Biophysical Assessment

BIOPHYSICAL ASSESSMENT

FAWN MEADOWS

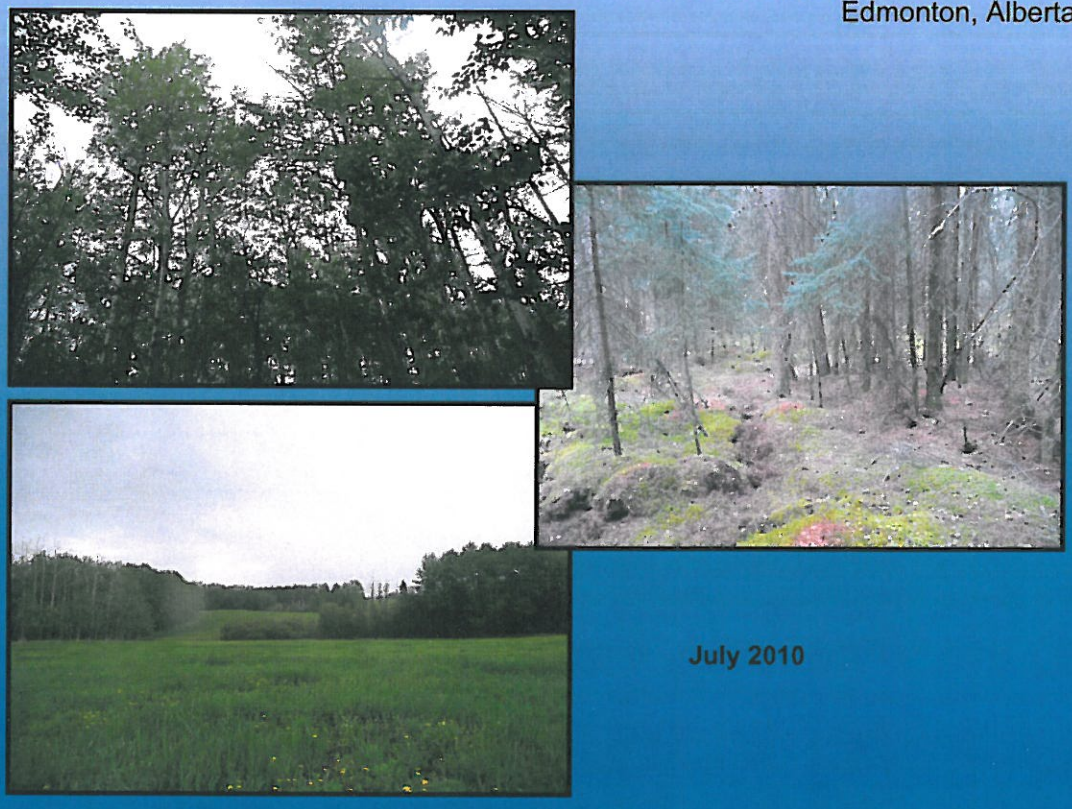
NE 04-53-02-W5M

PARKLAND COUNTY, ALBERTA

Submitted to:

NorCan Consulting Group Inc. (Alberta)
and Fawn Meadows Development Inc.

Submitted by:
Bruce Thompson & Associates Inc.
Edmonton, Alberta



July 2010

TABLE OF CONTENTS

List of Tables

List of Figures

APPENDICES

1.0 INTRODUCTION

1.1 Background and Purpose

This Biophysical Assessment has been developed for NorCan Consulting Group Inc. (Alberta) and its client Fawn Meadows Development Inc, as part of its application to develop a portion of the northeast quarter-section of Section 04, Township 53, Range 02, West of the 5th Meridian as a mainly residential subdivision with a retirement community theme, which will be known as Fawn Meadows. The biophysical assessment is a necessary requirement for the approval of an Area Structure Plan for the proposed project site, as well as approval of the stormwater management plan for the subdivision, under the *Alberta Water Act* and the *Environmental Protection and Enhancement Act.*

A Biophysical Assessment is conducted to identify significant and sensitive environmental components on the project site prior to the development of an Area Structure Plan (ASP), and to make recommendations on the sustainability of the site, whether parts of it can or should be preserved in the natural state, and if so, what mitigation and monitoring measures are necessary to achieve sustainability. The Biophysical Assessment provides recommendations for dedication of Environmental Reserve, Municipal Reserve and Conservation Easement lands based on municipal, community and environmental needs.

Accordingly, the purpose of this Biophysical Assessment is:

- to identify and evaluate existing ecological features on the site as they appear at the present time;
- to provide practical recommendations for preserving or enhancing ecologically significant features within the context of the ASP;
- to provide general recommendations for mitigation of potential adverse environmental effects resulting from the development, on the site and on surrounding lands.

1.2 Development Project Overview and Site Location

The property intended for the Fawn Meadows subdivision development comprises approximately 3/4 of a quarter section (130 acres or 52.6 ha) and is located approximately 14 km west of Stony Plain, Alberta, in Parkland County. The quarter-section is located 1.6 km south of Hwy. 16, where it joins Hwy. 43, and it borders the west side of Secondary Hwy. 770.

Carvel Corner is located just to the east of the property, on the other side of Secondary Hwy. 770. The north edge of the property lies 0.2 kilometers south of Township Rd. 531. Township Rd. 530A (Parkland Dr.) is 0.2 km south of the south boundary of the property.

The land in this quarter-section, and in the surrounding area generally, is agricultural crop land or pasture, with country residential development.

Figs. 1-4 show the location of the project site in a regional context. Figs. 5 and 6 are aerial photographs of the proposed development site (2008 and 1978). Fig. 7 shows the boundaries of the property. Fig. 8 shows the GPS waypoints recorded at the site in June 2010.

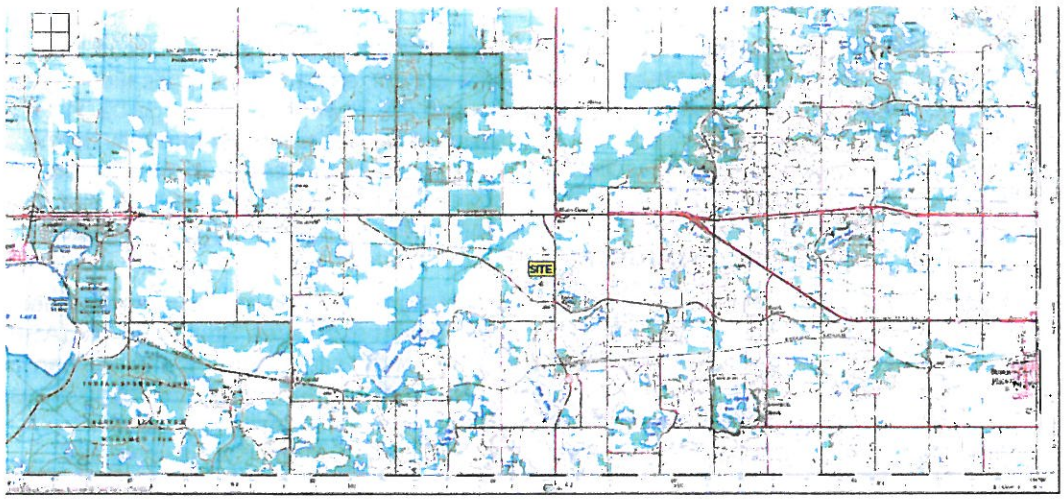


Fig. 1: *Context map showing site of the proposed Fawn Meadows residential development at NE 04-53-02-W5M.*

Fig. 2: *Location of the proposed Fawn Meadows residential development at NE 04-53-02-W5M (Google Earth Professional imagery).*

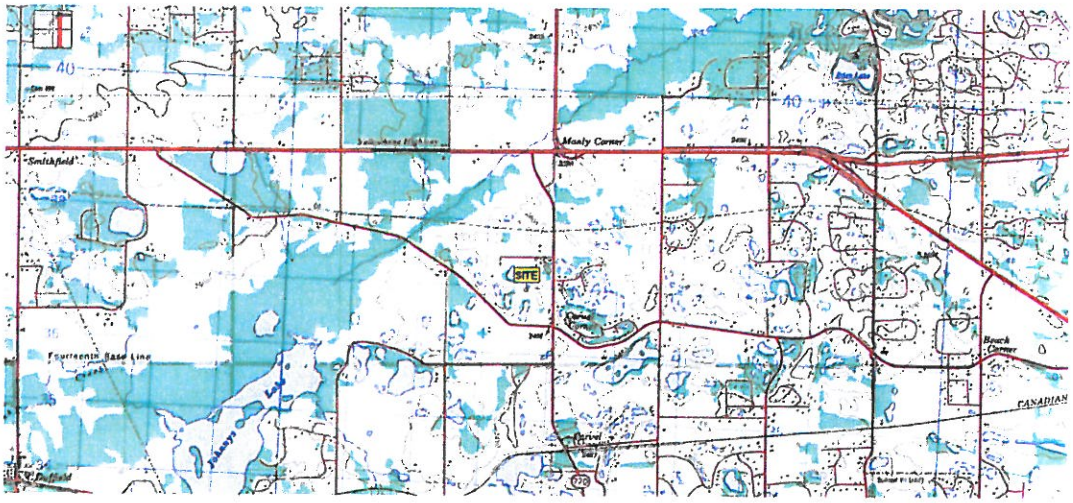


Fig. 3: *Location of the proposed Fawn Meadows residential development at NE 04-53-02-W5M.*

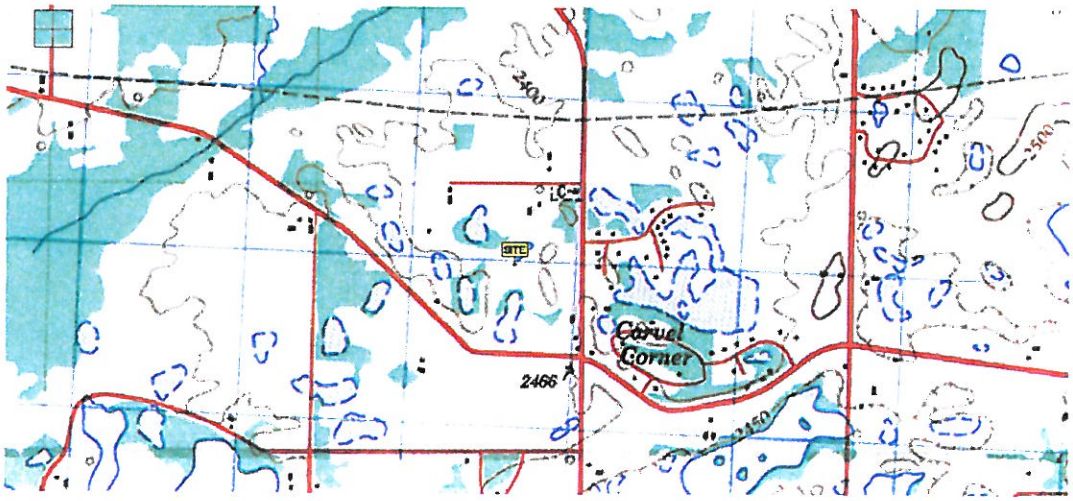


Fig. 4: *Location of the proposed Fawn Meadows residential development at NE 04-53-02-W5M.*

Fig. 5: *Aerial photograph (2008) of the quarter-section NE 04-53-02-W5M, the proposed development site.*

Fig. 6: *Aerial photograph (1978) of the quarter-section NE 04-53-02-W5M, the proposed development site.*

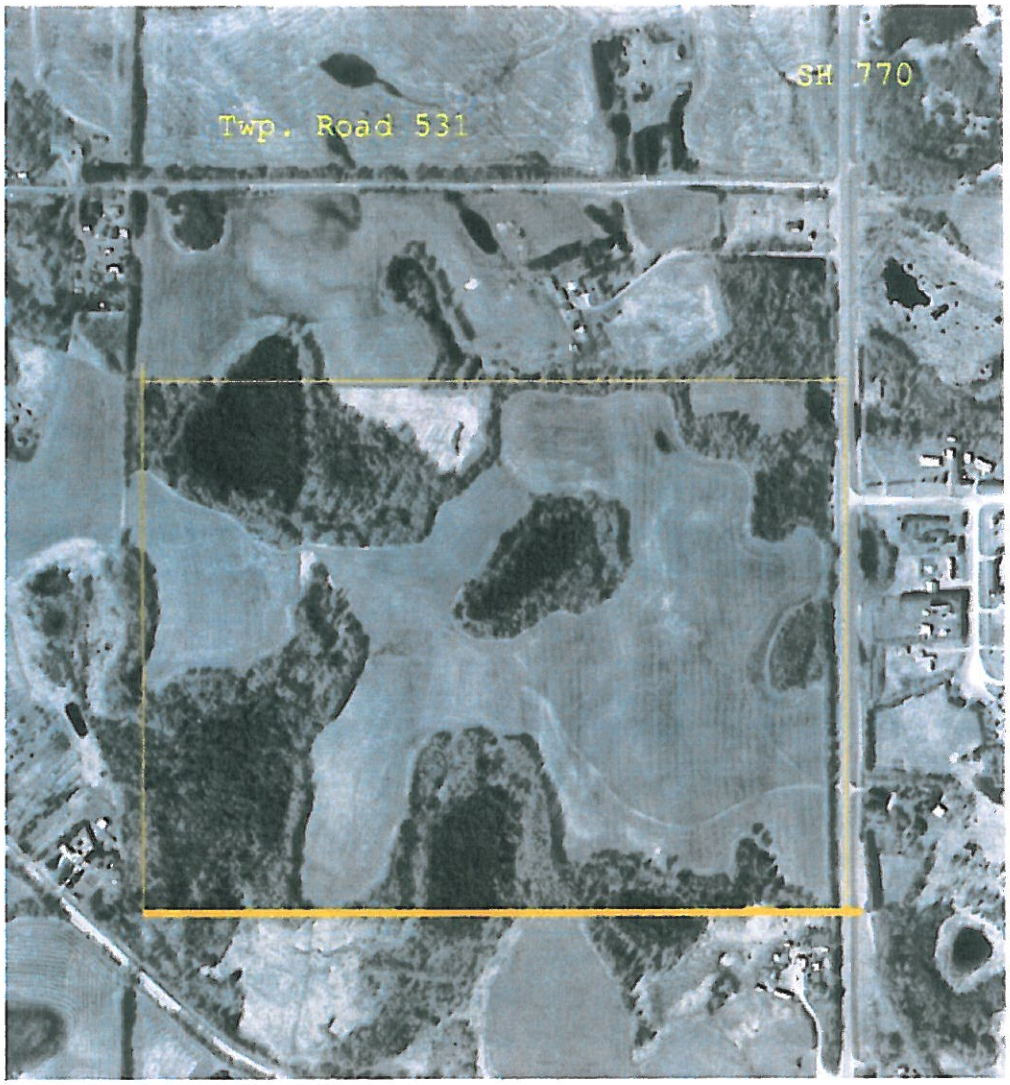


Fig. 7: *Aerial photograph of the Fawn Meadows property (approximately 3/4 of one quarter-section), with the yellow lines showing the boundaries of the property.*

Fig. 8: *The GPS waypoints recorded at the site in June 2010. These are used as location references throughout the text of this report. The UTM coordinates for the waypoints are shown in Appendix A.*

1.3 Scope of Biophysical Assessment

The Biophysical Assessment addresses all parts of the natural environment, and includes:

- Topography, geology and soils;
- Hydrology (surface water, ground water);
- Vegetation (terrestrial, wetland);
- Wildlife (birds, fish, herptiles, invertebrates, mammals) and its habitat;
- Sustainability;
- Linkages with adjacent ecosystems (connectivity);
- Biodiversity and species at risk (rare, threatened and endangered species);
- Aesthetic and visual features;
- Human use and access, ecological appreciation opportunities; and
- Other issues that may be relevant to the suitability of the site for the intended use.

The geographical scope of the Assessment is the proposed project site, whose boundaries are shown in Fig. 7. However, where relevant the Assessment takes into account adjacent land uses and ecological linkages with the subject property in a regional context.

1.4 Planning History and Previous Assessments

A geotechnical study that involved drilling and analyses of material at various depths, and water table depths, was conducted on the quarter-section proposed for the development (Sabatini Earth Technologies Inc., 2004).

A groundwater supply analysis of the Fawn Meadows property was done in 2009 (Stantec, 2009), including supply capability of production wells, and analysis of groundwater quality.

A Wastewater System Analysis was done on the Fawn Meadows property by Jacques Whitford NAWE Inc., in 2009.

2.0 REGULATORY MATTERS

The following is a listing of the main Acts and regulations at federal, provincial or municipal levels, which could be relevant to various aspects of the proposed development and possible effects on the environment or natural resources. It is to be noted that not all of the following legislation may be directly applicable to the development, and that the following is not a comprehensive list of any Act or regulation that could apply in any circumstance.

Federal Legislation

Canadian Environmental Assessment Act (CEAA)

The Canadian Environmental Assessment Act (CEAA) applies to a project if a Federal Government Minister (Federal Authority):

- proposes a project;
- grants money or financial assistance to a project;
- grants an interest in land to enable a project to be carried out (that is, sells, leases, or otherwise transfers control of); or
- exercises a regulatory duty in relation to a project, such as issuing a permit or Licence that is covered under the Law List Regulation.

With respect to the last item above, the federal *Fisheries Act* and the *Navigable Waters Protection Act* could trigger the need for an Environmental Assessment under CEAA if a crossing structure (e.g., footbridge) or an outfall/intake structure were being planned. In Alberta, there are harmonization agreements and mechanisms to reduce unnecessary duplication under CEAA and provincial environmental assessment requirements under the Alberta *Environmental Protection and Enhancement Act* and the Albert *Water Act* (see below). A discussion of the applicability of the *Fisheries Act* and the NWPA is provided below.

Migratory Birds Convention Act (MBCA), 1994

Under the Migratory Birds Regulation (under MBCA), no person shall hunt a migratory bird except under authority of a federal permit under this Act/Regulation. Subject to subsection 5(9), no person shall (a) disturb, destroy or take a nest, egg, nest shelter, eider duck shelter or duck box of a migratory bird, or (b) have in his possession a live migratory bird, or a carcass, skin, nest or egg of a migratory bird, except under authority of a permit licenced under this Act/Regulation. This Act and its Regulation become particularly important when removing trees to facilitate development, to landscape, or to remove fall hazard.

Typically, if construction activities require the cutting, transplanting or disturbance of trees or other nesting areas of migratory birds (including wetlands), Environment Canada will advise on the times of the year that these activities can take place, i.e., when the birds are not nesting and raising their young. These timeframes can vary depending on the particular bird species, but typically range from August/September to March/April. However, development can occur outside these periods, providing a migratory bird assessment is completed and the area is found to be free of active nests.

It is suggested that under such conditions, where it is nesting season and any trees could contain a migratory bird's nest, the proponent contact the provincial or federal wildlife offices

(Alberta Sustainable Development or Environment Canada) to enquire whether the operation can be carried out without harming migratory birds or their nests.

Fisheries Act

If there is any proposed activity that would destroy or adversely affect fish or fish habitat, such proposed activity would require an Authorization from Fisheries and Oceans Canada (DFO) under the *Fisheries Act*. The Fisheries Act {R.S. 1985, c. F14}, applies to all Canadian fisheries waters and assigns the Department of Fisheries and Oceans Canada (DFO) the responsibility to administer and enforce the conservation and protection of fish habitat on private property and on provincial and federal lands. The Fisheries Act prohibits the discharge of deleterious substances into a water body and requires that any works conducted in and around a water body accommodate fish passage and avoid harmful alteration, disruption, or destruction of fish and fish habitat (HADD). DFO follows a "no-net-loss" guiding principle for fish habitat, meaning that the quantity and productive capacity of the aquatic environment, including fish habitat, must be equivalent to or exceed that which existed prior to commencement of the works. Additionally, any unavoidable habitat loss must be balanced with replacement habitat. If any crossings of water body containing fish (e.g., a culvert) were being considered, both federal and provincial requirements would apply. If any substances were proposed to be released into a fish bearing water body, this too would require a notification.

For any works that may cause a HADD, e.g., a watercourse crossing, a Notification must be sent to DFO. As far as is known, the project will not entail the crossing of a road or pipeline over a water body containing fish. Precautions must be taken to ensure that substances such as wood preservatives, paints, lubricants, or silt from erosion, do not enter any waterbodies or wetlands on or near the property.

Navigable Waters Protection Act

If a watercourse is considered to be navigable for the purposes of the *Navigable Waters Protection Act (NWPA)*, the construction of a crossing over it would require an Authorization from Fisheries and Oceans Canada (DFO) under the NWPA. The legal scope of the term "navigation" refers to any vessel, even one as small as a canoe or kayak.

If there is to be a crossing structure in the form of a free-standing bridge, the DFO Operational Standards apply. Otherwise, a Notification should be sent to the local office of DFO. This report should be attached to that Notification. The information contained in it is intended to satisfy both DFO and Alberta Environment (AENV) requirements.

As far as can be observed, there are no navigable waterbodies on or immediately adjacent to the property.

Species at Risk Act

The Species at Risk Act (SARA) was passed in 2002 as part of Canada's commitment to the international Convention on Biological Diversity. The intent of the SARA legislation is to prevent species that are listed in Schedule 1 of the Act from becoming extinct, threatened, or extirpated. Additionally, SARA strives to help in the recovery of any listed species through protecting the critical habitats of at-risk species. Under SARA, it is illegal to kill or harm any listed species, or to destroy the residences of any listed species that occur on federal lands. For listed species that that are found outside of federal lands, it is the duty of the province or territory to protect listed species through legislation. This legislation covers birds, plants, fish, mammals, insects, amphibians and reptiles.

In the present case, no rare or endangered species were observed on the portion of the land in which development is proposed (discussed later in this report).

Federal Policy on Wetland Conservation

The Federal Policy on Wetland Conservation was passed by Cabinet in 1991, with the objective of promoting "the conservation of Canada's wetlands to sustain their ecological and socio-economic functions, now and in the future" (Government of Canada, 1991). The Federal Policy on Wetland Conservation applies to the full range of federal activities and drives management decisions regarding the protection of wetland habitat on federal lands.

The two key commitments of the Federal Policy on Wetland Conservation include:

- no net loss of wetland functions on federal lands and waters through mitigation of all impacts of development related to these wetlands; and
- enhancement and rehabilitation of wetlands in areas where the continuing loss or degradation of wetlands has reached critical levels.

Provincial Legislation

Public Lands Act

The bed and shores of all watercourses and water bodies are considered public lands unless the Government of Canada owns them. As such, approvals under the Public Lands Act {R.S.A. 2000, c. P-40} are required for any activity on the bed or shore of Crown owned rivers, streams, or lakes. Any activity that alters or occupies the bed and shore of a water body may be done only after written approval.

A Licence of Occupation (LOC) would be required for instream structures and permanent or temporary facilities on Crown Land. A Licence of Occupation (LOC) is required under the *Public Lands Act* to build any structures that could have a negative impact on the bed and shore of a waterbody (e.g., retaining walls, boat launching facilities, breakwater structures, and causeways).

It would appear unlikely that the Alberta Government would claim any of the wetlands on the property for the Crown, because they are all very small and not permanent in the sense that water is present throughout the year. It is still advisable, however, to notify the Lands Division of ASRD of the proposed development at an early stage, so that a determination can be made.

Environmental Protection and Enhancement Act, 1992

The Alberta *Environmental Protection and Enhancement Act (EPEA)* supports and promotes the protection, enhancement and wise use of the environment. It recognizes the impact of development, polluters paying for their actions, and other such acts.

The Act deals with the release of substances into the environment, regulating releases, and creating general prohibitions with respect to substance release, and also provides the necessary powers to regulate the handling of storm drainage and wastewater. A key part (Section 109) states that no person shall release or permit the release into the environment of a substance in an amount, concentration, or level or at a rate of release that causes or may cause a significant adverse effect, thus covering a very broad range of anti-pollution prohibitions.

Under the Wastewater and Storm Drainage Regulation, EPEA gives powers to Alberta Environment for the regulation of stormwater drainage and wastewater systems. The Wastewater and Storm Drainage Regulation and the Wastewater and Storm Drainage (Ministerial) Regulation enable the Department to regulate the operation of storm drainage and wastewater systems and establish standards for such facilities and their operators. This legislation sets out requirements for the construction and operation of municipal plants for handling of stormwater drainage and wastewater.

Among other things that the Act covers are the following:

- Harmful emissions to the air (Air Emissions Regulation);
- Release of harmful/toxic substances to the environment (Substance Release Regulation);
- Reclamation of disturbed lands (Conservation and Reclamation Regulation);
- Ozone-depleting substances (Ozone-Depleting Substances Regulation);
- Handling, use and application of pesticides (Pesticide Sales, Handling, Use and Application Regulation);
- Potable water (Potable Water Regulation); and
- Reporting of releases to the environment (Release Reporting Regulation).

EPEA allows for anti-litter orders to be issued for the control of waste on highways, water, ice and public and municipally owned land (which are referred to as enforcement orders). Orders for the cleanup of unsightly property are referred to as environmental protection orders. The forms of both types of orders are set out in the regulations.

EPEA regulates the handling, storage and disposal of hazardous wastes under the Waste Control Regulation. Hazardous wastes are defined in the Regulation.

The Wastewater and Storm Drainage Regulation under AEPEA gives Alberta Environment the responsibility of regulating storm drainage and wastewater systems, including the establishment of standards for such facilities in their operation. This includes naturalized wetlands, other storm water management facilities, outfalls and related piping. Some of these matters may be applicable to the present project, depending on the infrastructural design.

Water Act

The Alberta Water Act, which came into force in 1999, supports and promotes the conservation and management of water. It regulates withdrawals and diversions of water, including drilling water wells, through a licensing and authorization system. It regulates water management works and undertakings, and authorizes temporary diversions through a licensing process.

Watercourse crossings (road, bridge, pipeline, telecommunications, etc.) are authorized/regulated through the Alberta Watercourse Crossings Codes of Practice. A Notification must be submitted to Alberta Environment detailing any watercourse crossing structures, and explaining how the construction and operation of the crossing meets the requirements of the Code.

Approval would be required under the Water Act from Alberta Environment in respect to any watercourses or wetlands that might be affected, or whose flows may be affected, by the proposed development. For this reason, any wetlands or watercourses on the property

need to be identified, classified and evaluated according to defined criteria. Measures must be developed to mitigate any adverse effects on any wetlands or watercourses. Under the provincial wetlands policy, any wetland that is to be disturbed or destroyed due to the project must be replaced with habitat of equal quality (habitat compensation), or equivalent financial compensation.

An approval is required to conduct an activity in a water body. An activity is defined generally to include placing or constructing works within a water body, removing or disturbing ground and/or vegetation that results in altering the flow, level, direction and/or location of a water body. A license is required to divert or transfer water from a water body.

Construction of an outfall would also require that the Code of Practice for Outfall Structures on Waterbodies under the Water Act be followed. This Code of Practice dictates restricted activity periods on water bodies, and requires that certain design standards be followed. The Code of Practice also requires that notice be issued to the Director, Alberta Environment, prior to commencement of the work. Hydrological issues are discussed later in this report.

Approvals would be required under the *Water Act* to modify or fill any wetlands that might occur on the property, and to construct any outfall drainage channel into a water body. This matter is discussed later in this report. There are several wetland areas on the property to which this would apply if such wetland areas were to be drained, filled or otherwise disturbed or altered.

Weed Control

Under provincial legislation, only pesticides that have been registered for use in Canada by the Pest Management Regulatory Agency under the Canada *Pest Control Products Act* can be used in Alberta. Pesticides are regulated in Alberta under the Alberta *Environmental Protection and Enhancement Act* and supporting regulation (Pesticide Sales, Handling, Use and Application Regulation).

This legislation provides for the regulation of sales (pesticide vendors) and use (pesticide applicators) of pesticides in Alberta. In addition, there is the Environmental Code of Practice for Pesticides which provides more detailed direction for pesticide sales and use in Alberta.

Wildlife Act

Alberta's Wildlife Act is the main piece of provincial legislation that deals with wildlife. Under the Act, hunting without a licence or out of season is prohibited, as is the possession of wildlife and controlled animals (defined in the Act). The Act also covers diseased animals, damage or threat caused by private animals, and the closing of areas to the public to protect wildlife, where necessary. Licences and permits are issued under the Act to regulate hunting or other activities, as outlined above.

If the Minister believes that any animal is diseased or materially infested by parasites and might present a danger to the life or health of any wildlife animal or endangered organism, or that any animal poses an ecological threat or genetic danger to wildlife or an endangered organism, he/she may order that the suspect animal be quarantined or direct a wildlife officer to seize the suspect animal and kill or otherwise dispose of it. If a wildlife officer believes that a privately owned animal is harassing wildlife, the officer can order the owner to confine it in acceptable manner. Other similar provisions apply where a privately owned animal is harassing, or posing a threat to, the life or health of wildlife, or is damaging wildlife habitat. Additionally, where a privately owned animal is believed to pose an immediate danger to any person, or is damaging or is imminently likely to damage property, an officer

may capture or destroy the animal. If a wildlife officer believes that the health or safety of the public is in jeopardy in any area owing to the presence of wildlife or a controlled animal or from any attempt to capture or kill such an animal, the officer or guardian may make a written or oral order that the area be closed to public access for a specified period.

Historical Resources Act

Section 37 of the Historical Resources Act provides the framework for Historical Resources Impact Assessments (HRIAs) and mitigative studies. When, in the opinion of the Minister of Alberta Community Development (ACD), an activity will or will likely result in the alteration, damage or destruction of an historic resource, the person or company undertaking the activity can be required to:

- conduct an HRIA on lands that may be affected by the activity;
- submit to ACD a report discussing the results of the HRIA;
- avoid any historic resources endangered by activity; or
- mitigate potential impacts by undertaking comprehensive studies.

HRIAs and mitigative studies are paid for by the person or company undertaking or proposing to undertake the activity. ACD regulates archaeological and paleontological fieldwork through a permit system. All decision-making in regard to the management of historical resources rests with ACD.

One of the requirements of an HRIA is to address compliance requirements associated with the Historical Resources Act of Alberta. As such, it becomes incumbent for the proponent to comply with any government requirements that result from a Historical Overview if one has been done. At a minimum, ACD should be contacted, to determine if they have any concerns about the property in question, from an historical, archaeological or related perspective. This matter is discussed later in this report.

Species at Risk Program

Alberta has a Species at Risk Program, which was initiated as a response to the provinces commitment to the Accord for the Protection of Species at Risk in Canada. The intent of the Accord is to prevent species in Canada from becoming extinct as a consequence of human activity. As part of the assessment procedure, all species of concern are generally assessed and are classified as one of the following categories 1) At Risk; 2) May Be at Risk; 3) Sensitive; 4) Undetermined; and 5) Secure. Any species that is designated as "At Risk" or "May Be at Risk" undergoes a detailed status assessment and is formally designated as Endangered, Threatened, Special Concern, Data Deficient, or Not At Risk. Any species that is designated as Endangered or Threatened becomes legally protected under Alberta's Wildlife Act {R.S.A 2000, c.W-10}. This legal designation prohibits the disturbance, killing or trafficking of these species, and provides immediate protection of nests and den sites. Any species that is designated as "Sensitive" after a general assessment, or as "Special Concern" after a detailed assessment becomes eligible for special management actions designed to prevent the species from becoming "At Risk".

In the present case, no listed species were observed on the portion of the land in which development is proposed. An enquiry was made to the Alberta Natural History Information Centre (ANHIC), regarding whether there were any reports of listed species within 3 km of the project site. This is discussed later in this report.

Interim Policy for Wetland Management in the Settled Area of Alberta and Guidelines for Wetland Habitat Compensation

Developed in 1993, this interim policy provides direction on the management of wetlands in the settled areas (white zone) of Alberta (Alberta Water Resources Commission, 1993). The primary goal of the policy is to "sustain the social, economic, and environmental benefits that functioning wetlands provide, now and in the future" by conserving wetlands in a natural state, mitigating the degradation and loss of wetlands, and enhancing, restoring, or creating wetlands in areas where they have been depleted or degraded.

If the flow of surface water is altered or blocked, or if a wetland is being altered or destroyed by filling in or draining, the Alberta Policy on Wetlands and the *Alberta Water Act* would apply. The Policy, in essence, requires that there be no *net* loss in wetland habitats in Alberta. If a wetland is destroyed, then compensation must be provided by the person or persons responsible for effecting such damage. Under the policy, compensation can be through directly creating equivalent wetland habitat in another location, or by paying a recognized wetland manager (e.g., Ducks Unlimited) to accomplish this. If the compensation sites are within a certain distance from the affected one, the compensation ratio is 3 hectares of new wetland to 1 hectare of affected wetland. Beyond a certain distance between compensated wetlands and affected wetlands, the ratio becomes higher, and increases with progressive distance. This would apply if any wetland that might occur on the property were affected by the development or related construction activities.

Several wetlands were observed on the property, some of which were connected to wetlands on adjacent properties. The issue of mitigation or compensation in respect to wetlands is discussed later in this report.

Standards and Guidelines for Municipal Waterworks, Wastewater and Storm Drainage Systems

Alberta Environmental Protection has established standards and guidelines for the design and operation of municipal waterworks, wastewater and storm drainage systems (Alberta Environmental Protection, 1997). These standards and guidelines outline four types of requirements: Performance Standards, Design Standards, Design Guidelines, and Operating and Monitoring Requirements and Guidelines. These requirements are all directed towards ensuring public health and environmental protection.

Wastewater and Storm Drainage Regulation and Wastewater and Storm Drainage (Ministerial) Regulation

The Wastewater and Storm Drainage Regulation {AR 119/93} and the Wastewater and Storm Drainage (Ministerial) Regulation {AR 120/93} fall under Part 4, Division 1 of the Environmental Protection and Enhancement Act {R.S.A. 2000, c. E-12}. These regulations create general prohibitions with respect to substance release to the environment and provide powers to regulate the handling of wastewater and storm drainage.

Stormwater Management Guidelines for the Province of Alberta

These guidelines were developed as a result of increased urbanization and public expectation for improved runoff control. These guidelines direct the planning, analysis, design, construction, operation, and maintenance of stormwater management systems to address concerns associated with stormwater runoff and its impact on urban and rural

development, and aquatic resources. These guidelines include Best Management Practices for stormwater management and quality control.

Code of Practice for Outfall Structures on Water Bodies

The Code of Practice for Outfall Structures on Water Bodies came into effect in September 2003. Activities regulated under the CoP for outfalls include the placement, construction, installation, maintenance, replacement or removal of an outfall structure, and any activities related to the placement, construction, installation, maintenance, replacement or removal of the structure. The CoP establishes standards to ensure that any disturbance or impact to the environment that occurs as a result of the placement of an outfall structure is minimized. The Guide to Requirements for Outfall Structures on Water Bodies was published in December 2004. The guide was designed to clarify the obligations of those involved in outfall structure activities. The document outlines methodologies for biological and physical assessments, and provides a list of best management practices for the construction, operation, and monitoring of outfall structures. Appropriate mitigation measures would need to be taken if a stormwater outfall is planned for the new subdivision. This appears to be unlikely, as there are no large waterbodies on the property or in the immediate vicinity.

Code of Practice for Watercourse Crossings

Activities regulated under the CoP include the placement, construction, installation, maintenance, replacement or removal of a watercourse crossing, by a road, pipeline or telecommunications line; and any activities related to the placement, construction installation, maintenance, replacement, or removal of it. The Code establishes standards to ensure that any disturbance or impact to the environment that occurs as a result of the placement, maintenance, or removal of a watercourse crossing is minimized. This Code would apply, therefore, if a crossing structure were to be used for any waterbodies entering or crossing the property. Appropriate mitigation measures would need to be taken in respect to crossing any drainage course. It is unlikely that this project will entail a crossing over a permanent watercourse, but if this were the case, the appropriate mitigation would need to be incorporated into the design.

Municipal Government

Most Municipal Government bodies in Alberta now require that a Biophysical Assessment be done prior to subdivision of land, and before the development of an Area Structure Plan (ASP). One of the purposes of the Biophysical Assessment, in general, is to provide a specific assessment process for dedication of Environmental Reserve, Municipal Reserve and Conservation Easement based on municipal, community and environmental needs.

This report addresses the requirement for a Biophysical Assessment by the County. The investigation also compiles information that would be useful for regulatory determinations under the *Water Act,* the *Public Lands* Act and other applicable acts and policies as outlined above.

3.0 APPROACH AND METHODS

The Biophysical Assessment was conducted to describe and interpret site features as they existed at the time of the field reconnaissance, which took place in June/July, 2010. The study included the following activities:

- Consultation with the firm undertaking the detailed design of the proposed subdivision development;
- Review of any maps, previous reports, etc., completed for this project;
- Examination of historical aerial photographs, to assess surrounding land use, vegetation areas, developments, etc.; and
- Field reconnaissance of the site (June/July 2010).

The scope of the field reconnaissance was to observe features of vegetation, drainage, wildlife and other components of the natural environment, as existed at the time of the field reconnaissance. The types and distribution of vegetation, the type of forest, drainage features, wildlife and wildlife signs (e.g., tracks, feces, hair, burrows, nests, rubs, scrapes, etc.), and any other environmental features, were noted by location and documented with photographs. There was no snow cover during the visit, and most remaining features of vegetation, soils, etc. were visible. It must be taken into account, however, that this study did not conduct surveys in all seasons, although most native plants should be clearly visible and identifiable at this time of year. In fact this is an ideal time to conduct a biophysical study.

The field reconnaissance was conducted on four days: June 7, June 16, June 18 and July 7, 2010.

Locations and features of the property were geolocated using a Garmin GPS60Cx hand-held GPS unit. The coordinates of all waypoints are given in Table A1 of Appendix A. Fig. 8 shows the waypoints established in June/July 2010.

The contours of the site were observed directly in the field, and notes were made of any depressions which might form a wetland, gully or natural drainage course. Historical aerial photos were examined from 1950 through 2008 (most recent for the property that are available from Alberta Government), to see where on the site water tends to collect. Potential wetlands were also identified by observing the vegetation growing there. Samples of vegetation were taken from any low-lying areas on the subject property and identified. Classification of these areas as potential wetlands was done according to the Stewart and Kantrud Wetland Classification System (Stewart and Kantrud, 1971). Appendix B gives some of the criteria used to make these identifications, based on plant species that occur in this region. The historical aerial photographs were examined to determine the configuration of each low, wet area and the amount of surface water present in various years.

GPS Waypoints are specific locations established by the GPS instrument, abbreviated in this report at "WP", so that Waypoint 8, for example, is referred to as "WP08".

The spatial area of each wetland or other feature was determined from aerial imagery.

4.0 ASSESSMENT RESULTS

4.1 CLIMATE

The proposed project site lies within the Dry Mixedwood Boreal Forest Natural Sub-Region near where it meets the Central Parkland Natural Sub-Region. The climate of the Dry Mixedwood Sub-Region is sub-humid, continental with short, cool summers and long, cold winters. The mean May - September temperature is about 11-13° C and the growing period is about 80 - 90 days. Annual precipitation averages about 380 mm with June and July the wettest months. Winters are relatively dry with about 60 mm of precipitation.

According to Environment Canada weather data from the Stony Plain meteorological station, the general area has a relatively dry northern continental climate with most of the annual precipitation occurring between May and September. From 1971-2000 climate data, it was observed that the average annual precipitation is only 536 mm (about 24 inches). While extreme snowfall events have amounted to about 33 cm (1.1 feet), normal month-end snow cover is a maximum of 16 cm in January with snow cover normally occurring from October through March. Temperatures are representative of the northern Canadian prairies with most days having a maximum temperature below 0°C between November and February. Summers tend to be relatively warm with mean daily maximum temperatures from 19.9 to 21.0°C over June to August and an extreme recorded temperature of about 35°C.

The most frequent wind direction varies minimally over the year. Wind directions are mainly from the northwest except during February, April, July and December when they are predominately from the west. Monthly wind speeds are fairly consistent throughout the year (9.3 to 11.9 km/hr).

Agricultural and related industrial activities predominate local emission sources. Higher particulate air quality levels may occur on a temporary basis as a result of agricultural and industrial (e.g., construction, road dust) activity. Vehicle exhaust fumes may be another source of air pollution, given the proximity to major highway routes.

4.2 PHYSIOGRAPHY AND TOPOGRAPHY

The physiography of the Dry Mixedwood Sub-Region is typically of hummocky moraine landform, with glaciolacustrine, aeolian dunes, organic deposits and sand outwash plains.

The topography of the quarter-section where the proposed development is to be located is shown in Fig. 9. The land is hummocky throughout the property, but slopes generally toward the west and the south.

Fig. 9: *Contours on the quarter-section NE 04-53-02-W5M (NorCan Consulting Group, 2010).*

4.3 SOILS AND GROUNDWATER

Soils of the Dry Mixedwood Boreal Forest are typically gray luvisols in well-drained, upland till sites and eutric brunisols in coarse-textured sandy uplands. Organics and gleysolics occur on wet depressional sites. In the Central Parkland, Black and Dark Brown Chernozems predominate under grassland vegetation while under the moister aspen woodlands Dark Gray Chernozems and Luvisolics are most common.

The surficial geology in the vicinity of the project area is reported to be ice-contact lacustrine and fluvial deposits comprised of gravels, sand and clay and local till. The deposits can be up to 25 m thick and deposited in intermittent supraglacial lakes and streams or at the margins of ice-floored proglacial lakes (Sabatini Earth Technologies Inc., 2004).

A geotechnical study of the property was conducted in 2003/2004 (Sabatini Earth Technologies Inc., 2004), in which soil samples were taken at 19 locations across the quarter-section. The soil stratigraphy generally consisted of topsoil over clay, with silt, sand and/or clay till encountered below the clay. In the northwest of the property (#04-10), clay was encountered from 0.1 to 1.7 m, while in the south of the property (boreholes #04-14 and 04-15), the clay was at 0.1 to 7.4 m and 3.5 to 6.0 m, respectively.

The site lies within a recharge area (although adjacent to an area transitional between recharge and discharge) of the Upper Horseshoe Canyon Aquifer (Stantec, 2009). All but about 10% of Parkland County is comprised by recharge area. A production well tested on the site showed that it is capable of producing 120 gpm, and was judged to be suitable to supply the community's water needs. The major area of impact of groundwater drawdown of more than 1.5 m was shown to be contained within the property boundaries for a distance of 234 m from the production well, located in the south of the site. The minor area of impact (up to 1.5 m drawdown) was estimated to be about twice this radius, and extended to the west, southwest and south of the site. A minimal area of impact (0.2 m drawdown or less) was a radius of 1,038 m around the production well, and extended off the property in all directions.

In Table 1 of the geotechnical site report, the depth to water (after 39 days) was logged as 1.3 to 6.8 m below ground surface, with most being 1.5 to 5 m (Sabatini Earth Technologies Inc., 2004). The boreholes from which these measurements were made were located outside the lowest points in the topography (i.e., the interiors of the treed areas). Most were done in the field areas, just outside the treed blocks. They are more indicative, therefore, of the open field or the deciduously treed areas, rather than the lowest, boggy spots in the interiors of the treed blocks. It is most likely that the depth to water table in the interior of the treed blocks would be less than the above figures, and that the ground near the surface would be saturated for all or much of the year.

That there were clay layers observed at fairly shallow depth supports the observations, made later in this report, of bog vegetation communities in the lowest locations: bogs are fed by rain water and a relatively impervious bottom substrate such as clay helps these low areas act as receptacles to retain water that drains in from surface runoff due to precipitation or snowmelt. Thus, the topography, stratigraphy and climate, plus time and the avoidance of clearing or other disturbances, work together to form a characteristic bog vegetation community.

Aquifer testing and analysis indicated that a groundwater diversion of 50,200 gpd (35 gpm) is sustainable, and would not unreasonably interfere with neighbouring groundwater supplies. The maximum impact predicted for the wells east of Highway 770 was less than 0.2 m of drawdown (Stantec, 2009).

Chemical analysis indicated that the groundwater concentrations of sodium and total dissolved solids exceed Canadian Drinking Water Quality Standards, and that water treatment will be necessary before its use as potable water. No pathogenic micro-organisms or toxic elements of concern were found in the groundwater (Stantec, 2009).

On the basis of the results of the geotechnical study, 35 to 40 percent of the site can be classified as low and wet, for the purposes of siting a sanitary waste treatment system. It was recommended that each proposed lot on the property have at least 0.40 ha of high dry land (if individual septic systems were being proposed) (Sabatini Earth Technologies Inc., 2004).

It is understood that several optional designs for a collective on-site sanitary waste treatment system are being considered for the Fawn Meadows development (Stantec, 2010), and that a septic system and/or recirculating sand or gravel filter system is being considered, to be located in the southeast part of the property.

Whatever design and location are chosen, it is very important that seepage of nutrient-contaminated groundwater from the treatment area to the low areas of the treed blocks is avoided. Bogs are typically nutrient-poor (and acidic) ecosystems, and the special assemblage of plant species that bogs contain has evolved to flourish in such an environment. Any introduction of additional levels of, for example, nitrogen and phosphorus (as well as various ions), could disrupt the soil and water chemistry of these areas, with the result of altering the delicate balance of vegetation in these communities. Similarly, wetlands in the northeast and southwest, as well as adjacent wetland areas to the south of the property, should be protected from seepage of excessive levels of nutrients and other substances from the sanitary waste treatment area.

4.4 SURFACE WATER

Surface water flow on the quarter section that contains the project site is complex due to the hummocky nature of the land. While the hummocky topography of the property will determine the minor, on-site surface drainage, in a broader context the surface water will flow predominantly to the northwest from the site toward Kilini Creek. Kilini Creek flows toward the northeast, flowing into Matchayaw Lake and thence into the Sturgeon River drainage system. Ultimately, the drainage enters the North Saskatchewan River drainage system via the Sturgeon River.

Between the project site and Kilini Creek to the west, and in the vicinity of the site generally, the land slopes gradually down toward the northwest, west and southwest, and as a result the landscape contains many shallow water bodies and wetlands, as can be seen on Figure 10 and in the field.

There are no clearly defined watercourses (i.e., streams, creeks, etc.) on the quarter section, and apart from the aforementioned wetland areas, there are no major watercourses near the site.

Observation of maps published by Alberta Environment indicate that the nearest mapped waterbody for the purposes of the Watercourse Crossing Code of Practice is Kilini Creek, which lies approximately 2 km north of the site. It is a Class C watercourse. There are other mapped watercourses to the south and west of the site, which drain to/from Wabamun Lake and Johnny's Lake 3 km or more to the west of the site (Wabamun Creek, Mink Creek) and empty into the North Saskatchewan River about 10 km to the south of the site. These creeks are shown as Class C watercourses (St. Paul Management Area Map, Alberta

Environment, 2006). Several important recreational lakes lie in the vicinity. Jackfish Lake, for example, is located about 5 km to the south of the site, and Mink Lake is 3 km south of the project site.

The Alberta Environment maps and the classification system for watercourses in Alberta is based generally on the abundance and quality of fish habitat. Class A is the highest priority class, and class D is the lowest (except for watercourses that are not shown on the map at all). Because of the distances involved, it is highly unlikely that the proposed development activities will have an adverse effect on these waters or their aquatic fauna. However, if there were activities on the property that interrupted drainage or introduced silt or other materials into the surface runoff water, it could affect some of the wetlands and small unnamed water bodies to the southwest, west and northwest of the site. Examination of the aerial photos of the site in 1975 and in 2005, as well as the aerial photos shown in Appendix D (1950 to 2008) indicates that there have been no significant changes in the wetlands and associated vegetation patterns over the last 50 years.

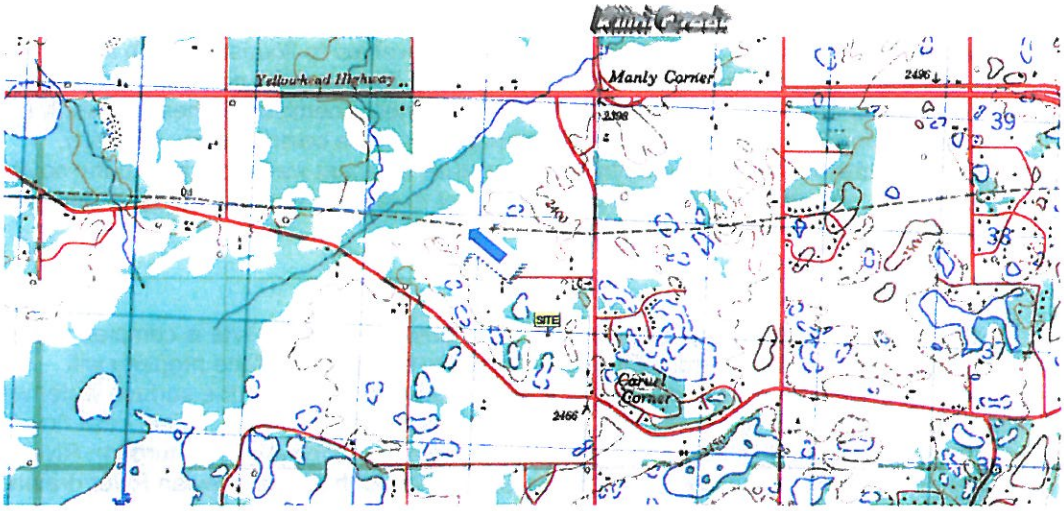


Fig. 10: *Projected surface water flow in the project vicinity, as inferred from topography. Blue arrow indicates major flow direction, which is from the project site northwestward toward Kilini Creek.*

In some low areas, the depression is sufficiently deep that over time, water has collected on a more or less permanent basis, and this has led to the buildup of a bog area, as vegetation material has collected and turned to peat. Along with this process, vegetation typical of bogs (or in some cases fens) in poorly drained, constantly wet conditions in this region has developed. This is in the form of layers of peat in different stages of decomposition, and the characteristic vegetation community consisting of black spruce, sphagnum moss, various lichens such as caribou moss and bushy plants like Labrador tea (*Ledum groenlandicum*). With increasing distance up slope from these depressions, deciduous forest establishes on the better drained soils. The vegetation community there consist of forest dominated by trembling aspen in the drier areas, and balsam poplar in the moister areas, with additions of white spruce. An intermediate zone between the lower, black spruce dominated communities and the upper, aspen/poplar dominated stands, consists of deciduous stands

dominated by white birch (paper birch). These water drainage and accumulation patterns explain why the site contains blocks of vegetation that consist of an inner, coniferous core surrounded by a narrow band of deciduous forest dominated by white birch, which is in turn enclosed by deciduous aspen/poplar forest on the surrounding, more gradual and better drained slopes.

Hydrologically, there are a number of areas where water accumulates, and which can be considered as wetlands. For example, the bogs noted in Figs. 13 and 14 (vegetation map) may be considered as wetlands (i.e., peatland areas that resembled "treed bogs" or "treed fens" as described in the new Alberta Wetland Classification Guidelines).

Additionally, there are several emergent marshes on the property. These are located at the points shown in Fig. 13 and 14 (vegetation map).

There is a small, marshy area on the east side of the property, which lies along the west shoulder of Highway 770 and which would be considered as a Class 4 wetland (i.e., *semi-permanent pond* of Stewart and Kantrud or *deep marsh* of the new Alberta Wetland Classification Guidelines). It is possible that it was formed by the construction of Highway 770, and the associated changes in natural drainage. Further south, also along the west shoulder of Highway 770, is a small willow thicket area, which contains a small patch of sedge vegetation. It would be considered as a Class 3 wetland (*seasonal pond* of Stewart and Kantrud or *shallow marsh* of the new Alberta Wetland Classification Guidelines).

Lying in the low point between the large forest block in the northwest and southwest of the property, there is a low, thicket area, but it does not contain wetland vegetation.

An emergent marsh wetland area is located right along the west boundary of the property, and resides mainly on the adjoining property to the west. While most of this wetland lies to the west of the property, it merges into the forest Block D at the southwest corner of the site. As drainage at this point would be in a westward direction, this marshy area would be affected by any changes in drainage on the property.

Adjacent to the northeast corner of the property, on the property on the other side of Highway 770, there is a large emergent marsh area. Directly adjacent to the southeast corner of the property, across Highway 770, is another water body which has features similar to a permanent pond type of wetland.

It seems most unlikely that the proponent will need to construct any crossings of a navigable water body, a permanent watercourse or a water body frequented by fish, and if this is so, notifications to Fisheries and Oceans Canada or Alberta Environment in this respect are not necessary. However, notification of Alberta Environment is required regarding the alteration, excavation, drainage or removal of wetlands or other surface water bodies.

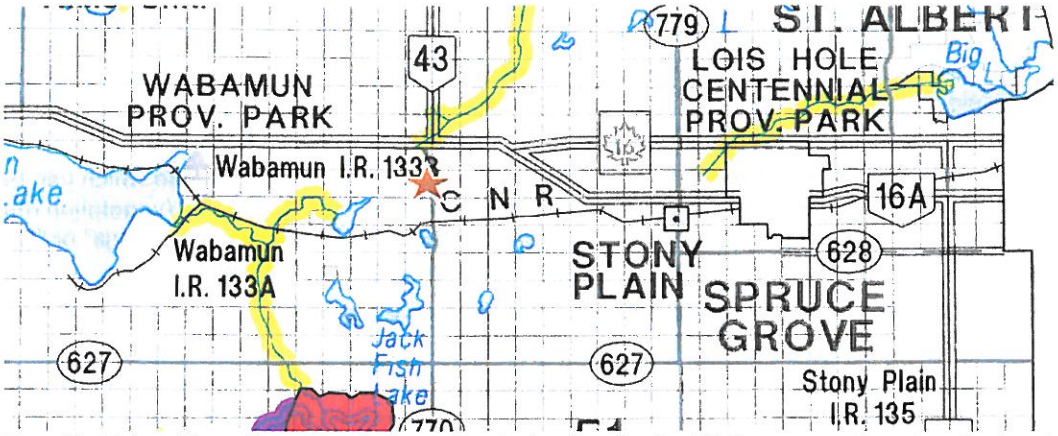


Fig. 11: *Extract from the map of classed waterbodies for the Watercourse Crossing Code of Practice (Alberta Environment, 2006, Stony Plain Management Area). Orange star indicates location of the subject site. Kilini Creek(Class C, yellow) lies about 2 km to the north; and the Class C watercourses draining to/from Wabamun Lake and into the North Saskatchewan River (Class A, red) lie about 5 km or more to the west/south.*

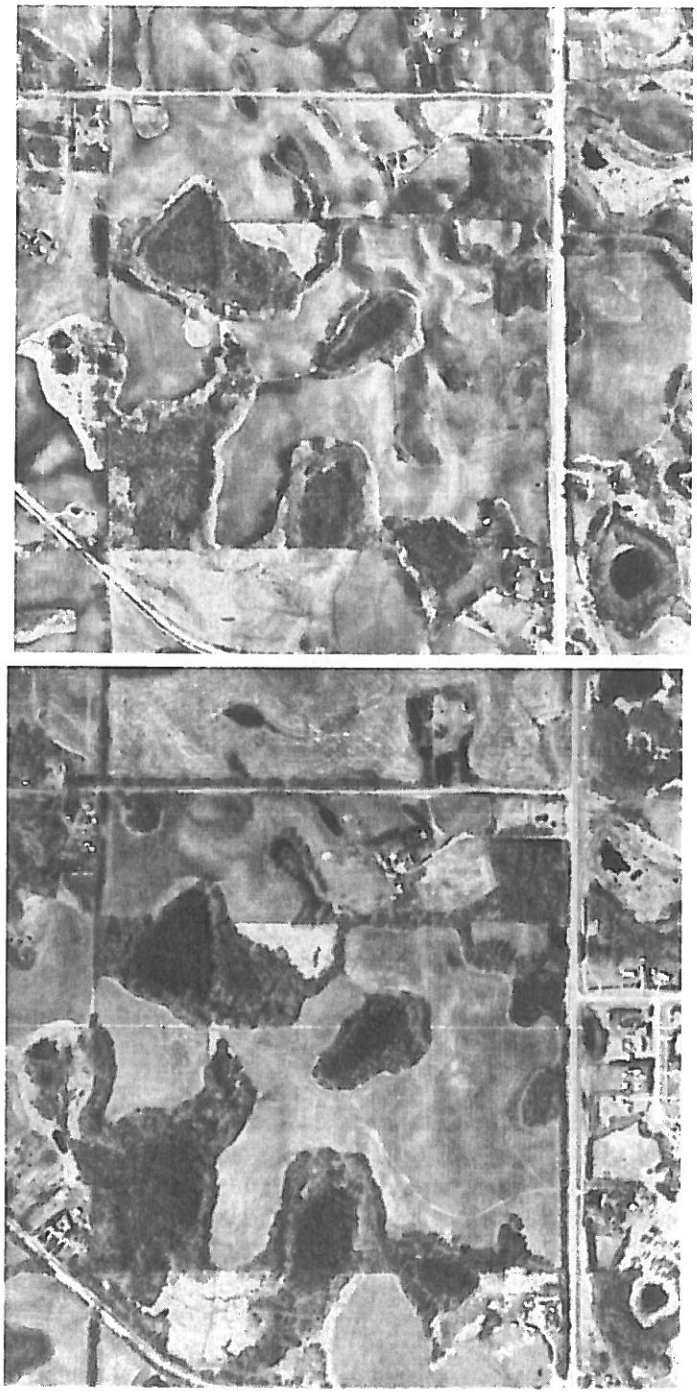


Fig. 12: The site as it existed in 1975 (upper) and 2005 (lower).

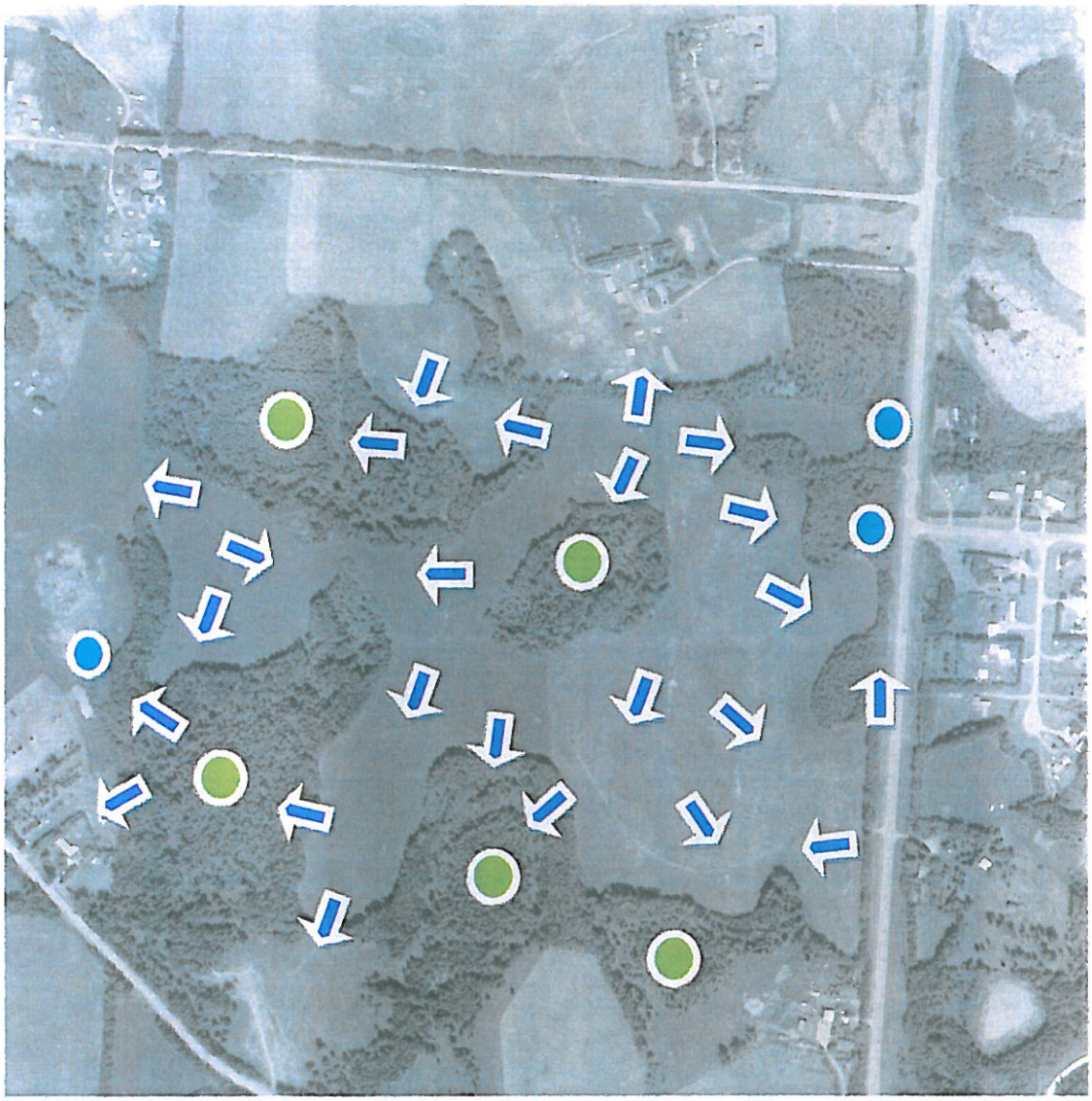


Fig. 13: *Existing surface water drainage patterns and wetlands identified on the property. Blue arrows indicate direction of surface water flow, as inferred from contours. Blue circles indicate identified wetlands. Green circles indicate boggy areas. Circles are not intended to be indicative of size.*

4.5 SURROUNDING LAND USE

Land in all directions in the vicinity of the proposed Fawn Meadows development is primarily cultivated agricultural land or pasture, or country residential.

Residential subdivision developments to the east of the site on the other side of Highway 770 include: Bowen Lake Estates; Lake Country; and Carvel Park. Shannon Meadows residential area lies to the south.

Immediately to the northeast of the site, on the west side of Secondary Hwy. 770 and just south of Township Rd. 531, is a small church and cemetery.

Highway 16 is a major transportation corridor lying approximately 1.6 km to the north of the site.

4.6 VEGETATION COMMUNITIES

This section provides a description of the vegetation communities that were observed on the site in the field reconnaissance, which was done on in June and July, 2010, preceded by a general description of vegetation in a regional context.

Waypoint coordinates are provided in Appendix A, Table A1, and shown in Figs. 8 and A1. Site photographs of the various features and areas observed, are shown in Appendix E. A list of the plant species observed on the site is provided in Appendix C.

Aerial photographs dated from 1950 to 2008 are shown in Appendix D.

It should be noted that the survey was done at only one time in the year, although this timing is ideal: most plants should be in the growing phase and would be observed and identifiable at that time, but not necessarily all. For example, the plant Indian Pipe (*Monotropa uniflora*) normally becomes readily visible and identifiable later in the summer in the Edmonton region, and none were seen in the present field reconnaissance.

4.6.1 Regional Context

Among the vegetation communities of the Dry Mixedwood sub-region trembling aspen (*Populus tremuloides*) is an important species, occurring in both pure and mixed stands. Balsam poplar (*Populus balsamifera*) frequently occurs with aspen especially on moister sites in depressions and along streams. Coniferous species are more common further north in the Dry Mixedwood sub-region with mixed stands of aspen and white spruce being widespread. Dry, sandy upland sites are usually occupied by Jack Pine (*Pinus banksiana*) forests. Peatlands are common throughout the sub-region and are extensive in some areas.

In drier situations, the forest is dominated by trembling aspen, and in moister areas (e.g., in depressions, near waterbodies) it is dominated by balsam poplar. Both are characterized by a diverse understory. Species characteristic of the aspen forest type include snowberry (*Symphoricarpos albus*), saskatoon (*Amelanchier alnifolia*), beaked hazelnut (*Corylus cornuta*), choke cherry (*Prunus virginiana*), bunchberry (*Cornus canadensis*), wild lily-of-the-valley (*Maianthemum canadense*) and false melic grass (*Schizachne purpurascens*).

In the moister (poplar dominated) areas, the understory is very diverse, consisting of such plants as red osier dogwood (*Cornus stolonifera*), pussy willow (*Salix discolor*), northern gooseberry (*Ribes oxyacanthoides*), green alder (*Alnus crispa*), bracted honeysuckle (*Lonicera involucrata*), bluebells (*Mertensia paniculata*), palmate-leaved coltsfoot (*Petasites*

palmatus), Bishop's cap (*Mitella nuda*) and baneberry (*Actaea rubra*). Species common to both types include wild rose (*Rosa acicularis*), woods rose (*Rosa woodsii*), low-bush cranberry (*Viburnum edule*), wild red raspberry (*Rubus idaeus*), dewberry (*Rubus pubescens*), twining honeysuckle (*Lonicera dioica*), wild sarsaparilla (*Aralia nudicaulis*), bearded wheat grass (*Agropyron trachycaulum*), fairy bells (*Disporum trachycarpum*), pink wintergreen (*Pyrola asarifolia*), Lindley's aster (*Aster ciliolatus*), northern bedstraw (*Galium boreale*), fireweed (*Epilobium angustifolium*), cream-colored peavine (*Lathyrus ochroleucus*), American vetch (*Vicia americana*), and star-flowered Solomon's seal (*Smilacina stellata*).

Shrub communities are common in the subregion and often extend in belts outward from the forest communities. Major species are *Symphoricarpos occidentalis, Rosa spp., Prunus virginiana, P. pensylvanica, Amelanchier alnifolia* and *Elaeagnus commutata*.

Poorly drained areas typically contain peatlands, including bogs or fens. Bogs are generally acidic, nutrient-poor, and vegetated with black spruce, sphagnum moss, various lichens including caribou moss, Labrador tea and other plants. Fens are generally alkaline, nutrient-rich and vegetated with tamarack as well as black spruce, willows and other shrubs and herbs. The differing chemistry of bogs and fens is due to the fact that bogs are fed by surface water and fens are fed by groundwater. Many of Alberta's rare plants (e.g., orchids) are found in bogs and fens, because of the special chemical and ecological conditions found in these ecosystems.

On the property, several peatland areas occur, being in the lowest, interior areas of the treed blocks. In the new Alberta Wetland Classification Guidelines, these would be classed as treed bogs (particularly when dominated by black spruce), although there are similarities with treed fens particularly where tamarack trees occur among the spruce.

4.6.2 Site Context

There are several basic types of vegetation community on the site of the proposed project:

- open fields
- deciduous tree stands (aspen/poplar or birch dominated)
- coniferous tree stands (mixed wood forest, bogs/fens)
- thickets, wet meadows and marshes

Fig. 14 is a map showing the project site and its vegetation communities.

In Appendix E, site photographs illustrating the various features of the property are given.

Open Fields:

More than half of the property consists of open pasture that has been cleared of trees and shrubs for the purposes of agriculture (since at least 1950). Because of the hummocky nature of the land, there are points of high elevation separated by depressions in the land. In the low elevation points, there are coniferous forests, and on the slopes above them are deciduous forests, both described below. The vegetation consists of upland grasses, clover and various invader species such as dandelion, thistle, and sow thistle. In all parts of the property, the pasture reflects the hummocky topography of the site, with quite steep slopes in many areas. It is only in the larger depressions that forest, wetlands and thickets have

been allowed to persist. Presumably, these areas remain because of the difficulty of ploughing and cultivating such areas.

Treed Blocks:

Block A:

location: *waypoints 226-230*

Block A at waypoint 226 in the northeast corner of the property and near Highway 770, is vegetated by deciduous forest, dominated by mature balsam poplar, trembling aspen, and various understory bushes and other plants. These include snowberry, fairybells, fireweed, prickly wild rose, red osier dogwood, anemone, wild raspberry, wild strawberry, horsetails, dandelions and other plants.

In the south part of Block A (waypoint 227), there is a small thicket/wetland complex, in which the vegetation is dominated by sedges and willows. Because the sedges (*Carex sp.*) predominate in the center, this part of it would be considered as a class III wetland. Moose pellets were observed in this area.

The west side of Block A is similar to the east side, with mature poplar (30 cm DBH, some up to 40 cm DBH) and a well developed, vigorous understory and ground vegetation. Plants observed there included Star-flowered false Solomon's seal, saskatoon, red osier dogwood, high bush cranberry, honeysuckle, western violets, peavine, pink wintergreen, cow parsnip, northern gooseberry, club mosses, bluebells, baneberry and wild sarsaparilla. There was a moderate amount of deadfall and coarse woody debris on the forest floor. There was some degree of breakage of mature trees, but not excessive. There was some dieback of mature poplar/aspen, but most trees appeared to be vigorous and healthy. The forest of Block A would appear to be mainly vigorous and healthy. The vegetation encountered there is typical of small deciduous stands in this subregion, with a fairly high degree of biodiversity.

Block B:

location: *waypoints 232-237*

Block B is a treed stand lying in the north-centre part of the property. Around the periphery of the stand there are mature balsam poplar and trembling aspen trees and typical associated understory shrubs and herbs. Within the inner part of the block, however, the vegetation is distinctly different. Here the community is comprised of black spruce, sphagnum moss and Labrador tea, plus some other associated plants such as shield ferns (*Dryopteris sp.*). This vegetation community is one that is typical of poorly drained areas in this subregion, and is characterized as a bog. A bog normally receives its supply of water from surface runoff, so it is characteristic of this hummocky area that there are frequently bogs located in the topographical low points, with deciduous vegetation in the higher, well-drained areas. "Bog" is to be differentiated from a "swamp", which is a low-lying area containing standing water and often submerged tree stems, or a "fen", which is a type of wetland that receives its water from groundwater. Both of the latter types of wetland have quite different assemblages of plant species, and are quite distinct from the type of bog area that was observed in Block B.

Peripheral to the black spruce inner core of Block B, but inside the poplar/aspen exterior, a stand of white birch was observed. Many of the older birch trees were dead, this perhaps being due to excessive moisture conditions.

Signs of wildlife were observed in Block B, including moose and white tailed deer (pellets) and red squirrel (warrens), the latter species being well associated with spruce forests (they eat the cone-borne seeds of spruce and construct burrows, or warrens, in the ground around the spruce trunks).

Block C:

location: waypoints 239-251

The treed stand Block C occupies the northwest corner of the property. Similar to Block B, it consists of an outer area of deciduous forest (balsam poplar, trembling aspen and associated deciduous vegetation), surrounding a core of black spruce forest at lower elevation. Plants observed in the deciduous part of Block C included Star-flowered false Solomon's seal, saskatoon, red osier dogwood, high bush cranberry, honeysuckle, western violets, peavine, pink wintergreen, cow parsnip, northern gooseberry, club mosses, bluebells, baneberry, wild sarsaparilla, wild raspberry, wild strawberry, bunchberry, shield ferns (*Dryopteris sp.*) and a few species of weeds such as dandelion. Mature poplar/aspen trees ranged up to about 30 cm DBH. The groundcover was composed mainly of deciduous leaf litter, as well as herbs and grasses. As in Block A, there was a moderate amount of deadfall and coarse woody debris on the forest floor, and some degree of breakage of mature trees. The trees appeared largely to be vigorous and healthy. The interior, coniferous part of the stand includes black spruce, sphagnum moss and Labrador tea, ferns, caribou moss (lichen of the genus *Cladonia*) and various herbs. A few specimens of cloudberries (*Rubus chamaemorus*) were observed in this black spruce stand. The black spruce stand in Block C is an ecosystem that is similar to the interior of Block B.

Surrounding the black spruce interior, and mainly on the north and west sides of it, there is a narrow strip of mature white birch. Similar to the one observed in Block B, most of the trees are dead. It is not totally clear why the stands of birch in both cases display such high mortality, but it may be due to changing water levels and moisture in the stand. No signs of soil erosion, disease or other obvious factors that would cause such mortality were observed. There were no signs of active recruitment of young birch trees in the stands.

Around waypoint 242, there was a small zone of mature white spruce and deciduous trees.

There were abundant signs of deer browsing (particularly on red osier dogwood), as well as deer pellets and moose pellets. As in Block B, red squirrel warrens were abundant in the spruce zone. Numerous elderberry (*Sambucus*) trees were observed at the edge of the spruce stand, e.g., at waypoint 240. Wildlife trails were observed throughout both the deciduous and coniferous components of Block C. A small mammal den was observed at waypoint 242. A pair of Red-Tailed Hawks was observed overhead, and one white tailed deer was observed in Block C.

Block D:

Block D takes up much of the southwest part of the quarter section. Similar to Blocks B and C, Block D comprises an inner core of black spruce bog area surrounded by a band of deciduous forest. At the north end of the stand, however, the peripheral deciduous stand is

a mixed wood stand composed of mature trembling aspen, balsam poplar, white spruce and white birch (waypoint 258). On the west side of the block, there is a vigorous mixed-wood forest, with balsam poplar, trembling aspen and white spruce, with a major portion consisting of a stand of black spruce, tamarack and birch. This vegetation transitions into a willow thicket type of ecology, which is linked to the thicket and wetland areas immediately to the west of Block D on the adjacent property (waypoint 256). With further distance east, the black spruce forest core is encountered (waypoint 259). Further eastward, (waypoint 260), mixed wood forest is again encountered around the southeast corner of the block, and it includes spruce, poplar and white birch.

Block D is the largest and most diverse forest block on the property. The spruce/tamarack/birch complex between waypoints 317 and 324, and particularly around waypoints 317-323 is a spectacular section of forest. It represents excellent opportunities for conserving core wildlife habitat, as well as ecological appreciation and perhaps nature trails (provided they don't disrupt or degrade wildlife core habitat or offer the potential for wildlife disturbance).

Block E:

location: waypoints 263-270

Similar to the aforementioned blocks, Block E contains a black spruce community in the interior and deciduous and mixed wood stand components around the periphery (waypoints 263-265). Within the black spruce interior (waypoints 266-268), there were abundant signs of red squirrel activity, as well as wildlife trails. The deciduous and mixed wood forest components contain some very old, large trees, including poplar, aspen, white spruce and birch.

Block F:

location: waypoints 271-221; SW corner of property

Like Blocks B, C, D and E, Block F, in the southwest corner of the property, contains a black spruce community in the interior (and south edge of the property) and deciduous and mixed wood stand components around the periphery.

The east part of Block F contains a mixed wood forest with some very large specimens of balsam poplar, white birch, white spruce. Some older spruce trees near waypoint 306 were as much as 40 cm DHB. This old forest area is very attractive.

The west part of Block F contains deciduous and mixed wood stands on the outer areas, with a core of black spruce, peatland area. The black spruce core is continuous with similar vegetation on the property adjacent to the south. However, the black spruce, boggy part appears to be fragmented to some extent, and impacted by clearing activities on the south edge of the property (waypoints 303-306).

Block G:

location: waypoint 278; east boundary of property

Block G contains a stand of white birch with scattered white spruce (both in upper canopy and understory), around the edges of which are mature aspen and poplar. The birch and

spruce were in vigorous condition, and the birch ranged in DBH from 4 cm to 15 cm. The ground cover consisted of leaf litter, with nettles, raspberries, fireweed, hedge nettle and other upland plants.

Wetlands

W1:

location: *waypoint 296-298; northeast corner of property, within Block A*

W1 is a small (0.2 ha) willow thicket on the south side of Block A, in the northeast corner of the property immediately to the west of Hwy. 770. It is vegetated mainly by sedges surrounded by a dense willow perimeter. The interior part of it, which is dominated by sedges, would be classed as a class 3 wetland (seasonal pond, Stewart and Kantrud, 1971), or a shallow marsh under the new Alberta Wetland Classification Guidelines. Because the outline of the actual sedges-dominated interior is a transitional area with the surrounding willow thicket and upland vegetation, the actual area of wetland is probably less than 0.2 ha.

The vegetation in this wetland-thicket area included wild mint, marsh skullcap, nettles, swamp horsetail, grasses and various weeds, with the ground cover being composed of a mosaic of Sphagnum moss or moist leaf litter. It is a minor wetland, with a considerable degree of disturbance, partly due to its being immediately on the shoulder of the highway and partly lying within the ditch area.

W2:

location: *waypoint 291-294; northeast corner of property, within Block A*

W2 is a small wetland bordering the highway on the east side of the property. It was vegetated primarily by cattails, rushes, slough grass, hair grass and various weeds. It would be classified as a small Class 4 wetland (semi-permanent pond, Stewart and Kantrud, 1971). In the new Alberta Wetland Classification Guidelines, it would be classed as a deep marsh. There is a large marsh with cattail vegetation on the east side of the highway, roughly adjacent to this point.

This, too, is a minor wetland, with a considerable degree of disturbance, largely due to its being immediately on the shoulder of the highway and partly lying within the ditch area. It may in fact have been formed by the construction of a highway.

Summary

Table 1 summarizes the areas described above, giving the type of vegetation community, the spatial area of each, and the total sum of their areas.

Table 1: *Vegetation areas on the property: classification and size.*

Block	Total Area (ha)	Deciduous Forest/Thicket	Coniferous or Mixedwood Forest	Marsh
A	1.5	1.2	0.0	0.3
B	1.7	1.2	0.5	0.0
C	4.7	3.8	0.9	0.0
D	7.4	5.7	1.5	0.2
E	3.3	2.6	0.7	0.0
F	1.4	1.3	0.2	0.1
G	0.5	0.5	0.0	0.0
Total:	20.5	16.3	3.8	0.6

Notes:

In Block A, there were a shallow marsh (Class 3) and deep marsh (Class 4), measuring 0.2 and 0.1 ha, respectively (referred to in text W1, W2, respectively).

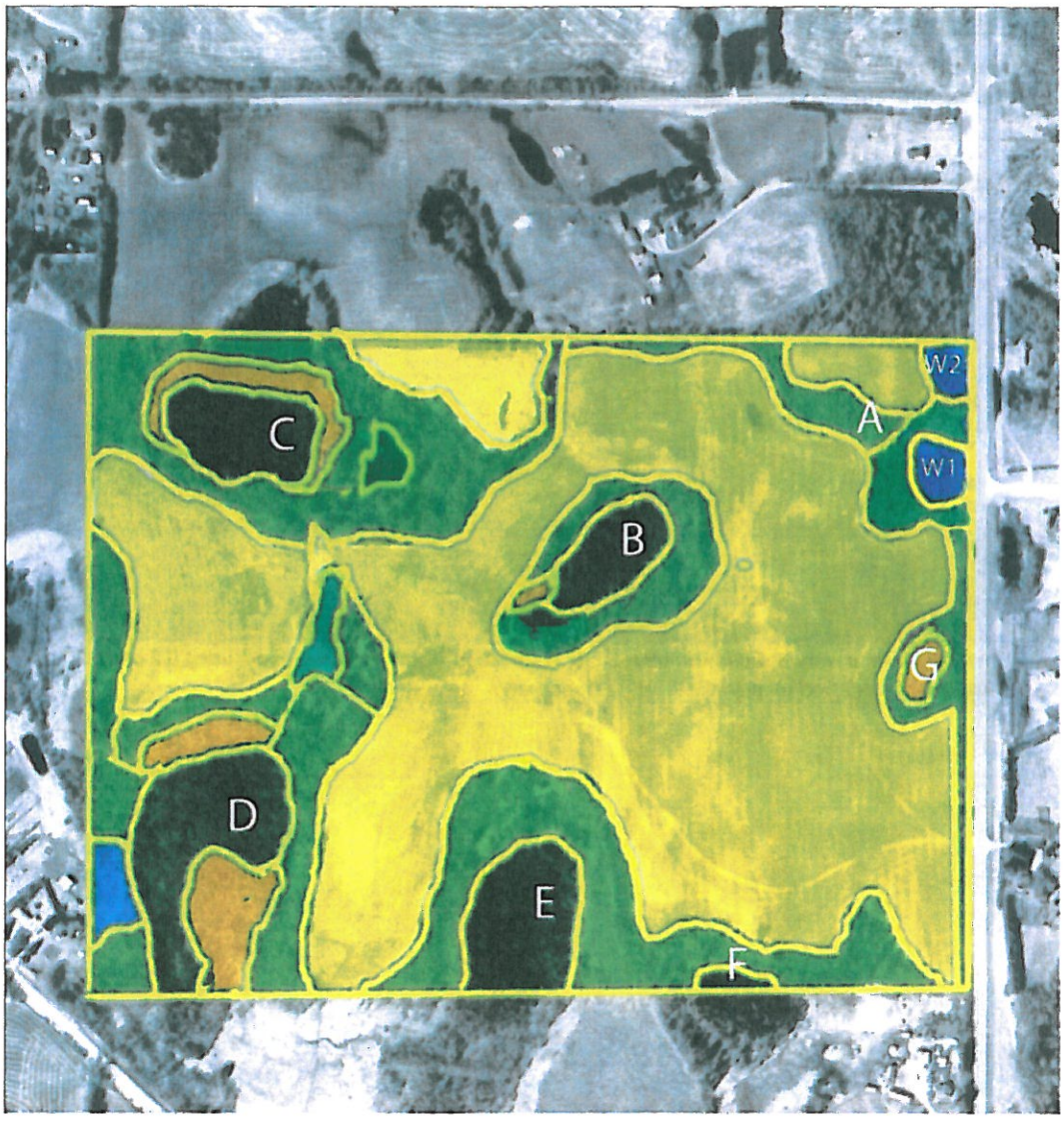


Fig. 14: *Vegetation map of the Fawn Meadows property (see legend below).*

Vegetation Community	
Open fields, pasture	yellow
Coniferous forest (bog/fen with black spruce, larch)	deep green
Deciduous forest stands (mainly aspen, poplar, willow).	light green
Deciduous stands dominated by white birch	orange
Wetlands/ or Wetland Thicket Complex	blue

4.7 WILDLIFE

4.7.1 Regional Context

Characteristic avian fauna of deciduous forests in the Dry Mixedwood sub-region include such species as Least Flycatcher, House Wren, Ovenbird, Red-Eyed and Warbling Vireos, Baltimore Oriole and Rose-Breasted Grosbeak. Species of mixedwood forests include birds such as Yellow-Bellied Sapsucker, Swainson's Thrush, Solitary Vireo, Magnolia Warbler, White-Throated Sparrow, Pileated Woodpecker and Northern Goshawk.

The richest fauna is to be found in riparian mixedwoods and shrublands associated with swamps, ponds, streams and lakes. Some species, such as Yellow and Black-and-White Warblers, American Redstart, Song Sparrow, Northern Water Thrush, Fox Sparrow and Philadelphia Vireo are mostly restricted to these sites.

Throughout the subregion, typical, widespread mammals include beaver, muskrat, moose, varying hare, black bear, wolf, lynx, red-backed vole, various species of shrew, deer mouse, least chipmunk, red squirrel and ermine. Others, such as fisher, wolverine, river otter, and woodland caribou, are less common and locally distributed.

Mammalian wildlife that could be expected to occur commonly in riparian and other moist areas include moose, white-tailed deer, beaver, muskrat, mink, weasel, skunk, red fox, and various smaller mammals such as deer mouse, red-backed vole, meadow vole, and various species of shrews. The shrews are commonly found on the margin of lakes, bogs, muskeg and streams, though not by any means restricted to such habitats.

4.7.2 Wildlife in the Study Area

Much of the quarter section in which the development is proposed has been cleared of trees and has existed as agricultural land since at least 1950 (oldest aerial photos available). As such, the cleared portions of the site would not be expected to contain valuable wildlife habitat. The primary habitat features are those of the coniferous forest, deciduous forest, thicket and wetland areas on the property, as shown in Fig. 14.

The field reconnaissance was done throughout June and early July, and while most birds and other wildlife should be observable at this time of year, it is not likely that all avian, mammalian or other wildlife at the site would be seen on the one occasion: it would be desirable to conduct field observations throughout the spring and summer of the year. However, the types of wildlife that might use the site can be inferred to a great extent from the vegetation communities. A number of species of birds, small mammals and amphibians would likely utilize the forest, thicket and wetland areas of the quarter section.

Based on observations and experience in biophysical assessments in similar ecological situations, common wildlife species that might be expected to inhabit or use the natural area include: white-tailed deer, moose, snowshoe hare, white-tailed jackrabbit, red squirrel, thirteen-lined ground squirrel, least chipmunk, porcupine, coyote, and various small mammals including bats. Less common species may include black bear, lynx and cougar. A reasonably high diversity of songbirds and raptor species would be expected in the area, based on the location and vegetative communities. In addition to providing nesting habitat, woodlots such as are on and adjacent to this property are important for migratory songbirds in that they provide both food and cover during migration periods.

Clay-coloured, Song and Savannah Sparrows would be found associated with the shrub communities, edges, and adjacent grassland, along with Cedar Waxwings and Orange-

crowned Warblers. American Robins, Least and Alder Flycatchers and Tennessee Warblers could be expected to inhabit the tall shrub/mid-canopy layer, while Warbling and Red-eyed Vireos might be found in the upper canopy of the deciduous treed area. Swainson's Thrushes, and Hermit Thrushes and Veerys may occur in the lower canopy areas along with White-throated Sparrows. Snags and fallen dead wood provide food and/or habitat for various birds and insects, including Downy, Hairy and Pileated Woodpeckers, Yellow-bellied Sapsuckers and secondary cavity nesters like Mountain Bluebirds, Red-breasted and White-breasted Nuthatches, Black-capped Chickadees, House Wrens, Tree Swallows, Kestrels and other species that use cavities created by woodpeckers. Yellow warblers and American Redstarts might be expected to occur in the willow/tall shrub areas around the low lying habitats. Brown-headed Cowbirds that commonly use nests of Yellow Warblers to lay their eggs could be found in the edges and the forested area of the site. In addition to the owls and hawks discussed above, raptors such as Sharp-shinned, Cooper's, or Goshawks have a potential to inhabit the site.

The low areas lying interior to the deciduous aspen, balsam poplar and birch habitats are interesting in that they contain black spruce bogs, willow/sedge fens and a birch bog. Associated with the mixedwood and coniferous bog areas, species of birds like Ruby-crowned Kinglets, Dark-eyed Juncos, Red-breasted and White-breasted Nuthatches, Purple Finches, Winter Wrens, and Boreal Chickadees would be found. Moose sign (beds, pellet groups, tracks and browsing) was abundant in the willow/sedge fen area and in the transition zones of the deciduous and bog/fen areas.

Table 2 gives the common and scientific names of birds observed or expected to breed or otherwise use the subject site at Fawn Meadows, based on previous experience in areas with similar vegetation communities, and relevant literature (e.g., *The Atlas of Breeding Birds of Alberta: A Second Look, 2007*).

Due to the lack of surface water on the site for much of the summer season, waterfowl would be uncommon and may consist of cavity-nesting Common Goldeneye or Bufflehead using ponds off the site. Common species of amphibians including: Boreal Chorus, Wood Frogs and perhaps Tiger Salamander are likely to be relatively scarce at the site, as compared with more marshy areas.

Mammalian wildlife that could be expected to occur include moose, white-tailed deer, weasel, skunk, red fox, and various smaller mammals such as deer mouse, red-backed vole, meadow vole, and various species of shrews. Several white tailed deer were observed during the field reconnaissance, and wildlife trails were extensive throughout the coniferous, mixed wood and deciduous treed areas on the quarter section.

Table 2: *Common and scientific names of birds observed, or expected to breed or otherwise use the subject site at Fawn Meadows.*

Canada Goose	*Branta canadensis*	*House Wren	*Troglodytes aedon*
Mallard	*Anas platyrhychos*	*Winter Wren	*Troglodytes troglodytes*
Blue-winged Teal	*Anas discors*	*Ruby-crowned Kinglet	*Regulus calendula*
Northern Shoveler	*Anas clypeata*	Mountain Bluebird	*Sialia currucoides*
Green-winged Teal	*Anas crecca*	Veery	*Catharus fuscesens*
Bufflehead	*Bucephala albeola*	Swainson's Thrush	*Catharus ustulatus*
Common Goldeneye	*Bucephala clangula*	Hermit Thrush	*Catharus guttatus*
Gray Partridge	*Perdix perdix*	*American Robin	*Turdus migratorius*
Ring-necked Pheasant	*Phasianus colchicus*	Gray Catbird	*Dumetella carolinensis*
*Ruffed Grouse	*Bonasa umbellus*	European Starling	*Sturnus vulgaris*
*Great Blue Heron	*Ardea herodias*	Bohemian Waxwing	*Bombycilla garrulus*
Sharp-shinned Hawk	*Accipiter striatus*	*Cedar Waxwing	*Bombycilla cedrorum*
Cooper's Hawk	*Accipiter cooperii*	*Tennessee Warbler	*Vermivora peregrina*
Northern Goshawk	*Accipiter gentiles*	Orange-crowned Warbler	*Vermivora celata*
Swainson's Hawk	*Buteo swainsoni*	*Yellow Warbler	*Dendroica petechia*
Red-tailed Hawk	*Buteo jamaicensis*	*Yellow-rumped Warbler	*Dendroica coronata*
American Kestrel	*Falco sparverius*	Black-and-White Warbler	*Mniotilia varia*
Great Horned Owl	*Bubo virginianus*	*American Redstart	*Setophaga ruticilla*
Long-eared Owl	*Asio otus*	Ovenbird	*Seiurus aurocapillus*
Northern Saw-whet	*Aegolius acadicus*	Connecticut Warbler	*Oporornisagilis*
Ruby-throated Hummingbird	*Archilochus colubris*	Mourning Warbler	*Oporornis philadelphia*
*Downy Woodpecker	*Picoides pubescens*	Common Yellow-throat	*Geothlypis trichas*
Hairy Woodpecker	*Picoides villosus*	*Western Tanager	*Piranga ludoviciana*
Northern Flicker	*Colaptes auratus*	*Chipping Sparrow	*Spizella passerine*
Pileated Woodpecker	*Dryocopus pileatus*	*Clay-coloured Sparrow	*Spizella pallida*
Olive-sided Flycatcher	*Contopus cooperi*	Vesper Sparrow	*Pooecetesgramineus*
Western Wood-Pewee	*Contopus sordidulus*	*Savannah Sparrow	*Passerculus sandwichensis*
*Alder Flycatcher	*Epidonax alnorum*	LeConte's Sparrow	*Ammodramus leconteii*
*Least Flycatcher	*Epidonax minimus*	Nelson's Sharp-tailed Sparrow	*Ammodramus nelsoni*
Eastern Phoebe	*Sayornis phoebe*	Song Sparrow	*Melospiza melodia*
Eastern Kingbird	*Tyrannus tyrannus*	Lincoln's Sparrow	*Melospiza lincolnii*
Northern Shrike	*Lanius excubitor*	Swamp Sparrow	*Melospiza georgiana*
*Blue-headed Vireo	*Vireo solitarius*	*White-throated Sparrow	*Zonotrichia albicollis*
*Warbling Vireo	*Vireo gilvus*	White-crowned Sparrow	*Zonotrichia leucophrys*
Philadelphia Vireo	*Vireo philadelphicus*	Dark-eyed Junco	*Junco hyemalis*
*Red-eyed Vireo	*Vireo olivaceus*	Rose-breasted Grosbeak	*Pheucticus ludovicianus*
Gray Jay	*Perisoreus canadensis*	Red-winged Blackbird	*Agelaius phoeniceus*
*Blue Jay	*Cyanocitta cristata*	Western Meadowlark	*Sturnella neglecta*
*Black-billed Magpie	*Pica pica*	Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*
*American Crow	*Corvus brachyrhynchos*	Brewer's Blackbird	*Euphagus cyanocephalus*
*Common Raven	*Corvus corax*	Common Grackle	*Quiscalus quiscula*
Tree Swallow	*Tachycineta bicolor*	*Brown-headed Cowbird	*Molothrus ater*
Barn Swallow	*Hirundo rustica*	*Baltimore Oriole	*Icterus galbula*
*Black-capped Chickadee	*Parus atricapillus*	Purple Finch	*Carpodacus purpureus*
Boreal Chickadee	*Poecile hudsonica*	Pine Siskin	*Carduelis pinus*
Red-breasted Nuthatch	*Sitta canadensis*	American Goldfinch	*Carduelis tristis*
White-breasted Nuthatch	*Sitta carolinensis*	Evening Grosbeak	*Coccothraustes vespertinus*
Brown Creeper	*Certhia americana*	House Sparrow	*Passer domesticus*

** observed during field surveys, 2010*
Expected derived from The Atlas of Breeding Birds of Alberta: A Second Look, 2007.

4.8 FISH AND AQUATIC ECOSYSTEMS

As mentioned above, there are no clearly defined streams, creeks or lakes on the property or on adjoining lands. It is highly unlikely that any fish population would exist in any of the small wetlands that exist on the property, as they are very small, not connected to any other significant watercourses, and do not contain significant standing water late into the summer season (which can be seen from the historical aerial photos from 1950 to 2008 in Appendix D).

The Code of Practice for Watercourse Crossings, Pipelines and Telecommunications Lines crossing a Water Body defines the restrictions on activities and works within specific watercourses in each fish Management Area. The project area lies within the St. Paul Management Area. The restrictions are in place to avoid adverse impacts to sensitive populations/stages of fish that inhabit or utilize the watercourse or stretch of watercourse. The restrictions usually are related to spawning and rearing activities for spring-spawning and fall/winter-spawning fish populations.

Observation of the maps published by Alberta Environment indicate that the nearest mapped waterbody for the purposes of the Watercourse Crossing Code of Practice is Kilini Creek, which lies approximately 2 km north of the site. It is a Class C watercourse. There are other mapped watercourses to the south and west of the site, which drain to/from Wabamun Lake and Johnny's Lake 3 km or more to the west of the site (Wabamun Creek, Mink Creek) and empty into the North Saskatchewan River about 10 km to the south of the site. These creeks are shown as Class C watercourses (St. Paul Management Area Map, Alberta Environment, 2006). Several important recreational lakes lie in the vicinity. Jackfish Lake, for example, is located about 5 km to the south of the site, and Mink Lake is 3 km south of the project site.

The Alberta Environment maps and the classification system for watercourses in Alberta is based generally on the abundance and quality of fish habitat. Class A is the highest priority class, and class D is the lowest (except for "unmapped" watercourses which are not shown on the maps at all). Because of the distances involved, it is highly unlikely that the proposed development activities will have an adverse effect on these waters or their aquatic fauna. However, if there were activities on the property that interrupted drainage or introduced silt or other materials into the surface runoff water, it could affect some of the wetlands and small unnamed water bodies to the west and northwest of the site.

Given the above, it is unlikely that the proposed development activities, with mitigation in place to limit erosion and the introduction of silt into surface waters, will have an adverse effect on any mapped watercourses or their aquatic fauna.

4.9 BIODIVERSITY

While roughly half of the development property has been cleared of trees to accommodate agriculture, there are several blocks of substantial size containing coniferous forest, deciduous forest, thickets and marshes. This diversity of vegetation communities results in there being a diversity of structural habitats, based on the type of vegetation, the height and density of the stand, the presence of a well-defined canopy and understory, moisture and other physical factors. The structural habitat diversity in turn leads to a variety of ecological niches, and thus favors a relatively diverse assemblage of plant and animal species.

About 30 species of birds were observed during the field surveys of June 2010, and nearly 100 bird species are expected to inhabit or use the area, based on experience in assessing similar vegetation communities in this region. Ninety-five species of plants were observed in the field reconnaissance on the site. These statistics are suggestive of a moderate to high level of biodiversity.

In particular, the mixture of aspen/poplar, black spruce and birch stands on the property offer a high degree of structural habitat diversity. This particular mixture of vegetation communities is not frequently found upon a single property in the Edmonton region. This assemblage of different trees and shrub types, plus some marshy areas, would attract a diverse suite of plant and animal species.

Additionally, the thicket areas would be of some value in biodiversity, supporting the activities of birds such as Song Sparrow, Clay-coloured Sparrow, and Savannah Sparrows, American Robins, House Wrens, and American Crows. Eastern Kingbirds and Cedar Waxwings would also nest here and utilize the area for feeding on flying insects. Red-winged Blackbirds would inhabit the marshy areas.

No rare, threatened or endangered species, or Provincially listed species of plants or animals were observed during the field survey. A database search for rare, endangered or tracked species by the Alberta Natural Heritage Information Centre (ANHIC) was requested. In its response, it was stated that the information in the Alberta Conservation Information Management System (ACIMS) showed no occurrences recorded in its system for elements on its tracking lists in the vicinity of Fawn Meadows site or within 3 km of it. (It is acknowledged therein that the absence of records could indicate that very few inventories/surveys have been done in this part of the province.)

Overall, the plant and animal diversity at the proposed development site is likely to be moderate to high. It is recommended that as much as possible of the deciduous and coniferous stands be retained, in order to continually foster the level of biodiversity, as well as the wetland areas in the southwest and northeast of the property.

4.10 SUSTAINABILITY

A fundamentally important question in planning the development of agricultural land to country residential, is the choice of which lands components and vegetation communities to retain as natural areas, environmental reserves or other protected areas. Ecosystems can be conserved in order to protect soil or water resources from erosion, sedimentation or pollution; or in order to protect important vegetation or wildlife habitat; and/or to provide an opportunity for wildlife viewing and ecological appreciation and understanding. The secondary question that arises in making this choice is whether the stand, wetland or other element to be conserved is likely to survive in its natural state as a functioning ecosystem over the long-term.

In determining whether an ecosystem is likely to be sustainable over the long term, some of the important factors to consider include the size of the system (e.g., the length and width of a stand of trees), the health and sensitivity of the soil, slope angles and aspect, soil drainage and supply of moisture, the depth of the water table and supply of groundwater, and the exposure and susceptibility of the system to the extremes of weather.

In terms of biodiversity, as discussed above, some importance would be placed upon conserving some or all of the black spruce bog systems in the low areas, as well as the aspen/poplar deciduous stands higher on the slopes. In these cases, the sustainability of the stands will depend largely on the supply of surface water and groundwater, particularly in the case of the bog areas.

In land development, it is often the case that surface water flows and water table depths are changed due to the altered topography or infiltration rates of water into the ground. The timing and amounts of runoff may be changed substantially, depending on the proportion of the developed area that has an impermeable surface, such as the roofs and pavement of developed areas. For the bog areas, it is critically important that surface water flows and shallow

groundwater flows are not altered in the post-development scenario to the extent that these low-elevation stands are not flooded with more water, which could result in mortality of trees and other vegetation. Similarly, the areas should not be deprived of water or drained to the extent that they become desiccated due to declining water table levels and surface flows. For the deciduous stands in presently well-drained soils, too much water could lead to the frequent or prolonged flooding of the area and consequent damage to the roots of trees. Too little water, on the other hand, could result in tree mortality and a change in vegetation dominance. The key is to design stormwater management plans for the developed area such that post-development surface water flows are approximately similar in flow rates and periodicity to what was prevalent in the pre-development condition.

The sustainability of the black spruce bog areas and the thicket wetland areas would be enhanced if there were to be a buffer area of natural vegetation, of sufficient width to provide protection for these systems from winds, desiccation, invasion of weeds, excessive human access and other adverse physical or biological factors.

In terms of size, the black spruce dominated stands are probably at about the minimum size for conservation, with retention of ecological functioning. Any reduction in size or fragmentation would substantially reduce the prospects for long-term survival of these ecosystems.

The stands of aspen, poplar and other trees in the northwest and northeast parts of the property (Blocks A and C) appear to be largely healthy but there is some degree of dieback and breakage, possibly due to dry conditions over the last years, as well as wind damage. The understory, however, appears to be vigorous, and there were relatively few signs of senescence or disease. The soil and soil cover appeared to be healthy, with sufficient coarse woody debris, ground vegetation and moisture. Coarse woody debris (i.e., dead, fallen trees or dead standing trees (snags)) are an important element in nutrient cycling in the forest ecosystem, as well as being a factor in biodiversity because of the opportunities for habitats for many species of small plants and animals. The sustainability of these stands can be expected to be dependent on their remaining size, the condition of the soils and slopes, the degree of moisture, and the species, condition, age and health of the trees. This is true presently, and will be so in the future, if this stands are conserved in whole or in part in the development plan. Invasion by non-native species and weeds, as well as vegetation diseases or insect pests may require monitoring and mitigation measures to prevent.

Because the stands are currently in relatively good condition and there are few signs of disturbance, this suggests that conservation of the stand in the context of the site design is a practical possibility in an ecological sense. It is very important, however, that the development around it be such that this stand can remain sustainable. Construction should be avoided too close to the stands. As mentioned above, their sustainability can also be expected to be dependent on the flow patterns of surface water and, to some extent, the shallow groundwater flows.

If they are to be conserved, the wetlands in the northeast and southwest corners of the property will only be sustainable as such if surface water flows are maintained more or less at pre-development levels, i.e., not too much flooding and not too little water. There should be a buffer area of sufficient width to prevent desiccation, contamination or other damage to the vegetation around them.

If wetlands are used as, or constructed to be part of the storm water management system for the subdivision, they should be designed and managed so that emergent and shoreline vegetation can establish, and so that water levels will be maintained within a certain range, thus allowing waterfowl, amphibians and other living things to use the new wetland as habitat. This would involve, for example, contouring the base of the pond so that there is a sufficient area of

shallow water around the edge of it, in which emergent and riparian plants could thrive. There would also need to be a buffer that is of sufficient width to moderate surface water flows and remove sediments and contaminants from surface water runoff. Native trees and shrubs should be used to establish the shoreline area.

4.11 ECOLOGICAL LINKAGES

In this region, ecological connectivity has much to do with forested areas, which provide visual and thermal cover as well as nutritional support, for many forms of wildlife. Moose and deer, for example, move readily along corridors of forest, because it provides them with visual cover from predators, as well as providing them with a source of food in the form of leafy vegetation. While they venture out into the open to travel or to access other sources of food, they prefer to stay within about 200 m of forest cover. Extensive forest areas, therefore, serve as movement corridors for these animals. Similarly, birds use forest corridors for habitat, visual and thermal cover and the acquisition of food, and because they can fly, easily disperse among patches of forest on the landscape. Mammalian wildlife such as moose, deer, coyotes, furbearers and even amphibians, also use patches of treed areas to disperse with greater safety. These adjacent patches are referred to as "stepping stones", while long bands of forest are called "corridors". Patches of forest that are sufficiently large to support the life-cycle activities of animals are referred to as "core" habitats.

The Fawn Meadows property itself contains several blocks of core habitat area, namely blocks A, B, C, D, E, F and to a lesser extent G. Although avian and mammalian wildlife species have different requirements as to the minimum patch size to serve as core habitat, blocks A-E would be sufficiently large to support the life activities of many wildlife species. Additionally, these blocks to some extent constitute a treed corridor, including the shelterbelts along the boundaries of the property. Accordingly, it is recommended that as much as possible of the treed blocks on the property be retained as conservation areas, to support the establishment of a diverse assemblage of plants and wildlife species.

Linkages also exist among treed blocks on the property and similar vegetation communities on the adjacent properties. For example, Block D at the southwest of the property is linked in terms of hydrology and vegetation to the wetland and thicket complex on the adjacent property immediately to the west. Similarly, there are linkages between Block C and treed vegetation to the north and northwest; and there is some degree of linkage between the deciduous forest vegetation of Block A with similar vegetation to the north and northeast (although these lands are subject to development). Block E and F are continuous with vegetation on the adjacent property to the south. Accordingly, it is recommended that, where feasible, the aforementioned blocks of vegetation be retained. It is further recommended, to the county rather than to the proponent, that future planning take into account the desirability of maintaining the linkages described above.

In a broader context, it can be seen from Fig. 11 that the main opportunities for ecological linkages in terms of treed areas on the landscape, exist to the west, southwest and northwest (0.5 to 1.5 km); to the south (1 to 2 km); and to the east (less than 0.5 km). Further afield, the riparian area of Kilini Creek lies as near as 1 km northwest of the site. Dispersal along that corridor to the southwest would have potential, while dispersal northeastward would be limited, at least to mammalian wildlife, to some extent by Highways 16 and 43.

Given the remaining connectedness of the thicket and woodlots on and adjacent to the property, it is important that there be some overall strategy in place to conserve as much of this linkage as possible. While it is not possible for the proponent to control development outside of the proposed development site, it is recommended that the County make plans to conserve these

ecological linkages. The major opportunities would appear to be the riparian area of Kilini Creek as well as treed blocks in between the site and Kilini Creek, and areas to the south and east.

In a more specific sense, the wetlands adjacent to Highway 770 on the east side of the site are almost certainly hydrologically and ecologically linked to wetland areas on the east side of the highway. This provides an additional argument for conserving these small wetlands.

Fig. 15: *Ecological linkages, based on wooded areas in the vicinity of the project site (2008 aerial photo). Green arrows indicate potentially "permeable" wooded corridors or stepping stone patches amongst core habitats. Orange symbol indicates centre of Fawn Meadows site. The darker green arrows represent the riparian wooded corridor along Kilini Creek. The smaller arrow to the north of Hwy. 16 is meant to represent the barrier effect of this major transportation infrastructure.*

4.12 AESTHETICS AND VISUAL IMPACT

The hummocky topography of the land, together with the coniferous and deciduous forest and wetland/thicket areas on the property collectively present a potentially diverse and interesting visual impact. This heterogeneous landscape also provides an interesting setting in which to create ecologically interesting natural areas and nature trails. The forest stand and thickets also provide visual and noise shielding. Features such as these provide not only a positive visual feature, but also serve to reduce the transmission of noise to and from the property. Dust levels, too, can be reduced to some extent by woodlots, thickets and shelterbelts. For this purpose, consideration should be given to conserving the existing shelterbelts along the east, north and west boundaries of the property.

Where opportunities exist, the coniferous and deciduous treed areas of the property as well as the wetland/thicket areas should be retained for visual and noise shielding, as well as aesthetic interest, wildlife habitat and ecological appreciation. In addition the natural contours of the land should be retained to the extent feasible, which would provide not only an aesthetically pleasing environment for the residential community, but also a more environmentally beneficial pattern of surface water flow.

4.13 EXISTING DISTURBANCES

The major disturbance on the property in the past has been the clearing of treed or thicket areas to accommodate agriculture on more than half of the property.

No clear signs of significant disturbance such as dying vegetation, waste, etc., were observed during the field reconnaissance, although there was some dieback and wind damage in the deciduous stands. The latter are judged to be due to natural causes, e.g., dry conditions experienced over the last decade and more in this region.

A Phase 1 Environmental Site Assessment is often conducted as part of the planning process for the development of agricultural or other lands. Consideration should be given to conducting such an assessment for the property, to determine if any past or current activities that occurred there might have resulted in land contamination. It is to be noted, however, that no *a priori* reason to suspect environmental contamination was suggested in the research or the field reconnaissance on this property.

4.14 HISTORICAL RESOURCES

Sites with high vantage points and near permanent waterbodies are often associated with moderate to high potential for archaeological or historical findings. While the land is hummocky with some fairly steep slopes, these two features are not expressed particularly on or adjacent to the property.

However, it is always advisable to either have a pre-assessment screening done by a qualified historical resources consultant if one has not already been done, and/or to enquire about any previous findings or interest from Alberta Community Development.

4.15 CONSERVATION, RECREATION AND PROTECTED AREAS

Parkland County possesses a number of parks and natural areas. These include the Clifford E. Lee Nature Sanctuary, west of Highway 60 on Woodbend Road. The Wagner Natural Area is located on the west side of Parkland County, south of Highway 16 off Atim Road, and contains an extensive fen area and a wide variety of rare plants and many species of birds.

Primary Parks in Parkland County include: Jack Fish Lake (about 5 km south of the project site); Hasse Lake; and Chickakoo Lake Recreation Area.

Other parks in the County offer opportunities for fishing, hiking, mountain biking, cross-country skiing and much more. They include Kokomoko Park, Ascot Beach Park; Rich's Point Park: Muir Lake Park; and Prospector's Point.

Parkland County also has three Provincial Parks: Pembina River Provincial Park; Wabamun Lake Provincial Park; and Lois Hole Centennial Provincial Park around Big Lake to the east.

There are no Natural Areas, Provincial Parks or other protected areas in the vicinity of the proposed development site; and it is not likely that a residential development at the proposed site will affect such facilities.

5.0 THE PROPOSED DEVELOPMENT PLAN

The current plans for development are shown, generally, in Fig. 16. The plan calls for the residential areas to be allocated to several blocks on land that is currently pasture, for the most part. Much of the lands that are presently vegetated by forests are to be conserved as natural areas. Stormwater ponds are planned for 6 locations around the property.

It was recommended that the sanitary treatment/disposal system be located in the southeast of the property. The wastewater treatment stages would include primary and secondary treatment. Primary treatment will be handled by septic tanks. Three secondary treatment options were evaluated, and it was recommended that a recirculating gravel filter system be used, based mainly on total capital and life cycle costs. It was determined that soil disposal is feasible at Fawn Meadows, as the soils investigation identified sufficient area to support the installation of a soil disposal system. Both subsurface drip and infiltration beds were recommended for disposal.

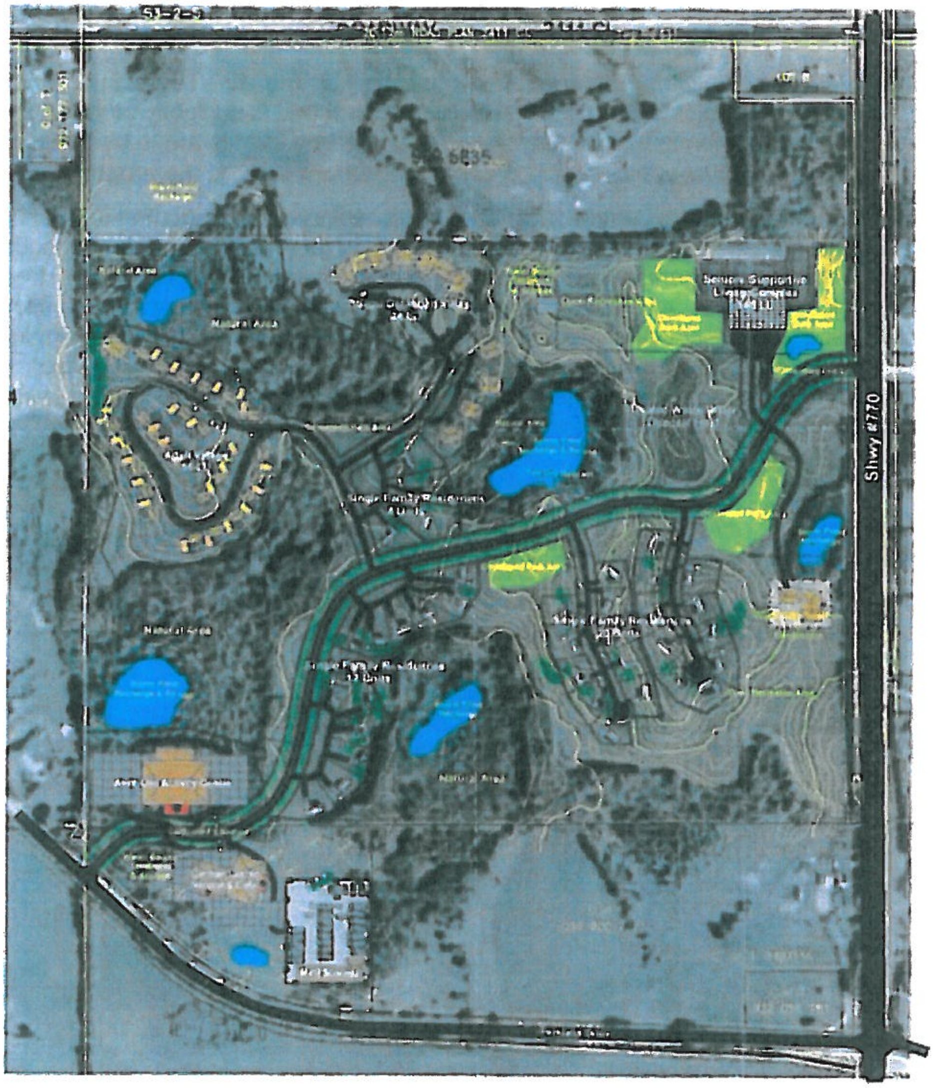


Fig. 16: *The proposed development plan (Fawn Meadows Development Inc., 2010).*

6.0 SUMMARY AND CONCLUSIONS

- A Biophysical Assessment was conducted for a property comprising about 3/4 of the northeast quarter-section of Section 04, Township 53, Range 02, West of the 5th Meridian as a mainly residential subdivision, which will be known as Fawn Meadows. The biophysical assessment is a necessary requirement for the approval of an Area Structure Plan for the proposed project site, as well as approval of the stormwater management plan for the subdivision, under the *Alberta Water Act* and the *Environmental Protection and Enhancement Act.* The site is located in Parkland County, about 14 km west of Stony Plain, Alberta.
- The land within the quarter-section is composed of hummocky terrain. About half of the area has been cleared of trees for agricultural use. The remaining land, primarily the depressions and adjoining slopes, is vegetated by both coniferous and deciduous forest stands. The lowest areas contain bogs with black spruce/Labrador Tea/sphagnum moss vegetation communities. This association is typical of poorly drained, boggy areas in this sub-region. The slopes contain deciduous forest stands dominated by trembling aspen and balsam poplar, with vigorous understory and ground vegetation. This latter vegetation community is typical of well drained slope areas in this sub-region. Intermediate between the black spruce and aspen/poplar stands are stands dominated by white birch (although tree mortality there is very high).
- In terms of surface water flows, the flow on the property is governed by the hummocky topography, but in general the flow is mainly from east to west.
- There are no clearly defined watercourses (i.e., streams, creeks, etc.) on the quarter section, and there are no major watercourses within 1 km of the site.
- Relatively little change in the vegetation patterns and degree of clearing, or of significant human infrastructure appears to have taken place on the property between 1950 (the earliest available aerial photographs) to the present.
- There are several wetlands-thicket complexes, two on the east side of the site, and one in the southwest of the property. The one in the southwest is part of a larger wetland area that extends onto the adjacent property to the west.
- Of the two wetlands occurring on the northeast of the property, one is a Class 3 and one is a Class 4 (semi-permanent pond), under the wetlands classification system of Stewart and Kantrud, 1971.
- Altogether, the total area of wetland existing today on the property is 0.55 ha (see Table 1).
- Under provincial laws and policies, the available options for dealing with wetlands in proposed development areas include (a) conserving the wetland areas, with appropriate mitigation measures; or (b) if wetlands are disturbed or destroyed, creating new wetland areas within the project area or outside the project area to compensate for the lost wetland, or providing financial compensation to do so, to a managing agency such as Ducks Unlimited. If the second option is followed, a compensation multiplier is applied to the area of the wetland (normally 3 ha of compensation for each 1 ha of lost wetland).

- From preliminary discussions with the proponent and the planner, it appears that most of the forested and wetland/thicket areas will be conserved as natural areas in the context of the proposed subdivision development. Stormwater wet ponds are planned to be adjacent to the forested areas in the topographical low areas of the property, i.e., near the coniferous stands.
- Observation of the maps published by Alberta Environment for purposes of the Code of Practice for Crossings of a Waterbody indicated that there are no mapped waterbodies on the site or within approximately 1 km of it.
- Aquifer testing and analysis indicated that a groundwater diversion of 50,200 gpd (35 gpm) is sustainable, and would not unreasonably interfere with neighbouring groundwater supplies. The maximum impact predicted for the wells east of Highway 770 was less than 0.2 m of drawdown (Stantec, 2009).
- Chemical analysis indicated that the groundwater concentrations of sodium and total dissolved solids exceed Canadian Drinking Water Quality Standards, and that water treatment will be necessary before use as potable water. No pathogenic micro-organisms or toxic elements of concern were found in the groundwater (Stantec, 2009).
- On the basis of the results of the geotechnical study, 35 to 40 percent of the site can be classified as low and wet, for the purposes of siting a sanitary waste treatment system. It was recommended that each proposed lot on the property have at least 0.40 ha of high dry land (if individual septic systems were being proposed) (Sabatini Earth Technologies Inc., 2004).
- There was no evidence of there being rare, threatened or endangered species, Provincially listed species of plants or animals on the property, nor reported occurrences of listed species.
- Overall, the plant and animal diversity at the proposed development site is likely to be moderate to high, given the structural diversity offered by a variety of forest, thicket, wetland and open field areas. This is confirmed in the number of plant and avian wildlife species observed at the site in the field reconnaissance or expected to inhabit or use the area based on the vegetation communities there.
- Opportunities exist for maintaining ecological linkages by retaining forested patches on the property. These forest and wetland/thicket areas link with substantial wooded patches on the landscape in the vicinity of the property that serve as dispersion corridors or "stepping stones" in wildlife dispersion across a landscape that has lost much of its treed area due to agriculture, roads and highways, and other developments.
- No clear signs of significant disturbance such as dying vegetation, waste, etc., were observed during the field reconnaissance, and the forest stands appeared to be in healthy and sustainable condition.

7.0 RECOMMENDATIONS

The following recommendations are put forward for consideration in the design, construction and post-construction phases of a mainly residential subdivision with a retirement community theme, on the northeast quarter-section of Section 04, Township 53, Range 02, West of the 5th Meridian, in Parkland County, Alberta:

7.1 Subdivision Design

- The overall planning philosophy should embrace the principle of "Conservation Design" to achieve higher density in developed areas, in order to conserve greater areas of green space as natural areas or reserves on the property.
- To the extent feasible, the natural contours of the land should be retained as features of the subdivision design in order to conserve the natural drainage patterns and flows, and to moderate stormwater drainage patterns, thus damping out extremes of overland flow, avoiding erosion and promoting the settling of solid particulate matter.
- Where opportunities exist, vegetated bioswales should be built into the contouring of the land. Bioswales allow the surface runoff water to follow its natural course. By slowing down the runoff, this provides more opportunity for particulate matter to settle, and nutrients to be removed. The vegetation also serves as a filter for particulate matter in the water, and reduces the amount of silt and other substances carried into receiving waters off site.
- In the developed zone, features such as vegetated belts and grassy slopes should be incorporated into the neighborhood design and landscaping, in order to cleanse runoff water of sediments and other substances before it enters the receiving waters in lower areas. This is particularly important in areas where there are natural or constructed wetlands or stormwater retention ponds.

7.2 Opportunities for Habitat Conservation

- In general, the development plan should aim to conserve all or portions of the several unique habitats on the property, particularly the black spruce vegetation communities in the lower areas (Blocks B, C, D, E and F), in order to maintain as much of the current biodiversity as possible. They should be retained as natural areas or environmental reserves also because they are based on permeable, moisture-dependent soils/moss, they act as a water storage mechanism and serve to moderate local moisture conditions, and because they are representative of the type of ecosystem that is becoming progressively more rare in the urbanizing locale of Edmonton. As such, they offer a unique kind of opportunity for ecological understanding and appreciation.
- The trembling aspen/balsam poplar dominated stands in Blocks A, B, C, D and E should also be considered for retention as natural areas, to maintain biodiversity, moderate drainage, provide a positive aesthetic feature as well as dust and noise control, and to offer opportunities for wildlife appreciation and walking recreation.
- The small stand of white birch on the east side of the property (Block G) should also be considered for retention as a natural area, for reasons of biodiversity and uniqueness of opportunities for natural history and ecological appreciation.
- Conserving the above vegetation communities has many important benefits to the local community, such as: preserving plant and animal habitat and biodiversity; providing a visual screen for the subdivision; curbing the propagation of noise and dust; enhancing the aesthetics of the subdivision; moderating temperature and humidity; and optimizing water tables.
- The thicket-wetland complex in the southwest corner of the property (part of Block D) should be preserved as a functioning ecosystem, and in making this

recommendation it is noted that this complex is only a portion of a larger wetland complex extending across the property line and westward. It should be surrounded with a suitable vegetated buffer to minimize contamination from subdivision runoff, moderate surface water flows and provide protection from disturbance to wildlife that may inhabit or otherwise use the wetland; however, it is noted that the peripheral forest and thicket part of Block D already serves as a buffer for this wetland.

- It is understood that several storm water retention ponds are plan for the treed areas, namely in Blocks A, B, C, D, E and G. In Blocks B, C, D and E, there appears to be the potential for these retention ponds to supplant or otherwise interfere with bog (black spruce dominated) communities in the lowest areas. If they are to be located in these places, the retention ponds should be located and designed so as not to disrupt these vegetation communities or their soils and moss layers, through proximity or through alterations in drainage. Preferably, these storm water retention ponds could be located sufficient distance away from the aforesaid black spruce bog communities that these threatened ecosystems will not be adversely affected.
- If it is not possible to conserve all of the treed blocks and their core bog vegetation communities, then priority should be put on conserving Blocks C and D, because of their relative size and the fact that the core areas are well buffered by the outer band of deciduous forest. Blocks B, E and F would be next in priority. Although it does not contain an inner bog core, Block A should be considered as high priority for conservation because it is a vigorous deciduous stand with high biodiversity and well developed understory; it also would provide a good visual and noise barrier for land adjacent to Highway 770.
- To protect the integrity of any retained wetlands (e.g., in the southwest or the northeast of the property) storm water management plan should be such that surface water flows within the catchment area are maintained so that not too much flooding occurs but at the same time not so little flow as to dry out these small wetlands. There should be a buffer area of sufficient width to prevent desiccation, contamination or other damage to the vegetation around the wetland. If conserved in their present form, these wetlands would collectively serve as barriers to noise and dust, while enhancing the aesthetics of the neighbourhood, moderating temperature and humidity, optimizing water tables and providing additional opportunities for recreational walking trails and wildlife appreciation.
- In addition to providing habitat for numerous species of birds, mammals, amphibians and other forms of wildlife, these above mentioned areas could also serve as "stepping stones" for wildlife dispersal across a landscape which has been progressively cleared of trees and thickets.
- Property landscaping should be done to enhance habitat and ecological connectivity, chiefly by retaining native tree species on and adjacent to retained natural areas, and by orienting back yards of adjacent properties so that the treed portion is contiguous with preserved or other conserved or naturalized areas. Greenbelts, utility corridors and stormwater management facilities present other opportunities to link treed areas on the property and on adjacent lands.
- Native species plantings should be used for future restoration to ensure rapid establishment and conservation of water.

- Where opportunities exist, naturalized areas should be maintained as a boundary to forested stands or riparian zones to increase core area. Edge zones also serve the important purpose of providing a transition from an un-treed area to a treed one. Low trees and shrubs in the edge zone not only provide an important habitat for "edge species" of birds and other forms of wildlife, but also buffer the forested area from wind, light penetration and other influences.
- Opportunities for ecological appreciation should be considered, using the existing ecological resources presented by the above mentioned forest or wetland areas. By connecting these areas with greenbelts or other linear pedestrian areas including stormwater management facilities, a connected series of observation points and walking/riding trails (or boardwalks around the wetland area) could be created. Interpretive signs could be set up, explaining not only specific ecological features but the purpose of conserving the wetland-thicket ecosystems and the functioning of the newly constructed or conserved ecosystems. Natural areas should incorporate interpretive infrastructure such as "low impact" trail design and signage to provide a nature experience for future residents.
- If walking trails are to be set up around wetland areas, consideration should be given to locating the pedestrian access or viewing points on one side/end of the area, leaving the remaining area for waterfowl and other wildlife to carry out their life activities (feeding, nesting, rearing, etc.). Any walking/riding trails should be low-impact, i.e., granular surface, winding route.
- The felling of trees should be avoided during the nesting season, if it appears there are nests of migratory birds in the area. Similarly, the destruction of migratory birds nests in marshy areas should be avoided during the nesting season.
- Damage to tree roots in any conserved treed areas should be avoided during construction, by keeping any excavation a sufficient distance away (at least 3 m).

7.3 Ecological Linkages

- It is recommended that ecological connections be taken into account in the overall planning of the present project, and for the lands adjacent to it. The greatest prospects for maintaining ecological connectivity would appear to be toward the larger forested areas to the north, west and east (although the land to the east is developed to a large extent). Smaller patches of treed areas could serve as "stepping stones" for animal dispersal in various directions across the landscape.
- Given the remaining connectedness of the thicket and woodlots on and adjacent to the property, it is important that there be some overall strategy in place to conserve as much of this linkage as possible. While it is not possible for the proponent to control development outside of the proposed development site, it is recommended that the County make plans to conserve these ecological linkages. The major opportunities would appear to be the riparian area of Kilini Creek as well as treed blocks in between the site and Kilini Creek, and areas to the south and east. Kilini Creek possesses a rich and substantial riparian forest area with both deciduous and coniferous elements.
- In a more specific sense, the wetlands adjacent to Highway 770 on the east side of the site are almost certainly hydrologically and ecologically linked to wetland

areas on the east side of the highway, e.g., the large permanent pond (Class 5 wetland adjacent to the north boundary of the property. This provides an additional argument for conserving the small wetlands along the west side of Highway 770.

7.4 Surface Water, Drainage and Stormwater Management

- To the extent possible, the stormwater management plan for the new subdivision should result in drainage regimes that will ensure sustainability of forest, bog or wetland habitats. Stormwater ponds should be designed such as to ensure wildlife compatibility.
- The subdivision design should take into account ecological opportunities such as alternative road design, parking design, and permeable pavement to help water quality, groundwater re-charge, and supply and also to reduce costs. At the same time, however, it should be borne in mind that some technical measures such as permeable pavements are associated with some degree of difficulties or drawbacks when applied to certain types of sites or in certain physical conditions. Therefore, adequate preliminary investigation should be done on the feasibility of these methods, including the experience of other communities and planners.
- Groundwater usage should be conserved by the re-use of stormwater for domestic irrigation and fire protection. Groundwater should not be used for domestic irrigation. Stormwater should be harvested from roofs and collected in storage tanks to feed domestic irrigation in the summer and maintain a dead storage for fire protection via a sprinkler system.
- While aquifer testing and analysis in other studies on the site indicated that a groundwater diversion of 50,200 gpd (35 gpm) for the community from an on-site production well(s) would be sustainable and would not unreasonably interfere with neighbouring groundwater supplies, the groundwater diversion rate should not be such as to cause a significant drawdown of water in wetland areas on the property, or adjacent to it to the west, southwest, south and northeast. Desiccation of these wetland areas, through changes in soil infiltration rates, surface water hydrology patterns or groundwater drawdown should be avoided.
- To obtain an estimate of flow from the upland portion of the property into the remaining wetland and boggy areas, a hydrological study should be conducted, and a comparison made of the pre-development hydrology (extent and duration of flooding under various storm events) with the post-development hydrology. This analysis should be used in developing and refining the stormwater management plan.
- The stormwater management plan should aim at maintaining overland runoff at approximately pre-development conditions, so that the remaining wetlands or any conserved forested areas are not desiccated or unduly flooded as a result of altered runoff patterns. Excessive flooding in wetland areas could result in waterfowl nests being washed away.
- The stormwater plan and its estimated post-development surface water flows should be done in consideration of drainage from and to other adjacent lands, particularly from the forest/wetland complex on the southwest corner of the property to the wetlands immediately to the west of the property. While all of the future plans and designs for adjacent properties may not be known, discharge

from the property should not excessively flood adjacent properties nor curtail flows to them. Similarly, flows from adjacent properties should not be allowed to flood or desiccate wetlands on the property and thus adversely affect their sustainability.

- If it is to be conserved or reconfigured, the wetlands in the northeast corner of the property will only be sustainable as such if surface water flows are maintained more or less at predevelopment levels, i.e., not too much flooding and not too little water. They should be managed so that emergent and shoreline vegetation remain, and so that water levels will be maintained within a certain range, thus allowing waterfowl, amphibians and other living things to use the wetland as habitat.
- It is understood that several optional designs for a collective on-site sanitary waste treatment system are being considered for the Fawn Meadows development. Whatever design and location are chosen, it is very important that seepage of nutrient-contaminated groundwater from the treatment area to the low areas of the treed blocks is avoided. Bogs are typically nutrient-poor (and acidic) ecosystems, and the special assemblage of plant species that bogs contain has evolved to flourish in such an environment. Any introduction of additional levels of nitrogen, phosphorus and various ions, could disrupt the soil and water chemistry of these areas, with the result of altering the delicate balance of vegetation in these communities. Similarly, wetlands in the northeast and southwest, as well as adjacent wetland areas to the south of the property, should be protected from seepage of excessive levels of nutrients and other substances from the sanitary waste treatment area.
- The use of chemical fertilizers, or land uses that require fertilizer use, should be minimized, particularly on properties abutting natural or constructed wetland (storm water retention ponds) areas. Chemical fertilizers, which typically contain phosphates and nitrates, can lead to a decline in water quality, and in severe cases can result in algal blooms and mortality of aquatic life if they enter water bodies in excessive amounts via surface runoff water.
- Similarly, all attempts should be made to minimize erosion during and after construction, in order to avoid the introduction of silt into naturally occurring or constructed wetlands via surface runoff water. Silt can adversely affect water quality and the survival of aquatic flora and fauna.
- Surface paving should be minimized, other than what is necessary for transportation and other infrastructure in order to maintain permeability and thus groundwater re-charge.
- Where excavated, topsoil should be conserved and stockpiled with protection from wind and water erosion, and then replaced after construction.
- Where any clearing or earthworks are necessary, strict erosion control and reclamation measures should be taken. Contouring should avoid significantly increasing the angle of slopes, such as would lead to erosion and instability.
- Where necessary, roads and their ditches should have flow-limiting structures (e.g., ditch blocks) along sloped stretches so that water draining off or along them does not cause erosion. Discharge points should be into a vegetated or other area where energy dissipation will occur, preventing local erosion.

7.5 Hazards, Wastes and Potential Contamination

- If a collective tiles septic system will be used for the sanitary wastes management system, the system should be in conformance with provincial guidelines and codes of practice, and in accordance with the soil permeability and transmissivity conditions which should be determined in a geotechnical study of the site.
- Where it does not present a hazard to human safety, homes or property, snags and deadfalls in any conserved treed areas should be left in place to diversify habitat for cavity-nesting species.
- The condition of trees and other vegetation should be monitored periodically, and action taken to conserve stand health if necessary.
- Unnatural pools of standing water should be monitored and eliminated in order to minimize mosquito breeding.
- A fire prevention, control and response strategy should be developed to reduce the risk of fire spreading between any treed or thicket areas and adjacent residential areas.
- As for any predominantly deciduous forest in this region, there is the possibility of insect and disease attack, e.g., aspen tortrix, forest tent caterpillar, spruce budworm, coneworm or cankers. Control action should be taken, where it is warranted, with mechanical and cultural methods having preference over chemical methods.
- Any waste and derelict objects and materials currently in the development area should be removed and the soil/vegetation restored to normal condition where necessary. During construction, litter should be cleaned up and collection bins established for solid waste disposal and removal.

7.6 Historical Resources

- While there are no immediately apparent historical features on the property, it is advisable to enquire about any previous findings or interest from Alberta Community Development (Alberta *Historical Resources Act*). The ACD can advise whether there is a need to have an historical resources impact assessment or screening done by a qualified historical resources consultant.

7.7 Constructed Wetlands Design

If consideration is being given to developing and utilizing a constructed wetland as part of the storm water management system for the new subdivision, the following recommendations put forward:

- Constructed wetlands the subdivision should be designed as a naturalized wetland that will also serve as a storm water wet pond. The naturalized wetland should incorporate various depth zones, which create areas of open water and areas of emergent vegetation. This would create both wildlife habitat, and provide natural filtration of stormwater. It would act as a storm water retention pond in the operation of the overall stormwater management plan, and would have open space surrounding it to be used as a natural area or community green space.

- The basic objectives of a constructed wetland open space concept are (1) to function as part of the stormwater management system; and (2) to provide habitat and ecological connectivity. Both the proposed stormwater management facilities and associated uplands landscape development should be designed with this in mind. A number of strategies should be used to maintain and enhance connectivity. For example the wetlands should be within 300 m of each other to maintain connectivity. To support this, naturalized landscape design principles should be the basis for the detailed landscape design and construction. Wildlife such as waterfowl, shorebirds and amphibians should benefit from this.
- The upland open space surrounding the constructed wetlands should be designed using a "naturalized" landscape approach, and using native plantings where possible. New homeowner information and notifications can be made for properties bordering the constructed wetland space as far as plant species are concerned as well as the appropriate use of non-native species and garden chemicals.
- Urban lakes have a number of ecologically positive features. When stormwater management facilities are first constructed, they are often fairly sparsely vegetated, with relatively young plants. Abundant moisture creates a rich environment in which plants can thrive, and when left alone vegetation should seed and spread. The amount and variety of vegetation should change over time. Under favorable conditions, cattails, bulrushes and other aquatic vegetation should develop in the water, and shoreline vegetation such as shrubs and perennial plants should establish in more upland areas. The more naturalized the lake becomes and the more diverse the assemblage of plants that establish in and around it, the greater should be the amount and diversity of habitat that should be created for many species of birds, mammals, amphibians and invertebrates (FAN/ City of Edmonton, 2006).
- A naturalized lake also provides habitat for the predators of insect pests, thus reducing the need for chemical spraying. The roots of plants help hold the soil together and allow the shoreline to withstand the forces of high water and storm events. As the vegetation in and around the naturalized lake increases and becomes more diverse, the kinds of aquatic life in the water and vegetation should also increase. Microscopic animals and plants in the water should achieve a balance over time, and this can lead to improvement and stabilization of water quality over the long term (FAN/ City of Edmonton, 2006).
- The stormwater lake should be constructed such that favorable habitats are created for submergent and emergent vegetation around the shoreline. This means that the depth around the edge of the wetland should be relatively shallow, allowing the growth of cattails, bulrushes and other emergent aquatic vegetation around the shore, while the area near the center of the wetland could be quite a bit deeper in order to accommodate more stormwater storage volume. Some vegetation (e.g., cattails) could be established at the outset in order to encourage the development of a fully vegetated shoreline. If the conditions are right, such emergent vegetation will grow quickly and within a relatively short period, the entire shoreline should be well vegetated. Later on, home residents living along the shoreline can also play a role in helping to enhance the shoreline, by planting trees and shrubs along the edge of adjoining properties. Native species of plants are better able to deal with local conditions and withstand drought periods. Normally, they do not require inputs of fertilizers and are hardy

enough to withstand insects that affect them without the use of pesticides (FAN/ City of Edmonton, 2006).

- The land around the constructed wetlands should be planted with shrubby vegetation (i.e., willows, etc.) and the vegetation further back from the ponds should be a mixture of native trees and shrubs (e.g., willows, dogwood, saskatoon, bush-cranberry, cherry, alder, white spruce). While there should be some edge, the transition should be relatively smooth. Advantages of this approach would be that (a) the edges would create additional habitat niches for "edge" species of bird, mammalian and other wildlife; (b) wind stress on trees is alleviated to some extent if there is a transition in tree height rather than an abrupt edge; and (c) a mixture of trees and shrubs would create more cover and habitat complexity, which would in turn lead to more biodiversity and ecological connectivity. Wildlife such as many species of birds and small mammals are advantaged by having available small tree/shrub patches within an open area, i.e., there is a high degree of "ecological permeability" in such an arrangement. Additionally, trails/boardwalks should be routed so that some wildlife habitat is avoided for seclusion.
- Native plants such as shrubby willows or poplars beside a naturalized waterbody are already adapted to the growing conditions of the region. They are generally more resistant to disease and stresses that introduced plants experience, and this should reduce the need for mowing and having to apply fertilizer, pesticides and extra water. They also help protect the shoreline from erosion and provide natural habitat for wildlife (FAN/ City of Edmonton, 2006).
- The establishment of trees and shrubs around the shoreline of the stormwater lake has a number of advantages. Such vegetation creates some degree of shade around the edges, cooling the water and keeping sunlight exposure down, which should help prevent blooms of algae. Trees of various shapes help to dampen noise, providing a sense of place and stability. They intercept rain, slowing and reducing peaks in stormwater runoff, which as a result requires less treatment and results in fewer downstream impacts. Trees and shrubs absorb and filter pollutants from the soil and water, shade and cool air and water, and filter dust and airborne particles. Since native trees and shrubs do not require as much in the way of pesticides and fertilizers, this results in fewer downstream impacts from these substances (FAN/ City of Edmonton, 2006).
- The development of vertical and horizontal structure (e.g. shrubs, large trees, snags, woody debris) should be encouraged in treed stands, thickets and riparian zones. This should be to provide high quality nesting and foraging habitat for songbirds and cavity-nesting birds; high quality foraging habitat, thermal cover, and security cover for small mammals, amphibians, and invertebrates; and high quality roosting and foraging habitat for bats.

7.8 Environmental Sustainability and Community Participation

- While many aspects of sustainability can be addressed within the design of the subdivision, as discussed above, there are numerous additional ways of incorporating environmental sustainability principles into building and lot design. In this regard, homebuilders and/or future homebuyers should be encouraged to adopt such water and energy conservation features as solar powered homes, rainwater collection, enhanced insulation and energy efficient homes. Other

measures that could be considered are low-flow toilets, energy efficient appliances, energy efficient interior lighting and landscaping with native plants.

- In landscaping the site after construction, residents should be encouraged to: incorporate organic material in the soil to help aerate and loosen it (e.g., leaf mulch, compost, etc.); avoid topsoil that contains the seeds of weeds; seed or landscape with ground cover early in the season in order to minimize erosion by giving grass or other plants time to sprout and root before winter; plan alternatives to turf grass on erosion-prone slopes or steep slopes, shady areas or in compacted soil. Lawns should not extend to the edge of the stormwater lake: rather, a wide strip of native vegetation should be used to maintain and protect the shoreline of the stormwater lake (Federation of Alberta Naturalists/ City of Edmonton, 2006).
- Residents should be encouraged to adopt xeriscaping methods of landscaping. This refers to landscaping with native, drought-tolerant plants to create low-maintenance gardens. Minimizing water consumption is the primary objective of xeriscaping. While non-living features like rocks, sand and driftwood can be used as part of xeriscaping, the emphasis is on the establishment of native plants that are drought-tolerant. Xeriscaping requires less water, less fertilizer, less pruning and less mowing. Principles of xeriscaping include using native, drought-resistant plants; improving the soil with organic matter; establishing trees and shrubs, using herbaceous plants to fill in the spaces; using mulches applied to the soil surface to reduce evaporation and reduce erosion; and avoiding over-watering (Federation of Alberta Naturalists/ City of Edmonton, 2006).
- Street lighting in the community should use strategically placed fixtures that reduce light pollution, especially avoiding projecting light into natural areas. Fixture design and placement should ensure that most of the light produced should be projected downwards, rather than laterally into the surrounding environment. The use of long wavelength bulbs should be encouraged, as they have less impact on wildlife.
- Builders should be encouraged to install windows that are highly visible in buildings over two storeys to reduce the risk of birds striking windows.

8.0 REFERENCES

1. Alberta Culture, 1984. A Checklist of the Rare Vascular Plants in Alberta.
2. Alberta Environmental Protection, 1993. Alberta Plants and Fungi – Master Species List and Species Group Checklists.
3. Alberta Environmental Protection. 1996. The Status of Alberta Wildlife. Natural Resources Service, Wildlife Management Division.
4. Alberta Vegetation Inventory Standards Manual. February 2003. SRD Public Lands Division. Resource Data Branch.
5. Committee on the Status of Endangered Wildlife in Canada, COSEWIC). 1997. Current list of vulnerable, threatened and endangered species in Canada.
6. Federation of Alberta Naturalists/ City of Edmonton, 2006. Living near Urban Lakes.
7. Jacques Whitford NAWE Inc., 2009. Wastewater System Analysis, Fawn Meadows.
8. Kershaw, L., Gould, J., Johnson, D. and Lancaster, J., Rare Vascular Plants of Alberta. University of Alberta Press, 2001.
9. Primeau, S., Bell, M., Riopel, M., Ewaschuk, E., and Doell, D. 2009. Green Communities Guide: Tools to Help Restore Ecological Processes in Alberta's Built Environments. Land Stewardship Centre of Canada. Edmonton, Alberta.
10. Provincial Wetland Restoration/ Compensation Guide (Alberta Environment/NAWMP, February 2007)
11. Sabatini Earth Technologies Inc., 2004. Soil and Shallow Groundwater Table Testing, Proposed Country Residential Subdivision -- Fawn Meadows, Parkland County, Alberta.
12. Semenchuk, G.P. (ed) 1992. The Atlas of Breeding Birds of Alberta. Federation of Alberta Naturalists, Edmonton, Alberta 391pp.
13. Stantec, 2009. Groundwater Supply Analysis, Fawn Meadows.
14. Stewart, R.E. and H.A. Kantrud, 1971. Classification of Natural Ponds and Lakes in the Glaciated Prairie Region. US Department of the Interior, Fish and Wildlife Service. Resource Publication No. 92.
15. The 2005 General Status of Alberta Wild Species: Website http://www.srd.gov.ab.ca/fishwildlife/wildspecies/search.htm
16. The Atlas of Breeding Birds of Alberta: A Second Look. Federation of Alberta Naturalists. 626pp. with bibliography and index.

9.0 LIMITATIONS

This report has been prepared for the exclusive use of Norcan Consulting Group and its consultants or client Fawn Meadows Development Inc., relative to the proposed project described in the report. It may not be used or relied upon in any manner whatsoever, or for any purpose whatsoever, by any other party. The Consultant makes no representation of fact or opinion of any nature whatsoever to any person or entity other than the company, organization or individual to whom this report is addressed.

Bruce Thompson & Associates Inc. denies any liability whatsoever to other parties who may obtain access to this report for any injury, loss or damage suffered by such parties arising from their use of, or reliance upon, this report or any of its contents without the express written consent of the author and the client.

Subject to the following conditions and limitations, the investigation described in this report has been conducted in a manner consistent with a reasonable level of care and skill normally exercised by members of the environmental consulting profession currently practicing under similar conditions in the area.

The investigation described in this report has been limited to the scope of work described in discussions between Bruce Thompson & Associates Inc. and the client group March to July, 2010.

The investigation described in this report has been limited to the extent that the steps of doing a field reconnaissance were done at only one time of the year (early June). Features such as plants and wildlife, and water flows, are different at different times of the year, and will have variations from season to season and from year to year. To determine the entire assemblage of plants and wildlife that would frequent the study site, it would be necessary to conduct field surveys during both the spring and summer months. The plant and animal species identified in this study included those that can be inferred to use the site, based on its location and vegetation communities, and based on past experience in other investigations. The drainage map in this report was developed from visual observations and a contour map. The outlines depicted in the report, of vegetation areas and other features are intended to be approximations only.

The possibility of contamination from past activities on the property, or other public safety risks, were not assessed in this investigation. This would more appropriately fit into the scope of a Phase 1 Environmental Site Assessment.

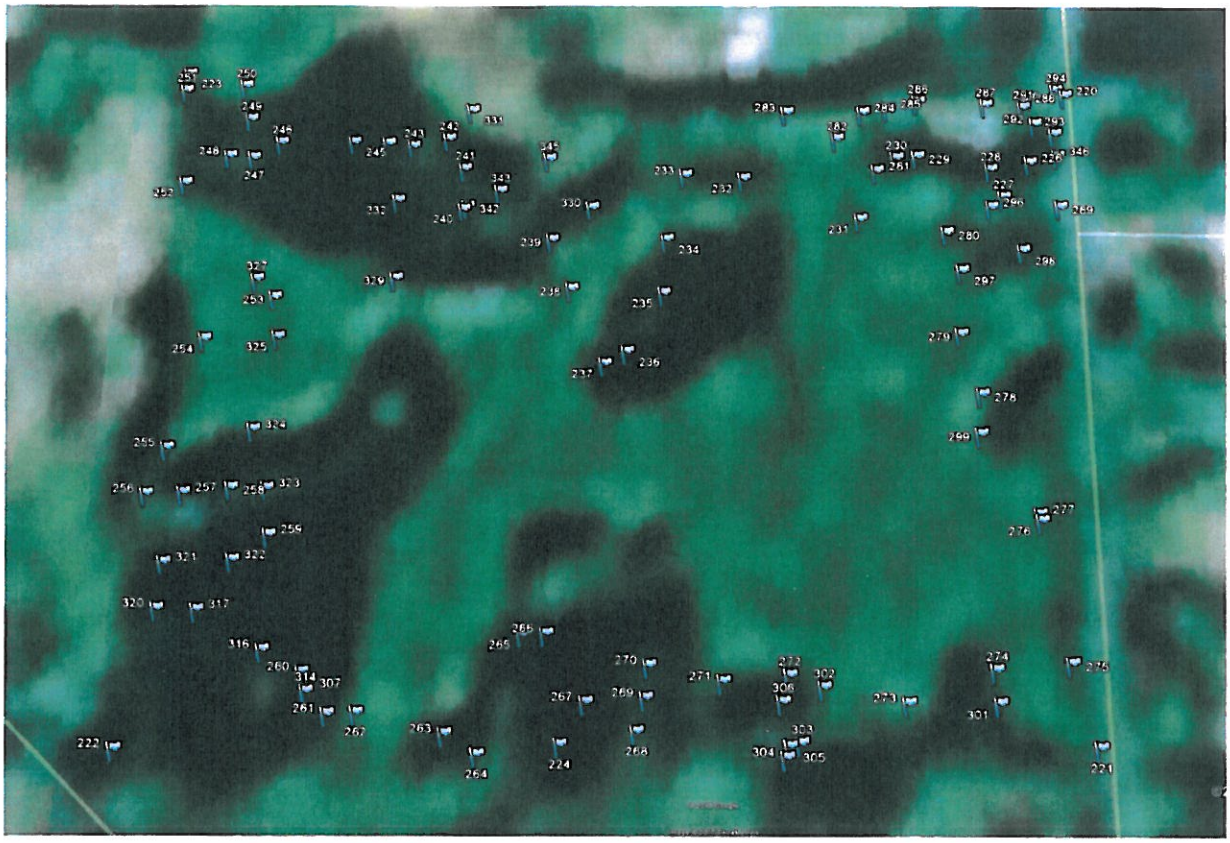
10.0 APPENDICES

APPENDIX A: LIST AND LOCATION OF WAYPOINTS
APPENDIX B: WETLAND CLASS INDICATOR PLANTS
APPENDIX C: LIST OF PLANTS OBSERVED
APPENDIX D: HISTORICAL AERIAL PHOTOGRAPHS
APPENDIX E: SITE PHOTOGRAPHS

APPENDIX A: LIST AND LOCATIONS OF WAYPOINTS

Table A1: *Waypoints established during the July 2010 Field Reconnaissance.*
Datum: NAD27 Canada. Map: NTS 1:50,000 83G10.

[UTM coordinates are available upon request]



Map showing all waypoints on the property.

Map showing all waypoints and tracks during the field reconnaissance, June 7 and July 7, 2010.

APPENDIX B: WETLAND CLASS INDICATOR PLANTS

The following are the plant species that were used as indicators in classifying wetland areas on the subject property. They are arranged approximately in order of preference for moist or dry habitats, with the wetter preferences being first.

Scientific name	**Common name**	**Habitat Preferences**
Typha latifolia	Cattail	marshes, ponds, wet ditches, in slow-flowing or standing freshwater.
Hippuris vulgaris	Mare's tail	Ponds, lakeshores, streambanks, mudflats, usually in shallow water.
Carex lacustris	Lakeshore sedge	marshes, treed fens and along lakeshores.
Eleocharis palustris	Common spikerush	marshes, wet meadows and ditches.
Glyceria grandis	Tall manna grass	sloughs, marshes, low meadows and damp ground.
Beckmannia syzigachne	slough grass	shores, marshes, wet meadows, ditches.
Calamagrostis canadensis	Marsh reedgrass	meadows, wetlands, lakeshores and moist woods.
Rumex occidentalis	Western dock	marshes and wet meadows
Poa palustris	Fowl bluegrass	moist meadows, woods and clearings
Aster spp.	Aster species	moist ground.
Agropyron trachycaulus	Slender wheatgrass	open woods, meadows and shores.

Classification System used for Wetland Areas:

	Class I	Class II	Class III	Class IV	Class V
Name of Class:	*Ephemeral Pond*	*Temporary Pond*	*Seasonal Pond*	*Semipermanent Pond*	*Permanent Pond*
Plants:					
Typha latifolia	*Absent*	*Absent*	*Absent*	*Central*	*Peripheral*
Hippuris vulgaris	*Absent*	*Absent*	*Central*	*Central*	
Carex lacustris	*Absent*	*Absent*	*Central*	*Central*	
Eleocharis palustris	*Absent*	*Absent*	*Inner*	*Inner*	
Glyceria grandis	*Absent*	*Absent*	*Central*	*Inner*	
Beckmannia syzigachne	*Absent*	*Absent*	*Central*	*Inner*	
Calamagrostis canadensis		*Central*	*Central*	*Outer*	
Rumex occidentalis		*Central*	*Inner*	*Outer*	
Stachys palustris	*Emergent Phase*	*Outer*	*Outer*	*Outer*	
Poa palustris		*Central*	*Outer*	*Outer*	
Aster spp.		*Central*	*Outer*	*Outer*	
Agropyron trachycaulus				*Outer*	

APPENDIX C: List of plant species observed in vegetation survey of NE 04-53-02-W5M, Fawn Meadows, July 2010. *Arranged in alphabetical order by scientific name*

Common Name	Scientific Name
A. Trees and Shrubs:	
Manitoba maple	*Acer negundo*
Alder	*Alnus rugosa*
Saskatoon	*Amelanchier alnifolia*
White birch	*Betula papyrifera*
Red-osier dogwood	*Cornus stolonifera*
Beaked Hazelnut	*Corylus cornuta*
Larch (Tamarack)	*Larix laricina*
White Spruce	*Picea glauca*
Black spruce	*Picea mariana*
Balsam poplar	*Populus balsamifera*
Trembling aspen	*Populus tremuloides*
Chokecherry	*Prunus virginiana*
Beaked Willow	*Salix bebbiana*
Pussy Willow	*Salix discolor*
Low bush cranberry	*Viburnum edule*
High bush cranberry	*Viburnum opulus*
Buffaloberry	*Shepherdia canadensis*
B. Forbs, Herbs and Other Vascular Plants:	
Baneberry	*Actaea rubra*
Quack grass	*Agropyron repens*
Slender wheat grass	*Agropyron trachycaulum*
Canada anemone	*Anemone canadensis*
Wild sarsaparilla	*Aralia nudicaulis*
Fringed aster	*Aster ciliolatus*
Quack grass	*Agropyron repens*
Slender wheat grass	*Agropyron trachycaulum*
Short-awned foxtail	*Alopecurus aequalis*
Blunt-leaved sandwort	*Arenaria lateriflora*
Slough grass	*Beckmannia syzigachne*
Brome grass	*Bromus spp..*
Marsh Reed Grass	*Calamagrostis canadensis*
Marsh marigold	*Caltha palustris*
Awned Sedge	*Carex atherodes*
Canada thistle	*Cirsium arvense*
Bunchberry	*Cornus canadensis*
Tufted hair grass	*Deschampsia caespitosa*
Fairy bells	*Disporum trachycarpum*

Creeping Spike-rush	*Eleocharis palustris*
Fireweed	*Epilobium angustifolium*
Horsetail (common)	*Equisetum arvense*
Horsetail (swamp)	*Equisetum fluviatile*
Fescue	*Festuca sp.*
Woodland strawberry	*Fragaria vesca*
Wild strawberry	*Fragaria virginiana*
Northern bedstraw	*Galium boreale*
Sweetscented bedstraw	*Galium triflorum*
Cow-parsnip	*Heracleum lanatum*
Narrow-leaved Hawkweed	*Hieracium umbellatum*
Foxtail barley	*Hordeum jubatum*
Slender rush	*Juncus tenuis*
Creamy Peavine	*Lathyrus ochroleucus*
Labrador Tea	*Ledum groenlandicum*
Twinflower	*Linnaea borealis*
Twining honeysuckle	*Lonicera dioica*
Bracted honeysuckle	*Lonicera involucrata*
Wild lily-of-the-valley	*Maianthemum canadense*
Yellow sweet-clover	*Melilotus officinalis*
Tall Lungwort	*Mertensia paniculata*
Wild mint	*Mentha arvensis*
Coltsfoot, Palmate	*Petasites palmatus*
Timothy	*Phleum pratense*
Common Plantain	*Plantago major*
Fowl bluegrass	*Poa palustris*
Forest floor moss	*Polytrichium sp.*
Wintergreen, Pink	*Pyrola asarifolia*
Tall Buttercup	*Ranunculus acris*
Skunk currant	*Ribes glandulosum*
Northern black currant	*Ribes hudsonianum*
Northern gooseberry	*Ribes oxacanthoides*
Prickly rose	*Rosa acicularis*
Wild raspberry	*Rubus idaeus*
Trailing raspberry	*Rubus pubescens*
Western dock	*Rumex occidentalis*
Great Bulrush	*Scirpus lacustris*
Marsh skullcap	*Scutellaria galericulata*
Water Parsnip	*Sium suave*
Star-flowered False Solomon's Seal	*Smilacina stellata*
Goldenrod	*Solidago canadensis*
Marsh Hedge Nettle	*Stachys palustris*
Chickweed	*Stellaria sp.*
Snowberry	*Symphoricarpos albus*
Dandelion	*Taraxacum officinale*
Veiny meadow rue	*Thalictrum venulosum*
Alsike clover	*Trifolium hybridum*
White clover	*Trifolium repens*

Cattail	*Typha latifolia*
Wild vetch	*Vicia americana*
Western violet	*Viola canadensis*
Sphagnum moss	*Sphagnum sp.*
Shield fern	*Dryopteris spinulosa*
Cloudberry	*Rubus chamaemorus*
Club moss	*Lycopodium sp.*
Elderberry	*Sambucus sp.*
Caribou moss	*Cladina sp.*
Old Man's Beard	*Usnea sp.*
Horsehair	*Bryoria sp*

Phase ! Environmental Site Assessment

Hagstrom Geotechnical Services Ltd.
5607 - 134 A. Avenue, Edmonton, Alberta T5A 0M3
Tel: (780) 996-5621• Fax: (780) 475-5671
e-mail: h_gsl@telus.net

NorCan Consulting Group Inc.
Box 38, Site 219, RR2
Carvel, Alberta
T0E 2H0

March 1, 2012
Our File: H0907-280

Attention: **Mr. Frank Florkewich**

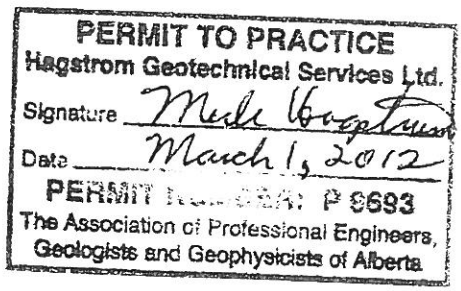
Dear Sir:

Re: Phase I Environmental Site Assessment
Proposed Country Residential Subdivision
Portion of NE 4-53-2-W5M & Lot 1, Block 1, Plan 0323261
Parkland County, Alberta

We are pleased to submit our Phase I Environmental Site Assessment (ESA) report on the above referenced property. Based on the findings of the foregoing Phase I ESA, a Phase II ESA is not required for this site.

Should you have any questions or concerns regarding our findings, do not hesitate to call our office at (780) 996-5621.

Respectfully submitted,
Hagstrom Geotechnical Services Ltd.



Merle Hagstrom, B.Sc., P.Eng.
Senior Engineer

Distribution: (4) addressee
Attachments: Appendix A, B, C, D, E

EXECUTIVE SUMMARY

PROJECT NAME:	Proposed Country Residential Subdivision
ADDRESS:	Portion of NE 4-53-2-W5M & Lot 1, Block 1, Plan 0323261 Parkland County, Alberta
LEGAL:	Portion of NE 4-53-2-W5M & Lot 1, Block 1, Plan 0323261 Parkland County, Alberta
OWNER(S):	Fawn Meadows Development Inc. of Calgary, Alberta
SCOPE OF WORK:	A Phase I Environmental Site Assessment (ESA) was conducted for vacant land located in Parkland County and was conducted in general accordance with CSA CZ768-01. The assessment consisted of historical records review, regulatory agency searches, personnel interviews and a site reconnaissance.
SITE DESCRIPTION:	The Site is located within the east half of Section 4, Township 53, Range 2, West of the Fifth Meridian in Parkland County, Alberta and is comprised of a portion of NE 4-53-2-W5M and Lot 1, Block 1, Plan 0323261. Collectively, the Site is comprised of 51.12 hectares (126.46 acres) of vacant land that is bounded on the east by Range Road 23 (Secondary Highway 770), on the south by Parkland Drive and a quarter section boundary line, and on the west by a quarter section boundary line. Bowen Estates and Lake Country Properties residential subdivisions are located immediately east and southeast of the Site. At the time of the inspection, the Site was vacant, undeveloped agricultural land.
BUILDING CONSTRUCTION:	The Site does not contain any buildings.
FINDINGS:	No potential sources of contamination were identified during the assessment; therefore, a Phase II ESA is not required for the Site.

TABLE OF CONTENTS

PAGE

LIST OF APPENDICES

LIST OF FIGURES

PAGE

LIST OF TABLES

PAGE

1.0 INTRODUCTION

1.1 PROJECT BACKGROUND

Hagstrom Geotechnical Services Ltd. (HGSL) was retained by Mr. Frank Florkewich to conduct a Phase I Environmental Site Assessment (ESA) on a property located within the north central limits of Parkland County, Alberta (hereinafter referred to as the "Site"). The Site is currently vacant, agricultural land and it is proposed to develop the Site into a country residential subdivision. A Site inspection was carried out on September 15, 2009.

1.2 OBJECTIVES

The primary objectives of a Phase I ESA are to document current Site conditions; to identify potential or actual environmental contamination(s) that could be associated with current or past occupants and/or activities on the Site; and to determine whether or not additional investigations are required.

1.3 SCOPE OF WORK

The foregoing Phase I ESA was conducted in accordance with the current Canadian Standard Association (CSA) guidelines[1]. The scope of work for the Phase I ESA consisted of identifying potential environmental concerns regarding the Site and neighboring properties by visual examination of the ground surface for disturbance(s) and/or staining or discoloration; documentation of current operating practices; and review of available historical and regulatory records.

1.4 METHODOLOGY

The work performed as part of this investigation included three components:

1. Perform a review of historical information pertaining to the Site and adjacent properties;

2. Conduct detailed inspection of the Site and cursory review of adjacent properties in order to identify potential environmental concerns, during which, a standardized checklist (Appendix D) was used as a guide; and

3. Prepare a report summarizing the methodology and findings of the historical review and Site inspections. If necessary, the report will include recommendations for further investigation and assessment.

The following lists the historical records obtained; regulatory agencies contacted; and environmental database reviewed for the purposes of the Phase I ESA:

- Alberta Registries was contacted to provide historical land title information.

[1]Canadian Standard Association (CSA), 2001. *Phase I Environmental Assessment (CSA Z768-01)*, Ottawa, Canada.

- Aerial photographs were obtained through Alberta Sustainable Resource Development-Air Photo Services in order to review land use and development at or near the Site.

- Alberta Environment's Freedom of Information and Protection of Privacy (FOIP) Office was contacted for information regarding any spills, releases and/or contamination pertaining to the Site, along with routinely available information, pursuant to the Environmental Protection and Enhancement Act.

- The Environmental Law Centre was contacted for information regarding enforcement actions against former and/or current owner(s) of the Site; and, information regarding reclamation certificates issued for former oil well lease areas at the Site.

- The Petroleum Tank Management Association of Alberta (PTMAA) was contacted for information regarding the presence of underground and/or aboveground storage tanks (USTs/ASTs) in connection with current and/or previous Site occupancy.

- Abacus Datagraphics Ltd.'s database (AbaData)[2] was searched for any oil and gas related facilities, pipelines and reportable incidents pertinent to the Site and adjacent properties.

- Alberta Environment's Industrial Waste Landfill Program Help End Landfill Pollution (H.E.L.P.) database[3] and other published data were reviewed for any registered landfills and/or dump sites that may have been present in the immediate area of the Site.

- Alberta Environment's Groundwater Information System[4] was reviewed for records of groundwater wells drilled within the immediate area of the Site.

2.0 SITE DESCRIPTION

The Site is located within the east half of Section 4, Township 53, Range 2, West of the Fifth Meridian in Parkland County, Alberta and is comprised of a portion of NE 4-53-2-W5M and all of Lot 1, Block 1, Plan 0323261 (refer to Figure 1, following). Collectively, the Site is comprised of 51.12 hectares (126.46 acres) of land that is bounded on the east by Range Road 23 (Secondary Highway 770), on the south by Parkland Drive and a quarter section boundary line, and on the west by a quarter section boundary line. It is noted that Bowen Estates and Lake Country Properties residential subdivisions are located immediately east and southeast of the Site. A 2008 aerial photograph of the area is presented in Figure 2, following.

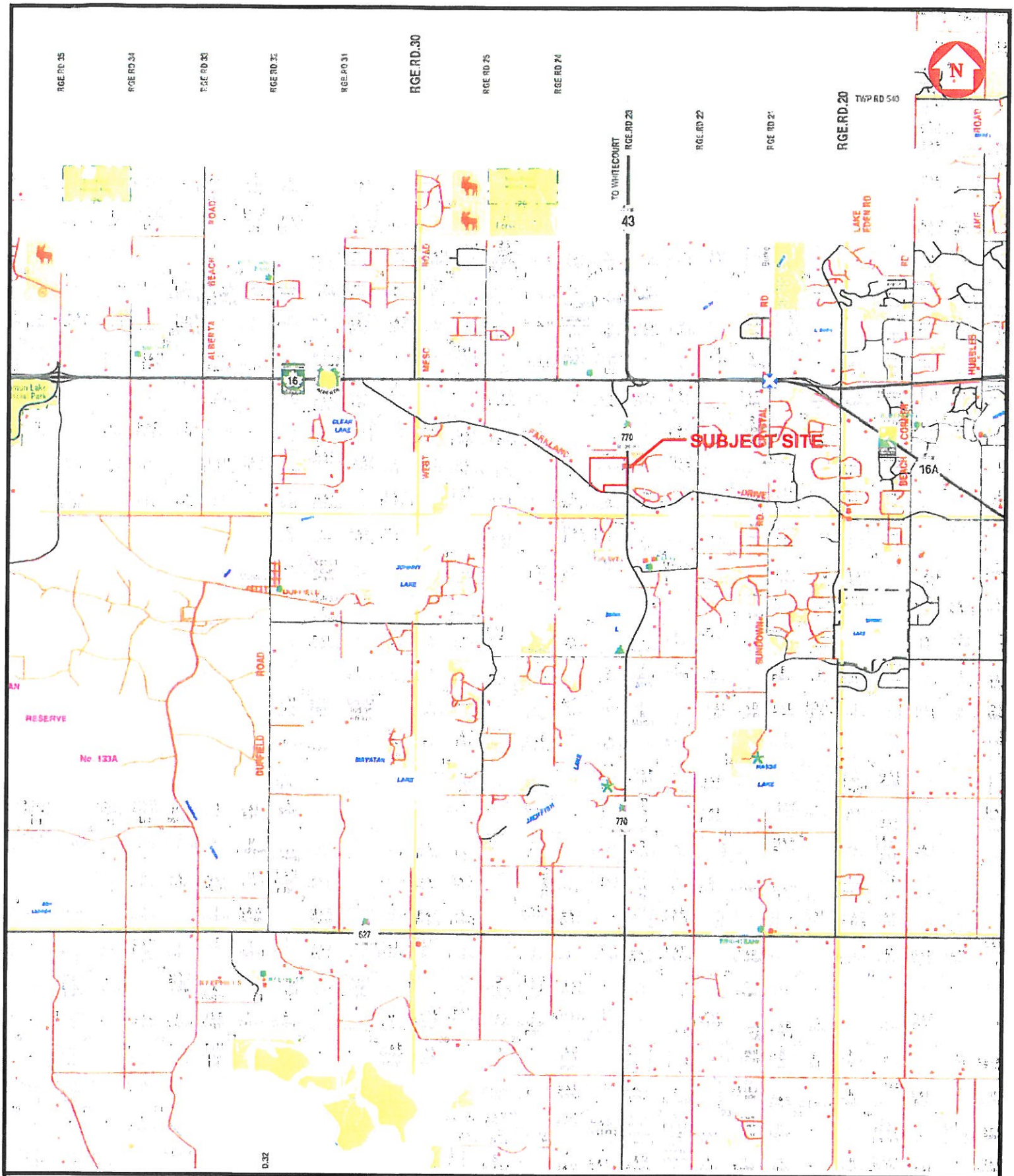
At the time of the inspection, the Site was vacant, undeveloped agricultural land. According to a land title search for the properties dated August 20, 2009, Fawn Meadows Development Inc. of

---

[2] http://www.abacusdatagraphics.com/AbaData/mgMain.asp

[3] Alberta Environment, 1988. *Data Tracking and Management Control System H.E.L.P. (Help End Landfill Pollution) Program. Industrial Waste Landfill Program*, Edmonton, Alberta.

[4] http://www3.gov.ab.ca/env/water/groundwater/index.html



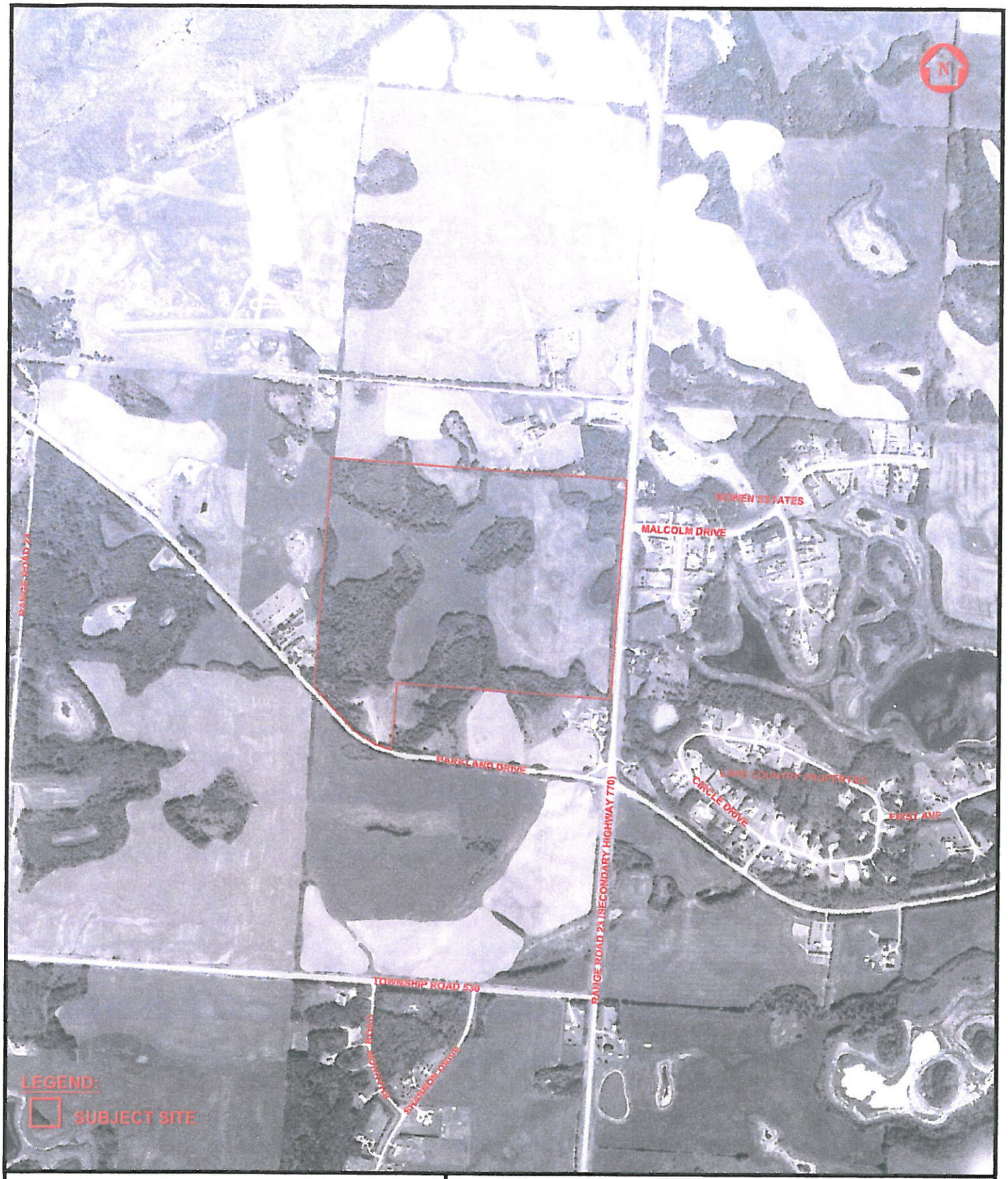
HAGSTROM GEOTECHNICAL SERVICES LTD.

5607-134A Avenue NW, Edmonton AB T5A OM3
Tel: (780) 996-5621 Fax: (780) 475-5671

NORCAN CONSULTING GROUP INC.

Phase I Environmental Site Assessment
Proposed Country Residential Subdivision
Portion of NE 4-53-2-W5M & Lot 1, Block 1, Plan 0323261
Parkland County, Alberta
County Map Showing Site Location

JOB NO.: H0907-280	DATE: October 30, 2009	FIGURE: 1



HAGSTROM GEOTECHNICAL SERVICES LTD.

5607-134A Avenue NW, Edmonton AB T5A OM3
Tel: (780) 996-5621 Fax: (780) 475-5671

NORCAN CONSULTING GROUP INC.

Phase I Environmental Site Assessment
Proposed Country Residential Subdivision
Portion of NE 4-53-2-W5M & Lot 1, Block 1, Plan 0323261
Parkland County, Alberta
2008 Aerial Photograph Showing Site Location and Area Layout

JOB NO.: H0907-280	DATE: October 30, 2009	FIGURE: 2

Calgary, Alberta is the current registered owner of NE 4-53-2-W5M and Lot 1, Block 1, Plan 0323261. Information regarding historical land ownership for the Site is presented in Section 2.2.1 of this report. A copy of the land title search is provided in Appendix A.

2.1 REGIONAL GEOLOGY

Parkland County is situated in central Alberta, immediately west of the City of Edmonton. This area is part of the Alberta Plains region. The County is within the North Saskatchewan and Athabasca River basins.

2.1.1 Surficial

According to published surficial geology reports[5], the terrain in the area is broadly classified as undivided ice-contact lacustrine and fluvial deposits consisting of gravel, sand, silt and clay, and local till of up to 25 meters thick. The sediments are deposited in intermittent supraglacial lakes and streams; or at margins of ice-floored proglacial lakes. The local topography is classified as undulating to hummocky.

2.1.2 Bedrock

According to published reports[6], the upper bedrock in Parkland County (herein referred to as the County) includes parts of the Paskapoo Formation and the Edmonton Group. The Paskapoo Formation consists of cycles of thick, tabular sandstones, siltstone and mudstone layers while the Edmonton Group consists of fresh and brackish-water deposits of fine grained sandstone and silty shale, thick coal seams, and numerous bentonite beds. The Edmonton Group in the County includes the Scollard, Battle, Whitemud and Horseshoe Canyon formations.

The Horseshoe Canyon Formation is the lower part of the Edmonton Group and is the upper bedrock in the eastern half of the County. The Horseshoe Canyon Formation consists of deltaic and fluvial sandstone, siltstone and shale with interbedded coal seams, bentonite and thin nodular beds of ironstone. Because of the low-energy environment in which deposition occurred, the sandstones, when present, tend to be finer grained. The lower 60 to 70 meters and the upper 30 to 50 meters of the Horseshoe Canyon Formation can include coarser grained sandstone deposits. The Horseshoe Canyon Formation has a maximum thickness of 350 meters and includes the Upper, Middle and Lower Horseshoe Canyon formations. The Upper Horseshoe Canyon, which can be up to 100 meters thick, is the upper bedrock in the east-central part of the County immediately east of the area where the Scollard Formation subcrops. The Middle Horseshoe Canyon, which is up to 80 meters thick, is the upper bedrock in the northeastern part of the County. The Middle Horseshoe Canyon Formation underlies the Site. The Lower Horseshoe Canyon, which is up to 180 meters thick, is the upper bedrock in a few areas of the northeastern part of the County.

---

[5] Shetsen, I. 1990. Quaternary Geology, Central Alberta, Alberta Research Council. Map Scale 1:500000.

[6] Hydrogeological Consultants Ltd., Parkland County, Parts of the North Saskatchewan and Athabasca River Basins, Parts of Tp 050 to 054, R 25, W4M to R 08, W5M, Regional Groundwater Assessment, August, 1998.

2.2 HISTORICAL RECORDS REVIEW

2.2.1 Land Titles

Historical land titles for the Site were obtained from Alberta Registries. The results of the search dated August 20, 2009 are summarized in Table 1, below. Copies of all available land title certificates for the Site are included in Appendix A. According to the most current land titles available for NE 4-53-2-W5M and Lot 1, Block 1, Plan 0323261, Fawn Meadows Development Inc. of Calgary, Alberta has been the registered owner of both properties since July 12, 2004.

TABLE 1
SUMMARY OF HISTORICAL LAND OWNERSHIP

Date of Transfer	Registered Owner	Remarks
NE 4-53-2-W5M		
July 12, 2004	Fawn Meadows Development Inc. (Calgary, Alberta)	
March 3, 1983	Ambrose William Comchi (Calgary, Alberta)	
August 10, 1955	William Comchi (Carvel, Alberta)	
June 21, 1955	William Chomcy (Carvel, Alberta)	Comprised of 116.46 acres of land
February 21, 1920	Nikolay Chomcy	
January 26, 1917	Matilda Singer (Edmonton, Alberta)	
May 20, 1914	Joseph Smith (Edmonton, Alberta)	Comprised of 158 acres of land
April 13, 1908	Ilko Krazewski (Stony Plain, Alberta)	Comprised of 160 acres of land
LOT 1, BLOCK 1, PLAN 0323261 (Within SE 4-53-2-W5M)		
July 12, 2004	Fawn Meadows Development Inc. (Calgary, Alberta)	
June 18, 2003	Donald Ross Waddell Julia Annette Waddell (Carvel, Alberta)	Lot 1, Block 1, Plan 0323261
June 6, 2003	Donald Ross Waddell Julia Annette Waddell (Carvel, Alberta)	SE 4-53-2-W5M
May 18, 1989	Donald Ross Waddell (Carvel, Alberta)	
November 3, 1980	Leonard F. North Lynda North (Spruce Grove, Alberta)	
February 8, 1980	Waldemar Guenther (Stony Plain, Alberta)	
October 19, 1959	Waldemar Guenther (Stony Plain, Alberta)	
January 8, 1958	Olena Stecyk (Stony Plain, Alberta)	

TABLE 1
SUMMARY OF HISTORICAL LAND OWNERSHIP

Date of Transfer	Registered Owner	Remarks
October 19, 1956	Fred S. Stecyk Mary J. Pawlyk (Carvel, Alberta)	
June 15, 1951	Stefan Stecyk (Carvel, Alberta)	
April 9, 1947	John Pawlyk Mary Pawlyk (Carvel, Alberta)	
October 22, 1945	Steve Stecyk (Carvel, Alberta)	
September 45, 1945	Walter Proskurniak (Edmonton, Alberta)	
April 5, 1918	Stefan Pryszczak (Carvel, Alberta)	
December 14, 1909	Stefan Stecyk (Manley, Alberta)	

2.2.2 Aerial Photographs

Aerial photographs of the Site and surrounding areas were reviewed to determine their history. Reproductions of historical aerial photographs from 1962, 1967, 1973, 1978, 1984, 1990, 1997, 2005 and 2008 were reviewed and are presented in Appendix B. Significant information regarding the Site and adjacent properties are summarized in Table 2, below.

TABLE 2
SUMMARY OF AERIAL PHOTOGRAPH INFORMATION

Year	Site	Adjacent Properties			
		North	East	South	West
1962	The Site appears as vacant agricultural land. Several clusters of heavily treed areas are located throughout. The Site is bounded to the east by Range Road 23.	The north adjacent property is occupied by an acreage/farm yard, which is located within the east half of the property.	The east adjacent quarter section appears to be vacant, undeveloped agricultural land.	The south adjacent property is occupied by an acreage/farm yard, which is located within the east half of the property.	The west adjacent property is occupied by an acreage/farm yard, which is located within the northeast corner of the property (northwest of the Site).
1967	As in 1962.	As in 1962.	The east adjacent quarter section generally appears similar to the previous aerial photograph, except for the acreage/farm yard that is now visible within the southwest corner of the property.	As in 1962.	As in 1962, except for an acreage that contains a building, which is now visible immediately southwest of the Site.
1973	As in 1967.	As in 1967.	As in 1967.	As in 1967.	As in 1967.
1978	As in 1973.	As in 1973.	As in 1973.	As in 1973.	As in 1973.

TABLE 2
SUMMARY OF AERIAL PHOTOGRAPH INFORMATION

Year	Site	Adjacent Properties			
		North	East	South	West
1984	As in 1978.	As in 1978.	Two residential subdivisions are now visible immediately east of the Site. Several homes are now visible throughout the subdivisions. A majority of the lots remain vacant.	As in 1978.	As in 1978.
1990	As in 1984.	As in 1984.	More residential properties are now visible within the two residential subdivisions.	As in 1984.	As in 1984.
1997	As in 1990.	As in 1990.	More residential properties are now visible within the two residential subdivisions, which now appear to be fully developed.	As in 1990.	As in 1990.
2005	As in 1997.	As in 1997.	As in 1997.	As in 1997.	As in 1997.
2008	As in 2005.	As in 2005.	As in 2005.	As in 2005.	As in 2005.

2.2.3 Regulatory Agencies

Several regulatory agencies were contacted in order to obtain environmental information associated with the Site and adjacent properties. A summary of the information received is presented in Table 3, below. Copies of the correspondence received are included in Appendix C.

TABLE 3
SUMMARY OF REGULATORY AGENCY RESPONSES

Agency	Items Addressed	Responses
Alberta Environment, FOIP Office	Spills, releases and/or contaminations; routine disclosure documents pursuant to the Environmental Protection & Enhancement Act (EPEA)	Correspondence from the FOIP office did not return any records relating to soil or groundwater contamination; technical/environmental reports pertaining to the Site; stop work orders; investigations; remediations; incident reports as part of investigations; and/or, spills or fines related to the contamination of the Site. A search under routine disclosure documents did not return any records.
Environmental Law Centre	Enforcement actions and wellsite information	The Environmental Law Centre has no records of enforcement actions issued against Fawn Meadows Development Inc. who has been the registered owner of the Site since 2004; and, Donald Ross Waddell, a former owner of Lot 1, Block 1, Plan 0323261. The search request for records pertaining to Reclamation Certificates, Orders and/or Notices within E 4-53-2-W5M did not return ay records.
Petroleum Tank Management Association of Alberta (PTMAA)	Underground storage tanks and aboveground storage tanks	The PTMAA have no records of storage tanks within E 4-53-2-W5M.

2.2.4 AbaData

A search through the AbaData database did not return any records for wells and related batteries/gas plants and other reportable incidents at the Site and adjacent properties.

2.2.5 Alberta Environment Database

2.2.5.1 H.E.L.P. Database

Alberta Environment's H.E.L.P. (Help End Landfill Pollution) database did not identify any landfills at or near the Site.

2.2.5.2 Groundwater Information System

Alberta Environment's Groundwater Information System contains four records for water wells drilled within E1/2 4-53-2-W5M. The exact locations of the wells relative to the Site are unknown. Based on the inspection carried out for this assessment, there are no groundwater wells located on the Site. Copies of the water well drilling records are not included in this report but can be provided upon request.

2.2.6 Previous Investigations

There are no available records regarding previous environmental site assessments conducted for the Site.

A geotechnical site investigation for proposed facilities was conducted on the Site by Hagstrom Geotechnical Services Ltd. in August, 2009 (HGSL File: H0907-280). The geotechnical site investigation consisted of a borehole drilling program, soil sampling and laboratory testing for soil properties. The scope of work, methodology and results of the geotechnical site investigation are detailed in a report dated October 22, 2009. In summary, a total of six deep boreholes were drilled at the Site. The soil profile encountered at the borehole locations generally consisted of a thin cover of topsoil over variable thick layers of silt and clay. The groundwater table is considered to be high. No evidence of soil contamination relative to petroleum hydrocarbon products was observed in any of the boreholes during the borehole drilling program.

3.0 SITE INSPECTION RESULTS

A visual inspection of the Site was conducted by HGSL personnel on September 15, 2009 in order to document the current activities at the Site and to identify any anomalous conditions that could be related to the presence of any hazardous wastes/materials and/or contamination of the Site, as may be evidenced by ground surface staining and/or distressed vegetation. The results of the reconnaissance conducted at the Site and immediate surrounding areas are presented below and are also included in the checklist in Appendix D.

3.1 Site Appearance

The on-Site inspection revealed that the Site was in a good state of housekeeping. At the time of the inspection, the Site was vacant, undeveloped agricultural land. The Site was generally open with five marshes/fens containing tall trees. No evidence of distressed vegetation and/or unusual groundwater staining and odors was observed during the inspection. Photographs taken of the Site are presented in Appendix E.

3.1.1 Topography and Site Drainage

The local topography at the Site is classified as gently rolling. At the time of the inspection, the Site was naturally drained via five marshes and fens located throughout.

3.2 Hazardous Wastes and Materials

3.2.1 Petroleum Hydrocarbons

No petroleum hydrocarbon products or large ground stained areas were observed during the inspection of the Site.

3.2.2 Bulk Storage Tanks

No above-ground storage tanks were visible on the Site during the inspection. There was no evidence of underground storage tanks on the Site.

3.2.3 Bulk Chemical Storage

No bulk chemical storage was noted during the inspection of the Site.

3.2.4 Asbestos

No asbestos containing materials were identified on the Site.

3.2.5 Lead

No evidence of lead-based products was observed on the Site.

3.2.6 Polychlorinated Biphenyls (PCBs)

No PCB-containing electrical equipment was observed on the Site.

3.2.7 Urea Formaldehyde

No evidence of urea formaldehyde foam insulation (UFFI) was observed on the Site.

3.2.8 Chlorofluorocarbons

No sources of chlorofluorocarbons were identified on the Site.

3.2.9 Air and Water Emissions

Aside from storm water run-off, there are no liquid discharges from the Site.

3.2.10 Odors, Noise and Vibrations

No unusual odors were encountered and no major sources of noise and vibrations were identified during the inspection of the Site.

3.2.11 Radon

Radon is a colorless, odorless, invisible gas that occurs naturally in soils. Natural radon levels vary and are dependent on the geologic formations present. Radon gas cannot be detected without specialized equipment. Due to the area geology, radon gas is not considered a significant concern in central and northern Alberta.

3.2.12 Radioactive Sources

No radioactive sources were identified on the Site.

3.2.13 Hazardous Wastes

No hazardous wastes are generated from the activities on the Site.

3.2.14 Dump Sites and Landfills

No evidence of dumps sites or landfills was observed on the Site.

3.3 Neighboring Properties

The Site is bounded on the east by Bowen Lake Estates country residential subdivision. All other adjacent properties to the north, south and west are agricultural lands that contain several acreages.

No potential sources of contamination were visible on the adjacent properties; although a thorough inspection was not conducted for each adjacent property.

4.0 CONCLUSION AND RECOMMENDATIONS

Based on information made available to HGSL through historical records, regulatory agency searches, site inspections and personnel interviews, no obvious potential sources of contamination were identified on the Site and adjacent properties during the Site inspection. Based on the information obtained from the foregoing Phase I ESA, a Phase II ESA is not required for the Site.

5.0 LIMITATIONS

No environmental site assessment can wholly eliminate uncertainty regarding the potential for recognized environmental conditions in connection with a property. Performance of a standardized environmental site assessment protocol is intended to reduce but not eliminate uncertainty regarding the potential for recognized environmental conditions in connection with the property given reasonable limits of time and cost.

This report was prepared for the exclusive use of the NorCan Consulting Group Inc. and any authorized users for specific applications to the Site. The foregoing Phase I ESA was conducted in accordance with the proposed scope of work prepared for this Site and with CSA Standard Z768-01. No other warranty, expressed or implied, is made as to the professional services provided. Any use which a third party makes of this report, or any reliance on, or decisions to be made based upon it, are the responsibility of such third parties. HGSL accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. The evaluation and interpretation provided herein does not preclude the existence of site conditions in variance to those indicated by the environmental regulatory agencies and/or individuals contacted for this assessment. HGSL accepts no responsibility for any deficiency, misstatement and/or inaccuracies contained in this report as a result of omissions, misinterpretations or fraudulent acts of the individuals and agencies contacted.

Specific contamination evaluation procedures, such as soil or ground water sampling and chemical analysis are not included in the scope of work for the foregoing Phase I ESA. Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted environmental science practices for environmental site assessments in Alberta at the time this report was prepared.

APPENDIX A

Historical Land Title Certificates

HISTORICAL LAND TITLE CERTIFICATE

CURRENT TITLE WITH HISTORICAL DATA

S LINC	SHORT LEGAL	TITLE NUMBER
0022 814 537	5;2;53;4;NE	042 286 912

LEGAL DESCRIPTION

MERIDIAN 5 RANGE 2 TOWNSHIP 53
SECTION 4
QUARTER NORTH EAST
CONTAINING 64.7 HECTARES (160 ACRES) MORE OR LESS
EXCEPTING THEREOUT:
(A) THE NORTHERLY 693 FEET THROUGHOUT
CONTAINING 17.0 HECTARES (42 ACRES) MORE OR LESS
(B) 0.624 HECTARES (1.54 ACRES) MORE OR LESS AS SHOWN
ON ROAD PLAN 466JY
EXCEPTING THEREOUT ALL MINES AND MINERALS

ESTATE: FEE SIMPLE

MUNICIPALITY: PARKLAND COUNTY

REFERENCE NUMBER: 832 050 645

REGISTERED OWNER(S)

REGISTRATION	DATE(DMY)	DOCUMENT TYPE	VALUE	CONSIDERATION
042 286 912	12/07/2004	TRANSFER OF LAND	$197,965	SEE INSTRUMENT

OWNERS

FAWN MEADOWS DEVELOPMENT INC..
OF 3215 UTAH PLACE NW
CALGARY
ALBERTA T2N 4A8

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS

(CONTINUED)

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
832 173 218	19/07/1983	CAVEAT RE : AGREEMENT CHARGING LAND CAVEATOR - ROYAL BANK OF CANADA. 1 PALLISER SQUARE 125-9 AVENUE SE CALGARY ALBERTA
852 124 957	19/06/1985	CAVEAT RE : AGREEMENT CHARGING LAND CAVEATOR - ROYAL BANK OF CANADA. ONE PALLISER SQUARE 125-9 AVE SE CALGARY ALBERTA
042 286 914	12/07/2004	MORTGAGE MORTGAGEE - 907840 ALBERTA INC.. 600, 5920 MACLEOD TRAIL SOUTH CALGARY ALBERTA T2H0K2 ORIGINAL PRINCIPAL AMOUNT: $150,000
042 286 915	12/07/2004	CAVEAT RE : ASSIGNMENT OF RENTS CAVEATOR - 907840 ALBERTA INC.. C/O HOFFMAN DORCHIK LLP MACLEOD PLACE 1 600, 5920 MACLEOD TRAIL SOUTH CALGARY ALBERTA T2H0K2 AGENT - MICHAEL J DERCHIK
042 325 196	05/08/2004	DISCHARGE OF CAVEAT 832173218
042 325 197	05/08/2004	DISCHARGE OF CAVEAT 852124957
052 267 815	05/07/2005	CAVEAT RE : AGREEMENT CHARGING LAND CAVEATOR - AMBROSE WILLIAM COMCHI 3215 UTAH PLACE NW CALGARY ALBERTA T2N4A8
062 020 120	13/01/2006	MORTGAGE MORTGAGEE - B2B TRUST. 404, 130 ADELAIDE ST WEST

(CONTINUED)

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
		TORONTO ONTARIO M5H3P5 MORTGAGEE - CANADIAN WESTERN TRUST COMPANY. 2200, 666 BURRARD STREET VANCOUVER BRITISH COLUMBIA V6C2X8 MORTGAGEE - GREENTREE MORTGAGE CORPORATION. MORTGAGEE - RAYMOND STEVENSON MORTGAGEE - MARLENE STEVENSON MORTGAGEE - WILLIAM HEALEY MORTGAGEE - CHRISTIAN STEVENSON ALL OF : C/O AXCESS CAPITAL PARTNERS 500, 11012 MACLEOD TR. S. CALGARY ALBERTA T2J6A5 ORIGINAL PRINCIPAL AMOUNT: $280,000 (DATA UPDATED BY: 092249155) (DATA UPDATED BY: 092249180) (DATA UPDATED BY: 092249200) (DATA UPDATED BY: 092249206)
062 020 121	13/01/2006	POSTPONEMENT OF CAVE 052267815 TO MORT 062020120
062 081 501	21/02/2006	DISCHARGE OF MORTGAGE 042286914
062 081 502	21/02/2006	DISCHARGE OF CAVEAT 042286915
082 319 261	01/08/2008	MORTGAGE MORTGAGEE - B2B TRUST. 404, 130 ADELAIDE ST WEST TORONTO ONTARIO M5H3P5 MORTGAGEE - CANADIAN WESTERN TRUST COMPANY. 600, 750 CAMBIE ST VANCOUVER BRITISH COLUMBIA V6B0A2 MORTGAGEE - WILLIAM HEALEY MORTGAGEE - CHRISTIAN STEVENSON BOTH OF: C/O AXCESS CAPITAL PARTNERS 1410, 10655 SOUTHPORT RD SW CALGARY ALBERTA T2W4Y1 MORTGAGEE - MARLENE STEVENSON

(CONTINUED)

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
		C/O AXCESS CAPITAL PARTNERS 1410, 10655 SOUTHPORT RD SW CALGAR ALBERTA T2W4Y1 MORTGAGEE - RAYMOND STEVENSON C/O AXCESS CAPITAL PARTNERS 1410, 10655 SOUTHPORT RD SW CALGARY ALBERTA T2W4Y1 MORTGAGEE - GREENTREE MORTGAGE CORPORATION. C/O AXCESS CAPITAL PARTNERS 1410, 10655 SOUTHPORT RD SW CALGAR ALBERTA T2W4Y1 ORIGINAL PRINCIPAL AMOUNT: $580,000
082 319 262	01/08/2008	CAVEAT RE : ASSIGNMENT OF RENTS AND LEASES CAVEATOR - B2B TRUST. C/O DOUGLAS M. SEFCIK 212, 20 SUNPARK PLAZA S.E. CALGARY ALBERTA T2X3T2 AGENT - DOUGLAS M SEFCIK
082 319 882	01/08/2008	DISCHARGE OF MORTGAGE 082319261 AND CAVEAT 082319262
082 319 992	01/08/2008	MORTGAGE MORTGAGEE - B2B TRUST. 404, 130 ADELAIDE ST WEST TORONTO ONTARIO M5H3P5 MORTGAGEE - CANADIAN WESTERN TRUST COMPANY. 600-750 CAMBIE ST VANCOUVER BRITISH COLUMBIA V6B4Y1 MORTGAGEE - WILLIAM HEALEY MORTGAGEE - CHRISTIAN STEVENSON MORTGAGEE - MARLENE STEVENSON MORTGAGEE - RAYMOND STEVENSON MORTGAGEE - GREENTREE MORTGAGE CORPORATION. ALL OF : C/O AXCESS CAPITAL PARTNERS 1410, 10655 SOUTHPORT RD SW CALGARY ALBERTA T2W4Y1

(CONTINUED)

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
		ORIGINAL PRINCIPAL AMOUNT: $580,000
082 319 993	01/08/2008	CAVEAT RE : ASSIGNMENT OF RENTS AND LEASES CAVEATOR - B2B TRUST. C/O 212, 20 SUNPARK PLAZA SE CALGARY ALBERTA T2X3T2 CAVEATOR - CANADIAN WESTERN TRUST COMPANY. 212 20 SUNPARK PLAZA SE CALGARY ALBERTA T2X3T2 CAVEATOR - WILLIAM HEALEY CAVEATOR - CHRISTIAN STEVENSON CAVEATOR - MARLENE STEVENSON CAVEATOR - RAYMOND STEVENSON ALL OF : C/O #212, 20 SUNPARK PLAZA SE CALGARY ALBERTA T2X3T2 CAVEATOR - GREENTREE MORTGAGE CORPORATION. C/O 212, 20 SUNPARK PLAZA SE CALGARY ALBERTA T2X3T2 AGENT - DOUGLAS M SEFCIK
082 360 125	21/08/2008	POSTPONEMENT OF CAVE 052267815 TO MORT 082319992 CAVE 082319993
092 249 155	22/07/2009	CORRECTION OF INSTRUMENT AFFECTS INSTRUMENT: 062020120 "THE FOLLOWING PARTY (AND DATA) WAS ADDED: RAYMOND;STEVENSON ADDRESS : C/O AXCESS CAPITAL PARTNERS;500, 11012 MACLEOD TR. S.;CALGAR Y PROVINCE :AB POSTAL CODE :T2J6A5 TENANCY TYPE :C"
092 249 180	22/07/2009	CORRECTION OF INSTRUMENT AFFECTS INSTRUMENT: 062020120 "THE FOLLOWING PARTY (AND DATA) WAS ADDED: MARLENE;STEVENSON ADDRESS : C/O AXCESS CAPITAL PARTNERS;500, 11012 MACLEOD TR. S.;CALGAR Y PROVINCE :AB POSTAL CODE :T2J6A5 TENANCY TYPE :C"
092 249 200	22/07/2009	CORRECTION OF INSTRUMENT AFFECTS INSTRUMENT: 062020120 "THE FOLLOWING PARTY (AND DATA) WAS ADDED:

(CONTINUED)

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
		WILLIAM;HEALEY ADDRESS : C/O AXCESS CAPITAL PARTNERS;500, 11012 MACLEOD TR. S.;CALGAR Y PROVINCE :AB POSTAL CODE :T2J6A5 TENANCY TYPE :C"
092 249 206	22/07/2009	CORRECTION OF INSTRUMENT AFFECTS INSTRUMENT: 062020120 "THE FOLLOWING PARTY (AND DATA) WAS ADDED: CHRISTIAN;STEVENSON ADDRESS : C/O AXCESS CAPITAL PARTNERS;500, 11012 MACLEOD TR. S.;CALGAR Y PROVINCE :AB POSTAL CODE :T2J6A5 TENANCY TYPE :C"
092 249 218	22/07/2009	DISCHARGE OF MORTGAGE 062020120 AND POSTPONEMENT 062020121

TOTAL INSTRUMENTS: 022

THE REGISTRAR OF TITLES CERTIFIES THIS TO BE AN ACCURATE REPRODUCTION OF THE CERTIFICATE OF TITLE REPRESENTED HEREIN THIS 20 DAY OF AUGUST, 2009 AT 09:12 A.M.

ORDER NUMBER:14656518

CUSTOMER FILE NUMBER: 7047292

END OF CERTIFICATE

HISTORICAL LAND TITLE CERTIFICATE

TITLE CANCELLED ON JULY 12,2004

S

LINC	SHORT LEGAL	TITLE NUMBER
0022 814 537	5;2;53;4;NE	832 050 645

LEGAL DESCRIPTION

MERIDIAN 5 RANGE 2 TOWNSHIP 53
SECTION 4
QUARTER NORTH EAST
CONTAINING 64.7 HECTARES (160 ACRES) MORE OR LESS
EXCEPTING THEREOUT:
(A) THE NORTHERLY 693 FEET THROUGHOUT
CONTAINING 17.0 HECTARES (42 ACRES) MORE OR LESS
(B) 0.624 HECTARES (1.54 ACRES) MORE OR LESS AS SHOWN
ON ROAD PLAN 466JY
EXCEPTING THEREOUT ALL MINES AND MINERALS

ESTATE: FEE SIMPLE

MUNICIPALITY: PARKLAND COUNTY

REGISTERED OWNER(S)

REGISTRATION	DATE(DMY)	DOCUMENT TYPE	VALUE	CONSIDERATION
832 050 645	03/03/1983		$69,876	

OWNERS

AMBROSE WILLIAM COMCHI
OF 45 WARWICK DRIVE SW
CALGARY
ALBERTA

(CONTINUED)

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
832 173 218	19/07/1983	CAVEAT RE : AGREEMENT CHARGING LAND CAVEATOR - ROYAL BANK OF CANADA. 1 PALLISER SQUARE 125-9 AVENUE SE CALGARY ALBERTA
852 124 957	19/06/1985	CAVEAT RE : AGREEMENT CHARGING LAND CAVEATOR - ROYAL BANK OF CANADA. ONE PALLISER SQUARE 125-9 AVE SE CALGARY ALBERTA
042 286 912	12/07/2004	TRANSFER OF LAND OWNERS - FAWN MEADOWS DEVELOPMENT INC.. 3215 UTAH PLACE NW CALGARY ALBERTA T2N4A8 NEW TITLE ISSUED

TOTAL INSTRUMENTS: 003

THE REGISTRAR OF TITLES CERTIFIES THIS TO BE AN ACCURATE REPRODUCTION OF THE CERTIFICATE OF TITLE REPRESENTED HEREIN THIS 20 DAY OF AUGUST, 2009 AT 09:12 A.M.

ORDER NUMBER:14656518

CUSTOMER FILE NUMBER: 7047292

END OF CERTIFICATE

(CONTINUED)

INCLUDING THIS UNMODIFIED PRODUCT IN ANY REPORT, OPINION, APPRAISAL OR OTHER ADVICE PREPARED BY THE ORIGINAL PURCHASER AS PART OF THE ORIGINAL PURCHASER APPLYING PROFESSIONAL, CONSULTING OR TECHNICAL EXPERTISE FOR THE BENEFIT OF CLIENT(S).

Certificate of Title

NO.	8	3	2	0	5	0	6	4	5
REF		7	1		G		1	5	5
VALUES			6	9	8	7	6	0	0

Canada

	M.	RG.	TWP.	SEC.	Q.	PT.
1	5	2	5	3	4	N E

	PLAN	BLK.	LOT	PT.
2				

North Alberta Land Registration District

THIS IS TO CERTIFY that AMBROSE WILLIAM COMCHI

OF CALGARY, IN THE PROVINCE OF ALBERTA

IS now the owner of an estate in fee simple

of and in

THE NORTH EAST QUARTER OF SECTION FOUR (4)

TOWNSHIP FIFTY THREE (53)

RANGE TWO (2)

WEST OF THE FIFTH MERIDIAN

CONTAINING 64.7 HECTARES (160 ACRES) MORE OR LESS

EXCEPTING THEREOUT:

(A) THE NORTHERLY SIX HUNDRED AND NINETY THREE (693§) FEET THROUGHOUT, CONTAINING (17.0 HECTARES) (42 ACRES) MORE OR LESS.
(B) 0.624 HECTARES (1.54 ACRES) MORE OR LESS AS SHOWN ON ROAD PLAN 466 J.Y.

EXCEPTING THEREOUT ALL MINES AND MINERALS.

CANCELLED
JUN 2 3 1992

SUBJECT TO THE ENCUMBRANCES, LIENS, ESTATES OR INTERESTS NOTIFIED BY MEMORANDUM UNDERWRITTEN OR ENDORSED HEREON, OR WHICH MAY HEREAFTER BE MADE IN THE REGISTER

IN WITNESS WHEREOF I have hereunto subscribed my name and affixed my official seal

this 3RD day of MARCH A.D. 19 83

KM

Post Office Address 45 WARWICK DRIVE S.W.,
CALGARY, ALTA.

AD Registrar
North Alberta Land Registration District

AG 1825 (DEC 81)

ABBREVIATIONS

E – Easement
C – Caveat
Tr – Transmission
Tfr – Transfer
Mtge – Mortgage
URW – Utility Right of Way
BL – Builders Lien
TN – Tax Notification
WE – Writ of Execution
CC – Covenants and Conditions
ENCUM – Encumbrance

Certificate of Title

Show Other Abbreviations Here

NAME AMBROSE W. COMCHI

LAND 5 2 53 4 N.E.

TITLE NO. 8 3 2 0 5 0 6 4 5

CHARGES, LIENS AND INTERESTS.

Nature of Instrument	Registration Number	Date of Registration DY	MO	YR	Amount $	PARTICULARS	Signature of Registrar	Discharges and Withdrawals: Registration Number	Date of Registration DY	MO	YR	Signature of Registrar
C.	832173218	19	7	83		1 PALLISER SQUARE, 125-9TH AVE S.E., CALGARY, ALTA. BY THE ROYAL BANK OF CANADA (RE:MTGE)						
C	852124957	19	6	85		BY THE ROYAL BANK OF CANADA (RE: MTGE) (AGENT: NEIL R. MCKAY) (ONE PALLISER SQUARE 125-9AVE. SE CALGARY, ALBERTA)						

CANCELLED
EXPIRED
JAN 23 1992

CANCELLED

Certificate of Title

NO 71-G-155
REF 232-M-154
VALUE $ 9950

M RG TWP. SEC Q PT
1 5 2 5 3 4 N E -

PLAN BLK. LOT PT.
2

Canada

RENEWAL

6487 J.X.

North Alberta Land Registration District

THIS IS TO CERTIFY that WILLIAM COMCHI OF CARVEL, IN THE PROVINCE OF ALBERTA (FARMER)

IS now the owner of an estate in fee simple

of and in THE NORTH EAST QUARTER OF SECTION FOUR (4)
TOWNSHIP FIFTY THREE (53)
RANGE TWO (2)
WEST OF THE FIFTH MERIDIAN
CONTAINING (64.7) HECTARES (160 ACRES) MORE OR LESS.
EXCEPTING THEREOUT: (A) THE NORTHERLY SIX HUNDRED AND NINETY THREE (693) FEET THROUGHOUT, CONTAINING (17.0) HECTARES (42 ACRES) MORE OR LESS.
(B) (0.624) HECTARES (1.54 ACRES) MORE OR LESS AS SHOWN ON ROAD PLAN 466 J.Y.

EXCEPTING THEREOUT ALL MINES AND MINERALS.

CANCELLED No 83205064S
on this 3 day of May 19 83
A.D. Registrar

SUBJECT TO THE ENCUMBRANCES, LIENS, ESTATES OR INTERESTS NOTIFIED BY MEMORANDUM UNDERWRITTEN OR ENDORSED HEREON, OR WHICH MAY HEREAFTER BE MADE IN THE REGISTER.

IN WITNESS WHEREOF I have hereunto subscribed my name and affixed my official seal

this TENTH day of AUGUST A.D. 19 55

Post Office Address CARVEL, ALBERTA

A.D. Registrar
North Alberta Land Registration District

ALBERTA LAND REGISTRATION DISTRICT LAND TITLES OFFICE NORTH

AG 080
Rev 7/77
LDK

ABBREVIATIONS

E – Easement
C – Caveat
Tr – Transmission
Tfr – Transfer
Mtge – Mortgage
URW – Utility Right of Way
BL – Builders Lien
TN – Tax Notification
WE – Writ of Execution
C.C. – Covenants and Conditions
ENCUM – Encumbrance

CANCELLED

Certificate of Title

Show Other Abbreviations Here

NAME WILLIAM COMCHI

LAND W5 - 2 - 53 - 4 N.E. -

NO 71-G-155

CHARGES, LIENS AND INTERESTS.

Nature of Instrument	Registration Number	Date of Registration DY | MO | YR	Amount $	PARTICULARS	Signature of Registrar	Discharges and Withdrawals: Registration Number	Discharges and Withdrawals: Date of Registration DY | MO | YR	Discharges and Withdrawals: Signature of Registrar

CANCELLED 71-6-155

GOVERNMENT OF THE PROVINCE OF ALBERTA

2.03 AUG. 55 6407 JX 199 J.W. THOM

Certificate of Title

Assess Fund Value $395.00 Unearned Imp Value $585.00 Refer Cert No. 232-M-154

North Alberta Land Registration District

This is to Certify that WILLIAM CORCHEI

OF CARVEL IN THE PROVINCE OF ALBERTA, DOMINION OF CANADA, (FARMER).

is now the owner of an estate in fee simple

of and in THE NORTH EAST QUARTER OF SECTION FOUR (4) TOWNSHIP FIFTY THREE (53) RANGE TWO (2) WEST OF THE FIFTH MERIDIAN IN THE SAID PROVINCE CONTAINING ONE HUNDRED AND SIXTY (160) ACRES MORE OR LESS. EXCEPTING THEREOUT,

(A) THE NORTHERLY SIX HUNDRED AND NINETY THREE (693) FEET THROUGHOUT, CONTAINING FORTY TWO (42) ACRES MORE OR LESS.

(B) ONE AN[illegible] FOUR HUNDREDTHS (1.54) ACRES MORE OR LESS AS SHOWN ON ROAD PLAN 466 J.Y.

THE LAND HEREBY DESCRIBED CONTAINING ONE HUNDRED AND SIXTEEN AND FORTY SIX HUNDREDTHS (116.46) ACRES MORE OR LESS.

RESERVING UNTO HER MAJESTY ALL MINES AND MINERALS.

TITLE CANCELLED

on this 2 day of [illegible] 19[illegible]

A D Registrar

subject to the encumbrances, liens and interests notified by memorandum underwritten or endorsed hereon or which may hereafter be made in the register

In Witness Whereof I have hereunto subscribed my name and affixed my official seal this TENTH day of AUGUST A.D. 1955

GGC

Registrar

North Alberta Land Registration District

P.O Address CARVEL, ALTA.

NO ENDORSEMENTS

OVER

CANCELLED
232-N-154

232

LAND TITLES ACT, Sec. 61—The land mentioned in any certificate of title granted under this Act shall be held subject to the exceptions mentioned in section 61 of this Act, and also to such of the following encumbrances, liens, estates or interests as may appear on the register, unless the same have been duly released, but free from all other encumbrances, liens, estates or interests whatsoever, except the claim, if any, of any person in possession of the land, the title of which has been registered under the provisions of this Act, and except any subsisting lease or agreement for a lease for a period not exceeding three years, where there is actual occupation of the land under the same, of which no notice is directed by this Act to be entered on the register, and except any public highway or right of way or other easement subsisting upon or over the said land, provided that nothing in this section shall relieve the owner of the land which have been registered under this Act from any obligation to fence.

Land incumbered as at 10.31 1941
A. 21 July
M.D. 55
4646 J.Y. 142
J.M. THOM
Registrar N.A.L.R.D.

Certificate of Title

Assca. Fund Value $995.00 Unearned Inc. Value $685.00 Refer Cert. No. 119-X-47

TRANSMISSION

North Alberta Land Registration District

This is to Certify that WILLIAN CHOMCY

OF CARVEL, IN THE PROVINCE OF ALBERTA, DOMINION OF CANADA, (FARMER),

EXECUTOR OF THE ESTATE OF NIKOLAY CHOMCY, (DECEASED),

is now the owner of an estate in fee simple

of and in THE NORTH EAST QUARTER OF SECTION FOUR (4) TOWNSHIP FIFTY THREE (53) RANGE TWO (2) WEST OF THE FIFTH MERIDIAN, IN THE SAID PROVINCE, CONTAINING ONE HUNDRED AND SIXTY (160) ACRES MORE OR LESS. EXCEPTING THEREOUT,--

(A) THE NORTHERLY SIX HUNDRED AND NINETY THREE (693) FEET THROUGHOUT, CONTAINING FORTY TWO (42) ACRES MORE OR LESS.

(B) ONE AND FIFTY FOUR HUNDREDTHS (1.54) ACRES MORE OR LESS AS SHOWN ON ROAD PLAN 466 J.Y.

THE LAND HEREBY DESCRIBED CONTAINING ONE HUNDRED AND SIXTEEN AND FORTY SIX HUNDREDTHS (116.46) ACRES MORE OR LESS.

RESERVING UNTO HER MAJESTY ALL MINES AND MINERALS.

CANCELLED

THIS CERTIFICATE OF TITLE IS CANCELLED
...
...
...

CANCELLED

119X47

Certificate of Title.

CANADA

Issued as Instrument registered at 10 o'clock ... on the 21 day of Feb. A.D. 1920. Number 1247 ... Folio 37
W. L. Coone
A Registrar N.A.L.R.D.

Assur. Fund Value $1325.
Unencumbered Fee Value $125.

NORTH ALBERTA Land Registration District

Refer Cert. No. ..., 146 F 40

This is to Certify that Nikolay Chorney, of Caroll, in the Province of Alberta, Dominion of Canada, farmer

THIS CERTIFICATE OF TITLE IS CANCELLED
[illegible]
and in fee
IN ACCORDANCE WITH THE TRANSFER SUBJECT TO ANY EXCEPTIONS AND/OR RESERVATIONS THEREIN AND A NEW CERTIFICATE OF TITLE NO. 235 N 154
ISSUED THIS 21 DAY OF June 1955
TO William Chorney
DR 4446 J.X.
A/D REGISTRAR

is now the owner of an estate in fee simple of and in the North-East quarter of Section Four (4) Township Fifty-three (53) Range Two (2) West of the Fifth Meridian, in the said Province, containing One hundred and sixty (160) acres more or less. Excepting thereout all portion described as follows: Commencing at the North-East corner of said quarter section, thence West a distance of Two hundred and eight (208) feet and three (3) inches along the Northern boundary of said quarter section, thence South parallel to the East boundary thereof, a distance of Four hundred and sixteen (416) feet and Six (6) inches, thence East parallel to the said Northern boundary, a distance of Two hundred and eight (208) feet and three (3) inches to the said East boundary thereof, thence North along said East boundary a distance of Four hundred and sixteen (416) feet and six (6) inches to point of commencement, containing Two (2) acres more or less. The Land herein described containing One hundred and fifty-eight (158) acres more or less. Reserving unto His Majesty all mines and minerals

CANCELLED

[illegible] 7-4-1948

subject to the encumbrances, liens and interests notified by memorandum underwritten or endorsed hereon, or which may hereafter be made in the register.

In Witness Whereof I have hereunto subscribed my name and affixed my official seal this twenty-first day of February A.D. 1920

W. L. Coone as Registrar
NORTH ALBERTA Land Registration District

P.O. Address Caroll Alta.

The title of Above Land is subject to MORTGAGE made by Nikolay Chorney to Hazel A. Lundy of Stony Plain Alta. to secure the repayment of $1400 and interest thereon at 10% per annum as therein mentioned. Dated the 26 of April 1921. Registered at ... April 1921 ... 6226 CJ
R. McLeod

... This Certificate of Title is cancelled as to that portion (2 a.) containing 2 acres ... Certificate of Title 120X47 ... this 21 day of Feb ... in North Alberta ... Theosat

OVER

The above mentioned Mtge No. 4572 GH
is discharged by instrument dated the 25 day
of Apl 1925 Reg. at 10 A.M.
30 day of April 1925, as D.B.
No. 1946 D.B.

R McLeod
Registrar.

The title of within land
is subject to a MORTGAGE made by Nikolay Chomcy to National Trust Co. Ltd of Edmonton for $ 400.00 and interest thereon at 7 % per annum. Dated the 24 day of Mar 1933
Registered at 2.30 P.M. the 10 day of Apl 1933 as D.B. No. 3966 E.L.

R McLeod
AD Registrar.

The above mentioned Mtge No. 3966 E.L.
is discharged by instrument dated the 2 day of Nov 34 registered at 3.52 P.M. the 10 day of Nov 1934, D.B. No. 2579 E.W.

Registrar.

The within land
is subject to a CAVEAT filed by Min. of Public Works to Dept. of Public Works, Edm. Alta.
dated the 19 day of June 1951
Registered 12.01 the 27 day of June 1951 as D.B. No. 2021 I.X.

AD. Registrar
re: roadway

This Certificate is cancelled as to pt. within land conty 1.5 acres
and a NEW CERTIFICATE of TITLE No.
issued this 2 day of Feb 1952
to The Crown
D.B. No. 466 J.Y.

Registrar

146

146 40

Certificate of Title.

CANADA

Issued on instrument registered at 9.01 o'clock P. m. on the 26 day of Jan. A.D. 1917. Number 5027 Book BP Folio 160

W. L. Boone, Registrar, N.A.L.R.D.

Assess. Fund Value $1325.

Unearned Inc. Value $915.

NORTH ALBERTA Land Registration District 32

Prefix Cert. No. 54 T

This is to Certify that Matilda Senger, of the City of Edmonton, in the Province of Alberta, Dominion of Canada. "Married Woman"

is now the owner of an estate in fee simple

of and in the North East Quarter of Section Four (4), Township Fifty-three (53), Range Two (2), West of the Fifth Meridian, in the said Province, Containing One hundred and Sixty (160) acres more or less. Excepting thereout Two (2) acres as described in Certificate of Title 1059.10. The land hereby described Containing One hundred and Fifty-eight (158) acres more or less. Reserving unto His Majesty His successors and Assigns all mines and minerals.

This Certificate of Title Cancelled in full and a new Certificate of Title No. 119 X 87 issued this 21 day of Feb. A.D. 1920 to Nikolaj Chomey. D.D. No. 1247 C.C. — A. H. Rendall, Registrar

CANCELLED

subject to the encumbrances, liens and interests notified by memorandum underwritten or endorsed hereon, or which may hereafter be made in the register.

In Witness Whereof I have hereunto subscribed my name and affixed my official seal this Twenty-Sixth day of January A.D. 1917

W. L. Boone, Registrar,

P.O. Address, Edmonton Alta. NORTH ALBERTA Land Registration District. JAN 24 1917

440

The Title of above land is subject to a Mortgage made by Alex Krasowski to Canada Life Assur. Co. to secure the repayment of $ 925.— and interest thereon at 8 % per annum as therein mentioned. Dated the 8 of July 1918. Registered 10.25 a.m. the 21 of July 1918 under No. 6164 A.B. — W. L. Boone, Registrar.

The above mentioned Mortgage No. 6164 A B. is discharged by an Instrument executed by The Interee Dated the 17 day of July 1918 Registered at 10.50 a.m. the 29 day of Sept. 1918, under No. 1993 B.N. — Registrar

NO CHANGE ON BACK OF ...

54 T32

Certificate of Title.

CANADA

Refer Cert. No. 143 C E

Last Value

Assessment Value 7-2000.00
Unearned Incr. Tax A. 1500.00

NORTH ALBERTA *Land Registration District.*

I Certify that the within Instrument is duly Entered and Registered in the Land Titles Office for the North Alberta Land Registration District at Edmonton in the Province of Alberta, at 12.51 o'clock P. m., on the 20 day of May A. D. 1914 Number 3705 Book B4 Fol. 122.
W. L. Brown
Registrar N.A.L.R.D.

LAND TITLES ACT, Sec. 42.—The land mentioned in any certificate of title granted under this Act shall by implication and without any special mention therein, unless the contrary is expressly declared, be subject to—
(a) Any subsisting reservations or exceptions contained in the original grant of the land from the Crown;
(b) All unpaid taxes;
(c) Any public highway or right of way or other public easement, howsoever created upon, over or in respect of the land;
(d) Any subsisting lease or agreement for a lease for a period not exceeding three years, where there is actual occupation of the land under the same;
(e) Any decrees, orders or executions against or affecting the interest of the owner of the land which have been registered and maintained in force against the owner;
(f) Any right of expropriation which may by statute or ordinance be vested in any person, body corporate, or His Majesty;
(g) Any right of way or other easement granted or acquired under the provisions of any Act or law in force in the province.

This is to Certify that Joseph Smith
of the City of Edmonton in the Province of Alberta
Dominion of Canada. Gentleman
is now the owner of an estate in fee simple
of and in The North East Quarter of Section Four (4) in
Township Fifty-three (53) Range Two (2) West of
the Fifth Meridian, in the said Province containing
One Hundred and Sixty (160) acres more or less.
Excepting thereout Two (2) acres as described in
Certificate of Title 105 G. 10
Excepting thereout all mines and minerals.

CANCELLED

This Certificate of Title is cancelled
In full
and a new Certificate of Title No. 146 J 40
issued the 26 day of Jany.
A. D. 1917 to Matilda Singer
D. B. No. 5027 B8
F. W. Brown
for Registrar.

subject to the encumbrances, liens and interests notified by memorandum underwritten or endorsed hereon, or which may hereafter be made in the register.

In Witness Whereof *I have hereunto subscribed my name and affixed my official seal this* Twentieth
day of May *A.D.* 1914

W. L. Brown *Registrar,*

P.O. Address Edmonton Alta NORTH ALBERTA *Land Registration District.*

The Title of above land is subject to a Mortgage made by Ido Kozwaski to Canada Life Assce Co to secure the repayment of $ 325.00 and interest thereon at 9 % per annum as therein mentioned.
Dated the 8th of July 1912 Registered at 10.20 A.M., the 9 of July 1912
as Day Book No. 6164 A.B.7 F. W. Brown for Registrar.

NO ENDORSEMENTS ON BACK OF TITLE

C. on File June 9th 1911

143 C8

I Certify ... duly entered and Registered in the Land Titles Office for the North Alberta Land Registration District at Edmonton in the Province of Alberta at 2:10 o'clock P. M. on the 13 day of April A. D. 1908 Number 8.116 Book T Fol. 65
Fuery Registrar
N. A. L. R. D.

CANADA

Certificate of Title.

NORTH ALBERTA *Land Registration District*

This is to certify that Ilko Krazewski, of Stony Plain, in the Province of Alberta, Dominion of Canada farmer

is now the owner of an estate in fee simple
of and in the north east quarter of Section Four (4), of Township Fifty three (53), in Range Two (2) West of the Fifth Meridian, in the said Province. Containing by admeasurement One Hundred and Sixty (160) Acres, more or less. Reserving unto His Majesty, His Successors, and Assigns, all mines and minerals.

CANCELLED

This Certificate of Title is cancelled in full
and a new Certificate of Title No. 541
issued this 9 *day of* May *A. D.,* 1914 *to* Jeff Smith
D. B. No. 1904 B.B.
W. L. Boone
Registrar.

subject to the encumbrances, liens and interests notified by memorandum underwritten or endorsed hereon, or which may hereafter be made in the register.

In Witness Whereof *I have hereunto subscribed my name and affixed my official seal this* thirteenth *day of* April *A.D. 1908*

Fuery Registrar,
NORTH ALBERTA *Land Registration District*

P.O. Address Stony Plain, Alta.
I. Krazewski

John Fitzenberger ... 3602 ... 1909 ... 23 ... 1908 ... 7798 V

The above mentioned Mortgage No. 7798 V. *is discharged by an instrument executed by* the mortgagee *dated the* 9 *day of* June 1909 *registered at* 12.35 P. *M., the* 11 *day of* June 1909, *as D. B. No.* 30592
Fuery
Registrar

This Certificate of Title is cancelled ... *and a new Certificate* ... *issued this* ...

The above mentioned Mortgage No. 7798 V
is discharged by an instrument executed by the
mortgagee Dated the 10th day
of Dec 1909. Registered at 11 20 a.M.,
the 10 day of Jan 1910, as D. B.
No. 6442 Z

Registrar

The Title of Vik. Klazewski is subject
to a Mortgage made by him
to Canada Life Assu Co to secure the
repayment of $ 3750 00/100 and interest thereon at 9%
per annum as therein mentioned.
Dated the 8th of July 1910 Registered
at 10 20 a.M. the 8th of July 1910
as Day Book No. 6164 AB

Registrar

APPENDIX A

Historical Land Title Certificates

HISTORICAL LAND TITLE CERTIFICATE

CURRENT TITLE WITH HISTORICAL DATA

S

LINC	SHORT LEGAL	TITLE NUMBER
0029 960 656	0323261;1;1	042 286 913

LEGAL DESCRIPTION
PLAN 0323261
BLOCK 1
LOT 1
EXCEPTING THEREOUT ALL MINES AND MINERALS
AREA: 4.048 HECTARES (10 ACRES) MORE OR LESS

ESTATE: FEE SIMPLE
ATS REFERENCE: 5;2;53;4;SE

MUNICIPALITY: PARKLAND COUNTY

REFERENCE NUMBER: 032 218 815

REGISTERED OWNER(S)

REGISTRATION	DATE(DMY)	DOCUMENT TYPE	VALUE	CONSIDERATION
042 286 913	12/07/2004	TRANSFER OF LAND	$90,000	CASH/MORTGAGE

OWNERS

FAWN MEADOWS DEVELOPMENT INC..
OF 3215 UTAH PLACE NW
CALGARY
ALBERTA T2N 4A8

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
752 145 223	15/10/1975	UTILITY RIGHT OF WAY GRANTEE - WEST PARKLAND GAS CO-OP LTD.
892 115 922	18/05/1989	MORTGAGE MORTGAGEE - EMERGENCY SERVICES CREDIT UNION LTD..

(CONTINUED)

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
		11714-95 STREET EDMONTON ALBERTA T5G1L9 ORIGINAL PRINCIPAL AMOUNT: $90,000 (DATA UPDATED BY: CHANGE OF NAME 982379857)
982 379 857	08/12/1998	CHANGE OF NAME RE: EMERGENCY SERVICES CREDIT UNION LTD.. 11714-95 STREET EDMONTON ALBERTA T5G1L9 AFFECTS INSTRUMENT: 892115922
042 272 937	02/07/2004	CAVEAT RE : VENDOR'S LIEN CAVEATOR - DONALD ROSS WADDELL CAVEATOR - JULIA ANNETTE WADDELL BOTH OF: C/O BOX 3407 115 MAIN STREET SPRUCE GROVE ALBERTA T7X3A7 AGENT - FRANK C DEANGELIS
042 286 914	12/07/2004	MORTGAGE MORTGAGEE - 907840 ALBERTA INC.. 600, 5920 MACLEOD TRAIL SOUTH CALGARY ALBERTA T2H0K2 ORIGINAL PRINCIPAL AMOUNT: $150,000
042 286 915	12/07/2004	CAVEAT RE : ASSIGNMENT OF RENTS CAVEATOR - 907840 ALBERTA INC.. C/O HOFFMAN DORCHIK LLP MACLEOD PLACE 1 600, 5920 MACLEOD TRAIL SOUTH CALGARY ALBERTA T2H0K2 AGENT - MICHAEL J DERCHIK
042 351 432	19/08/2004	DISCHARGE OF CAVEAT 042272937
042 424 508	29/09/2004	DISCHARGE OF MORTGAGE 892115922 AND CHANGE OF NAME 982379857
062 020 120	13/01/2006	MORTGAGE MORTGAGEE - B2B TRUST.

(CONTINUED)

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
		404, 130 ADELAIDE ST WEST TORONTO ONTARIO M5H3P5 MORTGAGEE - CANADIAN WESTERN TRUST COMPANY. 2200, 666 BURRARD STREET VANCOUVER BRITISH COLUMBIA V6C2X8 MORTGAGEE - GREENTREE MORTGAGE CORPORATION. MORTGAGEE - RAYMOND STEVENSON MORTGAGEE - MARLENE STEVENSON MORTGAGEE - WILLIAM HEALEY MORTGAGEE - CHRISTIAN STEVENSON ALL OF : C/O AXCESS CAPITAL PARTNERS 500, 11012 MACLEOD TR. S. CALGARY ALBERTA T2J6A5 ORIGINAL PRINCIPAL AMOUNT: $280,000 (DATA UPDATED BY: 092249155) (DATA UPDATED BY: 092249180) (DATA UPDATED BY: 092249200) (DATA UPDATED BY: 092249206)
062 081 501	21/02/2006	DISCHARGE OF MORTGAGE 042286914
062 081 502	21/02/2006	DISCHARGE OF CAVEAT 042286915
062 319 261	01/08/2008	MORTGAGE MORTGAGEE - B2B TRUST. 404, 130 ADELAIDE ST WEST TORONTO ONTARIO M5H3P5 MORTGAGEE - CANADIAN WESTERN TRUST COMPANY. 600, 750 CAMBIE ST VANCOUVER BRITISH COLUMBIA V6B0A2 MORTGAGEE - WILLIAM HEALEY MORTGAGEE - CHRISTIAN STEVENSON BOTH OF: C/O AXCESS CAPITAL PARTNERS 1410, 10655 SOUTHPORT RD SW CALGARY ALBERTA T2W4Y1 MORTGAGEE - MARLENE STEVENSON C/O AXCESS CAPITAL PARTNERS 1410, 10655 SOUTHPORT RD SW CALGAR

(CONTINUED)

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
		ALBERTA T2W4Y1 MORTGAGEE - RAYMOND STEVENSON C/O AXCESS CAPITAL PARTNERS 1410, 10655 SOUTHPORT RD SW CALGARY ALBERTA T2W4Y1 MORTGAGEE - GREENTREE MORTGAGE CORPORATION. C/O AXCESS CAPITAL PARTNERS 1410, 10655 SOUTHPORT RD SW CALGAR ALBERTA T2W4Y1 ORIGINAL PRINCIPAL AMOUNT: $580,000
082 319 262	01/08/2008	CAVEAT RE : ASSIGNMENT OF RENTS AND LEASES CAVEATOR - B2B TRUST. C/O DOUGLAS M. SEFCIK 212, 20 SUNPARK PLAZA S.E. CALGARY ALBERTA T2X3T2 AGENT - DOUGLAS M SEFCIK
082 319 882	01/08/2008	DISCHARGE OF MORTGAGE 082319261 AND CAVEAT 082319262
082 319 992	01/08/2008	MORTGAGE MORTGAGEE - B2B TRUST. 404, 130 ADELAIDE ST WEST TORONTO ONTARIO M5H3P5 MORTGAGEE - CANADIAN WESTERN TRUST COMPANY. 600-750 CAMBIE ST VANCOUVER BRITISH COLUMBIA V6B4Y1 MORTGAGEE - WILLIAM HEALEY MORTGAGEE - CHRISTIAN STEVENSON MORTGAGEE - MARLENE STEVENSON MORTGAGEE - RAYMOND STEVENSON MORTGAGEE - GREENTREE MORTGAGE CORPORATION. ALL OF : C/O AXCESS CAPITAL PARTNERS 1410, 10655 SOUTHPORT RD SW CALGARY ALBERTA T2W4Y1 ORIGINAL PRINCIPAL AMOUNT: $580,000
082 319 993	01/08/2008	CAVEAT

(CONTINUED)

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
		RE : ASSIGNMENT OF RENTS AND LEASES CAVEATOR - B2B TRUST. C/O 212, 20 SUNPARK PLAZA SE CALGARY ALBERTA T2X3T2 CAVEATOR - CANADIAN WESTERN TRUST COMPANY. 212 20 SUNPARK PLAZA SE CALGARY ALBERTA T2X3T2 CAVEATOR - WILLIAM HEALEY CAVEATOR - CHRISTIAN STEVENSON CAVEATOR - MARLENE STEVENSON CAVEATOR - RAYMOND STEVENSON ALL OF : C/O #212, 20 SUNPARK PLAZA SE CALGARY ALBERTA T2X3T2 CAVEATOR - GREENTREE MORTGAGE CORPORATION. C/O 212, 20 SUNPARK PLAZA SE CALGARY ALBERTA T2X3T2 AGENT - DOUGLAS M SEFCIK
092 227 435	07/07/2009	BUILDER'S LIEN LIENOR - L & B WATER SERVICES LTD.. BOX 2503 STONY PLAIN ALBERTA T7Z1X9 AGENT - SHANDRA BLEKER AMOUNT: $25,326
092 249 155	22/07/2009	CORRECTION OF INSTRUMENT AFFECTS INSTRUMENT: 062020120 "THE FOLLOWING PARTY (AND DATA) WAS ADDED: RAYMOND;STEVENSON ADDRESS : C/O AXCESS CAPITAL PARTNERS;500, 11012 MACLEOD TR. S.;CALGAR Y PROVINCE :AB POSTAL CODE :T2J6A5 TENANCY TYPE :C ROLE CODE :MOR"
092 249 180	22/07/2009	CORRECTION OF INSTRUMENT AFFECTS INSTRUMENT: 062020120 "THE FOLLOWING PARTY (AND DATA) WAS ADDED: MARLENE;STEVENSON ADDRESS : C/O AXCESS CAPITAL PARTNERS;500, 11012 MACLEOD TR. S.;CALGAR Y PROVINCE :AB POSTAL CODE :T2J6A5 TENANCY TYPE :C ROLE CODE :MOR"

(CONTINUED)

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
092 249 200	22/07/2009	CORRECTION OF INSTRUMENT AFFECTS INSTRUMENT: 062020120 "THE FOLLOWING PARTY (AND DATA) WAS ADDED: WILLIAM;HEALEY ADDRESS : C/O AXCESS CAPITAL PARTNERS;500, 11012 MACLEOD TR. S.;CALGAR Y PROVINCE :AB POSTAL CODE :T2J6A5 TENANCY TYPE :C ROLE CODE :MOR"
092 249 206	22/07/2009	CORRECTION OF INSTRUMENT AFFECTS INSTRUMENT: 062020120 "THE FOLLOWING PARTY (AND DATA) WAS ADDED: CHRISTIAN;STEVENSON ADDRESS : C/O AXCESS CAPITAL PARTNERS;500, 11012 MACLEOD TR. S.;CALGAR Y PROVINCE :AB POSTAL CODE :T2J6A5 TENANCY TYPE :C ROLE CODE :MOR"
092 249 218	22/07/2009	DISCHARGE OF MORTGAGE 062020120

TOTAL INSTRUMENTS: 022

THE REGISTRAR OF TITLES CERTIFIES THIS TO BE AN ACCURATE REPRODUCTION OF THE CERTIFICATE OF TITLE REPRESENTED HEREIN THIS 20 DAY OF AUGUST, 2009 AT 08:46 A.M.

ORDER NUMBER: 14656011

CUSTOMER FILE NUMBER: 7047292

END OF CERTIFICATE

HISTORICAL LAND TITLE CERTIFICATE

TITLE CANCELLED ON JULY 12,2004

S

LINC	SHORT LEGAL	TITLE NUMBER
0029 960 656	0323261;1;1	032 218 815

LEGAL DESCRIPTION
PLAN 0323261
BLOCK 1
LOT 1
EXCEPTING THEREOUT ALL MINES AND MINERALS
AREA: 4.048 HECTARES (10 ACRES) MORE OR LESS

ESTATE: FEE SIMPLE
ATS REFERENCE: 5;2;53;4;SE

MUNICIPALITY: PARKLAND COUNTY

REFERENCE NUMBER: 032 200 722

REGISTERED OWNER(S)

REGISTRATION	DATE(DMY)	DOCUMENT TYPE	VALUE	CONSIDERATION

---

032 218 815 18/06/2003 SUBDIVISION PLAN

OWNERS

DONALD ROSS WADDELL

AND
JULIA ANNETTE WADDELL
BOTH OF:
RR 1
CARVEL
ALBERTA T0E 0H0
AS JOINT TENANTS

(CONTINUED)

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
752 145 223	15/10/1975	UTILITY RIGHT OF WAY GRANTEE - WEST PARKLAND GAS CO-OP LTD.
892 115 922	18/05/1989	MORTGAGE MORTGAGEE EMERGENCY SERVICES CREDIT UNION LTD.. 11714-95 STREET EDMONTON ALBERTA T5G1L9 ORIGINAL PRINCIPAL AMOUNT: $90,000 (DATA UPDATED BY: CHANGE OF NAME 982379857)
982 379 857	08/12/1998	CHANGE OF NAME RE: EMERGENCY SERVICES CREDIT UNION LTD.. 11714-95 STREET EDMONTON ALBERTA T5G1L9 AFFECTS INSTRUMENT: 892115922
042 272 937	02/07/2004	CAVEAT RE : VENDOR'S LIEN CAVEATOR - DONALD ROSS WADDELL CAVEATOR - JULIA ANNETTE WADDELL BOTH OF: C/O BOX 3407 115 MAIN STREET SPRUCE GROVE ALBERTA T7X3A7 AGENT - FRANK C DEANGELIS
042 286 913	12/07/2004	TRANSFER OF LAND OWNERS - FAWN MEADOWS DEVELOPMENT INC.. 3215 UTAH PLACE NW CALGARY ALBERTA T2N4A8 NEW TITLE ISSUED

(CONTINUED)

TOTAL INSTRUMENTS: 005

THE REGISTRAR OF TITLES CERTIFIES THIS TO BE AN ACCURATE REPRODUCTION OF THE CERTIFICATE OF TITLE REPRESENTED HEREIN THIS 20 DAY OF AUGUST, 2009 AT 08:46 A.M

ORDER NUMBER:14656011

CUSTOMER FILE NUMBER: 7047292

END OF CERTIFICATE

HISTORICAL LAND TITLE CERTIFICATE

TITLE CANCELLED ON JUNE 18,2003

S

LINC	SHORT LEGAL	TITLE NUMBER
0018 081 489	5;2;53;4;SE	032 200 722

LEGAL DESCRIPTION

ALL THAT PORTION OF THE SOUTH EAST QUARTER OF
SECTION FOUR (4)
TOWNSHIP FIFTY THREE (53)
RANGE TWO (2)
WEST OF THE FIFTH MERIDIAN
LYING NORTH OF ROAD PLAN 2482EO, CONTAINJNG 14.57 HECTARES
(36.01 ACRES) MORE OR LESS.
EXCEPTING THEREOUT
A) ALL THAT PORTION DESCRIBED AS FOLLOWS: COMMENCING AT THE
INTERSECTION OF THE NORTHERLY LIMIT OF ROAD PLAN 2482EO
AND THE WEST LIMIT OF ROAD PLAN 7721062; THENCE NORTHERLY ALONG
THE SAID WEST LIMIT TWO HUNDRED AND NINE (209) FEET; THENCE
WESTERLY AND AT RIGHT ANGLES TO THE SAID WEST LIMIT THREE HUNDRED
AND SEVENTY (370) FEET; THENCE SOUTHERLY AND PARALLEL TO THE SAID
WEST LIMIT TO THE NORTH LIMIT OF ROAD PLAN 2482EO; THENCE SOUTH
EASTERLY ALONG THE SAID NORTHERLY LIMIT OF THE SAID ROAD TO THE
POINT OF COMMENCEMENT, CONTAINING 0.685 HECTARES (1.69 ACRES)
MORE OR LESS.
B) 0.088 HECTARES (0.22 ACRES) MORE OR LESS AS SHOWN ON
ROAD PLAN 7721062.
EXCEPTING THEREOUT ALL MINES AND MINERALS

ESTATE: FEE SIMPLE

MUNICIPALITY: PARKLAND COUNTY

REFERENCE NUMBER: 892 115 918

(CONTINUED)

REGISTERED OWNER(S)

REGISTRATION	DATE(DMY)	DOCUMENT TYPE	VALUE	CONSIDERATION
032 200 722	06/06/2003	TRANSFER OF LAND	$200,000	NIL

OWNERS

DONALD ROSS WADDELL

AND
JULIA ANNETTE WADDELL
BOTH OF:
RR 1
CARVEL
ALBERTA T0E 0H0
AS JOINT TENANTS

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
752 145 223	15/10/1975	UTILITY RIGHT OF WAY GRANTEE - WEST PARKLAND GAS CO-OP LTD.
892 115 922	18/05/1989	MORTGAGE MORTGAGEE - EMERGENCY SERVICES CREDIT UNION LTD.. 11714-95 STREET EDMONTON ALBERTA T5G1L9 ORIGINAL PRINCIPAL AMOUNT: $90,000 (DATA UPDATED BY: CHANGE OF NAME 982379857)
982 379 857	08/12/1998	CHANGE OF NAME RE: EMERGENCY SERVICES CREDIT UNION LTD.. 11714-95 STREET EDMONTON ALBERTA T5G1L9 AFFECTS INSTRUMENT: 892115922

(CONTINUED)

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
032 218 815	18/06/2003	SUBDIVISION PLAN 0323261 TITLE CANCELLED AS TO PART AND NEW TITLE ISSUED FOR THE REMAINDER

TOTAL INSTRUMENTS: 004

THE REGISTRAR OF TITLES CERTIFIES THIS TO BE AN ACCURATE REPRODUCTION OF THE CERTIFICATE OF TITLE REPRESENTED HEREIN THIS 20 DAY OF AUGUST, 2009 AT 08:46 A.M.

ORDER NUMBER:14656011

CUSTOMER FILE NUMBER: 7047292

END OF CERTIFICATE

HISTORICAL LAND TITLE CERTIFICATE

TITLE CANCELLED ON JUNE 06,2003

S

LINC	SHORT LEGAL	TITLE NUMBER
0018 081 489	5;2;53;4;SE	892 115 918

LEGAL DESCRIPTION

ALL THAT PORTION OF THE SOUTH EAST QUARTER OF
SECTION FOUR (4)
TOWNSHIP FIFTY THREE (53)
RANGE TWO (2)
WEST OF THE FIFTH MERIDIAN
LYING NORTH OF ROAD PLAN 2482EO, CONTAINJNG 14.57 HECTARES
(36.01 ACRES) MORE OR LESS.
EXCEPTING THEREOUT
A) ALL THAT PORTION DESCRIBED AS FOLLOWS: COMMENCING AT THE
INTERSECTION OF THE NORTHERLY LIMIT OF ROAD PLAN 2482EO
AND THE WEST LIMIT OF ROAD PLAN 7721062; THENCE NORTHERLY ALONG
THE SAID WEST LIMIT TWO HUNDRED AND NINE (209) FEET; THENCE
WESTERLY AND AT RIGHT ANGLES TO THE SAID WEST LIMIT THREE HUNDRED
AND SEVENTY (370) FEET; THENCE SOUTHERLY AND PARALLEL TO THE SAID
WEST LIMIT TO THE NORTH LIMIT OF ROAD PLAN 2482EO; THENCE SOUTH
EASTERLY ALONG THE SAID NORTHERLY LIMIT OF THE SAID ROAD TO THE
POINT OF COMMENCEMENT, CONTAINING 0.685 HECTARES (1.69 ACRES)
MORE OR LESS.
B) 0.088 HECTARES (0.22 ACRES) MORE OR LESS AS SHOWN ON
ROAD PLAN 7721062.
EXCEPTING THEREOUT ALL MINES AND MINERALS

ESTATE: FEE SIMPLE

MUNICIPALITY: PARKLAND COUNTY

(CONTINUED)

REGISTERED OWNER(S)

REGISTRATION	DATE(DMY)	DOCUMENT TYPE	VALUE	CONSIDERATION
892 115 918	18/05/1989			$85,000

OWNERS

DONALD ROSS WADDELL
OF R.R. #1, CARVEL
ALBERTA

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
752 145 223	15/10/1975	UTILITY RIGHT OF WAY GRANTEE - WEST PARKLAND GAS CO-OP LTD.
892 115 922	18/05/1989	MORTGAGE MORTGAGEE - EMERGENCY SERVICES CREDIT UNION LTD.. 11714-95 STREET EDMONTON ALBERTA T5G1L9 ORIGINAL PRINCIPAL AMOUNT: $90,000 (DATA UPDATED BY: CHANGE OF NAME 982379857)
982 379 857	08/12/1998	CHANGE OF NAME RE: EMERGENCY SERVICES CREDIT UNION LTD.. 11714-95 STREET EDMONTON ALBERTA T5G1L9 AFFECTS INSTRUMENT: 892115922
032 200 722	06/06/2003	TRANSFER OF LAND OWNERS DONALD ROSS WADDELL OWNERS - JULIA ANNETTE WADDELL BOTH OF: RR 1 CARVEL

(CONTINUED)

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
		ALBERTA T0E0H0 AS JOINT TENANTS NEW TITLE ISSUED

TOTAL INSTRUMENTS: 004

THE REGISTRAR OF TITLES CERTIFIES THIS TO BE AN ACCURATE REPRODUCTION OF THE CERTIFICATE OF TITLE REPRESENTED HEREIN THIS 20 DAY OF AUGUST, 2009 AT 08:46 A.M.

ORDER NUMBER:14656011

CUSTOMER FILE NUMBER: 7047292

END OF CERTIFICATE

CANADA

Alberta
ATTORNEY GENERAL

Certificate of Title

NUMBER 892115918

REFERENCE 802262148

CONSIDERATION $ 8500000

North Alberta Land Registration District

THIS IS TO CERTIFY that DONALD ROSS WADDELL

R.R. #1,

CARVEL, ALBERTA

is/are now the owner(s) of an estate in fee simple

of and in

ALL THAT PORTION OF THE SOUTH EAST QUARTER OF SECTION FOUR (4)

TOWNSHIP FIFTY THREE (53)

RANGE TWO (2)

WEST OF THE FIFTH MERIDIAN

LYING NORTH OF ROAD PLAN 2482 E.O., CONTAINING 14.5 HECTARES

(36.01 ACRES) MORE OR LESS.

EXCEPTING THEREOUT:

A) ALL THAT PORTION DESCRIBED AS FOLLOWS: COMMENCING AT THE INTERSECTION OF THE NORTHERLY LIMIT OF ROAD PLAN 2482 E.O. AND THE WEST LIMIT OF PLAN 772 1062; THENCE NORTHERLY ALONG THE SAID WEST LIMIT [illegible] AND NINE (209) FEET; THENCE WESTERLY AND AT RIGHT ANGLES TO THE SAID WEST LIMIT THREE HUNDRED AND SEVENTY (370) FEET; THENCE SOUTHERLY AND PARALLEL TO THE SAID WEST LIMIT TO THE NORTH LIMIT OF ROAD PLAN 2482 E.O. THENCE SOUTH EASTERLY ALONG THE SAID NORTHERLY LIMIT OF THE SAID ROAD TO THE POINT OF COMMENCEMENT, CONTAINING 0.685 HECTARES (1.69 ACRES) MORE OR LESS.

B) 0.088 HECTARES (0.22 ACRES) MORE OR LESS AS SHOWN ON ROAD PLAN 772 1062.

EXCEPTING THEREOUT ALL MINES AND MINERALS

CANCELLED AND CONVERTED

MAY 7 1991

BY .....

SUBJECT TO THE ENCUMBRANCES, LIENS AND INTERESTS NOTIFIED BY MEMORANDUM UNDERWRITTEN OR ENDORSED HEREON, OR WHICH MAY HEREAFTER BE MADE IN THE REGISTER.

In witness whereof I have subscribed my name and affixed my official seal this

18 day of MAY, 19 89

SAE

.....
A.D. Registrar

North Alberta Land Registration District

NORTH ALBERTA LAND REGISTRATION DISTRICT LAND TITLES OFFICE

A.G. 1825 (REV. MAR./84)

Certificate of Title

LAND W.5-2-57-4 S.E. -

NAME DONALD P. WADDELL

NUMBER 8 9 2 1 1 5 9 1 8

ENCUMBRANCES, LIENS & INTERESTS				DISCHARGES & WITHDRAWALS		
Registration Number	Date of Registration DY MO YR	PARTICULARS	Signature of A.D. Registrar	Registration Number	Date of Registration DY MO YR	Signature of A.D. Registrar
752145223	15 10 75	UTILITY RIGHT OF WAY TO WEST PARKLAND GAS CO-OP LTD.				
8921:5927	18 5 89	MORTGAGE - $90,000.00 TO EDMONTON FIRE FIGHTERS SAVINGS AND CREDIT UNION LTD. 11714 - 95TH STREET, EDMONTON, ALBERTA T5G 1L9				

CANCELLED
AND CONVERTED
MAY 7 1991
By.....

CANCELLED

Certificate of Title

NO.	8	0	2	2	6	2	1	4	8
REF.	8	0	2	0	2	8	5	9	6
VALUE $		1	1	0	0	0	0	0	0

Canada

TITLE CANCELLED 892115948

IN FULL

on this 18TH day of MAY 19 89

SAE

A.D. Registrar

GOVERNMENT OF THE PROVINCE OF ALBERTA

	M	RG.	TWP.	SEC.	Q	PT
1	5	2	5 3	4	S E	-

	PLAN	BLK.	LOT	PT
2				

North Alberta Land Registration District

THIS IS TO CERTIFY that LEONARD F. NORTH AND LYNDA NORTH, BOTH OF SPRUCE GROVE IN THE PROVINCE OF ALBERTA

are now the owners of an estate in fee simple AS JOINT TENANTS

of and in

ALL THAT PORTION OF THE SOUTH EAST QUARTER OF SECTION FOUR (4)
TOWNSHIP FIFTY THREE (53)
RANGE TWO (2)
WEST OF THE FIFTH MERIDIAN
LYING NORTH OF ROAD PLAN 2482 E.O., CONTAINING 14.57 HECTARES (36.01 ACRES) MORE OR LESS

EXCEPTING THEREOUT:-

ALL THAT PORTION DESCRIBED AS FOLLOWS:--

A) COMMENCING AT THE INTERSECTION OF THE NORTHERLY LIMIT OF ROAD PLAN 2482 E.O. AND THE WEST LIMIT OF ROAD PLAN 772 1062; THENCE NORTHERLY ALONG THE SAID WEST LIMIT TWO HUNDRED AND NINE (209) FEET; THENCE WESTERLY AND AT RIGHT ANGLES TO THE SAID WEST LIMIT THREE HUNDRED AND SEVENTY (370) FEET; THENCE SOUTHERLY AND PARALLEL TO THE SAID WEST LIMIT TO THE NORTH LIMIT OF ROAD PLAN 2482 E.O. THENCE SOUTHEASTERLY ALONG THE SAID NORTHERLY LIMIT OF THE SAID ROAD TO THE POINT OF COMMENCEMENT; CONTAINING 0.685 HECTARES (1.69 ACRES) MORE OR LESS

B) 0.088 HECTARES (0.22 ACRES) MORE OR LESS, AS SHOWN ON ROAD PLAN 772 1062

EXCEPTING THEREOUT ALL MINES AND MINERALS

SUBJECT TO THE ENCUMBRANCES, LIENS, ESTATES OR INTERESTS NOTIFIED BY MEMORANDUM UNDERWRITTEN OR ENDORSED HEREON, OR WHICH MAY HEREAFTER BE MADE IN THE REGISTER.

IN WITNESS WHEREOF I have hereunto subscribed my name and affixed my official seal

this 3 day of NOVEMBER A.D. 1980

Post Office Address GENERAL DELIVERY
SPRUCE GROVE, ALBERTA

ALBERTA LAND REGISTRATION DISTRICT LAND TITLES OFFICE

L. Marceau A.D. Registrar

North Alberta Land Registration District

EL

AG 699
Rev 7/77

ABBREVIATIONS

E – Easement
C – Caveat
Tr – Transmission
Tfr – Transfer
Mtge – Mortgage
URW – Utility Right of Way
BL – Builders Lien
TN – Tax Notification
WE – Writ of Execution
C.C – Covenants and Conditions
ENCUM – Encumbrance

Certificate of Title

CANCELLED

Show Other Abbreviations Here

NAME LEONARD F., NORTH ET AL

LAND W5 2 53 4 SE-

TITLE NO. 8 0 2 2 6 2 1 4 8

CHARGES, LIENS AND INTERESTS.

Nature of Instrument	Registration Number	Date of Registration DY	MO	YR	Amount $	PARTICULARS	Signature of Registrar	Discharges and Withdrawals: Registration Number	Date of Registration DY	MO	YR	Signature of Registrar
URW	752145223	15	10	75		TO WEST PARKLAND GAS CO-OP LTD						
(3) MTGE	802262149	3	11	80	78,000.00	TO BANK OF MONTREAL Encumbrance		882115136	27	5	88R	Ocdn
M DCT	882115137	27	5	88		DCT ISSUED	Ocdn					
						CANCELLED						

M

Canada

CANCELLED

Certificate of Title

NO	8 0 2 0 2 8 5 9 6
REF	1 6 8 - Q - 1 7 7
VALUE $	20500.00

M	RG.	TWP.	SEC.	Q	PT.
5	2	53	4	SE	-

PLAN	BLK.	LOT	PT.

GOVERNMENT OF THE PROVINCE OF ALBERTA

North Alberta Land Registration District

THIS IS TO CERTIFY that WALDEMAR GUENTHER OF STONY PLAIN, IN THE PROVINCE OF ALBERTA,

IS now the owner of an estate in fee simple

of and in

ALL THAT PORTION OF THE SOUTH EAST QUARTER OF SECTION FOUR (4)
TOWNSHIP FIFTY THREE (53)
RANGE TWO (2)
WEST OF THE FIFTH MERIDIAN,
LYING NORTH OF ROAD PLAN 2482 E.O., CONTAINING 14.57 HECTARES (36.01 ACRES) MORE OR LESS.

EXCEPTING THEREOUT: ALL THAT PORTION DESCRIBED AS FOLLOWS:--

(A) COMMENCING AT THE INTERSECTION OF THE NORTHERLY LIMIT OF ROAD PLAN 2482 E.O. AND THE WEST LIMIT OF ROAD PLAN 772 1062;
THENCE NORTHERLY ALONG THE SAID WEST LIMIT TWO HUNDRED AND NINE (209) FEET;
THENCE WESTERLY AND AT RIGHT ANGLES TO THE SAID WEST LIMIT THREE HUNDRED AND SEVENTY (370) FEET;
THENCE SOUTHERLY AND PARALLEL TO THE SAID WEST LIMIT TO THE NORTH LIMIT OF ROAD PLAN 2482 E.O.
THENCE SOUTH EASTERLY ALONG THE SAID NORTHERLY LIMIT OF THE SAID ROAD TO THE POINT OF COMMENCEMENT; CONTAINING 0.685 HECTARES (1.69 ACRES) MORE OR LESS.

(B) 0.088 HECTARES (0.22 ACRES) MORE OR LESS, AS SHOWN ON ROAD PLAN 772 1062.

EXCEPTING THEREOUT ALL MINES AND MINERALS.

TITLE CANCELLED No. 802263108
on this 5 day of Nov 1980
Marceau

SUBJECT TO THE ENCUMBRANCES, LIENS, ESTATES OR INTERESTS NOTIFIED BY MEMORANDUM UNDERWRITTEN OR ENDORSED HEREON OR WHICH MAY HEREAFTER BE MADE IN THE REGISTER.

IN WITNESS WHEREOF I have hereunto subscribed my name and affixed my official seal

this 8 day of FEBRUARY A.D. 19 80

Post Office Address STONY PLAIN, ALTA.

NORTH ALBERTA LAND REGISTRATION DISTRICT LAND TITLES OFFICE

A.D. Registrar

North Alberta Land Registration District

L.S. 699
R. 7/77

JW

ABBREVIATIONS

E – Easement
C – Caveat
Tr – Transmission
Tfr – Transfer
Mtge – Mortgage
URW – Utility Right of Way
BL – Builders Lien
TN – Tax Notification
WE – Writ of Execution
CC – Covenants and Conditions
ENCUM – Encumbrance

CANCELLED

Certificate of Title

NAME WALDEMAR GUENTHER

LAND W.5-2-53-4-S.E. -

Show Other Abbreviations Here

TITLE NO. 8 0 2 0 2 8 5 9 6

CHARGES, LIENS AND INTERESTS.

Nature of Instrument	Registration Number	Date of Registration DY	MO	YR	Amount $	PARTICULARS	Signature of Registrar	Discharges and Withdrawals: Registration Number	Date of Registration DY	MO	YR	Signature of Registrar
RIGHT OF WAY	752060603	28	5	75		PLAN 752 0148 TO ALBERTA GOVERNMENT TELEPHONES.		802045878	29	2	80	
URW	752145223	15	10	75		TO WEST PARKLAND GAS CO-OP LTD.						

CANCELLED

Certificate of Title

NO	1	6	8	Q	1	7	7		
REF	2	1	2	1	1	6	7		
VALUE $				9	2	5	0	0	0

	M	RG	TWP	SEC	Q	PT
1	5	2	5	3		

	PLAN	BLK	LOT	PT
2				

Canada

RENEWAL

7105 LL
772110009

GOVERNMENT OF THE PROVINCE OF ALBERTA

North Alberta Land Registration District

THIS IS TO CERTIFY that WALDEMAR GUENTHER

OF STONY PLAIN, IN THE PROVINCE OF ALBERTA.

IS now the owner of an estate in fee simple

of and in THE SOUTH EAST QUARTER OF SECTION FOUR (4)
TOWNSHIP FIFTY THREE (53)
RANGE TWO (2)
WEST OF THE FIFTH MERIDIAN, CONTAINING ONE HUNDRED AND SIXTY (160) ACRES, MORE OR LESS. EXCEPTING THEREOUT: --

(A) FIVE AND TWENTY NINE HUNDREDTHS (5.29) ACRES, MORE OR LESS, AS SHOWN ON ROAD PLAN 2482 E.O.
(B) ELEVEN HUNDREDTHS (0.11) OF AN ACRE, MORE OR LESS, AS SHOWN ON ROAD PLAN 1960 E.O.
(C) ALL THAT PORTION DESCRIBED AS FOLLOWS: COMMENCING AT THE INTERSECTION OF THE NORTHERLY LIMIT OF THE ROAD, AS SHOWN ON ROAD PLAN 2482 E.O. WITH THE EAST BOUNDARY OF THE SAID QUARTER SECTION, THENCE NORTH WESTERLY ALONG THE SAID NORTH LIMIT OF SAID ROAD SEVENTY FIVE (75) FEET, THENCE NORTHERLY AND PARALLEL TO THE SAID EAST BOUNDARY OF THE SAID QUARTER SECTION TWO HUNDRED AND NINE (209) FEET, THENCE EASTERLY AT RIGHT ANGLES TO THE LAST DESCRIBED COURSE TO INTERSECTION WITH THE EAST BOUNDARY OF THE SAID QUARTER SECTION, THENCE SOUTHERLY ALONG THE SAID EAST BOUNDARY TO THE POINT OF COMMENCEMENT, CONTAINING THIRTY NINE HUNDREDTHS (0.39) OF AN ACRE, MORE OR LESS.
(D) ALL THAT PORTION DESCRIBED AS FOLLOWS: - COMMENCING AT A POINT ON THE NORTHERLY LIMIT OF THE ROAD AS SHOWN ON ROAD PLAN 2482 E.O. SEVENTY FIVE (75) FEET MEASURED NORTH WESTERLY ALONG THE SAID LIMIT FROM THE EAST BOUNDARY OF THE SAID QUARTER SECTION, THENCE NORTHERLY AND PARALLEL TO THE SAID EAST BOUNDARY OF THE SAID QUARTER SECTION TWO HUNDRED AND NINE (209) FEET, THENCE WESTERLY AT RIGHT ANGLES TO THE LAST DESCRIBED COURSE THREE HUNDRED AND THIRTY (330) FEET, THENCE SOUTHERLY AND PARALLEL TO THE SAID EAST BOUNDARY TO INTERSECTION WITH THE NORTHERLY LIMIT OF THE SAID ROAD, THENCE SOUTH EASTERLY ALONG THE SAID NORTHERLY LIMIT OF THE SAID ROAD TO THE POINT OF COMMENCEMENT, CONTAINING ONE AND FIFTY HUNDREDTHS (1.50) ACRES, MORE OR LESS. (E) ONE AND FIFTY NINE HUNDREDTHS (1.59) ACRES, MORE OR LESS, FOR ROAD, AS SHOWN ON ROAD PLAN 772 1062.

RESERVING UNTO HER MAJESTY ALL MINES AND MINERALS.

TITLE CANCELLED No. 772 110 009
on this 8 day of Feb 1977
A.D. Registrar

SUBJECT TO THE ENCUMBRANCES, LIENS, ESTATES OR INTERESTS NOTIFIED BY MEMORANDUM UNDERWRITTEN OR ENDORSED HEREON OR WHICH MAY HEREAFTER BE MADE IN THE REGISTER

IN WITNESS WHEREOF I have hereunto subscribed my name and affixed my official seal

this 19TH day of OCTOBER A.D. 19 59

Post Office Address STONY PLAIN, ALTA

DA

ALBERTA LAND REGISTRATION DISTRICT LAND TITLES OFFICE

A.D. Registrar

North Alberta Land Registration District

AG 699 V 1203
REV 7/75

ABBREVIATIONS

E – Easement
C – Caveat
Te – Transmission
Tfr – Transfer
Mtge – Mortgage
URW – Utility Right of Way
BL – Builders Lien
TN – Tax Notification
WE – Writ of Execution
C.C. – Covenants and Conditions
ENCUM – Encumbrance

Certificate of Title

NAME WALDEMAR GUENTHER

LAND 5 - 2 - 53 - 6 - S.E. -

Show Other Abbreviations Here

TITLE NO. 168Q177

CHARGES, LIENS AND INTERESTS.

Nature of Instrument	Registration Number	Date of Registration DY	MO	YR	Amount $	PARTICULARS	Signature of Registrar	Discharges and Withdrawals: Registration Number	Date of Registration DY	MO	YR	Signature of Registrar
RE LIEN	8419 MZ	24	9	59		IN FAVOR OF THE DUFFIELD RURAL ELEC. ASSOC. LTD.		802028595	8	2	80	JW
RIGHT OF WAY	752060600	28	5	75		PLAN 752 0148 TO ALBERTA GOVERNMENT TELEPHONES						
URW	752145223	15	10	75		TO WEST PARKLAND GAS CO-OP LTD.						

LAND TITLES ACT Sec. 61— [illegible]

212-1-167

CANCELLED 212

Issued on instrument registered at 1.30 o'clock P m. on the 28 day of JAN.

A.D. 19 58

Number 5402 Book K.V. Fo. 165

J.M. THOM

Registrar N.A.L.R.D.

Certificate of Title

Assce. Fund Value 27,100.00

Refer Cert. No. 169/170 -O-161

North Alberta Land Registration District.

This is to Certify *that* OLENA STECYK

OF STONY PLAIN, IN THE PROVINCE OF ALBERTA, DOMINION OF CANADA, (WIDOW)

is now the owner of an estate in fee simple

of and in THE SOUTH EAST QUARTER OF SECTION FOUR (4) TOWNSHIP FIFTY THREE (53) RANGE TWO (2) WEST OF THE FIFTH MERIDIAN IN THE SAID PROVINCE, CONTAINING ONE HUNDRED AND SIXTY (160) ACRES MORE OR LESS, EXCEPTING THEREOUT,

(A) FIVE AND TWENTY NINE HUNDREDTHS (5.29) ACRES MORE OR LESS, AS SHOWN ON ROAD PLAN 2462 E.O.

(B) ELEVEN HUNDREDTHS (0.11) OF AN ACRE MORE OR LESS, AS SHOWN ON ROAD PLAN 1960 E.U.

(C) ALL THAT PORTION DESCRIBED AS FOLLOWS,---
COMMENCING AT THE INTERSECTION OF THE NORTHERLY LIMIT OF THE ROAD, AS SHOWN ON ROAD [illegible] WITH THE EAST BOUNDARY OF THE SAID QUARTER SECTION, THENCE NORTH [illegible] FEET, THENCE
WESTERLY ALONG THE SAID NORTH LIMIT OF SAID ROAD [illegible] SAID QUARTER SECTION TWO
NORTHERLY AND PARALLEL TO THE SAID EAST BOUNDARY OF THE SAID QUARTER SECTION TWO
HUNDRED AND NINE (209) FEET, THENCE EASTERLY AT RIGHT ANGLES TO THE LAST DESCRIBED
COURSE TO INTERSECTION WITH THE EAST BOUNDARYOF THE SAID QUARTER SECTION, THENCE
SOUTHERLY ALONG THE SAID EAST BOUNDARY TO THE POINT OF COMMENCEMENT, CONTAINING
THIRTY NINE HUNDREDTHS (0.39) OF AN ACRE MORE OR LESS.

(D) ALL THAT PORTION DESCRIBED AS FOLLOWS,---
ALL THAT PORTION [illegible] OF THE ROAD AS SHOWN ON ROAD PLAN
COMMENCING AT A POINT ON THE NORTHERLY LIMIT OF THE ROAD AS SHOWN ON ROAD PLAN
2462 E.O. SEVENTY FIVE (75) FEET MEASURED NORTH WESTERLY ALONG THE SAID LIMIT FROM
THE EAST BOUNDARY OF THE SAID QUARTER SECTION, THENCE NORTHERLY AND PARALLEL TO THE
SAID EAST BOUNDARY OF THE SAID QUARTER SECTION TWO HUNDRED AND NINE (209) FEET,
THENCE WESTERLY AT RIGHT ANGLES TO THE LAST DESCRIBED COURSE THREE HUNDRED AND
THIRTY (330) FEET, THENCE SOUTHERLY AND PARALLEL TO THE SAID EAST BOUNDARY TO
INTERSECTION WITH THE NORTHERLY LIMIT OF [illegible] SAID ROAD, THENCE SOUTH EASTERLY ALONG
THE SAID NORTHERLY LIMIT OF THE SAID ROAD TO THE POINT OF COMMENCEMENT, CONTAINING
ONE AND FIFTY HUNDREDTHS (1.50) ACRES MORE OR LESS.

LAND HEREBY DESCRIBED CONTAINING ONE HUNDRED AND FIFTY TWO AND SEVENTY ONE HUNDREDTHS (152.71) ACRES MORE OR LESS.

RESERVING UNTO HER MAJESTY ALL MINES AND MINERALS.

CANCELLED

THIS CERTIFICATE OF TITLE IS CANCELLED [illegible]
IN ACCORDANCE [illegible] TRANSFER SUB-
JECT TO [illegible]
MENTIONED [illegible] CERTIFICATE
OF TITLE NO. 168 Q 171
ISSUED [illegible] 19[illegible]
TO Waldemar Gruentar
[illegible] 710566

[signature] REGISTRAR

subject to the encumbrances, liens and interests notified by memorandum underwritten or endorsed hereon, or which may hereafter be made in the register.

In Witness Whereof *I have hereunto subscribed my name and affixed my official seal this* TWENTY EIGHTH *day of* JANUARY *A.D. 19*58

[signature] *Registrar*

North Alberta Land Registration District

P.O. Address STONY PLAIN, ALTA.

OVER

The title of [illegible] Land
is subject to a CAVEAT filed by [illegible]
[illegible]
c/o Bryan, Foote & Co., 408 Imperial Bank Bldg. Edmonton, Alta.
dated the 12 day of August 1958
Registered at 10.28 A.M., the 15 day of
August 1958 as D.B. No. 3926 L.O.

[signature] A.D. Registrar VB

THE LAND CONTAINED IN THIS TITLE & other lands IS SUBJECT TO A
LIEN UNDER THE RURAL ELECTRIFICATION REVOLVING
FUND ACT IN FAVOUR OF THE Duffield Rural
Elec. Assoc. Ltd. REGISTERED BY
ME ON THE 10 DAY OF Sept, 1959
ENDORSED BY ME THIS 24 DAY OF Sept, 1959 1:14 P.M.
8419 M.Z. [signature] A.D. Registrar
DK

163

LAND TITLES ACT, Sec. [illegible] [illegible]

169-G-161

GOVERNMENT OF THE PROVINCE OF ALBERTA

CANCELLED

Issued on instrument registered 1.13 ... P ... on the 19 day of OCT. ... No. 56 ... No. 4519 ... K.K. ... 139

J.M. THOM
Registrar N.A.L.R.D.

Certificate of Title

Refer Cert. No. 150-T-136

Assoc. Fund Value NIL

North Alberta Land Registration District

This is to Certify *that* FRED E. STECYK (GARAGE OPERATOR) AND MARY J. PAWLYK BOTH OF CARVEL IN THE PROVINCE OF ALBERTA, DOMINION OF CANADA.

ADMINISTRATORS WITH WILL ANNEXED OF THE ESTATE OF STEFAN STECYK (DECEASED)

is now the owner of an estate in fee simple

of and in THE SOUTH EAST QUARTER OF SECTION FOUR (4) TOWNSHIP FIFTY THREE (53) RANGE TWO (2) WEST OF THE FIFTH MERIDIAN IN THE SAID PROVINCE, CONTAINING ONE HUNDRED AND SIXTY (160) ACRES MORE OR LESS. EXCEPTING THEREOUT,

(A) ALL THAT PORTION DESCRIBED AS FOLLOWS,--
COMMENCING AT THE SOUTH EAST CORNER OF THE SAID QUARTER SECTION, THENCE WESTERLY
ALONG THE SOUTH BOUNDARY THEREOF THREE HUNDRED AND THIRTEEN (313) FEET AND SIX (6)
INCHES TO A POINT, THENCE NORTHERLY PARALLEL TO THE EAST
BOUNDARY OF THE SAID QUARTER SECTION FOUR HUNDRED AND EIGHTEEN (418) FEET, THENCE
EASTERLY PARALLEL TO THE SOUTH BOUNDARY OF THE SAID QUARTER SECTION TO THE EAST
BOUNDARY OF THE SAID QUARTER SECTION, THENCE SOUTHERLY ALONG THE SAID EAST BOUNDARY
TO THE POINT OF COMMENCEMENT, CONTAINING THREE (3) ACRES MORE OR LESS.

(B) FIVE AND TWENTY NINE HUNDREDTHS (5.29) ACRES MORE OR LESS, AS SHOWN ON ROAD PLAN 5960 E.U.

(C) ELEVEN HUNDREDTHS (0.11) OF AN ACRE MORE OR LESS, AS SHOWN ON ROAD PLAN 2482 E.O.

(D) ALL THAT PORTION DESCRIBED AS FOLLOWS,--- COMMENCING AT THE INTERSECTION OF THE
NORTHERLY LIMIT OF THE ROAD, AS SHOWN ON ROAD PLAN 2482 E.O. WITH THE EAST BOUNDARY
OF THE SAID QUARTER SECTION, THENCE NORTH WESTERLY ALONG THE SAID NORTH LIMIT OF THE
SAID ROAD SEVENTY FIVE (75) FEET, THENCE NORTHERLY AND PARALLEL TO THE SAID EAST
BOUNDARY OF THE SAID QUARTER SECTION TWO HUNDRED AND NINE (209) FEET THENCE EASTERLY
AT RIGHT ANGLES TO THE LAST DESCRIBED COURSE TO INTERSECTION WITH THE EAST BOUNDARY
OF THE SAID QUARTER SECTION, THENCE SOUTHERLY ALONG THE SAID EAST BOUNDARY TO THE
POINT OF COMMENCEMENT, CONTAINING THIRTY NINE HUNDREDTHS (0.39) OF AN ACRE MORE OR LESS

(E) ALL THAT PORTION DESCRIBED AS FOLLOWS,-- COMMENCING AT A POINT ON THE NORTHERLY LIMIT
OF THE ROAD, AS SHOWN ON ROAD PLAN 2482 E.O. SEVENTY FIVE (75) FEET MEASURED NORTH
WESTERLY ALONG THE SAID LIMIT FROM THE EAST BOUNDARY OF THE SAID QUARTER SECTION,
THENCE NORTHERLY AND PARALLEL TO THE SAID EAST BOUNDARY OF THE SAID QUARTER SECTION
TWO HUNDRED AND NINE (209) FEET, THENCE WESTERLY AT RIGHT ANGLES TO THE LAST DESCRIBED
COURSE THREE HUNDRED AND THIRTY (330) FEET, THENCE SOUTHERLY AND PARALLEL TO THE SAID
EAST BOUNDARY TO INTERSECTION WITH THE NORTHERLY LIMIT OF THE SAID ROAD, THENCE SOUTH
EASTERLY ALONG THE SAID NORTHERLY LIMIT OF THE SAID ROAD TO THE POINT OF COMMENCEMENT,
CONTAINING ONE AND FIFTY HUNDREDTHS (1.50) ACRES MORE OR LESS. THE LAND HEREBY
DESCRIBED CONTAINING ONE HUNDRED AND FORTY NINE AND SEVENTY ONE HUNDREDTHS (149.71)
ACRES MORE OR LESS. RESERVING UNTO HER MAJESTY ALL MINES AND MINERALS

subject to the encumbrances, liens and interests notified by memorandum underwritten or endorsed hereon, or which may hereafter be made in the register.

CANCELLED

In Witness Whereof *I have hereunto subscribed my name and affixed my official seal this* NINETEENTH *day of* OCTOBER A.D. 19 56

THIS CERTIFICATE OF TITLE CANCELLED
IN ACCORDANCE WITH TRANSFER SUB-
RESERVATIONS ... AND NEW CERTIFI-
CATE OF TITLE No. ... 169
ISSUED THIS 28 DAY OF Jan 1959
TO Olena Stecyk
DU 5412 K.V.
REGISTRAR

North Alberta Land Registration District

P.O. Address CARVEL, ALTA.,

NO ... ON BACK OF ...

OVER

LAND TITLES ACT, Sec 64—[illegible]

150-T-136

CANCELLED

Issued on endorsement registered at 10.32 o'clock A.m. on the 15 day of JUNE A.D. 19 51

Number 1910 Sheet H.X. Folio 59

J.M.THOM

Registrar N.A.L.R.D.

Certificate of Title

Assce. Fund Value NIL Unearned Inc. Value EX ACT Refer Cert. No. 18-I-11 147-T-136

North Alberta Land Registration District.

This is to Certify that STEFAN STECYK

OF CARVEL IN THE PROVINCE OF ALBERTA DOMINION OF CANADA (FARMER)

is now the owner of an estate in fee simple

of and in THE SOUTH EAST QUARTER OF SECTION FOUR (4) TOWNSHIP FIFTY THREE (53) RANGE TWO (2) WEST OF THE FIFTH MERIDIAN IN THE SAID PROVINCE, CONTAINING ONE HUNDRED AND SIXTY (160) ACRES MORE OR LESS. EXCEPTING THEREOUT, - - -

(A) ALL THAT PORTION DESCRIBED AS FOLLOWS, - - COMMENCING AT THE SOUTH EAST CORNER OF THE SAID QUARTER SECTION, THENCE WESTERLY ALONG THE SOUTH BOUNDARY THEREOF THREE HUNDRED AND THIRTEEN (313) FEET AND SIX (6) INCHES TO A POINT, THENCE NORTHERLY PARALLEL TO THE EAST BOUNDARY OF THE SAID QUARTER SECTION FOUR HUNDRED AND EIGHTEEN (418) FEET, THENCE EASTERLY PARALLEL TO THE SOUTH BOUNDARY OF THE SAID QUARTER SECTION TO THE EAST BOUNDARY OF THE SAID QUARTER SECTION, THENCE SOUTHERLY ALONG THE SAID EAST BOUNDARY TO THE POINT OF COMMENCEMENT, CONTAINING THREE (3) ACRES MORE OR LESS.

(B) FIVE AND TWENTY NINE HUNDREDTHS (5.29) ACRES MORE OR LESS AS SHOWN ON ROAD PLAN 2482 E.O.

(C) ELEVEN HUNDREDTHS (0.11) OF AN ACRE MORE OR LESS AS SHOWN ON ROAD PLAN 1960 E.U.

THE LAND HEREBY DESCRIBED CONTAINING ONE HUNDRED AND FIFTY ONE AND SIXTY HUNDREDTHS (151.60) ACRES MORE OR LESS.

RESERVING UNTO HIS MAJESTY ALL MINES AND MINERALS

CANCELLED

THIS CERTIFICATE OF TITLE IS CANCELLED

In full under Transmission

IN ACCORDANCE WITH THE TRANSFER SUBJECT TO ANY [illegible] AND A NEW CERTIFICATE OF TITLE NO 168 & 170 G 161

ISSUED THIS 19 DAY OF Oct 1956

TO FRED S. STECYK et al

[illegible] 4519 K.K.

[illegible] REGISTRAR

subject to the encumbrances, liens and interests notified by memorandum underwritten or endorsed hereon, or which may hereafter be made in the register.

In Witness Whereof I have hereunto subscribed my name and affixed my official seal this FIFTEENTH day of JUNE A.D. 19 51

PG

Registrar

P.O. Address CARVEL, ALTA.

North Alberta Land Registration District

1908 H.X. TRANSFER REG. 15-JUNE-51 CANCELLED AS TO 0.39 OF AN ACRE AS DESCRIBED AND NEW CERT. OF TITLE 148-T-136 ISSUED TO FRED STECYK

A.D.REG.

1909 H.X. TRANSFER REG. 15-JUNE-51 CANCELLED AS TO 3.50 ACRES AS DESCRIBED AND NEW CERT. OF TITLE 149-T-136 ISSUED TO JOHN PAWLYK ET AL

A.D.REG.

LAND TITLES ACT. Sec. [illegible] [illegible]

(a) [illegible]
(b) [illegible]
(c) [illegible]
(d) [illegible]
(e) [illegible]
(f) [illegible]
(g) [illegible]

147-T-136

GOVERNMENT OF THE PROVINCE OF ALBERTA

CANCELLED

[illegible] 10,26 [illegible]
A [illegible] 15 day of JUNE
A.D. 19 51
[illegible] 1907 [illegible] H.X. [illegible] 59
J.M. THOM
Registrar N.A.L.R.D.

Certificate of Title

Assoc. Fund Value $825.00 *Unearned Inc. Value* EX ACT *Refer Cert. No.* 189-E-117

North Alberta Land Registration District.

This is to Certify *that* STEFAN STECYK

OF CARVEL IN THE PROVINCE OF ALBERTA DOMINION OF CANADA (FARMER) X

is now the owner of an estate in fee simple

of and in ALL THAT PORTION OF THE SOUTH EAST QUARTER OF SECTION FOUR (4) TOWNSHIP FIFTY THREE (53) RANGE TWO (2) WEST OF THE FIFTH MERIDIAN IN THE SAID PROVINCE, DESCRIBED AS FOLLOWS, - - - COMMENCING AT A POINT ON THE NORTHERLY LIMIT OF THE ROADWAY AS SHOWN ON ROAD PLAN 2482 E.O. THE SAID POINT BEING SIXTY (60) FEET WESTERLY MEASURED ALONG THE SAID LIMIT FROM THE EAST BOUNDARY OF THE SAID QUARTER SECTION, THENCE WESTERLY ALONG THE SAID ROAD LIMIT TWO HUNDRED AND FIFTY (250) FEET, THENCE NORTHERLY AND PARALLEL TO THE SAID EAST BOUNDARY TWO HUNDRED AND FIFTY FIVE (255) FEET, THENCE EASTERLY AT RIGHT ANGLES TO THE LAST DESCRIBED COURSE TO THE POINT OF INTERSECTION WITH A LINE DRAWN NORTHERLY FROM THE POINT OF COMMENCEMENT PARALLEL TO THE EAST BOUNDARY OF THE SAID QUARTER SECTION, THENCE SOUTHERLY ALONG THIS SAID LINE TWO HUNDRED AND SIXTY EIGHT (268) FEET MORE OR LESS TO THE POINT OF COMMENCEMENT, CONTAINING ONE AND FIVE TENTHS (1.5) ACRES MORE OR LESS,

CANCELLED

RESERVING UNTO HIS MAJESTY ALL MINES AND MINERALS.

CANCELLED

This Certificate of Title is [illegible]
IN FULL UNDER CONS.
and a NEW CERTIFICATE OF TITLE No. 150-T-136
Issued this 15 day of JUNE 19 51
to SELF
D.B. No. 1910 H.X.
Registrar.

subject to the encumbrances, liens and interests notified by memorandum underwritten or endorsed hereon, or which may hereafter be made in the register.

In Witness Whereof *I have hereunto subscribed my name and affixed my official seal this* FIFTEENTH *day of* JUNE *A.D. 19* 51

PB

Registrar
North Alberta Land Registration District

P.O. Address CARVEL, ALTA.

3-Y-188 CANCELLED 3

LAND TITLES ACT [illegible]

... 2.30 ...
P ... 25 ... SEPT.
... 45
... 7092 ... F.T. ... 221
A. T. KINNAIRD.
Registrar

Certificate of Title

Assec. Fund Value $250.00 *Unearned Inc. Value* $50.00 *Refer Cert. No.* 86-G-43

North Alberta Land Registration District.

This is to Certify *that* WALTER PROSKURNIAK

OF EDMONTON IN THE PROVINCE OF ALBERTA DOMINION OF CANADA (TRUCKER).

CANCELLED

is now the owner of an estate in fee simple

of and in ALL THAT PORTION OF THE SOUTH EAST QUARTER OF SECTION FOUR (4) TOWNSHIP FIFTY THREE (53) RANGE TWO (2) WEST OF THE FIFTH MERIDIAN IN THE SAID PROVINCE

DESCRIBED AS FOLLOWS;-------

COMMENCING AT THE SOUTH EAST CORNER OF THE SAID QUARTER SECTION; THENCE WEST ALONG THE SOUTH BOUNDARY OF SAID QUARTER SECTION A DISTANCE OF THREE HUNDRED AND THIRTEEN FEET AND SIX INCHES (313'.5") TO A POINT; THENCE NORTH PARALLEL TO THE EAST BOUNDARY OF SAID QUARTER SECTION A DISTANCE OF FOUR HUNDRED AND EIGHTEEN (418) FEET; THENCE EAST PARALLEL TO THE SOUTH BOUNDARY OF THE SAID QUARTER SECTION TO THE EAST BOUNDARY OF THE SAID QUARTER SECTION; THENCE SOUTH ALONG THE EAST BOUNDARY OF THE SAID QUARTER SECTION TO THE POINT OF COMMENCEMENT CONTAINING THREE (3) ACRES MORE OR LESS.

RESERVING THEREOUT ALL MINES AND MINERALS.

This Certificate of Title is cancelled
In fee CC
and a new Certificate of Title No. 210.G.109
issued this 22 day of Oct. 1945
to Steve Strzyk
D.B. No. 7626 P.T.
F. W. Barclay
Dep. Registrar

subject to the encumbrances, liens and interests notified by memorandum underwritten or endorsed hereon or which may hereafter be made in the register.

In Witness Whereof *I have hereunto subscribed my name and affixed my official seal this* TWENTY FIFTH *day of* SEPTEMBER *A.D. 19* 45

BP

F. W. Barclay *Registrar*

North Alberta Land Registration District

P.O. Address EDMONTON ALTA.

... ON BACK OF TITLE

210-Q-109

LAND TITLES ACT [illegible]

GOVERNMENT OF THE PROVINCE OF ALBERTA

CANCELLED 219

[illegible] 10.86 [illegible]
A [illegible] 22 day of OCT.
[illegible] 45
[illegible] 7662 [illegible] F. T. [illegible] 237
A. T. KINNAIRD,
[illegible]

Certificate of Title

Assce. Fund Value $200.00 *Unearned Inc. Value* $50.00 *Refer Cert. No.* 3-Y-108

North Alberta Land Registration District

This is to Certify *that* STEVE STECYK

OF CARVEL IN THE PROVINCE OF ALBERTA DOMINION OF CANADA (FARMER).

is now the owner of an estate in fee simple

of and in ALL THAT PORTION OF THE SOUTH EAST QUARTER OF SECTION FOUR (4) TOWNSHIP FIFTY THREE (53) RANGE TWO (2) WEST OF THE FIFTH MERIDIAN IN THE SAID PROVINCE

DESCRIBED AS FOLLOWS,--------

COMMENCING AT THE SOUTH EAST CORNER OF THE SAID QUARTER SECTION; THENCE WEST ALONG THE SOUTH BOUNDARY OF SAID QUARTER SECTION A DISTANCE OF THREE HUNDRED AND THIRTEEN (313) FEET AND SIX (6) INCHES TO A POINT; THENCE NORTH PARALLEL TO THE EAST BOUNDARY OF SAID QUARTER SECTION A DISTANCE OF FOUR HUNDRED AND EIGHTEEN (418) FEET; THENCE EAST PARALLEL TO THE SOUTH BOUNDARY OF THE SAID QUARTER SECTION TO THE EAST BOUNDARY OF THE SAID QUARTER SECTION; THENCE SOUTH ALONG THE EAST BOUNDARY OF THE SAID QUARTER SECTION TO THE POINT OF COMMENCEMENT CONTAINING THREE (3) ACRES MORE OR LESS.

Corrected this 6 February 1948 [signature] *A.D. Registrar*

RESERVING ~~THEREOUT~~ *unto His Majesty*, ALL MINES AND MINERALS.

CANCELLED
THIS CERTIFICATE OF TITLE CANCELLED
In full under Transmission
[illegible]
CERTIFICATE OF TITLE NO. *168 G 170 G161*
ISSUED THIS 29. DAY OF *Oct* 195[illegible]
TO *FRED S. STECYK et al*
ON *4519* K.K. [signature]
AD REGISTRAR

subject to the encumbrances, liens and interests notified by memorandum underwritten or endorsed hereon, or which may hereafter be made in the register.

In Witness Whereof *I have hereunto subscribed my name and affixed my official seal this* TWENTY SECOND *day of* OCTOBER *A.D. 19* 45

BP

[signature] *Registrar*

North Alberta Land Registration District

P.O. Address CARVEL ALTA.

ON BACK OF TITLE

189-E-17 CANCELLED 189

LAND TITLES ACT [illegible]

Received and registered 2.43 o'clock P. M. 9 day of APR. A.D. 19 47. Loc. 5660 No. G.O. Vol. 175
A. J. KINNAIRD.
Registrar N.A.L.R.D.

Certificate of Title

Assce. Fund Value 1025.00 Unearned Inc. Value EX ACTi Refer Cert. No. 18-I-11

North Alberta Land Registration District

This is to Certify that JOHN PAWLYK (MERCHANT) AND MARY PAWLYK (MARRIED WOMAN) BOTH OF CARVEL IN THE PROVINCE OF ALBERTA DOMINION OF CANADA;

is now the owner of an estate in fee simple TO EACH AN UNDIVIDED ONE HALF (1/2) INTEREST,

of and in ALL THAT PORTION OF THE SOUTH EAST QUARTER OF SECTION FOUR (4) TOWNSHIP FIFTY THREE (53) RANGE TWO (2) WEST OF THE FIFTH MERIDIAN IN THE SAID PROVINCE DESCRIBED AS FOLLOWS;----

COMMENCING AT A POINT ON THE NORTHERLY LIMIT OF THE ROADWAY AS SHOWN ON ROAD PLAN 2462 E.O. THE SAID POINT BEING SIXTY (60) FEET WESTERLY MEASURED ALONG THE SAID LIMIT FROM THE EAST BOUNDARY OF THE SAID QUARTER SECTION; THENCE WESTERLY ALONG THE SAID ROAD LIMIT TWO HUNDRED AND FIFTY (250) FEET; THENCE NORTHERLY AND PARALLEL TO THE SAID EAST BOUNDARY TWO HUNDRED AND FIFTY FIVE (255) FEET, THENCE EASTERLY AT RIGHT ANGLES TO THE LAST DESCRIBED COURSE TO THE POINT OF INTERSECTION WITH A LINE DRAWN NORTHERLY FROM THE POINT OF COMMENCEMENT, PARALLEL TO THE EAST BOUNDARY OF THE SAID QUARTER SECTION, THENCE SOUTHERLY ALONG THIS SAID LINE TWO HUNDRED AND SIXTY EIGHT (268) FEET MORE OR LESS TO THE POINT OF COMMENCEMENT CONTAINING ONE AND FIVE TENTHS (1.5) ACRES MORE OR LESS. SAID PLAN OF RECORD IN THE LAND TITLES OFFICE FOR THIS LAND REGISTRATION DISTRICT.

RESERVING UNTO HIS MAJESTY ALL MINES AND MINERALS.

CANCELLED

This Certificate of Title is cancelled in full and a NEW CERTIFICATE of Title No. 147 I 136 issued the 15 day of June 1951 to Stefan Stryk. R.E. No. 1907 HX.

subject to the encumbrances, liens and interests notified by memorandum underwritten or endorsed hereon, or which may hereafter be made in the register.

APR 14 1947

In Witness Whereof I have hereunto subscribed my name and affixed my official seal this NINTH day of APRIL A.D. 19 47.

BP

Registrar,
North Alberta Land Registration District

P.O. Address CARVEL ALTA.

6840 E.R. MEC. LIEN DATED 22-FEB-36 REG. 1.30 PM 24-FEB-36 ABOVE AND OTHER LAND BY JOHN ARMBRUSTER OF STONY PLAIN ALTA. FOR $105.15
A.D. REG.

The above mentioned Mec. Lien No. 6840 is discharged by release dated 6 day of Sept. 1947 and registered 1.49 P.M. the 10 day of Sept. 1947 as R.E. No. 4015 C.J.

CANCELLED 170

LAND TITLES ACT, Sec. [illegible] [illegible]

170-0-161

GOVERNMENT OF THE PROVINCE OF ALBERTA

Filed or endorsed registered at 1.13 o'clock P. m. on the 19 day of OCT. A.D. 19 56

Number 4519 Book K.K. Folio 139

J.H. THOM
Registrar N.A.L.R.D

Certificate of Title

Assoc Fund Value $200.00

Refer Cert. No. 210-S-109

TRANSMISSION

North Alberta Land Registration District.

This is to Certify that FRED S. STECYK (GARAGE OPERATOR) AND MARY PAWLYK BOTH OF CARVEL IN THE PROVINCE OF ALBERTA, DOMINION OF CANADA, ADMINISTRATORS WITH WILL ANNEXED OF THE ESTATE OF STEVE STECYK (DECEASED)

is now the owner of an estate in fee simple

of and in ALL THAT PORTION OF THE SOUTH EAST QUARTER OF SECTION FOUR (4) TOWNSHIP FIFTY THREE (53) RANGE TWO (2) WEST OF THE FIFTH MERIDIAN IN THE SAID PROVINCE, DESCRIBED AS FOLLOWS,--

COMMENCING AT THE SOUTH EAST CORNER OF THE SAID QUARTER SECTION, THENCE WEST ALONG THE SOUTH BOUNDARY OF THE SAID QUARTER SECTION A DISTANCE OF THREE HUNDRED AND THIRTEEN (313) FEET AND SIX (6) INCHES TO A POINT, THENCE NORTH PARALLEL TO THE EAST BOUNDARY OF THE SAID QUARTER SECTION A DISTANCE OF FOUR HUNDRED AND EIGHTEEN (418) FEET, THENCE EAST PARALLEL TO THE SOUTH BOUNDARY OF THE SAID QUARTER SECTION TO THE EAST BOUNDARY OF THE SAID QUARTER SECTION THENCE SOUTH ALONG THE EAST BOUNDARY OF THE SAID QUARTER SECTION TO THE POINT OF COMMENCEMENT, CONTAINING THREE (3) ACRES MORE OR LESS,

RESERVING UNTO HER MAJESTY ALL MINES AND MINERALS.

CANCELLED

THIS CERTIFICATE OF TITLE IS CANCELLED In full
IN ACCORDANCE WITH THE TRANSFER SUBJECT TO ANY EXCEPTIONS AND/OR RESERVATIONS THEREIN AND A NEW CERTIFICATE OF TITLE NO. 212 I 167
ISSUED THIS 21 DAY OF Jan 1958
TO Olena Stecyk
DD. 5462 K.V. [signature]
AD REGISTRAR

subject to the encumbrances, liens and interests notified by memorandum underwritten or endorsed hereon, or which may hereafter be made in the register.

In Witness Whereof I have hereunto subscribed my name and affixed my official seal this NINETEENTH day of OCTOBER A.D. 1956

RB

[signature] Registrar.
North Alberta Land Registration District

P.O. Address CARVEL, ALTA.,

OVER

CANCELLED 86

86

Certificate of Title.

Issued on Instrument registered at 1:39 o'clock p.m., on the 5th day of April A.D. 1919 Number 6576 Book 8T Folio 204
W. H. Moore Dy Registrar ALRD

Assc. Land Value $50
Unearned Inc. Value $50

North Alberta Land Registration District.

Refer Cert. No. 18 I "

This is to Certify that Stefan Ungezak of Carvel in the Province of Alberta, Dominion of Canada Farmer

CANCELLED

is now the owner of an estate in fee simple

of and in All that portion of the South East quarter of Section Four (4) Township Fifty three (53) Range Two (2) West of the Fifth Meridian in the said Province as more particularly described as follows: Commencing at the South East corner of the said quarter Section, thence running Westward along the South boundary of said quarter Section, a distance of Three Hundred and Thirteen feet, six inches (313.6) to a point; thence running North parallel to the East boundary of said quarter Section, a distance of Four Hundred and Eighteen (418) feet; thence running East parallel to the South boundary of the said quarter Section to the East boundary of the said quarter Section; thence running South along the East boundary of the said quarter Section to the place of Commencement. Containing Three (3) Acres more or less, Excepting thereout all Mines and Minerals

This Certificate of Title is cancelled in full and a new certificate No. 3408 issued the 23 day of Sept 1945 to Walter Proskurniak
D.R. No. 7092 ET
Registrar

subject to the encumbrances, liens and interests notified by memorandum underwritten or endorsed hereon, or which may hereafter be made in the register.

In Witness Whereof I have hereunto subscribed my name and affixed my official seal this Fifth day of April A.D. 1919.

W. H. Moore Registrar, North Alberta Land Registration District.

APR 11 1919

P.O. Address Carvel, Alta

8V IK

NOTICE ... (filed) ... 1949 by M D Suga ... 12 Feb 35 ... 10 55 ... 1661 35 ... No. 6737 ES

The above mentioned Notice No 6737 ES is discharged by instrument dated the 31 day of May 1936 registered at 10 55 6 day of June 1935 ... 1240 ...
R. C. Lyster Registrar

The title of ... Land is subject to a MECHANIC'S LIEN filed by ... dated the 16 day of ... 194... Registered at 1:3 PM the 16 ... 194... at D.R. No. 13... R. C. Lyster Dy Registrar

The above mentioned Machin No. 98EV
is discharged by instrument dated the 20 day
of Sept 1945 Registered at 2.28 p.M.,
the 25 day of Sept 1945, as D.B.
No. 7091 E.T.

R. Marsh...
Registrar

June 27th 1911

CANCELLED
18.

I certify that the within Instrument is duly Entered and Registered in the Land Titles Office for the North Alberta Land Registration District at Edmonton, in the Province of Alberta, at 3.09 o'clock, P.M., on the 14th day of Dec. A.D. 1909, Number 1319. Book 9, Folio 55.

Gorsey, Registrar

CANADA

Certificate of Title.

Refer Cert. No

Last Value

NORTH ALBERTA Land Registration District.

This is to Certify that Stefan Steryk, of Manley, via Carvel Station, Alberta, in the Province of Alberta, Dominion of Canada. Farmer.

is now the owner of an estate in fee simple, of and in the South-East quarter of Section Four (4), Township Fifty-three (53), Range Two (2), West of the Fifth Meridian, in the said Province. Containing by admeasurement One hundred and sixty (160) acres, more or less. Reserving unto His Majesty, His Successors and Assigns, all Mines and Minerals.

Ohnmom 6 Feb 1945

CANCELLED

This Certificate of Title is cancelled as to the area and in full, Consolidation and a NEW CERTIFICATE OF TITLE No. 150 T 136 issued the 15 day of June 1951 to Stefan Steryk ... 1910 HX

A.D. Registrar

subject to the encumbrances, liens and interests notified by memorandum underwritten or endorsed hereon, or which may hereafter be made in the register.

In Witness Whereof I have hereunto subscribed my name and affixed my official seal this fourteenth day of December A.D. 1909.

Gorsey, Registrar

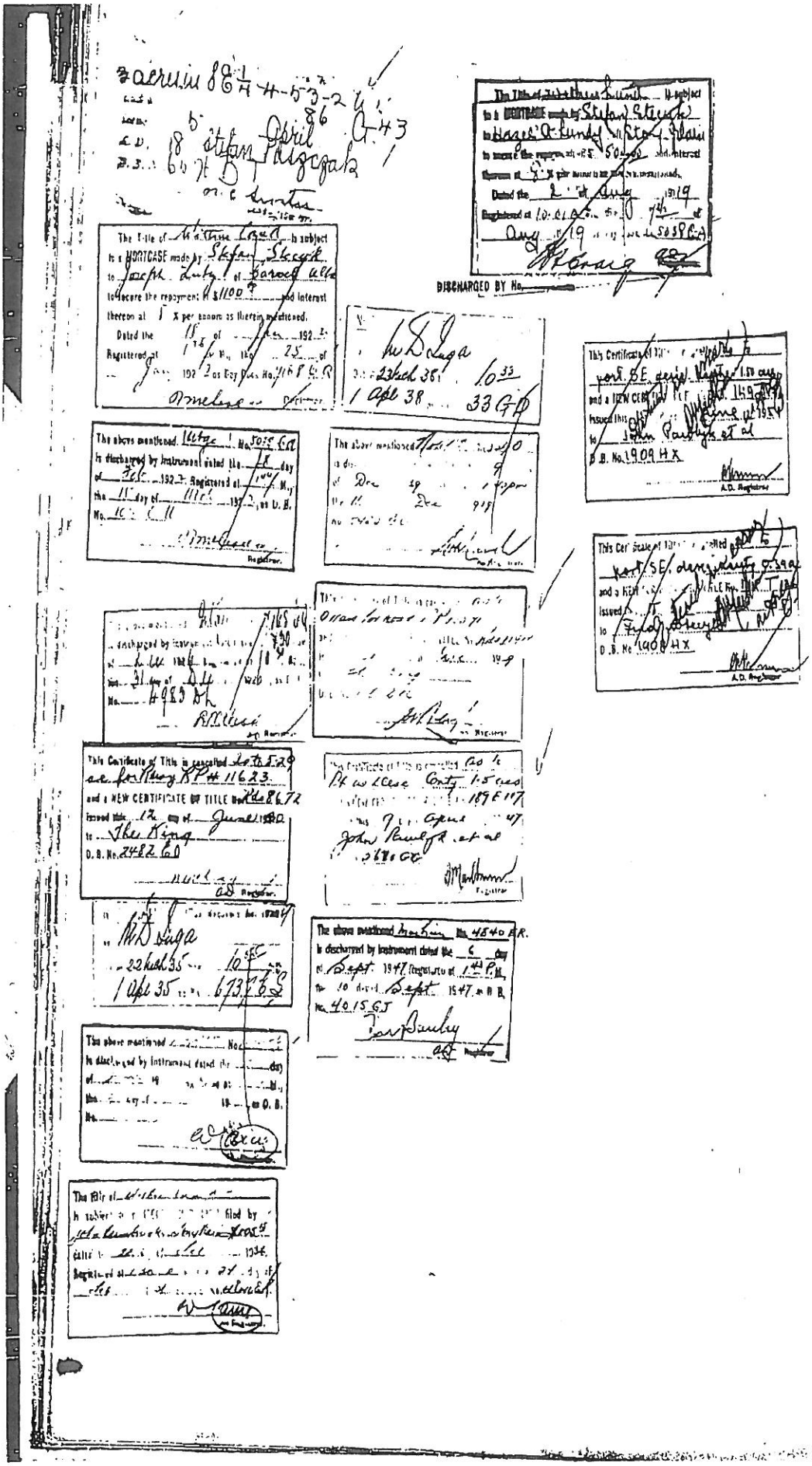
The title of S. Steryk, P.O. Address Manley, Alta, is subject to Mortgage made by him to Canada Life Assurance Co. to secure the payment of $800.00 and interest thereon at 7% ... as therein mentioned. Dated 25 June 1910. Registered 17 of June 1910 ... 1787 A.B.

NORTH ALBERTA ... Registration District 5795 D.B.

via Carvel Station, Alberta

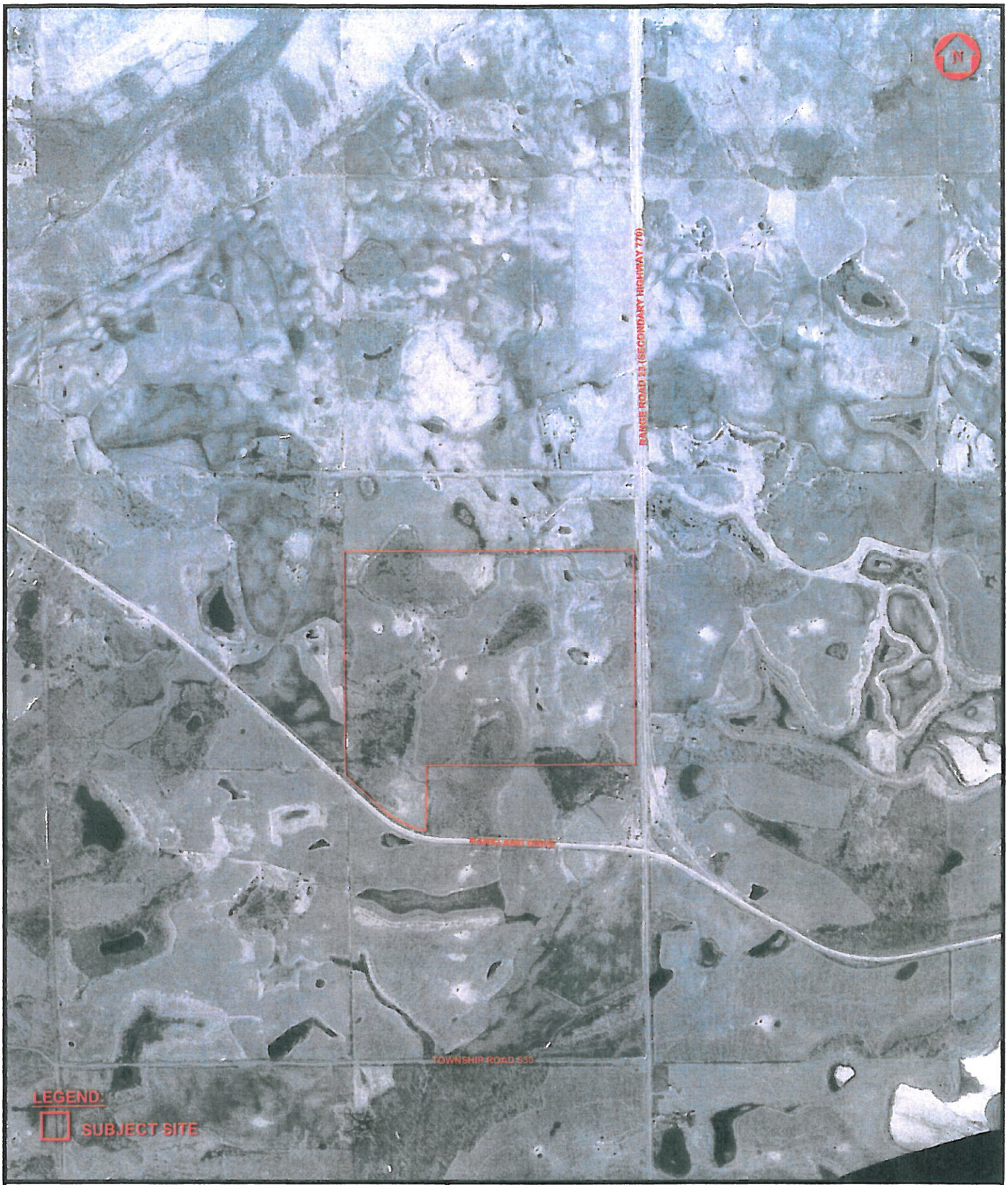
... of the Mtge ... 8th ... 1014 A ... 71 ... 5022 B.V.

OVER



APPENDIX B

Aerial Photographs



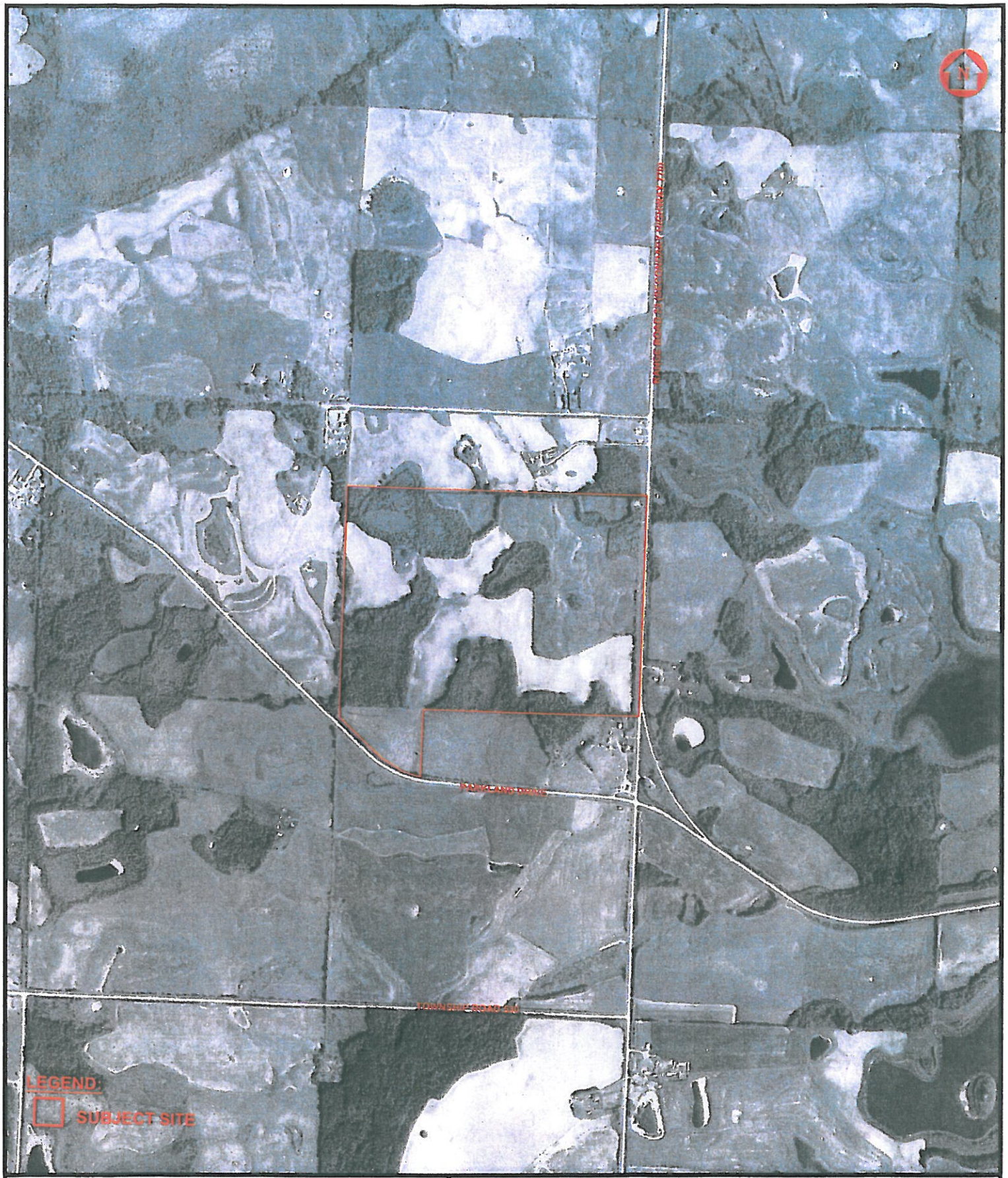
HAGSTROM GEOTECHNICAL SERVICES LTD.

5607-134A Avenue NW, Edmonton AB T5A OM3
Tel: (780) 996-5621 Fax: (780) 475-5671

NORCAN CONSULTING GROUP INC.

Phase I Environmental Site Assessment
Proposed Country Residential Subdivision
Portion of NE 4-53-2-W5M & Lot 1, Block 1, Plan 0323261
Parkland County, Alberta
1962Aerial Photograph

JOB NO.: H0907-280	DATE: October 30, 2009	PLATE: 1



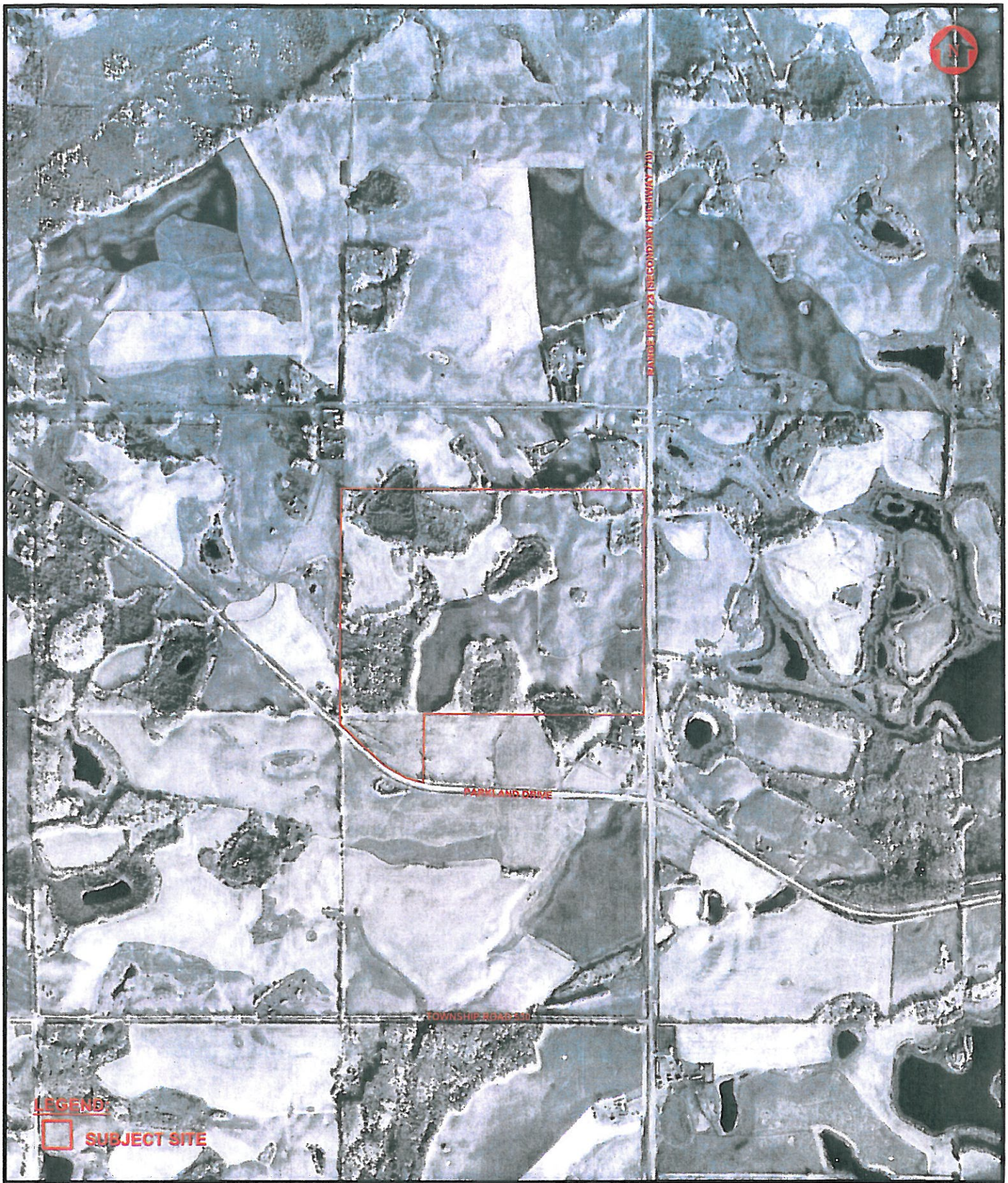
HAGSTROM GEOTECHNICAL SERVICES LTD.

5607-134A Avenue NW, Edmonton AB T5A OM3
Tel: (780) 996-5621 Fax: (780) 475-5671

NORCAN CONSULTING GROUP INC.

Phase I Environmental Site Assessment
Proposed Country Residential Subdivision
Portion of NE 4-53-2-W5M & Lot 1, Block 1, Plan 0323261
Parkland County, Alberta
1967Aerial Photograph

JOB NO.: H0907-280	DATE: October 30, 2009	PLATE: 2



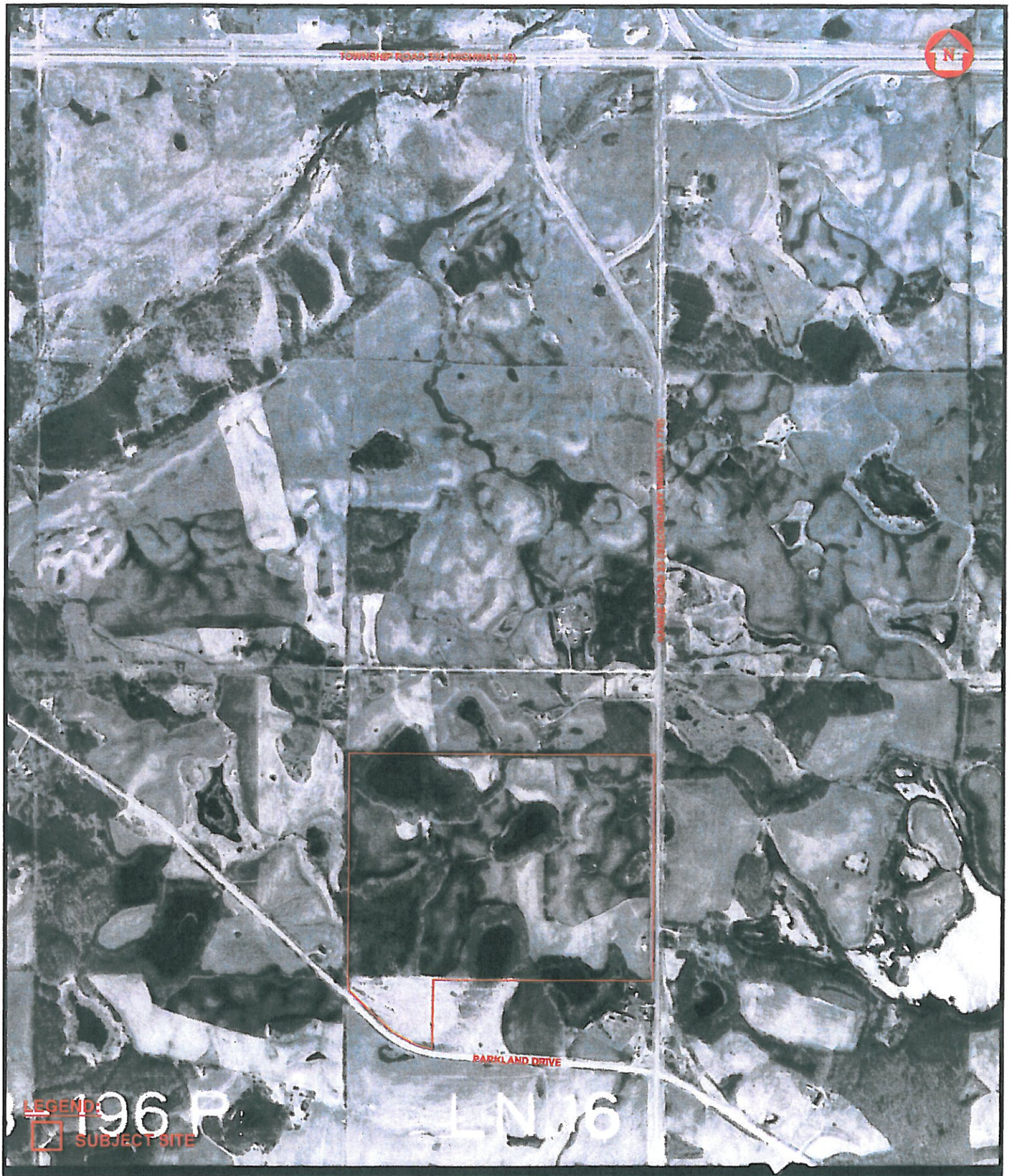
HAGSTROM GEOTECHNICAL SERVICES LTD.

5607-134A Avenue NW, Edmonton AB T5A OM3
Tel: (780) 996-5621 Fax: (780) 475-5671

NORCAN CONSULTING GROUP INC.

Phase I Environmental Site Assessment
Proposed Country Residential Subdivision
Portion of NE 4-53-2-W5M & Lot 1, Block 1, Plan 0323261
Parkland County, Alberta
1973Aerial Photograph

JOB NO.: H0907-280	DATE: October 30, 2009	PLATE: 3



HAGSTROM GEOTECHNICAL SERVICES LTD.

5607-134A Avenue NW, Edmonton AB T5A OM3
Tel: (780) 996-5621 Fax: (780) 475-5671

NORCAN CONSULTING GROUP INC.

Phase I Environmental Site Assessment
Proposed Country Residential Subdivision
Portion of NE 4-53-2-W5M & Lot 1, Block 1, Plan 0323261
Parkland County, Alberta
1978Aerial Photograph

JOB NO.: H0907-280	DATE: October 30, 2009	PLATE: 4

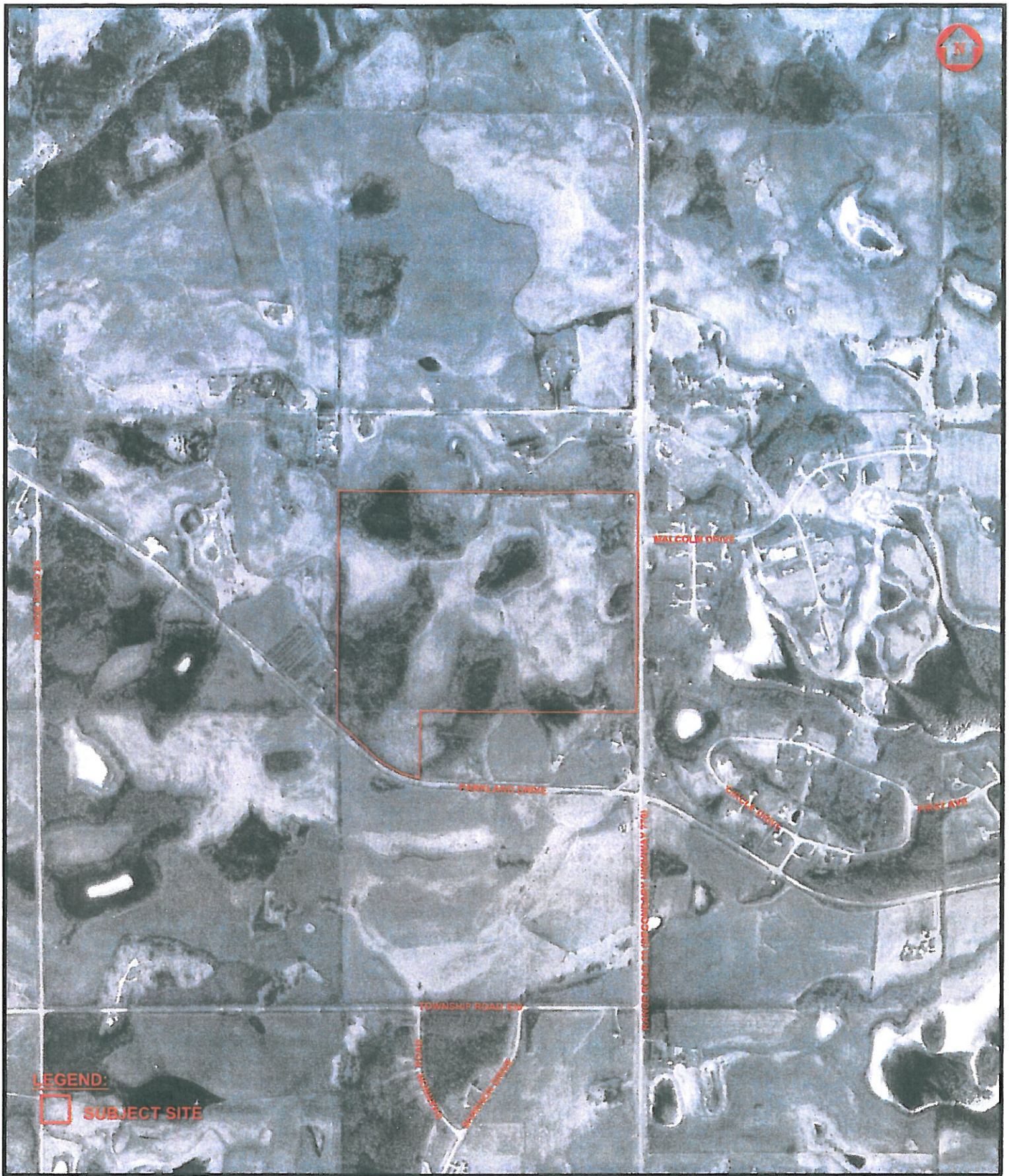
HAGSTROM GEOTECHNICAL SERVICES LTD.

5607-134A Avenue NW, Edmonton AB T5A OM3
Tel: (780) 996-5621 Fax: (780) 475-5671

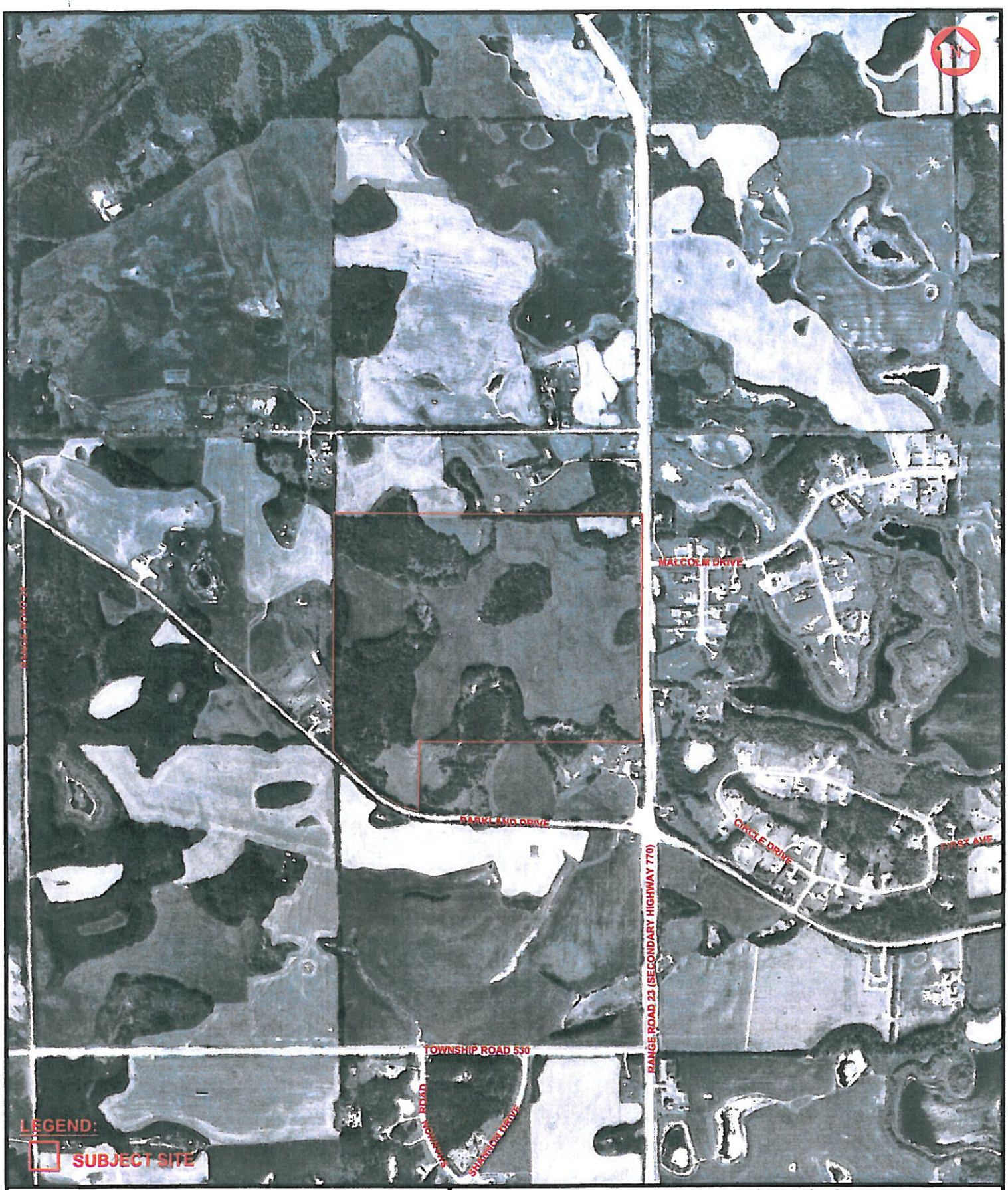
NORCAN CONSULTING GROUP INC.

Phase I Environmental Site Assessment
Proposed Country Residential Subdivision
Portion of NE 4-53-2-W5M & Lot 1, Block 1, Plan 0323261
Parkland County, Alberta
1984Aerial Photograph

JOB NO.: H0907-280	DATE: October 30, 2009	PLATE: 5



HAGSTROM GEOTECHNICAL SERVICES LTD.	NORCAN CONSULTING GROUP INC.		
5607-134A Avenue NW, Edmonton AB T5A OM3 Tel: (780) 996-5621 Fax: (780) 475-5671	Phase I Environmental Site Assessment Proposed Country Residential Subdivision Portion of NE 4-53-2-W5M & Lot 1, Block 1, Plan 0323261 Parkland County, Alberta **1990Aerial Photograph**		
	JOB NO.: H0907-280	DATE: October 30, 2009	PLATE: 6



HAGSTROM GEOTECHNICAL SERVICES LTD.

5607-134A Avenue NW, Edmonton AB T5A OM3
Tel: (780) 996-5621 Fax: (780) 475-5671

NORCAN CONSULTING GROUP INC.

Phase I Environmental Site Assessment
Proposed Country Residential Subdivision
Portion of NE 4-53-2-W5M & Lot 1, Block 1, Plan 0323261
Parkland County, Alberta
1997 Aerial Photograph

JOB NO.: H0907-280	DATE: October 30, 2009	PLATE: 7

HAGSTROM GEOTECHNICAL SERVICES LTD.

5607-134A Avenue NW, Edmonton AB T5A OM3
Tel: (780) 996-5621 Fax: (780) 475-5671

NORCAN CONSULTING GROUP INC.

Phase I Environmental Site Assessment
Proposed Country Residential Subdivision
Portion of NE 4-53-2-W5M & Lot 1, Block 1, Plan 0323261
Parkland County, Alberta
2005 Aerial Photograph

JOB NO.: H0907-280	DATE: October 30, 2009	PLATE: 8

HAGSTROM GEOTECHNICAL SERVICES LTD.

5607-134A Avenue NW, Edmonton AB T5A OM3
Tel: (780) 996-5621 Fax: (780) 475-5671

NORCAN CONSULTING GROUP INC.

Phase I Environmental Site Assessment
Proposed Country Residential Subdivision
Portion of NE 4-53-2-W5M & Lot 1, Block 1, Plan 0323261
Parkland County, Alberta
2008 Aerial Photograph

JOB NO.: H0907-280	DATE: October 30, 2009	PLATE: 9

APPENDIX C

Regulatory Agency Responses

Government of Alberta
Environment

Freedom of Information and Protection
of Privacy Office
6th fl., South Petroleum Plaza
9915 – 108 Street
Edmonton, AB T5K 2G8
Telephone: 780-427-4429
www.environment.alberta.ca

September 15, 2009

Ms. Hazel Battad
HB Geo-Enviro Services
43 Creekside Close
Spruce Grove, AB T7X 4N9

[Fax: (866)833-0331]
Your File #: 0908.72.ESA
Access Request: E09-G-0806

Dear Ms. Battad:

Subject: Freedom of Information and Protection of Privacy Act Request for records pertaining to the property located at Ptn. E Sec 4-Twp 53-Rge 2 W5M, Parkland County, AB.

The following is in response to your request of August 31, 2009 for access under the *Freedom of Information and Protection of Privacy Act* to the subject records.

A search of Alberta Environment record holdings has not identified any records relating to the subject of your request, based on the search parameters you provided to this office.

If you have any questions or concerns about the processing of your request, please write to the above address or call me at 780-644-3226, so that we can look at ways to address these issues. If, however, we are unable to resolve your concerns, you have the right to ask the Information and Privacy Commissioner to conduct a review under section 65 of the Act. You have 60 days from the receipt of this notice to request a review by writing to:

Information and Privacy Commissioner
410, 9925 - 109 Street
Edmonton, Alberta, T5K 2J8
Telephone (780) 422-6860
Fax (780) 422-5682

If you request a review, please provide the Commissioner with a copy of your original request, any letters of clarification, a copy of this letter and the reason why you are requesting a review.

Yours truly,

Christina von Schleinitz
FOIP Assistant

Government of Alberta
Environment

Freedom of Information and Protection
of Privacy Office
6th fl., South Petroleum Plaza
9915 – 108 Street
Edmonton, AB T5K 2G8
Telephone: 780-427-4429
www.environment.alberta.ca

Ms. Hazel Battad
HB Geo-Enviro Services
43 Creekside Close
Spruce Grove, AB T7X 4N9

[Fax:] (866)833-0331

September 15, 2009

Dear Ms. Battad:

Re: Routine Disclosure Request 1197-RD-09 for information routinely available under the Environmental Protection and Enhancement (EPEA) Legislation.

Our office received your request dated August 31, 2009 for the following subject records.

Location: **Ptn. E Sec 4-Twp 53-Rge 2 W5M, Parkland County, AB**
Plan 0323261 Block 1 Lot 1

Name: **Fawn Meadows Development Inc.; Donald Ross Waddell; Julia Annette Waddell; Leonard F. North; Lynda North; Waldemar Guenther; Olena Stecyck; Fred Stecyk; Mary J. Pawlyk; Stefan Stecyk; John Pawlyk; Steve Stecyk; Walter Proskurniak; Ambrose William Comchi; William Comchi; William Chomcy; Nikolay Chomcy; Matilda Singer; Joseph Smith; Ilko Krazewski**

Time Frame: **1950 - Present**

Records: **Scientific/technical information which may include reports documenting the nature and extent of soil, ground and surface water contamination; remedial measures taken to clean-up the site or status of the site; and external correspondence between the submitter and the Department of Environment pertaining to the reports.**

Alberta Environment has conducted a search of department records; based on the search parameters you provided to this office and has not identified any routinely available records relating to the subject of your request. As a result of our findings, your Routine Disclosure request has been closed.

Enclosed is a receipt for the initial fee in the amount of $25.00, submitted to Alberta Environment to undertake your request for a search for these records.

If you have any further questions or concerns, please write or call me at (780) 644-3226.

Yours truly,

C von Schleinitz

Christina von Schleinitz,
FOIP Assistant

Enclosure (receipt MC 5341363)

ENVIRONMENTAL LAW CENTRE
Suite 800, 10025 - 106 Street, Edmonton, AB T5J 1G4
Phone: (780) 424-5099 Fax: (780) 424-5133
E-Mail: elc@elc.ab.ca Home Page: http://www.elc.ab.ca

September 2, 2009 Our File: 024272

Ms. Hazel Battad
HB Geo-Enviro Services
43 Creekside Close
Spruce Grove, AB T7X 4N9

Dear Ms. Battad:

RE: Search Requested - NE-4-53-2-W5M

In response to your request of September 1, 2009, we have searched the Wellsite Reclamation Historical Search Service database for the following quarter section of land:

W5-02-053-04 NE1/4

and can advise that as of today's date, there have been NO Reclamation Certificates (applied for, issued or cancelled), Reclamation Orders and Conservation and Reclamation Notices issued pursuant to the "Alberta Environmental Protection and Enhancement Act" and its predecessor legislation, the "Land Surface Conservation and Reclamation Act" and the "Surface Reclamation Act" since 1963.

Information offered by the Wellsite Reclamation Historical Search Service is limited to wellsites, oil production sites, pipelines, compressor sites and some sand and gravel operations on Alberta private land, Special Areas Board land constituted under the "Special Areas Act" and Metis Settlements established under the "Metis Settlements Act". Not included are coal or oil sands mines or exploration sites.

These search results are based on information provided by Alberta Environment ("AENV"). AENV advises that they try to provide the best information possible. However, AENV advises that it cannot guarantee that the information provided is complete or accurate and that any person relying on these search results does so at their own risk.

Information about Environmental Protection Orders, Emergency Environment Protection Orders and Enforcement Orders issued under the "Alberta Environmental Protection and Enhancement Act" can be obtained by searching the Environmental Enforcement Historical Search Service database through the Environmental Law Centre.

Yours sincerely,

Cindy Dewing
Wellsite Reclamation Search Service Coordinator
/id
Encl.

ENVIRONMENTAL LAW CENTRE
Suite 800, 10025 - 106 Street, Edmonton, AB T5J 1G4
Phone: (780) 424-5099 Fax: (780) 424-5133
E-Mail: elc@elc.ab.ca Home Page: http://www.elc.ab.ca

September 2, 2009 Our File: 024273

Ms. Hazel Battad
HB Geo-Enviro Services
43 Creekside Close
Spruce Grove, AB T7X 4N9

Dear Ms. Battad:

RE: Search Requested - SE-4-53-2-W5M

In response to your request of September 1, 2009, we have searched the Wellsite Reclamation Historical Search Service database for the following quarter section of land:

W5-02-053-04 SE1/4

and can advise that as of today's date, there have been NO Reclamation Certificates (applied for, issued or cancelled), Reclamation Orders and Conservation and Reclamation Notices issued pursuant to the "Alberta Environmental Protection and Enhancement Act" and its predecessor legislation, the "Land Surface Conservation and Reclamation Act" and the "Surface Reclamation Act" since 1963.

Information offered by the Wellsite Reclamation Historical Search Service is limited to wellsites, oil production sites, pipelines, compressor sites and some sand and gravel operations on Alberta private land, Special Areas Board land constituted under the "Special Areas Act" and Metis Settlements established under the "Metis Settlements Act". Not included are coal or oil sands mines or exploration sites.

These search results are based on information provided by Alberta Environment ("AENV"). AENV advises that they try to provide the best information possible. However, AENV advises that it cannot guarantee that the information provided is complete or accurate and that any person relying on these search results does so at their own risk.

Information about Environmental Protection Orders, Emergency Environment Protection Orders and Enforcement Orders issued under the "Alberta Environmental Protection and Enhancement Act" can be obtained by searching the Environmental Enforcement Historical Search Service database through the Environmental Law Centre.

Yours sincerely,

Cindy Dewing
Wellsite Reclamation Search Service Coordinator
/id
Encl.

ENVIRONMENTAL LAW CENTRE
Suite 800, 10025 - 106 Street, Edmonton, AB T5J 1G4
Phone: (780) 424-5099 Fax: (780) 424-5133
Internet: www.elc.ab.ca E-Mail: elc@elc.ab.ca

October 28, 2009 Our File: 050577

Ms. Hazel Battad
HB Geo-Enviro Services
43 Creekside Close
Spruce Grove, AB T7X 4N9

Dear Ms. Battad:

RE: Search Requested - Fawn Meadows Development Inc.

In response to your request of October 28, 2009, we have searched the Environmental Enforcement Historical Search Service database for an exact match with respect to the above request, and can advise that as of today's date, there have been NO enforcement actions issued pursuant to the Alberta "Environmental Protection and Enhancement Act" ("EPEA") and its predecessor legislation, the "Hazardous Chemicals Act", "Agricultural Chemicals Act", "Clean Water Act" and "Clean Air Act" to 1971, and/or pursuant to the "Water Act" from 1999 onwards.

This search is limited to the following enforcement actions under EPEA and its predecessor legislation: Tickets, Prosecutions, Administrative Penalties, Warnings, Enforcement Orders, Enforcement Orders Concerning Waste, Environmental Protection Orders, Emergency Environmental Protection Orders, Emission Control Orders, Chemical Control Orders, Water Quality Control Orders and Stop Orders. This search is limited to the following enforcement actions under the Water Act: Prosecutions, Administrative Penalties, Water Management Orders, Warnings and Enforcement Orders. It does not include Clean Up Orders issued under the Litter Act or Environmental Protection Orders respecting unsightly property issued under EPEA; this information may be available from the local municipality.

Enforcement actions are entered in the database following: (1) the decision date, for prosecutions; (2) the date an administrative penalty was paid or due (30 days after issuance), whichever is sooner; and (3) the date the document was issued for all other enforcement actions.

These search results are based on information provided by Alberta Environment ("AENV"). AENV advises that they try to provide the best information possible. However, AENV advises that it cannot guarantee that the information provided is complete or accurate and that any person relying on these search results does so at their own risk. More information may be gained by referring to original enforcement documents.

Copies of orders are available from the Environmental Law Centre. Any other enforcement information may be available directly from Alberta Environment.

Yours sincerely,

Cindy Dewing
Enforcement Search Service
Encl.

ENVIRONMENTAL LAW CENTRE
Suite 800, 10025 - 106 Street, Edmonton, AB T5J 1G4
Phone: (780) 424-5099 Fax: (780) 424-5133
Internet: www.elc.ab.ca E-Mail: elc@elc.ab.ca

October 28, 2009

Our File: 050578

Ms. Hazel Battad
HB Geo-Enviro Services
43 Creekside Close
Spruce Grove, AB T7X 4N9

Dear Ms. Battad:

RE: Search Requested - Donald Ross Waddell

In response to your request of October 28, 2009, we have searched the Environmental Enforcement Historical Search Service database for an exact match with respect to the above request, and can advise that as of today's date, there have been NO enforcement actions issued pursuant to the Alberta "Environmental Protection and Enhancement Act" ("EPEA") and its predecessor legislation, the "Hazardous Chemicals Act", "Agricultural Chemicals Act", "Clean Water Act" and "Clean Air Act" to 1971, and/or pursuant to the "Water Act" from 1999 onwards.

This search is limited to the following enforcement actions under EPEA and its predecessor legislation: Tickets, Prosecutions, Administrative Penalties, Warnings, Enforcement Orders, Enforcement Orders Concerning Waste, Environmental Protection Orders, Emergency Environmental Protection Orders, Emission Control Orders, Chemical Control Orders, Water Quality Control Orders and Stop Orders. This search is limited to the following enforcement actions under the Water Act: Prosecutions, Administrative Penalties, Water Management Orders, Warnings and Enforcement Orders. It does not include Clean Up Orders issued under the Litter Act or Environmental Protection Orders respecting unsightly property issued under EPEA; this information may be available from the local municipality.

Enforcement actions are entered in the database following: (1) the decision date, for prosecutions; (2) the date an administrative penalty was paid or due (30 days after issuance), whichever is sooner; and (3) the date the document was issued for all other enforcement actions.

These search results are based on information provided by Alberta Environment ("AENV"). AENV advises that they try to provide the best information possible. However, AENV advises that it cannot guarantee that the information provided is complete or accurate and that any person relying on these search results does so at their own risk. More information may be gained by referring to original enforcement documents.

Copies of orders are available from the Environmental Law Centre. Any other enforcement information may be available directly from Alberta Environment.

Yours sincerely,

Cindy Dewing
Enforcement Search Service
Encl.

Petroleum Tank Management
Association of Alberta
Suite 980, 10303 Jasper Avenue
Edmonton, Alberta T5J 3N6
PH: (780)425-8265 or 1-866-222-8265
FAX: (780)425-4722

September 1, 2009

Hazel Battad
HB Geo-Enviro Services
43 Creekside Close
Spruce Grove, AB
T7X 4N9

Dear Hazel Battad:

As per your request, the PTMAA has checked the registration of active tank sites and inventory of abandoned tank sites and there are no records for the property with the legal land description:

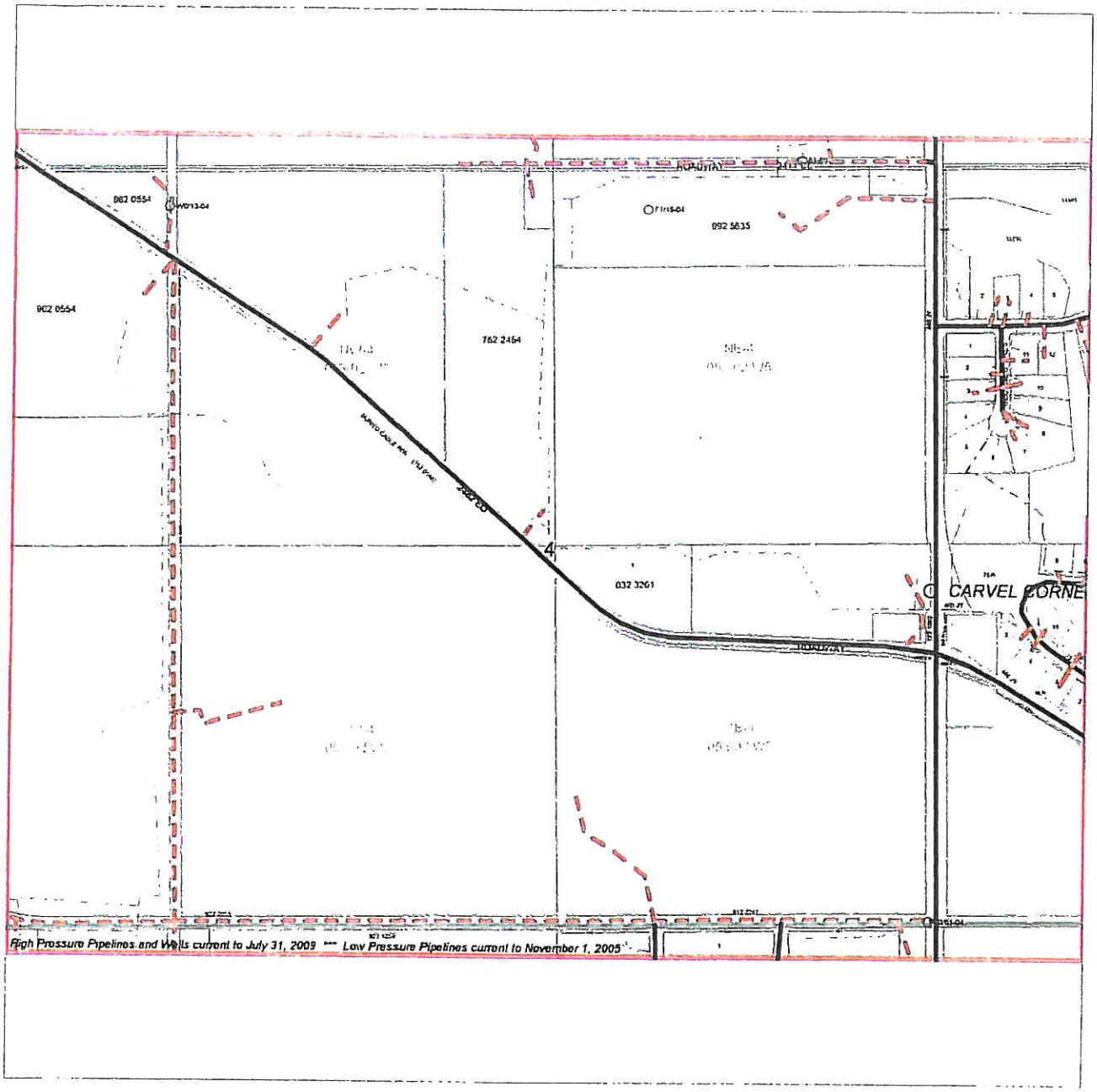
E-4-53-2-W5, Parkland County

Please note that both databases are not complete. The main limitation of these databases is that they only include information reported through registration or a survey of abandoned sites completed in 1992 and should not be considered as a comprehensive inventory of all past or present storage tank sites. The PTMAA **cannot** guarantee that tanks do not or have not existed at this location. Information in the databases is based on information supplied by the owner and the PTMAA cannot guarantee its accuracy. Information on storage tanks or on past or present contaminant investigations may be filed with the local Fire Department or Alberta Environment.

Yours truly,

Connie Jacobsen
PTMAA

Fawn Meadows -Portions of NE and SE 4-53-2-W5M



N

Wellheads
- Abandoned Wellhead
- Suspended Gas Wellhead
- Suspended Oil Wellhead
- Flowing Gas Wellhead
- Location Wellhead
- Flowing Oil Wellhead
- Miscellaneous Wellhead
- Water Wellhead
- Well Downhole Location
- Head, Licenced Well
- Newly Spudded Well

High Pressure Pipelines
- Gas Pipeline
- Oil Pipeline
- Water Pipeline
- LVP/HVP Pipeline
- Foreign Pipeline (Only when a company is specified)

Low Pressure Pipelines
- Gas Co-op Pipeline

APPENDIX D

Environmental Site Inspection Checklist

FACILITY ENVIRONMENTAL CHECKLIST

Phase 1 Site Assessment	Project: NC-195	Date: SEPT. 15 2009	Job# H0907-280

3.0 General site information

site address — — site name PROPOSED COUNTRY RESIDENTIAL SUB DIV.

— — site contact MR. FRANK FLORKEWICH.

— — telephone # 780 968-4665

land use classification AGRICULTURAL site area ____ ha ____ acres

predominant site use:	use	from	until
current	AGRICULTURAL	1900	2009
historical	— —		

number and type of buildings / structures on site number NONE describe below

#1 N/A

#2

#3

#4

Site services

potable water supply	No	electrical service	No
sewage disposal	No	transformer	No
solid waste disposal	No	natural gas	No
hazardous waste disposal	No	storm sewer	No

Indicated hazardous substances

Are any contaminants known to be associated with the current or with a prior occupancy? yes ____ no ✓

Does the record review indicate any areas of concern for further investigation? yes ____ no ✓

#1 N/A

#2

#3

#4

Phase 1 Site Assessment	Project: NC-145	Date: SEPT. 15 2009	Job #H0907-280

5.1. lands

5.1.1 topographic features of site, indicate which conditions best describe site features.

flat _____ sloped _____ direction of slope _____ degree of slope _____
describe drainage conditions of site good ✓ poor _____
elevation relative to surrounding sites high _____ low _____ same _____
GENTLY ROLLING ✓
Excepting buildings and similar structures is this site undeveloped _____ developed. _____
what are the predominant surface features and their relative area compared to the total site area.

material	percent coverage	native	imported material
gravel			
asphalt			
concrete			
rock			
topsoil			
sand	75	✓	
silt			
clay			
vegetation describe below			
grass			
trees			
other	25	✓	

5.1.2. Groundwater conditions

depth of groundwater on site _____ ft. or m _____ estimated ✓ not known

direction of groundwater flow: _____ _____ estimated ✓ not known

groundwater quality _____ good _____ poor ✓ not known

5.1.3. Surface water conditions

well drained ✓ poorly drained _____ naturaly drained _____
controled drainage _____ open _____ piped _____
storm water is recieved by
municipal storm sewer _____ municipal sanitary sewer _____
collection pond _____ surface water body _____

Indicate locations and nature of any catchments. N/A

Is there standing water on this site? yes ✓ no _____

if yes describe subsidence _____ surface contuours _____ impervious surface _____
blocked control structure _____ abnormal water table _____

other Water located in marshes + fens

Phase 1 Site Assessment	Project: NC-145	Date: SEPT. 15, 2009	Job# H0907-080

5.1.4 Artificial watercourses, ditches , ponds.

indicate the presence of drainage ditch _____ irrigation canal _____ pond _____

other N/A

5.1.5. lakes, rivers and streams

Indicate the nature and location of any natural water features that may be connected with this site.

N/A

Describe any conditions on this site that may negatively impact relative natural water features.

N/A

5.1.6 Wells

Are there any wells on this site?

	yes	no	number
gas / oil		✓	
water		✓	
other			

state of wells on site	in use	unused	abandoned	adequately decommissioned
well #1			N/A	
well #2				
well #3				
well #4				

Indicate the nature of any concern your may have.

N/A

5.1.7 slumps or depressions

Do any unusual slumps or depressions occur on this site? yes ____ no ✓ area ____
depth ____ number of occurrences ____

What is the most likely reason for these features

___ backfill of trenches
___ backfill of foundations
___ landfill
___ erosion by surface water
___ backfill of underground storage
___ underground disposal
___ ruptured underground piping
___ groundwater conditions

describe N/A

other

5.1.8. Pits or lagoons

Are there any pits or lagoons on this site yes ____ no ✓
are they used for runoff water ____ disposal of industrial waste ____ contaminants ____
sewage ____ treatment of any of the above ____

N/A

5.1.9. Stains or odours

Are there any unusual or suspect stains or odours on this site? yes ____ no ✓

describe N/A

Phase 1 Site Assessment	Project: NLC - 145	Date: SEPT. 15 2009	Job # 40907 - 280

5.1.10. Bulk storage, aboveground or underground storage tanks

Are bulk materials stored on this site yes ____ no ✓ unknown ____

container type	yes	no	substance	amount / capacity
drums		✓		
boxed containers		✓		
bagged goods		✓		
loose pile		✓		
other		✓		
aboveground storage tanks		✓		
belowground storage tanks		✓		

are containment facilities provided for these materials (N/A) yes no
if occurring indicate:
size____ number____ covered ____ enclosed____ fenced ____ restricted access ____
describe below including location ,materials of construction, purpose, contents, lining, freeboard, leaks if any, and general condition and age.

N/A

are these notes continued elsewhere yes____ no ✓

Where underground tanks installed on this site in the past? yes (no) unknown if yes indicate

contents
location N/A
date of installation
construction specifications
known contamination problems

are unused underground tanks still in place yes____ no ✓ unknown ____
have unused underground tanks been removed yes ____ no ✓ unknown ____ if yes indicate

date of removal
persons / company who removed them N/A
condition when removed
method of removal

attach copy of any available reports

Phase 1 Site Assessment	Project: NC -145	Date: SEPT. 15 2009	Job # 40907-280

5.1.11 stressed vegetation

Is there any indication of environmental stress on vegetation yes ____ no ✓ if yes indicate

plant type	location	indications	identify cause if possible
# 1		N/A	
# 2			
# 3			
# 4			
# 5			

5.1.12. Dump sites landfills

Is there any indication of waste disposal, landfilling or similar events on this site yes (no)
if yes indicate

	location	visible indications	nature of material	extent of fill /dump
#1			N/A	
#2				
#3				
#4				

5.1.13. Wastewater / effluent

Is there any indication of wastewater, effluent ,vapour or solid waste production, other than domestic refuse associated with the occupancy of this site ? yes ____ no ✓ if yes indicate .

waste material	origin	location	received by	stored
#1		N/A		
#2				
#3				
#4				
#5				

5.1.14 Transportation, transmission, easements

Describe any road, railways, pipelines, transmission lines or easements providing for future development of same that may have an environmental impact on this site. N/A

5.1.15 Are electrical transformers or other equipment located on or near this site yes ____ no ✓
if yes describe ____

5.1.16 Indicate the state of housekeeping on this site good ✓ fair ____ poor ____
agricultural land.

5.1.17 Are there any locations or portions of this site that were not inspected yes (no)
indicate ____

5.1.18 Indicate any obvious physical indications of contamination on this site.

✓ none	— stained concrete of asphalt
— stressed vegetation	— unnatural soil condition
— evidence of dumping	— foul or unusual odours
— refuse, waste or debris	— pits or ponds containing effluent of waste
— ash or residue	— oil slicks or discoloration of water
— corrosion or other damage	— other

describe all of the above. N/A

Phase 1 Site Assessment	Project: NLC-145	Date: SEPT. 15, 2009	Job# H0907-280

3.2. Adjacent sites

3.2.1 North

From where did your make these observations? WALK THROUGH

3.2.1.1 land use: commercial ____ industrial ____ residential ✓ public assembly ____
agricultural ✓ cropland ____ pasture ____ hayland ____
natural ____ forest ____ prairie ____ other ____
is site: occupied ____ vacant ____ name COUNTRY RESIDENTIAL

3.2.1.2 site features
roadway ✓ railway ____ transmission line ____ pipeline ____
topography: flat ____ sloped ____ ~~direction of slope~~ GENTLY ROLLING ✓
drainage: good ✓ poor ____ drainage to ___ from ___ subject site
soil condition: disturbed ✓ discoloured ____ good ✓
storage tanks: yes ____ no ✓ suspected ____ containing ____
electric transformers: yes ✓ no ____ unknown ____
utilities: aboveground ✓ underground ✓ fuel storage: yes ____ no ✓
vegetation condition: good ✓ poor ____ unknown ____
springs ____ seeps ____ standing water ✓ odour ____ yes ____ no ✓
explain ____

3.2.1.3 Indicate proximity of any of the following

petroleum service or bulk station	X	chemical plant or storage	X
dry-cleaning	X	heavy manufacturing	X
landfill or dump	X	railway	X
electrical substation	X	lagoon or treatment pond	X

3.2.2 South

From where did you make these observations? WALK THROUGH

3.2.2.1 land use: commercial ____ industrial ____ residential ✓ public assembly ____
agricultural ✓ cropland ____ pasture ____ hayland ____
natural ____ forest ____ prairie ____ other ____
is site: occupied ✓ vacant ____ name FARM YARD + AGRICULTURAL

3.2.2.2 site features
roadway ✓ railway ____ transmission line ____ pipeline ____
topography: flat ____ sloped ✓ direction of slope E → W
drainage: ____ good ✓ poor ____ drainage to ✓ from ____ subject site
soil condition: disturbed ✓ discoloured ____ good ✓
storage tanks: yes ____ no ✓ suspected ____ containing ____
electric transformers: yes ✓ no ____ unknown ____
utilities: aboveground ✓ underground ✓ fuel storage: yes ____ no ✓
vegetation condition: good ✓ poor ____ unknown ____
springs ____ seeps ____ standing water ____ odour ____ yes ____ no ✓
explain ____

3.2.2.3 Indicate proximity of any of the following

petroleum service or bulk station	X	chemical plant or storage	X
dry-cleaning	X	heavy manufacturing	X
landfill or dump	X	railway	X
electrical substation	X	lagoon or treatment pond	X

Phase 1 Site Assessment | Project: NC-145 | Date: SEPT. 15, 2009 | Job#H0907-280

3.2.3 East — From where did you make these observations? DRIVE THROUGH

3.2.3.1 land use — commercial ____ industrial ____ residential ✓ public assembly ____
agricultural ____ cropland ____ pasture ____ hayland ____
natural ____ forest ____ prairie ____ other ____
is site — occupied ✓ vacant ____ name BOWEN LAKE ESTATES

3.2.3.2 site features
roadway ✓ railway ____ transmission line ____ pipeline ____
topography flat ____ sloped ✓ direction of slope ____
drainage good ✓ poor ____ drainage to — from — subject site
soil condition — disturbed ✓ discoloured ____ good ✓
storage tanks — yes ____ no ✓ suspected ____ containing ____
electric transformers — yes ✓ no ____ unknown ____
utilities — aboveground ✓ underground ✓ fuel storage — yes ____ no ✓
vegetation condition — good ✓ poor ____ unknown ____
springs ____ seeps ____ standing water ✓ odour ____ yes ____ no ✓
explain ____

3.2.3.3 Indicate proximity of any of the following

petroleum service or bulk station	X	chemical plant or storage	X
dry-cleaning	X	heavy manufacturing	X
landfill or dump	X	railway	X
electrical substation	X	lagoon or treatment pond	X

3.2.4 West — From where did you make these observations? WALK THROUGH

3.2.4.1 land use — commercial ____ industrial ____ residential ✓ public assembly ____
agricultural ✓ cropland ____ pasture ____ hayland ____
natural ____ forest ____ prairie ____ other ____
is site — occupied ✓ vacant ✓ name FARM YARD + AGRICULTURAL

3.2.4.2 site features
roadway ✓ railway ____ transmission line ____ pipeline ____
topography flat ____ sloped ____ GENTLY ROLLING ✓
drainage ____ good ✓ poor ____ drainage to — from — subject site
soil condition — disturbed ✓ discoloured ____ good ✓
storage tanks — yes ____ no ✓ suspected ____ containing ____
electric transformers — yes ✓ no ____ unknown ____
utilities — aboveground ✓ underground ✓ fuel storage — yes ____ no ✓
vegetation condition — good ✓ poor ____ unknown ____
springs ____ seeps ____ standing water ____ odour ____ yes ____ no ✓
explain ____

3.2.4.3 Indicate proximity of any of the following

petroleum service or bulk station	X	chemical plant or storage	X
dry-cleaning	X	heavy manufacturing	X
landfill or dump	X	railway	X
electrical substation	X	lagoon or treatment pond	X

APPENDIX E

Site Photographs

Northwest view of Site, taken from southeast corner

North view of Site, taken from southeast corner

HAGSTROM GEOTECHNICAL SERVICES LTD.
5607-134A Avenue NW, Edmonton AB T5A OM3
Tel: (780) 996-5621 Fax: (780) 475-5671

NORCAN CONSULTING GROUP INC.

Phase I Environmental Site Assessment
Proposed Country Residential Subdivision
Portion of NE 4-53-2-W5M & Lot 1, Block 1, Plan 0323261
Parkland County, Alberta
Site Photographs

JOB NO.: H0907-280	DATE: Sept. 15, 2009	PLATE: 1

Northeast view of Site, taken from southeast corner

East view of Site, taken from central limits

HAGSTROM GEOTECHNICAL SERVICES LTD.

5607-134A Avenue NW, Edmonton AB T5A OM3
Tel: (780) 996-5621 Fax: (780) 475-5671

NORCAN CONSULTING GROUP INC.

Phase I Environmental Site Assessment
Proposed Country Residential Subdivision
Portion of NE 4-53-2-W5M & Lot 1, Block 1, Plan 0323261
Parkland County, Alberta
Site Photographs

JOB NO.: H0907-280	DATE: Sept. 15, 2009	PLATE: 2

Northwest view of Site, taken from central limits

North view of Site, taken from central limits

HAGSTROM GEOTECHNICAL SERVICES LTD.

5607-134A Avenue NW, Edmonton AB T5A OM3
Tel: (780) 996-5621 Fax: (780) 475-5671

NORCAN CONSULTING GROUP INC.

Phase I Environmental Site Assessment
Proposed Country Residential Subdivision
Portion of NE 4-53-2-W5M & Lot 1, Block 1, Plan 0323261
Parkland County, Alberta
Site Photographs

JOB NO.: H0907-280	DATE: Sept. 15, 2009	PLATE: 3

South view of Site, taken from central limits

North view of Site, taken from southwest corner

HAGSTROM GEOTECHNICAL SERVICES LTD.

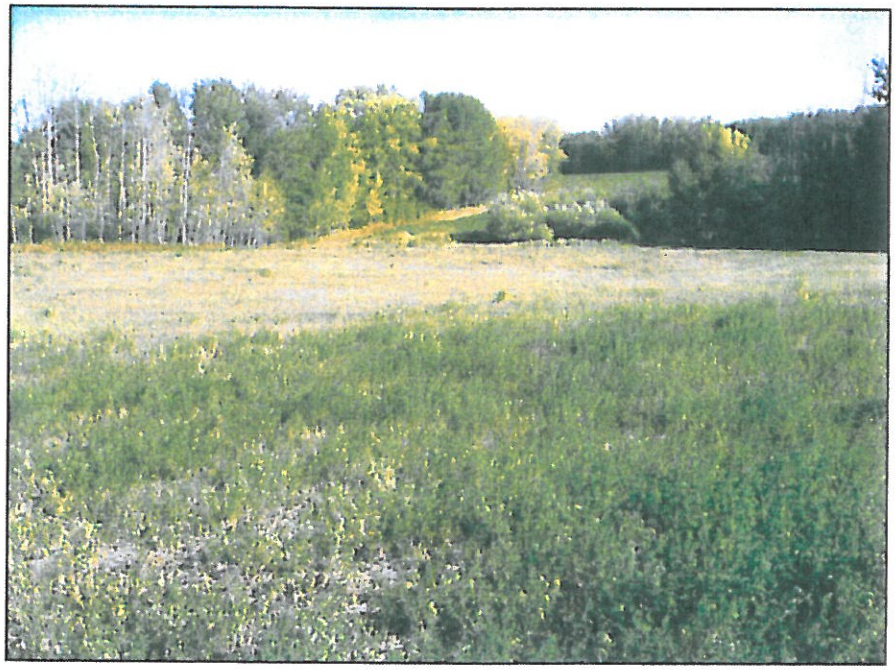
5607-134A Avenue NW, Edmonton AB T5A OM3
Tel: (780) 996-5621 Fax: (780) 475-5671

NORCAN CONSULTING GROUP INC.

Phase I Environmental Site Assessment
Proposed Country Residential Subdivision
Portion of NE 4-53-2-W5M & Lot 1, Block 1, Plan 0323261
Parkland County, Alberta
Site Photographs

JOB NO.: H0907-280	DATE: Sept. 15, 2009	PLATE: 4

Southwest view of Site, taken from central limits



West view of Site, taken from northwest corner

HAGSTROM GEOTECHNICAL SERVICES LTD.

5607-134A Avenue NW, Edmonton AB T5A OM3
Tel: (780) 996-5621 Fax: (780) 475-5671

NORCAN CONSULTING GROUP INC.

Phase I Environmental Site Assessment
Proposed Country Residential Subdivision
Portion of NE 4-53-2-W5M & Lot 1, Block 1, Plan 0323261
Parkland County, Alberta
Site Photographs

JOB NO.: H0907-280	DATE: Sept. 15, 2009	PLATE: 5

East view of Site, taken from northwest corner

South view of Site, taken from west limits

HAGSTROM GEOTECHNICAL SERVICES LTD.

5607-134A Avenue NW, Edmonton AB T5A OM3
Tel: (780) 996-5621 Fax: (780) 475-5671

NORCAN CONSULTING GROUP INC.

Phase I Environmental Site Assessment
Proposed Country Residential Subdivision
Portion of NE 4-53-2-W5M & Lot 1, Block 1, Plan 0323261
Parkland County, Alberta
Site Photographs

JOB NO.: H0907-280	DATE: Sept. 15, 2009	PLATE: 6

North view of Site, taken from southwest corner

South view of Site, taken from southwest corner

HAGSTROM GEOTECHNICAL SERVICES LTD.
5607-134A Avenue NW, Edmonton AB T5A OM3
Tel: (780) 996-5621 Fax: (780) 475-5671

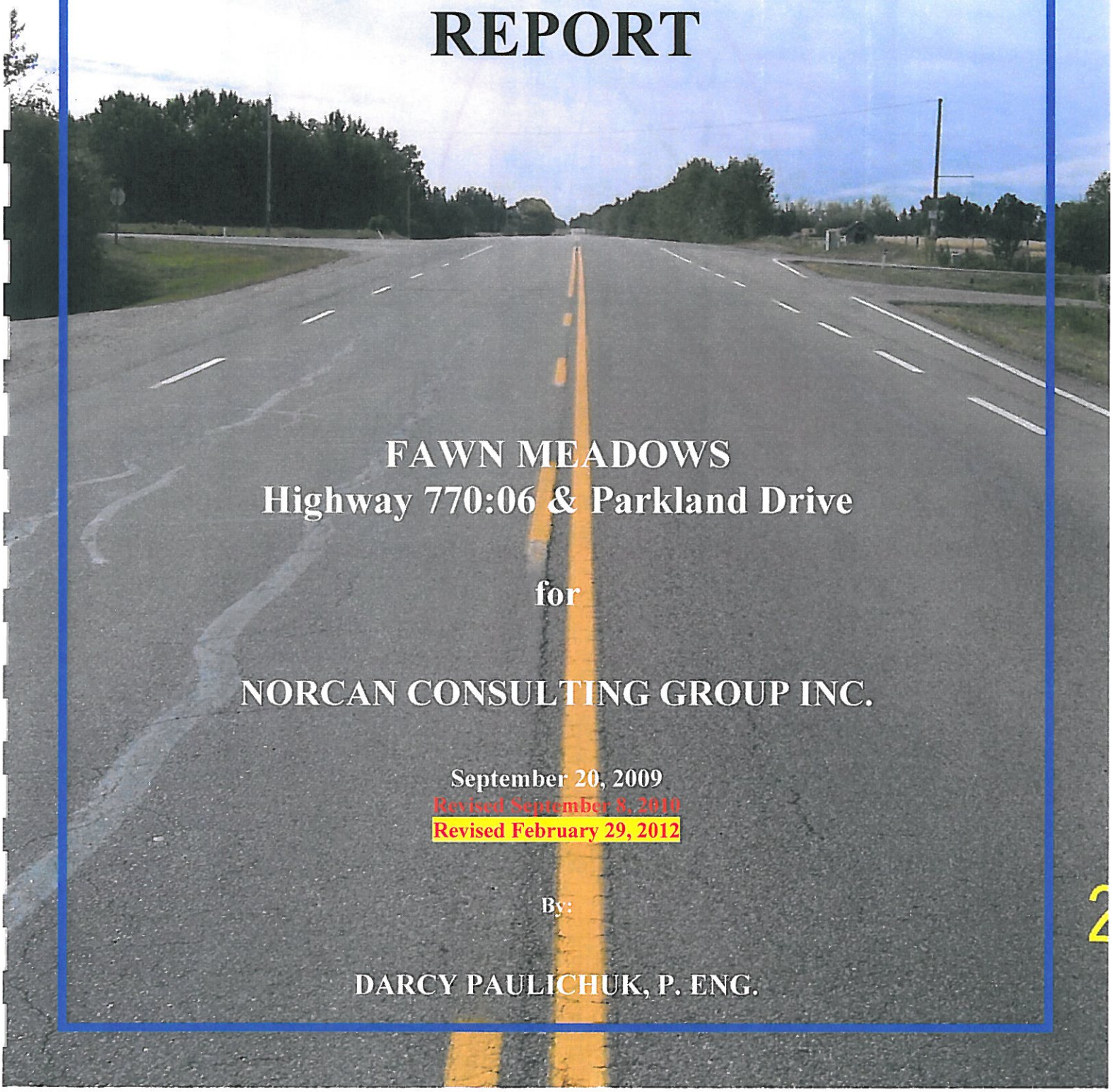
NORCAN CONSULTING GROUP INC.

Phase I Environmental Site Assessment
Proposed Country Residential Subdivision
Portion of NE 4-53-2-W5M & Lot 1, Block 1, Plan 0323261
Parkland County, Alberta
Site Photographs

JOB NO.: H0907-280	DATE: Sept. 15, 2009	PLATE: 7

Traffic Impact Assessment

TRAFFIC IMPACT ASSESSMENT REPORT



FAWN MEADOWS
Highway 770:06 & Parkland Drive

for

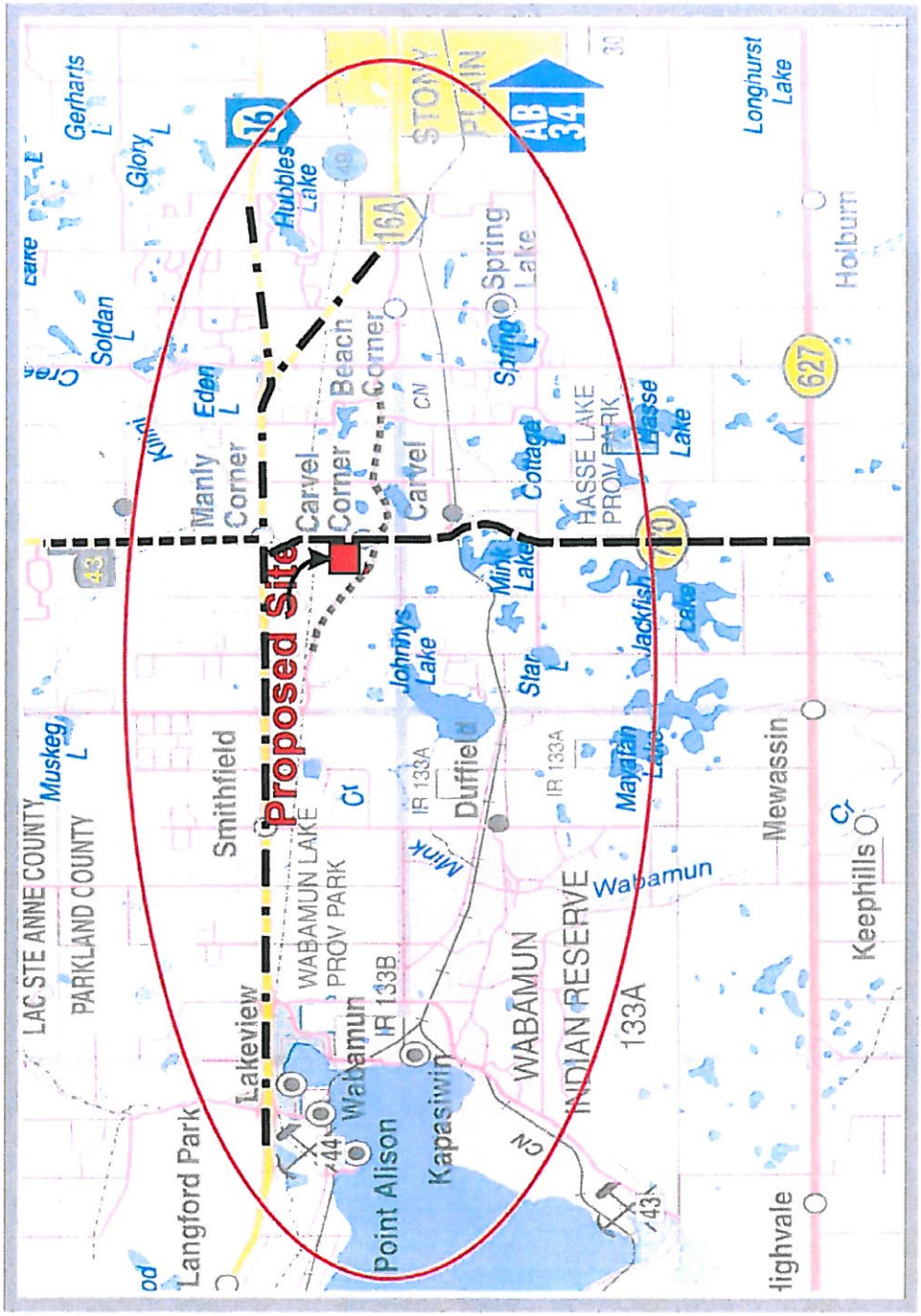
NORCAN CONSULTING GROUP INC.

September 20, 2009
Revised September 8, 2010
Revised February 29, 2012

By:

DARCY PAULICHUK, P. ENG.

LOCATION PLAN L-1



1029 Haythorne Road, Sherwood Park, AB, T8A 1B6

LOCATION PLAN L-4

Fawn Meadows

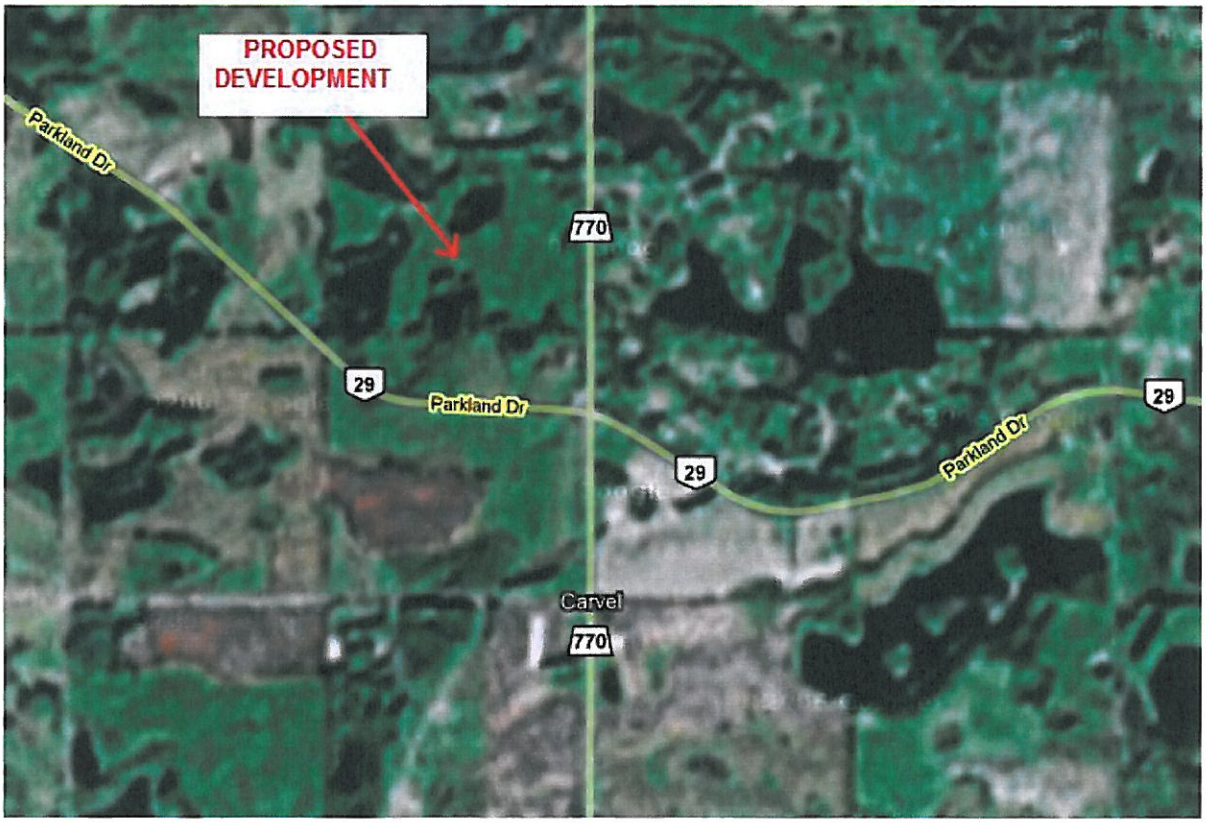
"A quality of Life - Country Style"

Development Plan

NORCAN CONSULTING GROUP INC.

1029 Haythorne Road, Sherwood Park, AB, T8A 1B6

LOCATION PLAN L-2 & L-3



1029 Haythorne Road, Sherwood Park, AB, T8A 1B6

TABLE OF CONTENTS

1029 Haythorne Road, Sherwood Park, AB, T8A 1B6

1. Introduction & Background

This report is a Traffic Impact Assessment (TIA) report for an Adult Only Residential Development in N.E. 4, Township 53, Range 2, West of 5th Meridian. See Location Plans before this report.

This report has been prepared to determine the impact of the development on traffic using Highway 770:06 and Parkland Drive, west of Stony Plain and north of Carvel. The scope of work in this case, is to assess the required intersection treatment as a result of the increased traffic volumes and turning movements attributed to the development.

This document will address the following:

- Retrieve 2008 traffic volume data.
- Determine present traffic volumes for 2009.
- Determine projected traffic volumes to 2011, 2013, 2019 and 2029.
- Determine traffic volumes generated from the development.
- Determine combined traffic volumes for 2009, 2011, 2013, 2019 and 2029.
- Complete intersectional analysis of Hwy. 770 & Parkland Drive intersection and the Development Entrance and Parkland Drive.
- Compare access and route alternatives.
- Identifies geometric deficiencies based on current 3R/4R guidelines.
- Review sight distance requirements.
- Complete illumination and signalization warrant analysis.
- Review the proposed haul road for geometric and condition deficiencies.
- Provide recommendations and staging requirements of any necessary improvements.
- Provides a preliminary engineering cost estimate for recommended improvements.

This report is based on site information provided by Mr. Frank Florkewich of Norcan Consulting Group Inc., site observations from Mr. Darcy Paulichuk, P. Eng., traffic volume data from Alberta Transportation, intersectional analysis procedures and standards documented in Alberta Infrastructure and Transportation's "Highway Geometric Design Guide", 1999, and Alberta Infrastructure and Transportation's "Traffic Impact Assessment Guideline", 2005.

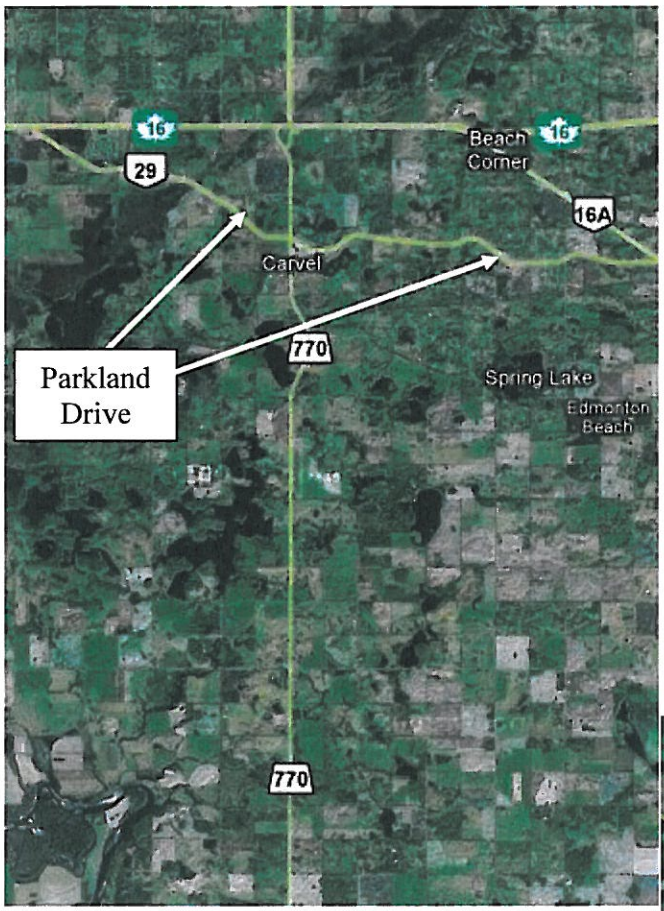
This report has been prepared for the developers of Fawn Meadows for purposes of gaining approval from municipal and provincial governments for the development of this residential development.

1029 Haythorne Road, Sherwood Park, AB, T8A 1B6

2. Existing Conditions

2.1 Physical Properties

Highway 770:04 traverses through the North Saskatchewan River Valley, between St. Francis and Highway 16 as the collector and connector for other highway routes. The intersection of Hwy. 770 and Parkland Drive exists just south of the junction of Hwy. 16 and Hwy. 770 on a tangent (km 21.8). The intersection is approximately at the bottom of a vertical crest curve with a K=340.



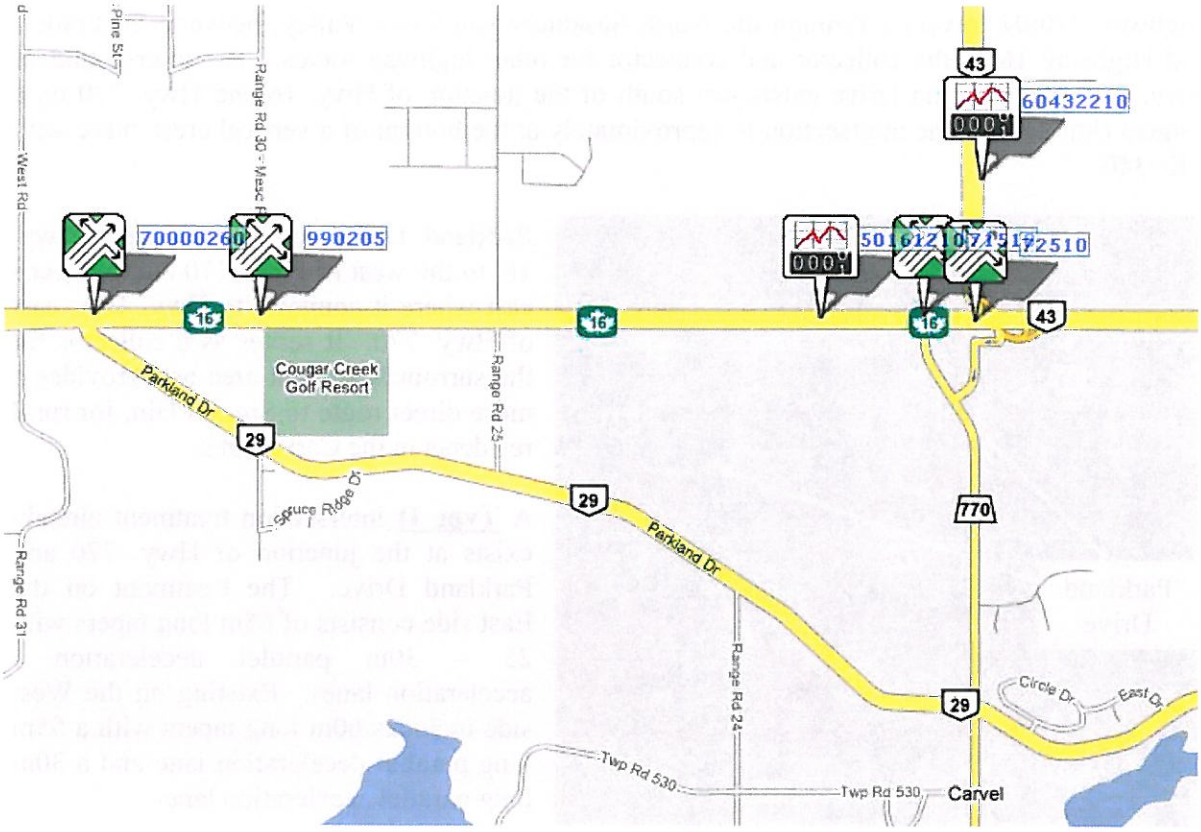
Parkland Drive commences from Hwy. 16, to the west of Hwy. 770 and proceeds east where it connects to Hwy. 16A, east of Hwy. 770. It serves as a collector for the surrounding rural area and provides a more direct route to Stony Plain, for rural residents in the Carvel area.

A **Type II** intersection treatment already exists at the junction of Hwy. 770 and Parkland Drive. The treatment on the East side consists of 65m long tapers with 25 – 30m parallel deceleration / acceleration lanes. Existing on the West side includes 60m long tapers with a 55m long parallel deceleration lane and a 30m long parallel acceleration lane.

1029 Haythorne Road, Sherwood Park, AB, T8A 1B6

2.2 Traffic Properties

Existing Alberta Transportation intersectional traffic volume data is shown in the map below:



2.2.1 Hwy. 770:06

The AT website http://www.transportation.alberta.ca/3460.htm has traffic counts available that are relevant for comparison purposes for this assessment.

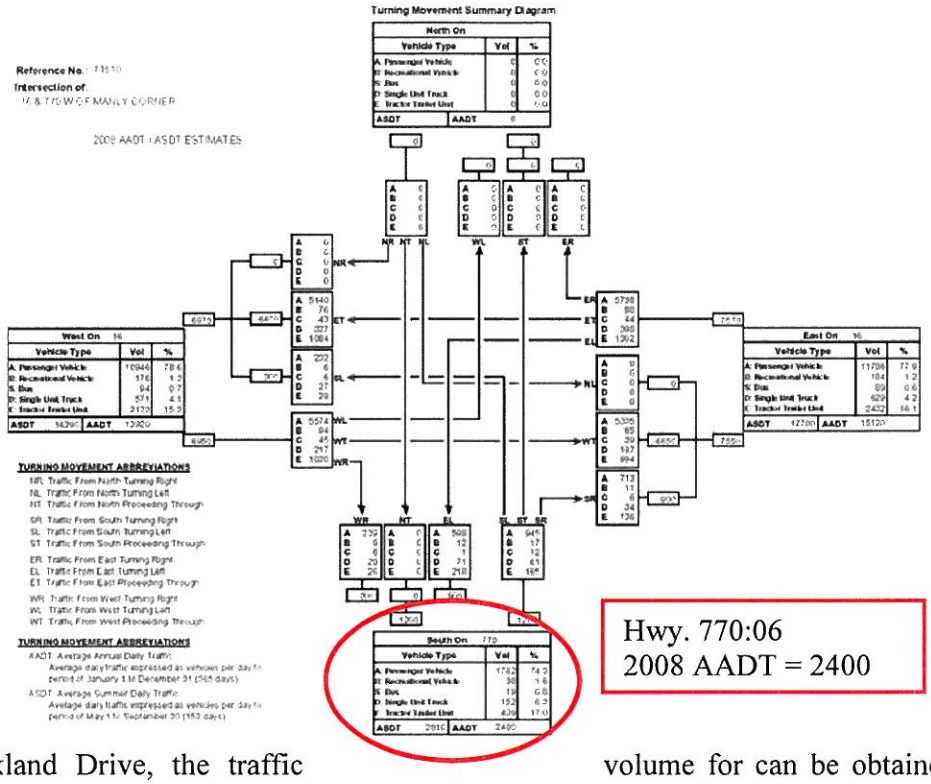
This data is summarized in the following table:

Table-2.2a: 2008 AADT and ASDT from Alberta Highways Traffic Volume History

Intersection Leg	2008 AADT	2007 ASDT	2007 % Trucks
Hwy. 16 & Hwy. 770 (71510)	2400	2810	23.3%

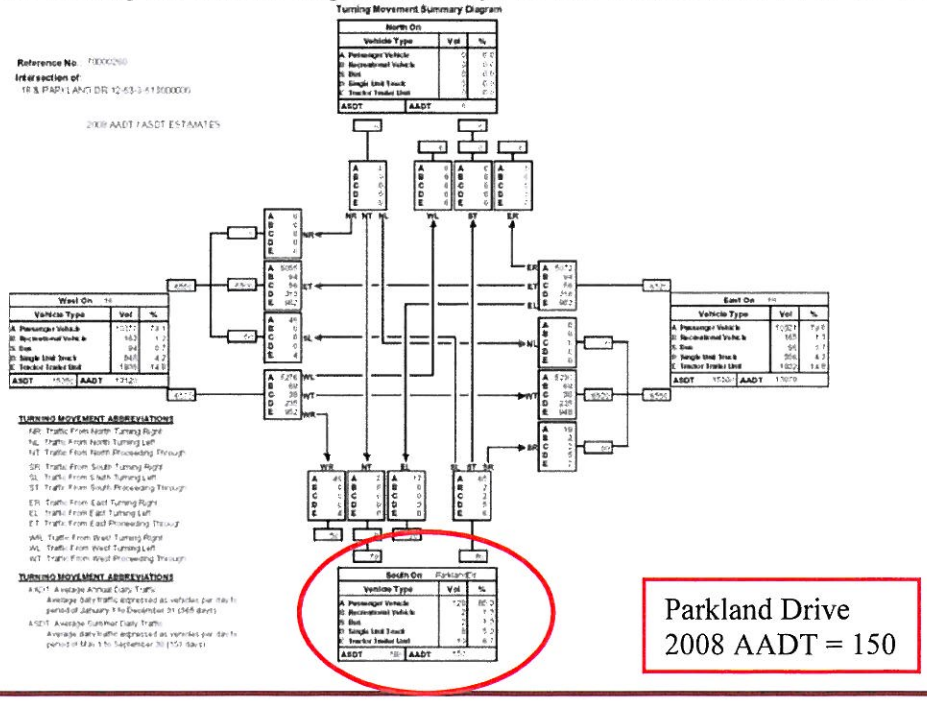
1029 Haythorne Road, Sherwood Park, AB, T8A 1B6

There is no specific traffic count available for the intersection of Hwy. 770:06 and Parkland Drive. The nearest traffic count is at the junction of Hwy. 16 & Hwy. 770. The traffic volume for Hwy. 770 can be estimated from the south leg of this turning movement diagram. See below.



Hwy. 770:06
2008 AADT = 2400

For the Parkland Drive, the traffic volume for can be obtained from the south leg of the turning movement diagram of Hwy. 16 and Parkland Drive, to the west of Hwy. 770.



Parkland Drive
2008 AADT = 150

1029 Haythorne Road, Sherwood Park, AB, T8A 1B6

2.3 Site Observations

2.3.1 Hwy. 770:06 & Parkland Drive

On September 19, 2009, Mr. Darcy Paulichuk, P. Eng., performed a site investigation. Some photos from this inspection are shown below:

Viewing North, at the intersection.
Farm and Road Access to the left & right.

Viewing South, at the intersection.
Field approach to the right.

Visual observations were as follows:

Highway 770:06 & Parkland Drive Intersection

- Highway 770:06 is paved. The existing surfacing structure is approximately 250mm of GBC and 100mm of Asphalt Bound Surface.
- The intersection is generally flat from north to south, with good sight distance in both directions (>600m).
- There is an existing intersection treatment, equivalent Type II, at this location.
- The pavement width on Hwy. 770 is follows:

NB shoulder:	1.3m	SB shoulder:	1.3m
NB through lane:	3.7m	SB though lane:	3.7m

- All pavement markings are visible.
- The Intersectional Site Distances (ISD) appeared adequate in all directions, since the existing intersection in on a vertical sag curve.
- This is a rural area and vehicles on Highway 770 appeared to be traveling at the posted speed limit of 100 km/hr.
- The side slopes seem to be 4:1 or better throughout.
- There is no existing illumination or signalization.
- There are approaches to farmsteads north of the intersection (east side (41m north) & west side (58m north)) and a field approach to the west, just south of the intersection (55m).

1029 Haythorne Road, Sherwood Park, AB, T8A 1B6

- Parkland Drive is paved and approximately 8 – 8.5m wide.

2.4 Adjacent Developments

The portion of Parkland Drive between Hwy. 16 and Hwy. 770, there are very view existing developments or landowners. These include:

Spruce Ridge Country Residential Subdivision:	approximately 15 lots
Farmsteads	approximately 9 properties
Total:	24

There is also the Cougar Creek Golf Course near the area, however the access to the golf course is along Hwy. 16.

There are no other known future developments proposed in this area that will increase the projected traffic volume on this section of Parkland Drive.

The 2008 turning movement diagram at Hwy. 16 and Parkland Drive, which is west of the Hwy. 770 and Parkland Drive intersection, indicates that there is 150 vehicles using Parkland Drive near Hwy. 16.

A traffic count taken by Parkland County on June 2, 2010, provided the following:

162 (12 hour count) x 1.2826 (AADT conversion factor from Cornerstone Solutions Inc.)

= **208 AADT** **This value will be used as the Parkland Drive (West) 2010 AADT.**

2.5 Signage and Pavement Marking

The existing intersection treatment at Hwy. 770 and Parkland Drive is a Type II, with no by-pass lanes, just tapers and parallel lanes.

2.6 Collision History

A summary of the collisions at or near this intersection for the period 2002 to 2006 was provided by AT, and is included in the Appendices. The relevant collisions are summarized below:

Intersection of Hwy. 770 & Parkland Drive - 2003
WB VEH1 COULD NOT STOP AT SS, MADE RIGHT TURN TO GO NB, REAR END OF VEH1 SWUNG INTO SB LANE STRIKING SB VEH2

There were no other recorded accidents at the intersection of Hwy. 770 and Parkland Drive between 2002 to 2007.

1029 Haythorne Road, Sherwood Park, AB, T8A 1B6

In review of the Collision History, there is no trend of accidents or collision prone situation at these sites.

3. Traffic Data

3.1 Existing (Background) Traffic projections

The following historical traffic data for Highway 770:06 is available from the Alberta Transportation's website, which indicates a growth of approximately 7.85% per year from 1999 to 2009. See Appendices for details. The provincial average is 2.0 %. This area experienced spurts in growth between 2002 and 2003 as well as between 2007 and 2008. These substantial growth increases were mainly due several large projects being completed south of this location, such as the Genesee Phase II construction (2002 – 2003) and the Keephills Power Plant construction (2007 – 2008). Since these events could be considered anomalies, there is still traffic that has remained using Hwy. 770. In order to determine a more realistic growth rate for the next 20 years, the value of 7.85% can be averaged with the provincial average of 2.0%, for a growth rate of **4.93%.**

Historical Traffic Volumes – Hwy. 770:06

Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
AADT	1350	1370	1380	1390	1640	1690	1730	1770	1820	2400	2410

Projected AADT values for Hwy. 770:06 are presented in the table below for key times:

Background Traffic Forecast, Daily Volumes

Year	**Hwy. 770:06**
2010	2525
2012	2645
2014	2888
2016	3123
2030 (20 Year)	4786

Peak hour traffic loading (100th highest hour) is shown below for am/pm volumes:

Background Traffic Forecast, Peak Hour Volumes

Year	**Hwy. 770:06** a.m./p.m.
2010	310 / 299
2012	337 / 325
2014	372 / 356
2016	397 / 383
2030 (20 Year)	616 / 592

1029 Haythorne Road, Sherwood Park, AB, T8A 1B6

The am and pm peak traffic volumes appear to be normal. This intersection does not experience any recorded unusual traffic patterns due to geographic conditions such as shift changes, season or day specific activities etc.

3.2 Development Traffic Projections

The development plan indicates a variety of Senior Housing Land Usages, within this proposed gated community. The housing and traffic generators are determined as follows:

Development Type	No. of Units	Land Use (ITE Trip Gen. Manual)	Rate	Total
Single Family Residences	16 Homes	Senior Adult Housing - Detached	3.71	59
Semi-Detached Villas	8 Living Units	Senior Adult Housing - Detached	3.71	30
Adult Village	56 Living Units	Senior Adult Housing - Attached	3.48	195
Semi-Detached Villas	16 Living Units	Senior Adult Housing - Detached	3.71	59
Single Family Residences	20 Units	Senior Adult Housing - Detached	3.71	74
Seniors Supportive Living Complex – 4 bus trips/day + staff	140 Units	Congregate Care Facility	2.02	20
Community Service Building, Store & Coffee Shop – See Note 1	2 Buildings	Staff		10
				447

Note 1: Only staff trips are accounted for the Community Service Building, the Convenience Store and Coffee Shop since it is assumed that only the residents of this development will be the main users of these facilities (internal traffic). Other traffic may come from passer-bys of existing Parkland Drive traffic. Both are not new traffic, but existing or development traffic already accounted for. The Community Service Building, Convenience Store and Coffee Shop are not expected to generate new traffic, as commuters will not likely go out of their way to use these facilities.

Fawn Meadows is to be developed in three (3) phases. The following is the anticipated scheduling of phases:

PHASE I:	2012
PHASE II:	2013 – 2015
PHASE III:	2014 - 2016

The following are the anticipated development per phase:

PHASE I (2012)

Development Type	No. of Units	Land Use (ITE Trip Gen. Manual)	Rate	Total
Single Family Residences	12 Homes	Senior Adult Housing - Detached	3.71	44
Semi-Detached Villas	8 Living Units	Senior Adult Housing - Detached	3.71	30
Adult Village	28 Living Units	Senior Adult Housing - Attached	3.48	97
Community Service Building, Store & Coffee Shop – 60%	2 Buildings	Staff		6
				177

At this phase, only **the south entrance to Parkland Drive is planned to be open. The secondary access to the east directly onto Hwy. 770, will not be opened and will only serve as an emergency access**.

The anticipated split at the south entrance for the development traffic is 10% to the west and 90% to the east, on Parkland Drive.

PHASE II (2013 - 2015)

Development Type	No. of Units	Land Use (ITE Trip Gen. Manual)	Rate	Total
Single Family Residences	12 Homes	Senior Adult Housing - Detached	3.71	44
Adult Village	28 Living Units	Senior Adult Housing - Attached	3.48	97
Seniors Supportive Living Complex – 4 bus trips/day + staff	140 Units	Congregate Care Facility	2.02	20
Community Service Building, Store & Coffee Shop – 100%	2 Buildings	Staff		4
				165

For Phase II, both the south entrance to Parkland Drive and the east access directly onto Hwy. 770 are planned to be open.

The anticipated split between the south entrance and east entrance is expected to be 50/50 (or that the new traffic of Phase II goes to the east entrance). The anticipated split at the south

1029 Haythorne Road, Sherwood Park, AB, T8A 1B6

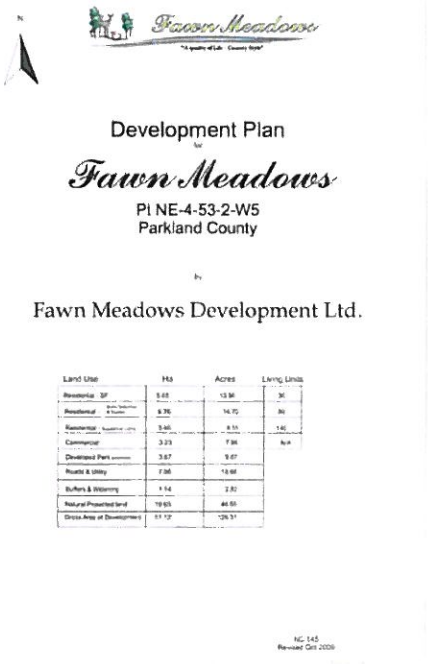
entrance for the development traffic is 10% to the west and 90% to the east, on Parkland Drive. The anticipated split at the east entrance is 90% to the north and 10% to the south.

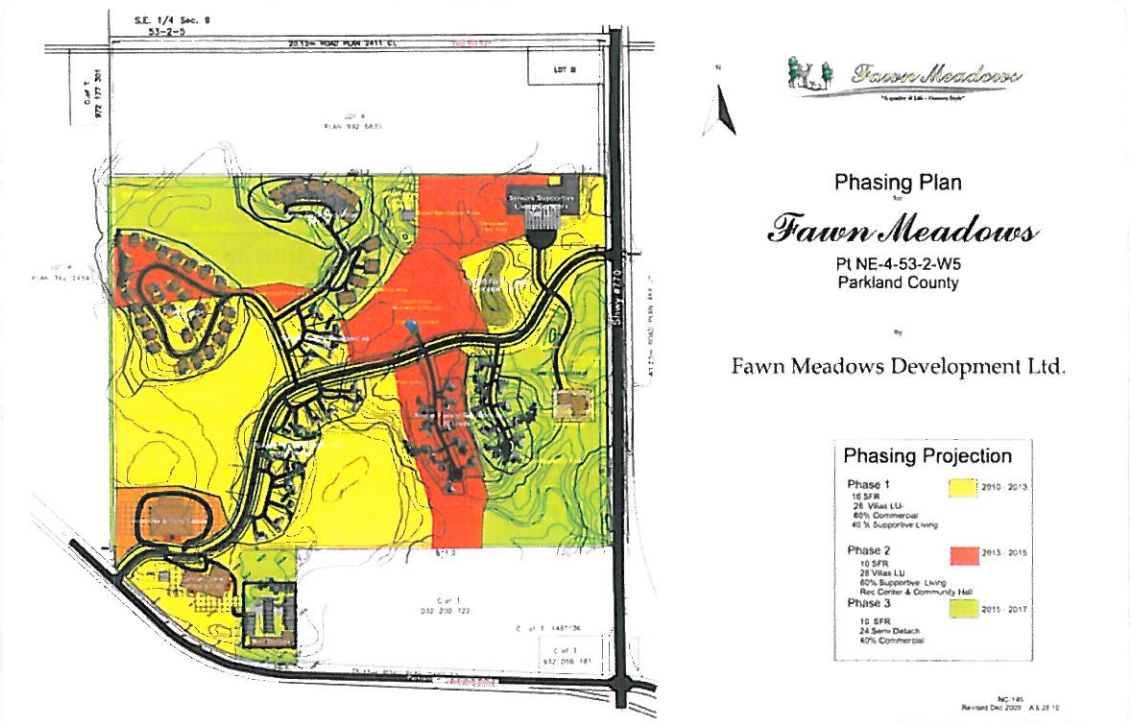
PHASE III (2014 - 2016)

Development Type	No. of Units	Land Use (ITE Trip Gen. Manual)	Rate	Total
Single Family Residences	12 Homes	Senior Adult Housing - Detached	3.71	44
Semi-Detached Villas	16 Living Units	Senior Adult Housing - Detached	3.71	59
				103

For Phase III, both the south entrance to Parkland Drive and the east access directly onto Hwy. 770 are planned to be open.

The anticipated split between the south entrance and east entrance is expected to be 50/50. The anticipated split at the south entrance for the development traffic is 10% to the west and 90% to the east, on Parkland Drive. The anticipated split at the east entrance is 90% to the north and 10% to the south.





3.3 Combined Traffic Projections

The following tables show the estimated combined traffic volumes at the intersection.

Combined Traffic Forecast, Daily Volumes

Year	Hwy. 770 Combined (North Leg)	Parkland Drive West Combined
2010	2525	208
2012 (Phase I)	2760	378
2014 (Phase II)	3003	401
2016 (Phase III)	3262	477
2030 (20 Year)	4925	618

Projected peak hour traffic loading (100th highest hour) is shown below for am/pm:

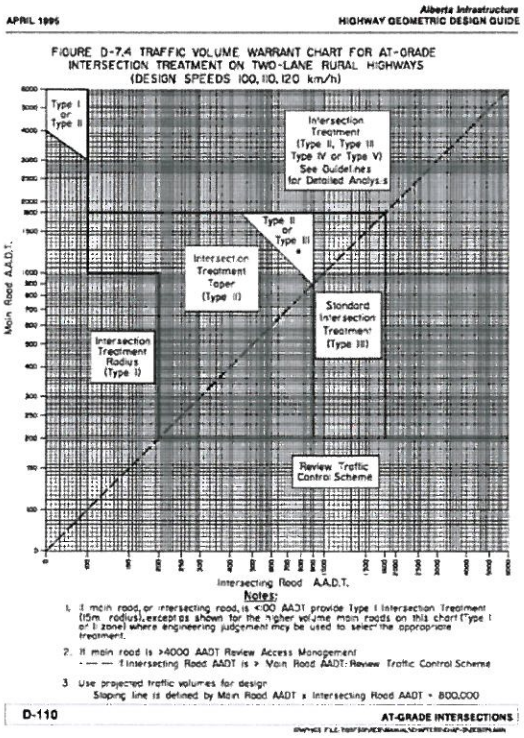
Combined Traffic Forecast, Peak Hour Volumes

Year	Hwy. 770 Combined (North) am/pm	Parkland Drive West Combined
2010	310 / 298	25 / 24
2012 (Phase I)	349 / 337	42 / 41
2014 (Phase II)	384 / 368	47 / 46
2016 (Phase III)	412 / 398	53 / 52
2030 (20 Year)	631 / 607	71 / 69

4.0 Analysis

4.1 Initial Determination based on Traffic Volume Warrant Chart (Fig. D-7.4)

The 2010, 2012, 2014, 2016 and 2030 AADT values for Highway 770:06 and Parkland Drive indicate from referencing Figure D-7.4, "Traffic Volume Warrant Chart for At-Grade Intersection Treatment on Two-Lane Rural Highways (Design Speeds 100/110/120 km/h)", that a more detailed analysis is required to determine whether a Type II, Type III, Type IV or Type V intersection is warranted for 2010, 2012, 2014, 2016 and 2030.



1029 Haythorne Road, Sherwood Park, AB, T8A 1B6

4.2 Design Speed

The posted speed on Highway 770:06 at this location is 100 km/hr. It is therefore reasonable to conclude that a design speed of 110 km/h is suitable.

4.3 Detailed Analysis

4.3.1 Highway 770:06

Right Turn

In accordance with Alberta Transportation's "Highway Geometric Design Guide" (Section D.7.7), an exclusive right turn lane is warranted on an undivided highway when all three of the following conditions are met:

- Main (or though) road AADT ≥ 1,800
- Intersecting road AADT ≥ 900
- Right turn daily traffic volume ≥ 360 for the movement in question.

The following table indicates the status of these requirements for various right turn from Hwy. 770:06.

Table: Right Turn Warrant

Condition	Base Year (2010)	4 Year (2014)	6 Year (2016)	20 Year (2030)
	(Condition Met)	(Condition Met)	(Condition Met)	(Condition Met)
Main Road (Hwy 770:06)	2,525	3,003	3,262	4,925
AADT ≥ 1800	(Yes)	(Yes)	(Yes)	(Yes)
Intersecting Road (Parkland Drive)	208	401	477	618
AADT ≥ 900	(No)	(No)	(No)	(No)
Right turn daily traffic ≥ 360	28	90	104	123
For movement in question	(No)	(No)	(No)	(No)

Based on the projected volumes there will not be a need for an exclusive right turn lane for the next 20 years.

Left Turn

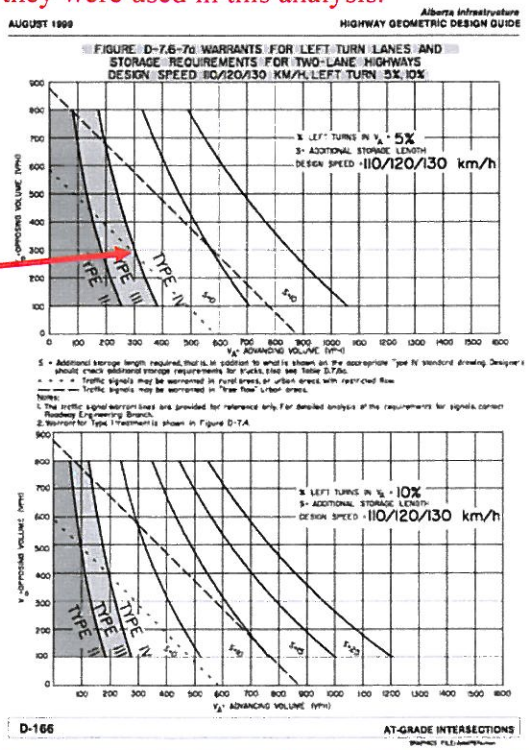
The Highway Geometric Design Guide Section D.7.6 gives graphical guidelines for determining left turn warrant. The graphs use peak (100th highest) hour volumes and factor in percent turning and design speed to identify the required treatment for the intersection. The following table shows the treatments needed for current and projected traffic volumes.

Table: Required Treatment Type

	Base Year (2010)	2 Year Phase I (2012)	4 Year Phase II (2014)	6 Year Phase III (2016)	20 Year (2029)
Peak 100th Hour (am)					
% Left Turns	3.9%	4.8%	4.3%	4.5%	4.3%
V_a = Advancing Volume (VPH)	153	168	185	198	305
V_0 = Opposing Volume (VPH)	154	173	191	204	313
Vl = Left turning Volume (VPH)	6	8	8	9	13
Design Speed	110 km/hr	110 km/hr	110 km/hr	110 km/hr	110 km/hr
Required Treatment Type	**Type II**	**Type II**	**Type II**	**Type II**	**Type III**

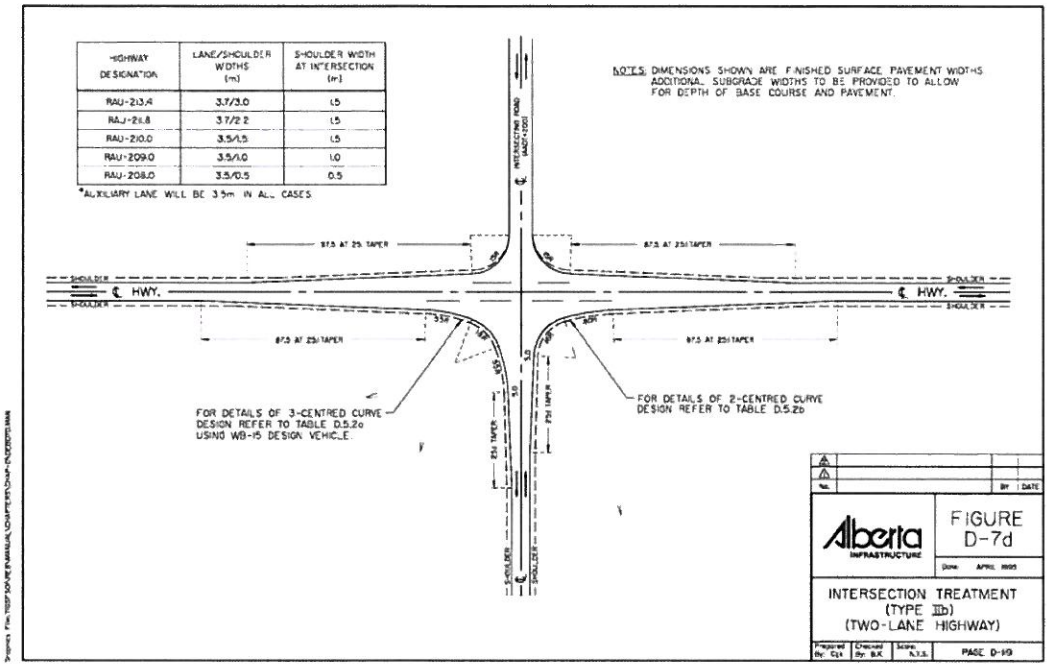
*Note: There is no accurate chart for less than 5% of left turns in the Design Guide. Engineering judgment ant interpolation has been used to determine the above values. Since the am peak values are higher, they were used in this analysis.

This Chart indicates that only a Type III intersection is required ultimately



1029 Haythorne Road, Sherwood Park, AB, T8A 1B6

A Type II intersection treatment is warranted for Years 2009 to 2016, and likely up to 2020. Since the west leg of Parkland Drive has a very low turning movement and most of the volume is in a north south direction, a Type IIb is warranted with the minor leg treatment being on the west. See below:



After 2020, a Type IIIb intersection treatment is warranted at both the Parkland Drive & Hwy. 770 intersection and the east subdivision access & Hwy. 770 intersection. See below:

YEAR	Parkland Drive & Hwy. 770 Intersection	East Access & Hwy. 770 Intersection
2010	No development yet	No development yet
2012 Phase I	Type II	Emergency Access Only
2014 Phase II	Type II	Type II
2016 Phase III	Type II	Type II
2020	Type III	Type III
2030	Type III	Type III

4.4 INTERSECTION SIGHT DISTANCE

In accordance with section D.4, "Sight Distances at Intersections", the sight distance for left turning vehicles from the approach, without interfering with vehicles nearing the intersection, is used for determination of minimum sight distance requirements. Using Fig. D-4.2.2.2, shown in Appendix C, the required sight distances for various vehicle types with a 110 km/hr design speed are as follows:

Vehicle Type	Required Sight Distance – 110 km/hr
Passenger Vehicle (P)	215 m
Single Unit or Bus (SU)	325 m
Semi-Trailer Combination (WB15)	430 m
Semi-Trailer Combination (WB21, WB23, WB28, WB33)	560 m

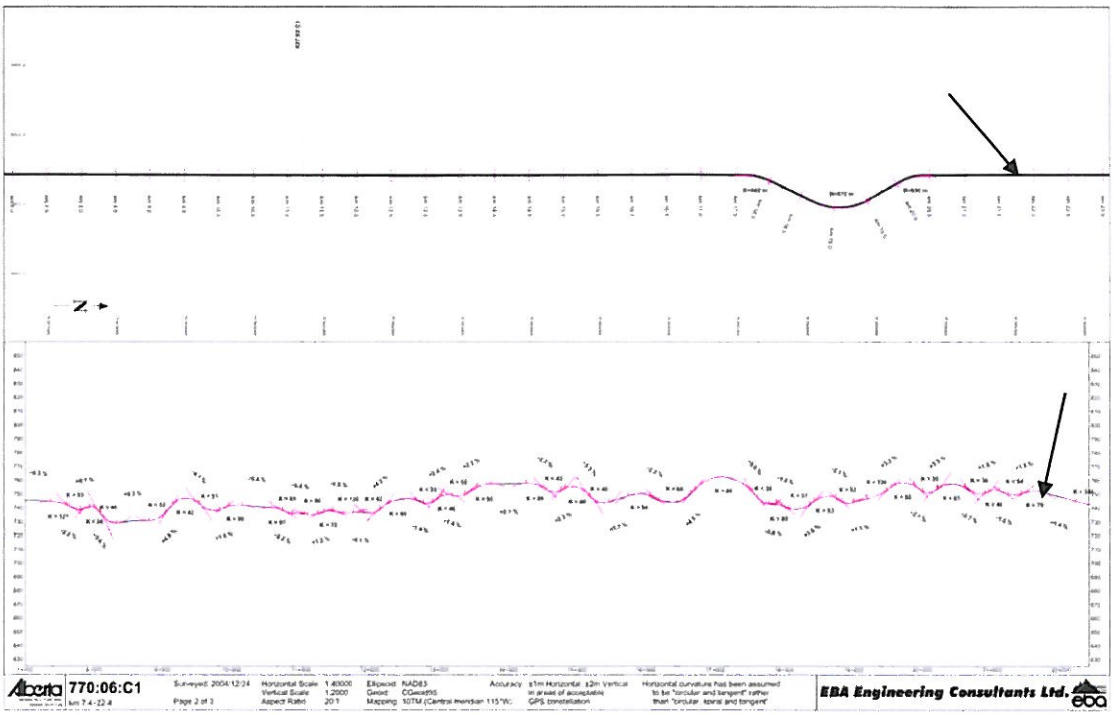
The sight distance for the Hwy. 770:06 and Parkland Road intersection is in excess of 600 metres in both the south and north directions.

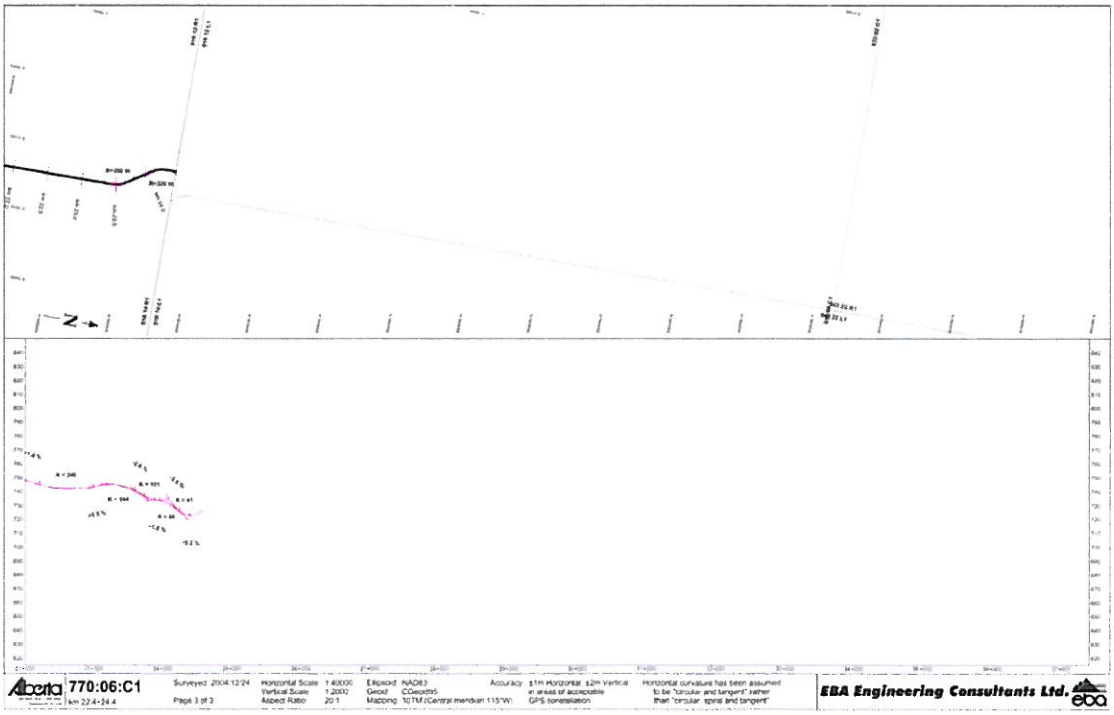
Viewing North on
Hwy. 770, from Parkland Dr.

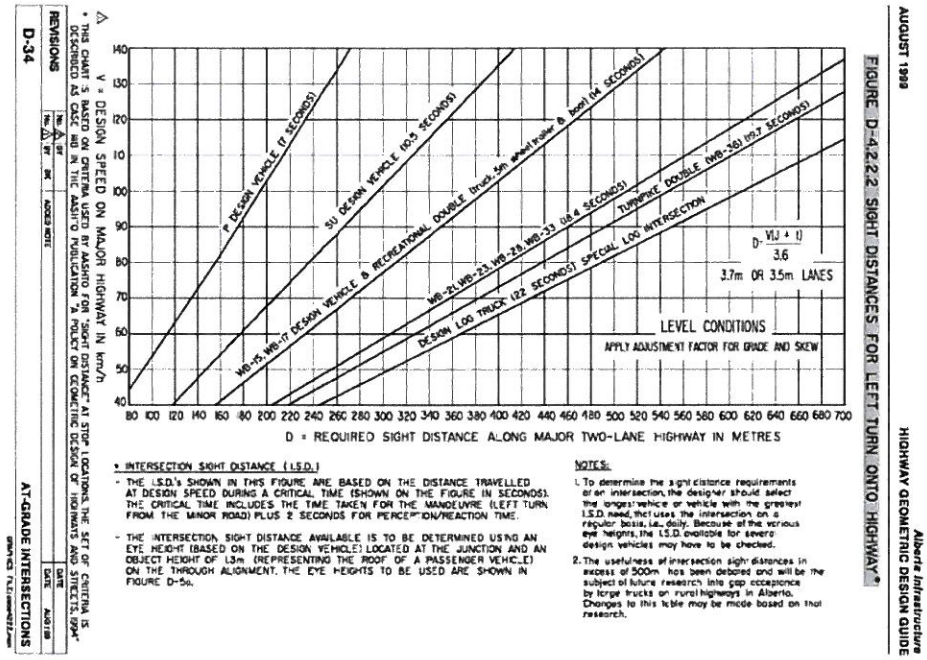
Viewing South on
Hwy. 770, from Parkland Dr.

1029 Haythorne Road, Sherwood Park, AB, T8A 1B6

The horizontal and vertical alignments are shown below:







5.0 Illumination & Signalization Warrants

Illumination and signalization are not warranted for these sites as the traffic volumes are too low.

6.0 Conclusions, Recommendations and Closure

6.1 Conclusions & Recommendations

The development is not expected to be in operation until 2011 to 2012. This is Phase I of three phases. Only the South Access is to be opened at Phase I. The next phase, Phase II, is expected to be in operation in 2014, where both the South Access and East Access are anticipated to be opened.

In review of the South Access that will route to Parkland Drive and then to Hwy. 770, the **Highway 770:06 & Parkland Drive intersection** was assessed and it was determined that a Type IIb intersectional treatment is warranted from 2012 to 2020 (Phases I, II and III). The existing treatment at this intersection is a Type II so no improvements would be required during this time period. After 2020, a Type IIIb intersectional treatment is warranted due to traffic volume increases on Hwy. 770.

For the **East Access of the development & Highway 770:06 intersection**, the intersection will only be an emergency access until 2014 (Phase I). Once Phase II is in operation, this access is proposed to be fully opened. This assessment has determined that a Type IIb intersectional treatment is warranted from 2014 to 2020. After 2020, a Type IIIb intersectional treatment is warranted. There is no present treatment at this location.

For the development traffic for Phase II and III, the traffic is anticipated to be split equally between the South Access and the East Access, and therefore the detailed analysis is the same for both accesses.

The intersection of Parkland Drive and Hwy. 16 will receive minimal traffic from this development as was not assessed in this report for this reason.

The interior intersection of the Fawn Meadows entrance and Parkland Drive, will require an intersection treatment as the traffic volumes on Parkland Drive presently are slightly above 200 AADT. This improvement should be in the form of a Type IIb intersection treatment.

6.2 Closure

We trust the information provided meets your present requirements. Should any questions arise, please contact our office at your convenience.

Darcy O. Paulichuk, P. Eng.

1029 Haythorne Road, Sherwood Park, AB, T8A 1B6

Appendix A

ALBERTA HIGHWAYS TRAFFIC VOLUME HISTORY
TRAFFIC DATA – TURNING MOVEMENT DIAGRAMS
ACCIDENT HISTORY

1029 Haythorne Road, Sherwood Park, AB, T8A 1B6

ALBERTA HIGHWAYS 1 TO 986
TRAFFIC VOLUME HISTORY 2000 - 2009

Alberta Transportation
Program Management Branch
Network Planning and Performance

Produced: 26-Feb-2010 By CornerStone Solutions Inc.

Hwy	CS	TCS	Muni	From	2000 AADT	2001 AADT	2002 AADT	2003 AADT	2004 AADT	2005 AADT	2006 AADT	2007 AADT	2008 AADT	2009 AADT	2009 ASDT
769	2	8	Barr	N OF 661 N OF NEERLANDIA SJ	480	310	310	310	310	310	310	310	310	310	340
769	2	8	Barr	S OF 661 AT VEGA NJ	220	210	210	260	260	260	260	260	260	220	240
770	2	4	Ledc	N OF 616 S OF WARBURG	580	610	610	510	510	510	510	510	510	520	560
770	2	8	Ledc	S OF 39 N OF WARBURG EJ	1600	1670	1660	1680	1680	1580	1610	1610	1580	1580	1710
770	4	4	Ledc	N OF 39 NW OF WARBURG WJ	650	710	710	710	740	750	820	870	870	870	940
770	4	4	Ledc	S OF 622 AT ST FRANCIS	840	680	680	680	700	660	720	770	770	770	830
770	4	8	Ledc	N OF 622 AT ST FRANCIS	900	780	780	780	800	760	820	870	870	870	940
770	6	4	Park	S OF 627 S OF CARVEL	1140	1180	1180	1420	1440	1440	1480	1510	1530	1530	1840
770	6	8	Park	N OF 627 S OF CARVEL	1020	1060	1060	1140	1160	1190	1220	1250	1390	1390	1680
770	6	8	Park	S OF 16 W OF MANLY CORNER	1370	1380	1390	1640	1690	1730	1770	1820	2400	2410	2900
771	2	4	Laco	N OF 20 NE OF BENTLEY	490	510	510	530	620	640	660	670	670	860	960
771	2	4	Pnka	N OF SUNNYSIDE DR 4-42-1-500000000								700		700	780
771	2	4	Pnka	S OF SUNNYSIDE DR 4-42-1-500000000								700		700	780
771	2	4	Pnka	S OF PARKLAND DR 9-42-1-500000235								760	760	760	850
771	2	4	Pnka	N OF PARKLAND DR 9-42-1-500000235								800	800	800	890
771	2	4	Pnka	S OF PARKLAND BEACH RD 9-42-1-500000000	390	670	670	670	670	690	580	800	800	800	890
771	2	4	Pnka	N OF PARKLAND BEACH RD 9-42-1-500000000	210	320	320	320	320	330	500	660	660	660	740
771	2	4	Pnka	S OF 53 S OF HOMEGLEN EJ	130	250	250	250	250	260	400	440	440	440	490
771	3	4	Pnka	N OF 53 S OF HOMEGLEN WJ	440	450	450	460	480	500	460	540	540	540	620
771	3	4	Pnka	S OF RGE RD 15 31-43-1-500000000	470	480	480	420	430	450	450	450	450	500	570
771	3	4	Pnka	E OF RGE RD 15 31-43-1-500000000	390	400	400	320	330	340	340	340	340	440	500
771	3	5	Pnka	S OF 611 NE OF SPRINGDALE	140	140	250	250	250	260	260	250	250	250	290
771	4	8	Pnka	N OF 611 NE OF SPRINGDALE	300	300	390	390	390	400	400	430	430	430	490
771	4	8	Weta	S OF 13 W OF WESTEROSE	460	460	480	480	620	640	680	680	660	660	760
771	6	4	Weta	N OF 13 W OF WESTEROSE	850	850	880	880	880	910	960	960	910	1000	1150
771	6	4	Weta	E OF RGE RD 21 35-46-2-500000000	470	490	630	630	630	650	660	640	640	700	800
771	6	4	Weta	N OF TWP RD 470 35-46-2-500000000	410	430	570	570	570	590	600	560	560	600	690
771	6	4	Ledc	S OF 616 NW OF PIGEON LAKE	460	480	480	480	490	490	490	490	490	520	600
772	2	4	Rkyv	S OF 566 W OF BALZAC	930	1170	1170	1170	1170	1200	1670	1710	1710	1710	1840
772	2	8	Rkyv	N OF 566 W OF BALZAC	1320	1530	1530	1530	1530	1560	2070	2110	2110	2110	2270
772	2	4	Rkyv	S OF TWP RD 261A 11-26-2-500001425	1140	1300	1310	1310	1270	1250	1740	1800	1800	1800	1930
772	2	4	Rkyv	N OF TWP RD 261A 11-26-2-500001425	1250	1410	1400	1400	1380	1290	1760	1840	1840	1840	1980
772	2	8	Rkyv	S OF 567 W OF AIRDRIE SJ	1460	1250	1250	1250	1250	1280	1990	2070	2070	2070	2220
772	2	12	Rkyv	N OF 567 W OF AIRDRIE SJ	1810	1570	1570	1570	1570	1630	2270	2350	2350	2350	2520
772	2	12	Rkyv	S OF 567 W OF AIRDRIE NJ	1580	1680	1680	1680	1680	1740	2300	2380	2380	2380	2560
772	2	16	Rkyv	N OF 567 W OF AIRDRIE NJ	950	780	780	780	780	800	890	890	890	890	980
772	2	16	Rkyv	S OF 574 AT MADDEN	390	400	400	400	550	550	550	550	550	570	630
774	2	4	PrCr	N OF CASTLE MOUNTAIN ACC 25-4-4-507151600	50	50	60	80	80	80	80	160	160	160	160
774	2	5	PrCr	S OF BEAVER MINES LAKE RD 22-5-3-514450975	240	240	240	400	400	400	560	380	380	380	460
774	2	5	PrCr	N OF BEAVER MINES LAKE RD 22-5-3-514450975	280	280	280	420	420	420	600	380	380	380	460
774	2	5	PrCr	S OF 507 NE OF BEAVER MINES	560	560	600	560	560	560	790	680	640	640	770

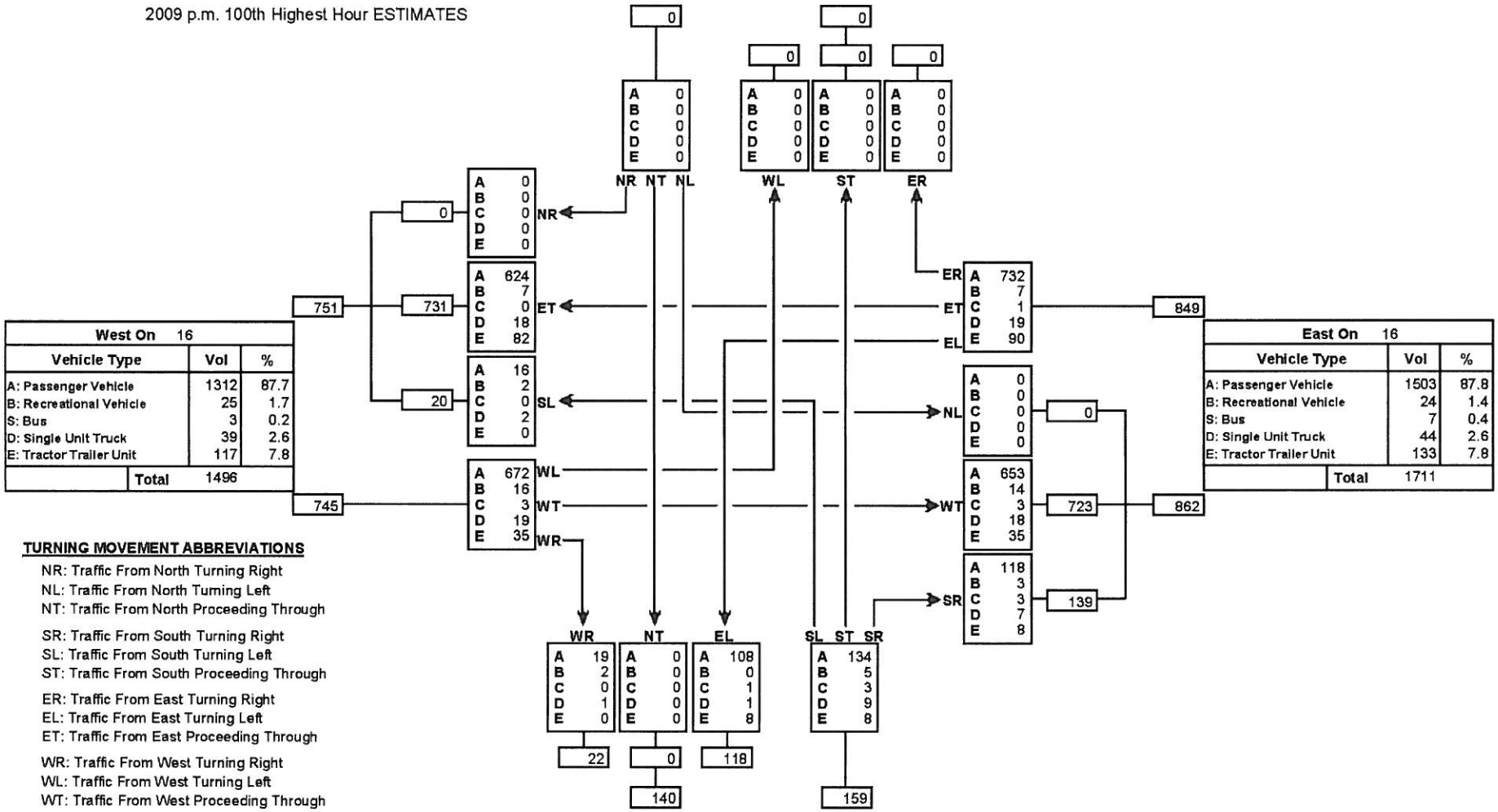
Turning Movement Summary Diagram

Reference No.: 71510

Intersection of:
16 & 770 W OF MANLY CORNER

2009 p.m. 100th Highest Hour ESTIMATES

North On		
Vehicle Type	Vol	%
A: Passenger Vehicle	0	0.0
B: Recreational Vehicle	0	0.0
S: Bus	0	0.0
D: Single Unit Truck	0	0.0
E: Tractor Trailer Unit	0	0.0
Total	0	



West On 16		
Vehicle Type	Vol	%
A: Passenger Vehicle	1312	87.7
B: Recreational Vehicle	25	1.7
S: Bus	3	0.2
D: Single Unit Truck	39	2.6
E: Tractor Trailer Unit	117	7.8
Total	1496	

East On 16		
Vehicle Type	Vol	%
A: Passenger Vehicle	1503	87.8
B: Recreational Vehicle	24	1.4
S: Bus	7	0.4
D: Single Unit Truck	44	2.6
E: Tractor Trailer Unit	133	7.8
Total	1711	

South On 770		
Vehicle Type	Vol	%
A: Passenger Vehicle	261	87.3
B: Recreational Vehicle	7	2.3
S: Bus	4	1.3
D: Single Unit Truck	11	3.7
E: Tractor Trailer Unit	16	5.4
Total	299	

TURNING MOVEMENT ABBREVIATIONS

NR: Traffic From North Turning Right
NL: Traffic From North Turning Left
NT: Traffic From North Proceeding Through

SR: Traffic From South Turning Right
SL: Traffic From South Turning Left
ST: Traffic From South Proceeding Through

ER: Traffic From East Turning Right
EL: Traffic From East Turning Left
ET: Traffic From East Proceeding Through

WR: Traffic From West Turning Right
WL: Traffic From West Turning Left
WT: Traffic From West Proceeding Through

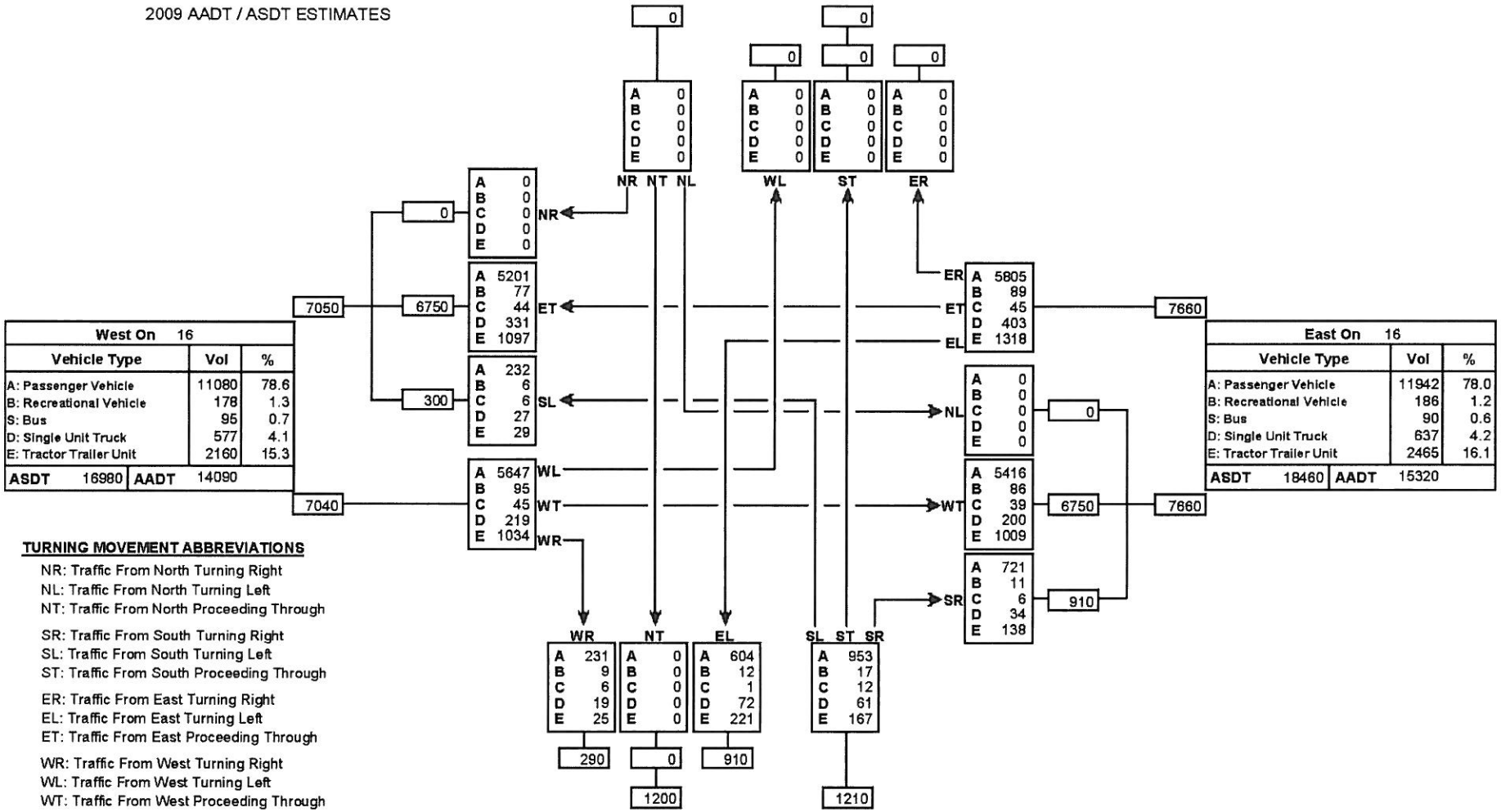
Turning Movement Summary Diagram

Reference No.: 71510

Intersection of:
16 & 770 W OF MANLY CORNER

2009 AADT / ASDT ESTIMATES

North On		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	0	0.0
B: Recreational Vehicle	0	0.0
S: Bus	0	0.0
D: Single Unit Truck	0	0.0
E: Tractor Trailer Unit	0	0.0
ASDT	**AADT**	0



West On 16		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	11080	78.6
B: Recreational Vehicle	178	1.3
S: Bus	95	0.7
D: Single Unit Truck	577	4.1
E: Tractor Trailer Unit	2160	15.3
ASDT 16980	**AADT**	14090

East On 16		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	11942	78.0
B: Recreational Vehicle	186	1.2
S: Bus	90	0.6
D: Single Unit Truck	637	4.2
E: Tractor Trailer Unit	2465	16.1
ASDT 18460	**AADT**	15320

South On 770		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	1788	74.2
B: Recreational Vehicle	38	1.6
S: Bus	19	0.8
D: Single Unit Truck	152	6.3
E: Tractor Trailer Unit	413	17.1
ASDT 2900	**AADT**	2410

TURNING MOVEMENT ABBREVIATIONS

NR: Traffic From North Turning Right
NL: Traffic From North Turning Left
NT: Traffic From North Proceeding Through

SR: Traffic From South Turning Right
SL: Traffic From South Turning Left
ST: Traffic From South Proceeding Through

ER: Traffic From East Turning Right
EL: Traffic From East Turning Left
ET: Traffic From East Proceeding Through

WR: Traffic From West Turning Right
WL: Traffic From West Turning Left
WT: Traffic From West Proceeding Through

TURNING MOVEMENT ABBREVIATIONS

AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day fo period of January 1 to December 31 (365 days)

ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehicles per day fo period of May 1 to September 30 (153 days)

Turning Movement Summary Diagram

Reference No.: 71510

Intersection of:
16 & 770 W OF MANLY CORNER

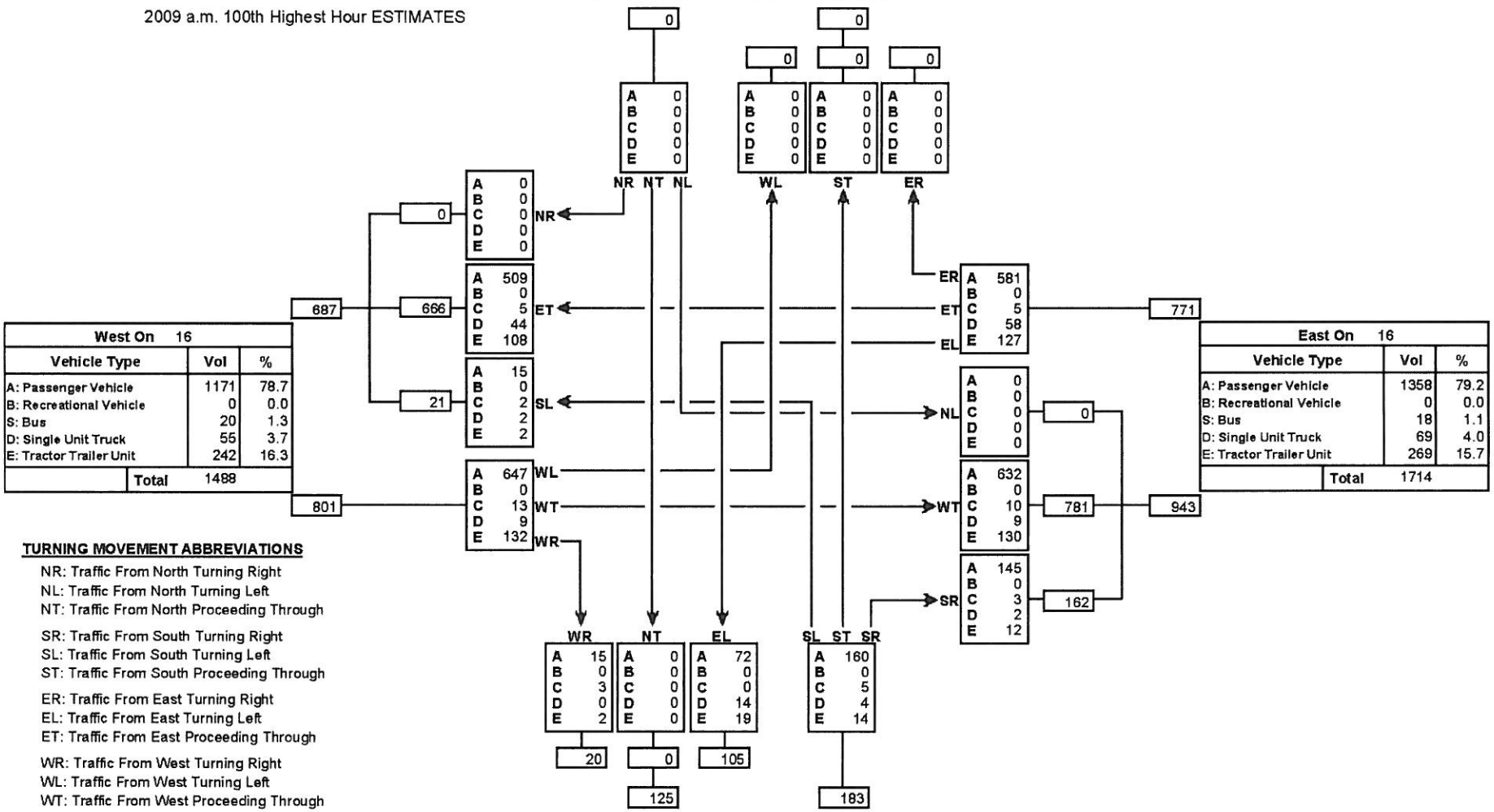
2009 a.m. 100th Highest Hour ESTIMATES

North On		
Vehicle Type	Vol	%
A: Passenger Vehicle	0	0.0
B: Recreational Vehicle	0	0.0
S: Bus	0	0.0
D: Single Unit Truck	0	0.0
E: Tractor Trailer Unit	0	0.0
Total	0	

West On 16		
Vehicle Type	Vol	%
A: Passenger Vehicle	1171	78.7
B: Recreational Vehicle	0	0.0
S: Bus	20	1.3
D: Single Unit Truck	55	3.7
E: Tractor Trailer Unit	242	16.3
Total	1488	

East On 16		
Vehicle Type	Vol	%
A: Passenger Vehicle	1358	79.2
B: Recreational Vehicle	0	0.0
S: Bus	18	1.1
D: Single Unit Truck	69	4.0
E: Tractor Trailer Unit	269	15.7
Total	1714	

South On 770		
Vehicle Type	Vol	%
A: Passenger Vehicle	247	80.2
B: Recreational Vehicle	0	0.0
S: Bus	8	2.6
D: Single Unit Truck	18	5.8
E: Tractor Trailer Unit	35	11.4
Total	308	



TURNING MOVEMENT ABBREVIATIONS

NR: Traffic From North Turning Right
NL: Traffic From North Turning Left
NT: Traffic From North Proceeding Through

SR: Traffic From South Turning Right
SL: Traffic From South Turning Left
ST: Traffic From South Proceeding Through

ER: Traffic From East Turning Right
EL: Traffic From East Turning Left
ET: Traffic From East Proceeding Through

WR: Traffic From West Turning Right
WL: Traffic From West Turning Left
WT: Traffic From West Proceeding Through

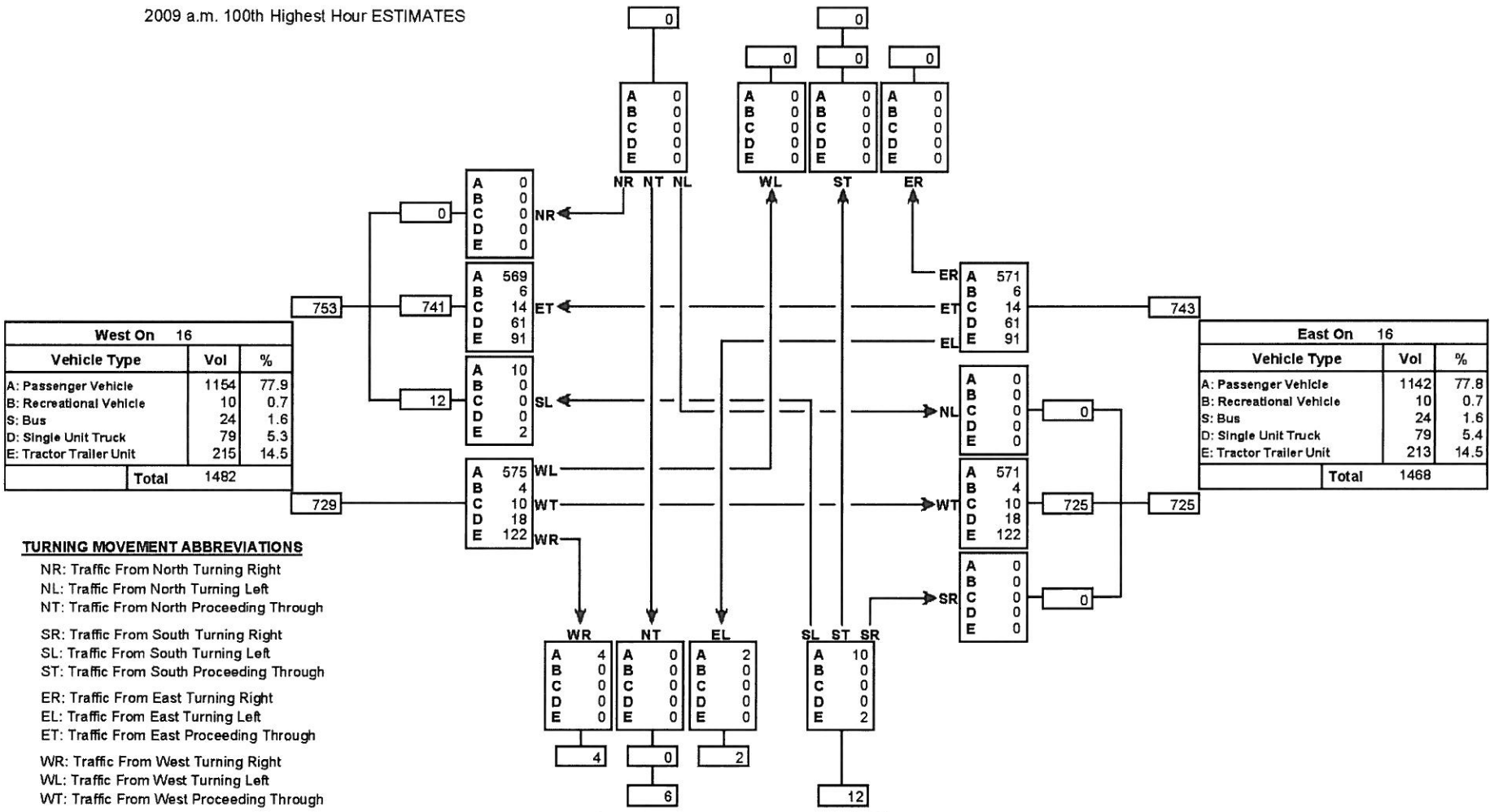
Turning Movement Summary Diagram

Reference No.: 70000260

Intersection of:
16 & PARKLAND DR 12-53-3-513000000

2009 a.m. 100th Highest Hour ESTIMATES

North On		
Vehicle Type	Vol	%
A: Passenger Vehicle	0	0.0
B: Recreational Vehicle	0	0.0
S: Bus	0	0.0
D: Single Unit Truck	0	0.0
E: Tractor Trailer Unit	0	0.0
Total	0	



West On 16		
Vehicle Type	Vol	%
A: Passenger Vehicle	1154	77.9
B: Recreational Vehicle	10	0.7
S: Bus	24	1.6
D: Single Unit Truck	79	5.3
E: Tractor Trailer Unit	215	14.5
Total	1482	

East On 16		
Vehicle Type	Vol	%
A: Passenger Vehicle	1142	77.8
B: Recreational Vehicle	10	0.7
S: Bus	24	1.6
D: Single Unit Truck	79	5.4
E: Tractor Trailer Unit	213	14.5
Total	1468	

South On ParklandDr		
Vehicle Type	Vol	%
A: Passenger Vehicle	16	88.9
B: Recreational Vehicle	0	0.0
S: Bus	0	0.0
D: Single Unit Truck	0	0.0
E: Tractor Trailer Unit	2	11.1
Total	18	

TURNING MOVEMENT ABBREVIATIONS

NR: Traffic From North Turning Right
NL: Traffic From North Turning Left
NT: Traffic From North Proceeding Through

SR: Traffic From South Turning Right
SL: Traffic From South Turning Left
ST: Traffic From South Proceeding Through

ER: Traffic From East Turning Right
EL: Traffic From East Turning Left
ET: Traffic From East Proceeding Through

WR: Traffic From West Turning Right
WL: Traffic From West Turning Left
WT: Traffic From West Proceeding Through

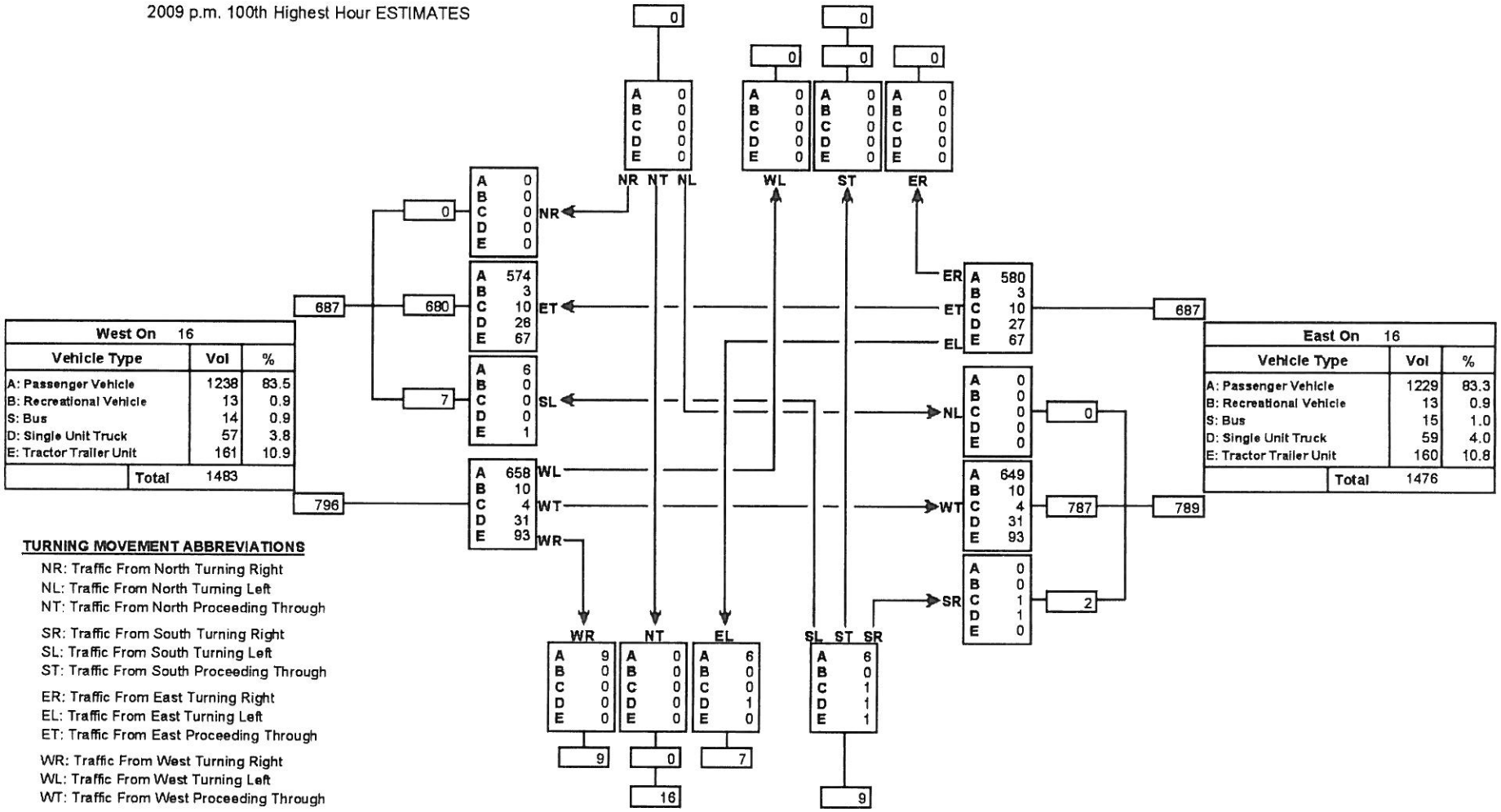
Turning Movement Summary Diagram

Reference No.: 70000260

Intersection of:
16 & PARKLAND DR 12-53-3-513000000

2009 p.m. 100th Highest Hour ESTIMATES

North On		
Vehicle Type	Vol	%
A: Passenger Vehicle	0	0.0
B: Recreational Vehicle	0	0.0
S: Bus	0	0.0
D: Single Unit Truck	0	0.0
E: Tractor Trailer Unit	0	0.0
Total	0	



West On 16		
Vehicle Type	Vol	%
A: Passenger Vehicle	1238	83.5
B: Recreational Vehicle	13	0.9
S: Bus	14	0.9
D: Single Unit Truck	57	3.8
E: Tractor Trailer Unit	161	10.9
Total	1483	

East On 16		
Vehicle Type	Vol	%
A: Passenger Vehicle	1229	83.3
B: Recreational Vehicle	13	0.9
S: Bus	15	1.0
D: Single Unit Truck	59	4.0
E: Tractor Trailer Unit	160	10.8
Total	1476	

South On ParklandDr		
Vehicle Type	Vol	%
A: Passenger Vehicle	21	84.0
B: Recreational Vehicle	0	0.0
S: Bus	1	4.0
D: Single Unit Truck	2	8.0
E: Tractor Trailer Unit	1	4.0
Total	25	

TURNING MOVEMENT ABBREVIATIONS

NR: Traffic From North Turning Right
NL: Traffic From North Turning Left
NT: Traffic From North Proceeding Through

SR: Traffic From South Turning Right
SL: Traffic From South Turning Left
ST: Traffic From South Proceeding Through

ER: Traffic From East Turning Right
EL: Traffic From East Turning Left
ET: Traffic From East Proceeding Through

WR: Traffic From West Turning Right
WL: Traffic From West Turning Left
WT: Traffic From West Proceeding Through

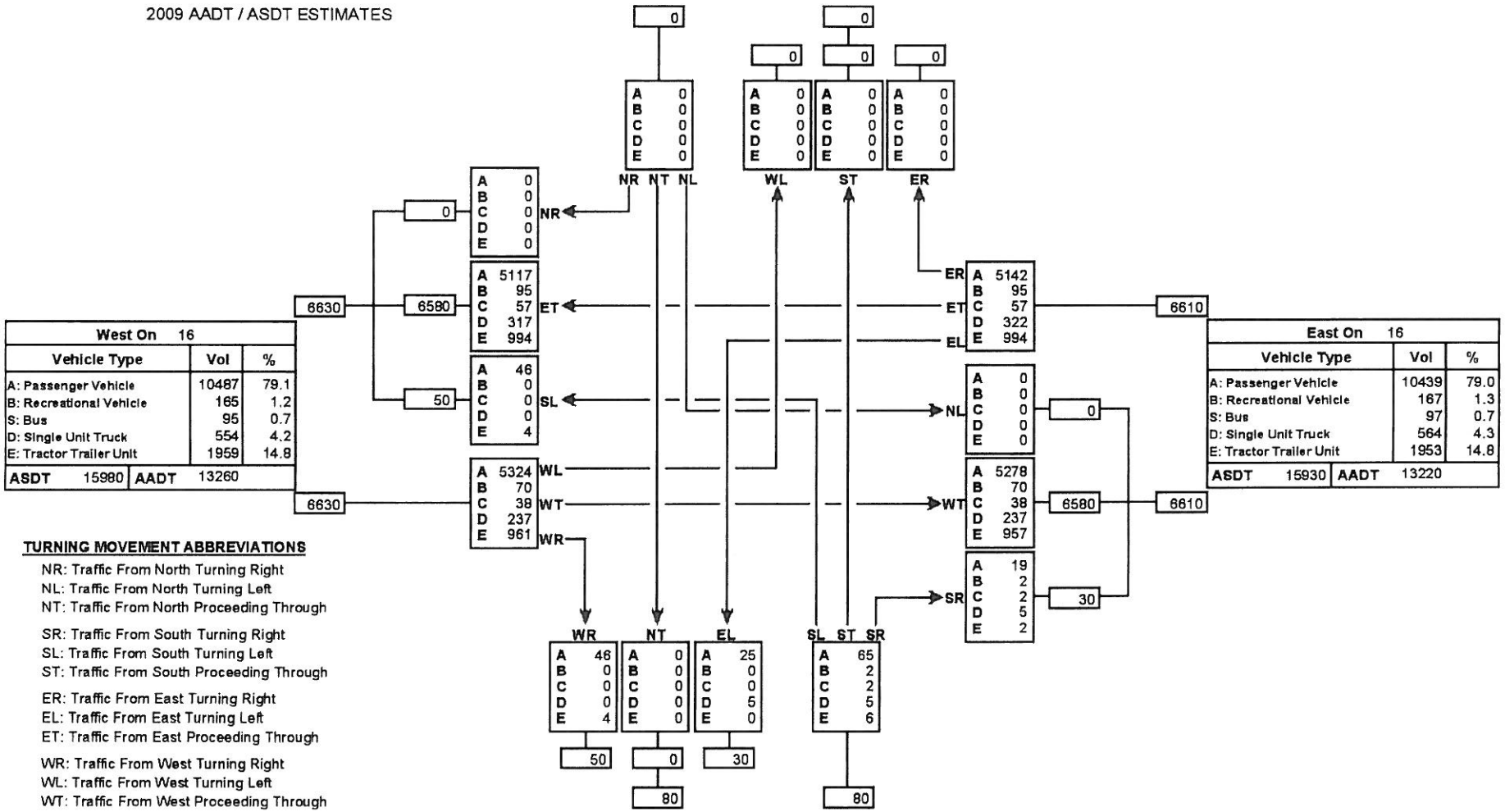
Turning Movement Summary Diagram

Reference No.: 70000260

Intersection of:
16 & PARKLAND DR 12-53-3-513000000

2009 AADT / ASDT ESTIMATES

North On		
Vehicle Type	Vol	%
A: Passenger Vehicle	0	0.0
B: Recreational Vehicle	0	0.0
S: Bus	0	0.0
D: Single Unit Truck	0	0.0
E: Tractor Trailer Unit	0	0.0
ASDT	AADT 0	



West On 16		
Vehicle Type	Vol	%
A: Passenger Vehicle	10487	79.1
B: Recreational Vehicle	165	1.2
S: Bus	95	0.7
D: Single Unit Truck	554	4.2
E: Tractor Trailer Unit	1959	14.8
ASDT 15980	AADT 13260	

East On 16		
Vehicle Type	Vol	%
A: Passenger Vehicle	10439	79.0
B: Recreational Vehicle	167	1.3
S: Bus	97	0.7
D: Single Unit Truck	564	4.3
E: Tractor Trailer Unit	1953	14.8
ASDT 15930	AADT 13220	

South On ParklandDr		
Vehicle Type	Vol	%
A: Passenger Vehicle	136	85.0
B: Recreational Vehicle	2	1.3
S: Bus	2	1.3
D: Single Unit Truck	10	6.3
E: Tractor Trailer Unit	10	6.3
ASDT 190	AADT 160	

TURNING MOVEMENT ABBREVIATIONS

NR: Traffic From North Turning Right
NL: Traffic From North Turning Left
NT: Traffic From North Proceeding Through

SR: Traffic From South Turning Right
SL: Traffic From South Turning Left
ST: Traffic From South Proceeding Through

ER: Traffic From East Turning Right
EL: Traffic From East Turning Left
ET: Traffic From East Proceeding Through

WR: Traffic From West Turning Right
WL: Traffic From West Turning Left
WT: Traffic From West Proceeding Through

TURNING MOVEMENT ABBREVIATIONS

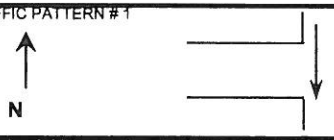
AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day fo period of January 1 to December 31 (365 days)

ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehicles per day fo period of May 1 to September 30 (153 days)

MANUAL TRAFFIC COUNTS

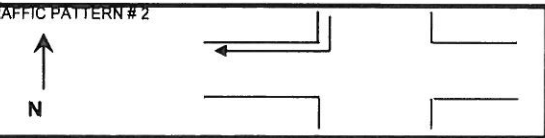
INTERSECTION OF: HWY 770 & Parkland Drive DATE: 6/2/2010

TRAFFIC PATTERN # 1



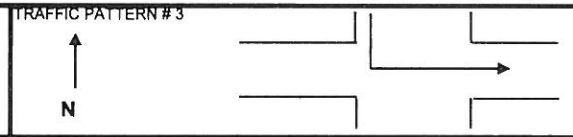
TIME	CARS & PICKUPS (A)	R.V.'S (B)	BUSES (C)	S. U. TRUCK (D)	TR. TR. COMB. (E)	TIME
06:00-07:00						07:00-08:00
07:00-08:00	50	2	1	5	10	07:00-08:00
08:00-09:00	55	5	0	3	10	08:00-09:00
09:00-10:00	45	4	0	2	5	09:00-10:00
10:00-11:00	35	1	0	2	5	10:00-11:00
11:00-12:00	35	1	0	2	2	11:00-12:00
12:00-13:00	25	1	0	1	3	12:00-13:00
13:00-14:00	30	0	0	0	0	13:00-14:00
14:00-15:00	35	0	0	0	0	14:00-15:00
15:00-16:00	55	0	0	0	0	15:00-16:00
16:00-17:00	70	3	1	0	0	16:00-17:00
17:00-18:00	48	2	1	0	0	17:00-18:00
18:00-19:00	37	1	0	0	0	18:00-19:00
TOTALS	520	20	3	15	35	TOTALS

TRAFFIC PATTERN # 2



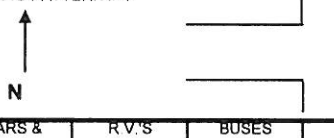
TIME	CARS & PICKUPS (A)	R.V.'S (B)	BUSES (C)	S. U. TRUCK (D)	TR. TR. COMB. (E)	TIME
06:00-07:00						07:00-08:00
07:00-08:00	0	0	0	2	0	07:00-08:00
08:00-09:00	0	0	0	0	0	08:00-09:00
09:00-10:00	0	0	0	0	0	09:00-10:00
10:00-11:00	2	0	0	0	0	10:00-11:00
11:00-12:00	1	0	0	0	0	11:00-12:00
12:00-13:00	3	0	0	0	0	12:00-13:00
13:00-14:00	2	0	0	0	0	13:00-14:00
14:00-15:00	1	0	0	0	0	14:00-15:00
15:00-16:00	3	0	0	0	0	15:00-16:00
16:00-17:00	5	0	0	0	0	16:00-17:00
17:00-18:00	2	0	0	0	0	17:00-18:00
18:00-19:00	1	0	0	0	0	18:00-19:00
TOTALS	20	0	0	2	0	TOTALS

TRAFFIC PATTERN # 3



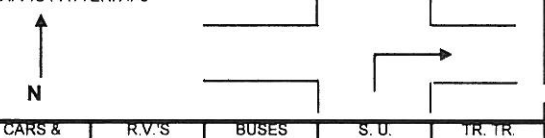
TIME	CARS & PICKUPS (A)	R.V.'S (B)	BUSES (C)	S. U. TRUCK (D)	TR. TR. COMB. (E)	TIME
06:00-07:00						07:00-08:00
07:00-08:00	8	0	1	1	1	07:00-08:00
08:00-09:00	5	0	1	1	1	08:00-09:00
09:00-10:00	4	0	1	1	1	09:00-10:00
10:00-11:00	9	0	0	0	0	10:00-11:00
11:00-12:00	6	0	0	0	0	11:00-12:00
12:00-13:00	8	0	0	0	0	12:00-13:00
13:00-14:00	8	0	0	0	0	13:00-14:00
14:00-15:00	7	0	0	0	0	14:00-15:00
15:00-16:00	10	0	0	0	0	15:00-16:00
16:00-17:00	7	0	0	0	0	16:00-17:00
17:00-18:00	15	0	0	0	0	17:00-18:00
18:00-19:00	7	0	0	0	0	18:00-19:00
TOTALS	94	0	3	3	3	TOTALS

TRAFFIC PATTERN # 4



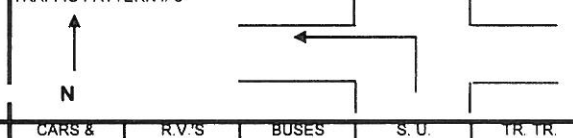
TIME	CARS & PICKUPS (A)	R.V.'S (B)	BUSES (C)	S. U. TRUCK (D)	TR. TR. COMB. (E)	TIME
06:00-07:00						07:00-08:00
07:00-08:00	50	0	2	0	5	07:00-08:00
08:00-09:00	70	0	1	0	5	08:00-09:00
09:00-10:00	60	0	1	0	8	09:00-10:00
10:00-11:00	40	1	0	0	5	10:00-11:00
11:00-12:00	35	1	0	0	5	11:00-12:00
12:00-13:00	20	1	0	0	2	12:00-13:00
13:00-14:00	24	0	0	0	0	13:00-14:00
14:00-15:00	32	0	0	0	0	14:00-15:00
15:00-16:00	35	0	0	0	0	15:00-16:00
16:00-17:00	43	0	1	0	0	16:00-17:00
17:00-18:00	33	0	1	0	0	17:00-18:00
18:00-19:00	43	0	0	0	0	18:00-19:00
TOTALS	485	3	6	0	30	TOTALS

TRAFFIC PATTERN # 5



TIME	CARS & PICKUPS (A)	R.V.'S (B)	BUSES (C)	S. U. TRUCK (D)	TR. TR. COMB. (E)	TIME
06:00-07:00						07:00-08:00
07:00-08:00	15	1	0	0	1	07:00-08:00
08:00-09:00	12	1	0	0	1	08:00-09:00
09:00-10:00	8	1	0	0	1	09:00-10:00
10:00-11:00	6	1	0	0	0	10:00-11:00
11:00-12:00	8	0	0	0	0	11:00-12:00
12:00-13:00	4	1	0	0	0	12:00-13:00
13:00-14:00	4	0	0	0	0	13:00-14:00
14:00-15:00	4	0	0	0	0	14:00-15:00
15:00-16:00	3	0	0	0	0	15:00-16:00
16:00-17:00	5	0	0	0	0	16:00-17:00
17:00-18:00	7	0	0	0	0	17:00-18:00
18:00-19:00	8	0	0	0	0	18:00-19:00
TOTALS	84	5	0	0	3	TOTALS

TRAFFIC PATTERN # 6

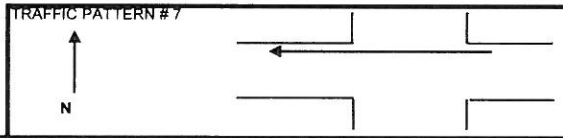


TIME	CARS & PICKUPS (A)	R.V.'S (B)	BUSES (C)	S. U. TRUCK (D)	TR. TR. COMB. (E)	TIME
06:00-07:00						07:00-08:00
07:00-08:00	5	0	0	0	0	07:00-08:00
08:00-09:00	4	0	0	0	0	08:00-09:00
09:00-10:00	4	0	0	0	0	09:00-10:00
10:00-11:00	3	0	0	0	0	10:00-11:00
11:00-12:00	2	0	0	0	0	11:00-12:00
12:00-13:00	2	0	0	0	0	12:00-13:00
13:00-14:00	2	0	0	0	0	13:00-14:00
14:00-15:00	2	0	0	0	0	14:00-15:00
15:00-16:00	3	0	0	0	0	15:00-16:00
16:00-17:00	3	0	0	0	0	16:00-17:00
17:00-18:00	5	0	0	0	0	17:00-18:00
18:00-19:00	4	0	0	0	0	18:00-19:00
TOTALS	39	0	0	0	0	TOTALS

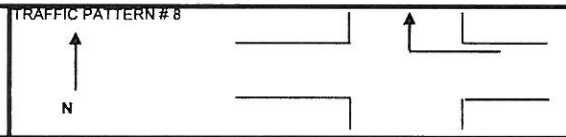
MANUAL TRAFFIC COUNTS

INTERSECTION OF: HWY 770 & Parkland Drive DATE: 6/2/2010 PAGE 2 0F 2

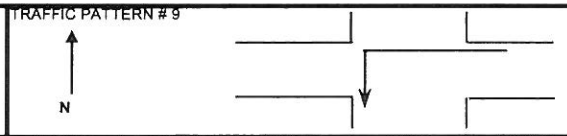
TRAFFIC PATTERN # 7



TRAFFIC PATTERN # 8

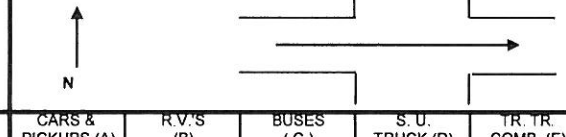


TRAFFIC PATTERN # 9

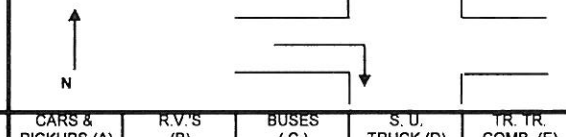


TIME	CARS & PICKUPS (A)	R.V.'S (B)	BUSES (C)	S. U. TRUCK (D)	TR. TR. COMB. (E)	CARS & PICKUPS (A)	R.V.'S (B)	BUSES (C)	S. U. TRUCK (D)	TR. TR. COMB. (E)	CARS & PICKUPS (A)	R.V.'S (B)	BUSES (C)	S. U. TRUCK (D)	TR. TR. COMB. (E)	TIME
06:00-07:00																
07:00-08:00	3	0	0	0	0	11	0	2	0	2	9	0	0	0	0	07:00-08:00
08:00-09:00	1	0	0	0	1	7	0	2	0	1	8	0	0	0	0	08:00-09:00
09:00-10:00	1	0	0	0	0	7	0	1	0	1	3	0	0	0	0	09:00-10:00
10:00-11:00	1	0	0	0	0	10	0	0	0	0	6	0	0	0	0	10:00-11:00
11:00-12:00	1	0	0	0	0	6	0	0	0	0	8	0	0	0	0	11:00-12:00
12:00-13:00	2	0	0	0	0	7	0	0	0	0	6	0	0	0	0	12:00-13:00
13:00-14:00	2	0	0	0	0	9	0	0	0	0	8	0	0	0	0	13:00-14:00
14:00-15:00	2	0	0	0	0	7	0	0	0	0	5	0	0	0	0	14:00-15:00
15:00-16:00	1	0	0	0	0	10	0	0	0	0	7	0	0	0	0	15:00-16:00
16:00-17:00	3	0	1	0	0	15	0	0	0	0	8	0	0	0	0	16:00-17:00
17:00-18:00	3	0	1	0	0	13	0	0	0	0	7	0	0	0	0	17:00-18:00
18:00-19:00	2	0	0	0	0	9	0	0	0	0	10	0	0	0	0	18:00-19:00
TOTALS	22	0	2	0	1	111	0	5	0	4	85	0	0	0	0	TOTALS

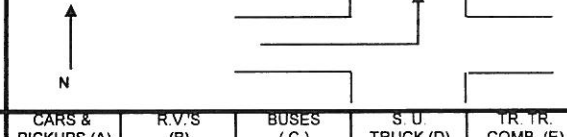
TRAFFIC PATTERN # 10



TRAFFIC PATTERN # 11



TRAFFIC PATTERN # 12



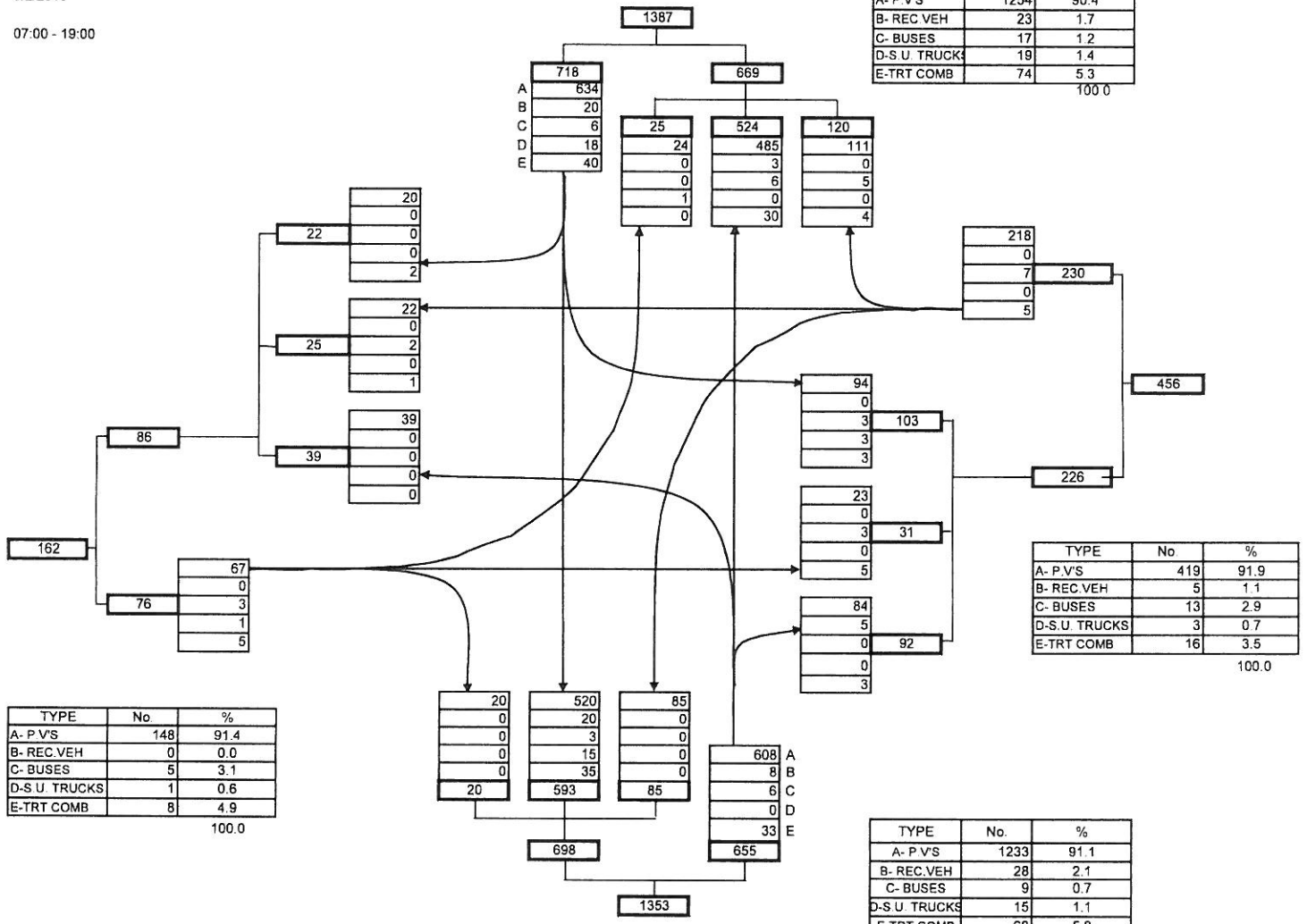
TIME	CARS & PICKUPS (A)	R.V.'S (B)	BUSES (C)	S. U. TRUCK (D)	TR. TR. COMB. (E)	CARS & PICKUPS (A)	R.V.'S (B)	BUSES (C)	S. U. TRUCK (D)	TR. TR. COMB. (E)	CARS & PICKUPS (A)	R.V.'S (B)	BUSES (C)	S. U. TRUCK (D)	TR. TR. COMB. (E)	TIME
06:00-07:00																
07:00-08:00	3	0	1	0	3	4	0	0	0	0	2	0	0	0	0	07:00-08:00
08:00-09:00	2	0	0	0	1	2	0	0	0	0	3	0	0	1	0	08:00-09:00
09:00-10:00	1	0	0	0	1	3	0	0	0	0	0	0	0	0	0	09:00-10:00
10:00-11:00	1	0	0	0	0	2	0	0	0	0	2	0	0	0	0	10:00-11:00
11:00-12:00	0	0	0	0	0	3	0	0	0	0	1	0	0	0	0	11:00-12:00
12:00-13:00	3	0	0	0	0	1	0	0	0	0	4	0	0	0	0	12:00-13:00
13:00-14:00	2	0	0	0	0	1	0	0	0	0	2	0	0	0	0	13:00-14:00
14:00-15:00	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14:00-15:00
15:00-16:00	3	0	0	0	0	0	0	0	0	0	3	0	0	0	0	15:00-16:00
16:00-17:00	2	0	0	0	0	2	0	0	0	0	2	0	0	0	0	16:00-17:00
17:00-18:00	1	0	1	0	0	1	0	0	0	0	2	0	0	0	0	17:00-18:00
18:00-19:00	3	0	1	0	0	1	0	0	0	0	3	0	0	0	0	18:00-19:00
TOTALS	23	0	3	0	5	20	0	0	0	0	24	0	0	1	0	TOTALS

TURNING MOVEMENT & TRAFFIC VOLUME CHART

LOCATION: HWY 770 & Parkland Drive

DATE: 6/2/2010

TIME: 07:00 - 19:00



TYPE	No.	%
A- P.V'S	1254	90.4
B- REC.VEH	23	1.7
C- BUSES	17	1.2
D-S.U. TRUCKS	19	1.4
E-TRT COMB	74	5.3
		100.0

TYPE	No.	%
A- P.V'S	419	91.9
B- REC.VEH	5	1.1
C- BUSES	13	2.9
D-S.U. TRUCKS	3	0.7
E-TRT COMB	16	3.5
		100.0

TYPE	No.	%
A- P.V'S	148	91.4
B- REC.VEH	0	0.0
C- BUSES	5	3.1
D-S.U. TRUCKS	1	0.6
E-TRT COMB	8	4.9
		100.0

TYPE	No.	%
A- P.V'S	1233	91.1
B- REC.VEH	28	2.1
C- BUSES	9	0.7
D-S.U. TRUCKS	15	1.1
E-TRT COMB	68	5.0
		100.0

Year	Case Number	Object Number	Police Service	In / Near	Place Name	On Highway	At Highway	On Street	At Street	Not at Intersection Distance	Not at Intersection Direction	Not at Intersection Km / m	Not at Intersection Reference Point	Reference Point Description	Special Reference Location Description
2003	Z334156		1467	2	CARVEL	770									3 KM S OF 16
2003	Z449689		1467	2	STONY PL	770				0.5	N	K	TWP 521		
2003	1315789		1467	2	CARVEL	770				3	S	K	OF CARVEL CORNER		
2003	756958		COPP	2	CARVEL	770		PARKLAND DRIVE							
2004	Z467390		1467	2	CARVEL	770				3	S	K	HWY 16		
2004	Z467551		1467	2	STONY PL	770				2	N	K	GENESSEE BRIDGE		
2004	Z477457		1467	2	CARVEL	770				0.5	N	K	TWP RD 524		MINK LAKE
2005	1542452		1467	2	CARVEL	770		TWP RD 524							
2006	1687706		1467	2	CARVEL	770				75	N	K	PARKLAND DR		
2007	Z539327		1467	2	STONY PL	770				3.21	S	K	HIGHWAY 16		
2007	Z540217		1467	2	CARVEL	770				5	N	M	TOWNSHIP ROAD 524		
2007	Z559781		1467	2	STONY PL	770				2.41	S	K	HWY16		NEAR TOWNSHIP 531
2007	1688021		1467	2	CARVEL	770		TWP RD 524		400	N	M	MINK LAKE TURN OFF		

Date	Time	Severity	Primary Event	Veh 1 Direction of Travel	Veh 2 Direction of Travel	Veh 1 Manoeuvre	Veh 2 Manoeuvre	Collision Type	Highway	Comm/ Section	Safety Subsection	Kilometre Post	Environmental Condition	Surface Condition	Total Injuries	Total Fatalities
2003/05/06	10:45	3	1	1		47		94	770	6	10	21.378			0	0
2003/09/24	05:45	3	1	5		47		94	770	6	10	17.188			0	0
2003/08/30	16:25	2	8	1		47		48	770	6	10	17.767	1	1	1	0
2003/02/09	15:50	2	6	7	5	86	47	38	770	6	10	21.625	4	3	2	0
2004/10/22	18:20	3	1	5		47		94	770	6	10	21.378			0	0
2004/02/11	18:00	3	9	1		47		58	770	6	10	22.098			0	0
2004/10/15	17:00	3	2	1		24		51	770	6	10	17.508			0	0
2005/11/02	15:20	3	3	1	3	47	97	8	770	6	10	17.64	5	1	0	0
2006/09/17	17:30	2	2	1		47		51	770	6	10	21.677	1	1	1	0
2007/11/09	18:00	3	1	5		47		94	770	6	10	21.156			0	0
2007/05/03	18:45	3	8	9		47		58	770	6	10	18.127			0	0
2007/02/20	16:30	3	1	1		47		94	770	6	10	21.951			0	0
2007/02/16	09:10	3	8	6	8	47	47	28	770	6	10	17.97	1	3	0	0

Appendix B

PHOTOS

PHOTO # 1 – Viewing South, north of the intersection of Hwy. 770 and Parkland Drive. The existing grade is fairly flat.

PHOTO # 2 – Viewing South from north of the intersection of Hwy. 770 and Parkland Drive. A Type II intersection treatment exists, with the tapers slightly longer on the east side .

PHOTO # 3 – Viewing South at the Hwy. 770 & Parkland Drive intersection. The intersection contains short parallel turning lanes with tapers.

PHOTO # 4 – Viewing North from the Hwy. 770 & Parkland Drive intersection. There is more than 600m of sight distance available. A road/approach exists on the left.

PHOTO # 5 – Viewing South from the Hwy. 770 & Parkland Drive intersection. There is more than 600m of sight distance available.

PHOTO # 6 – Viewing West, at Parkland Drive.

Appendix C

TRAFFIC VOLUME HISTORY & GROWTH RATES
2009 – 2029 TURNING MOVEMENT DIAGRAMS
STANDARD AT-GRADE INTERSECTION LAYOUTS FOR TWO-LANE HIGHWAYS
INTERSECTION TREATMENT (TYPE IIb)(TWO-LANE HIGHWAY)

Turning Movement Summary Diagram

Intersection of: Highway 770:06:04 & Parkland Drive

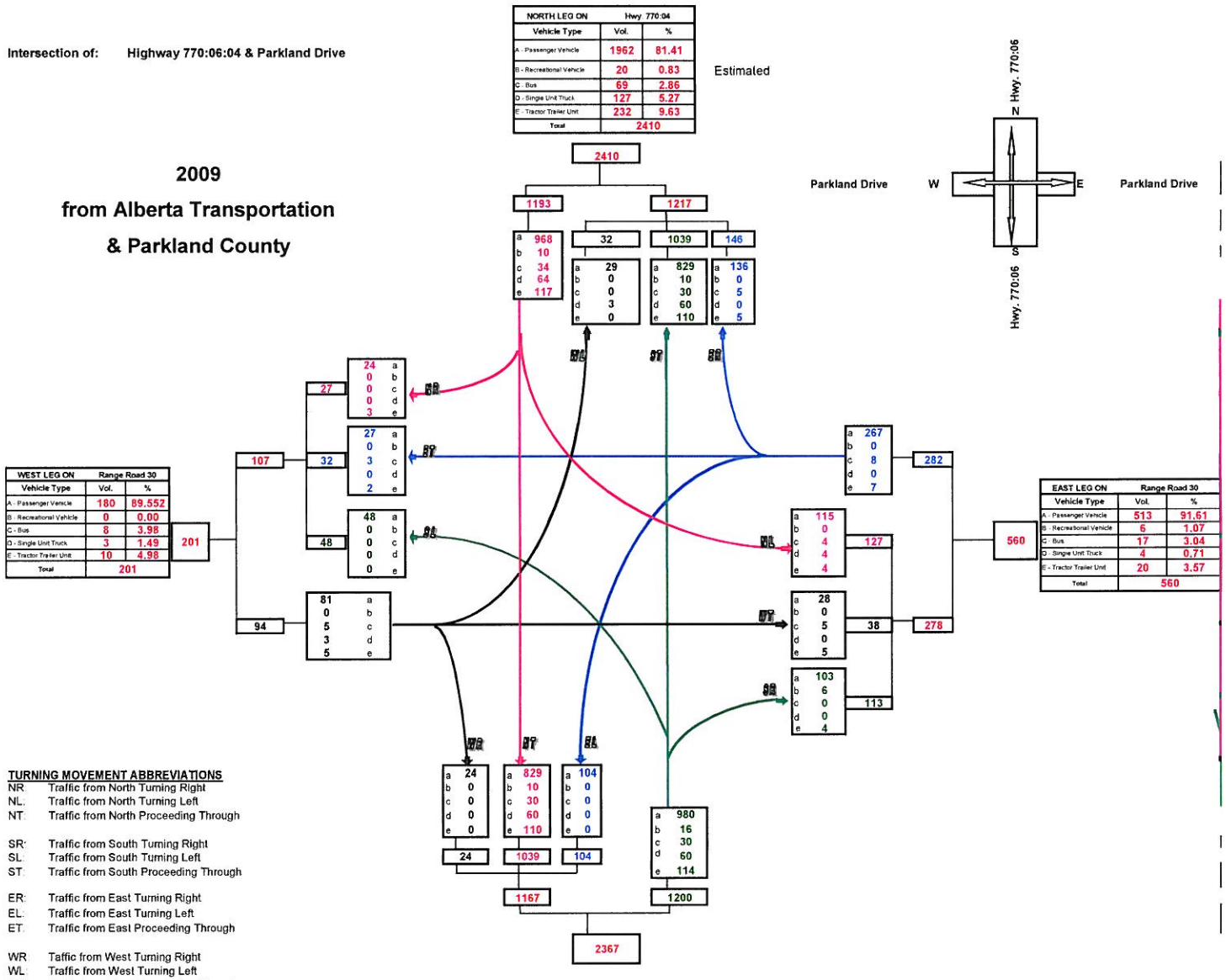
2009

from Alberta Transportation

& Parkland County

NORTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	1962	81.41
B - Recreational Vehicle	20	0.83
C - Bus	69	2.86
D - Single Unit Truck	127	5.27
E - Tractor Trailer Unit	232	9.63
Total	2410	

Estimated



WEST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	180	89.552
B - Recreational Vehicle	0	0.00
C - Bus	8	3.98
D - Single Unit Truck	3	1.49
E - Tractor Trailer Unit	10	4.98
Total	201	

EAST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	513	91.61
B - Recreational Vehicle	6	1.07
C - Bus	17	3.04
D - Single Unit Truck	4	0.71
E - Tractor Trailer Unit	20	3.57
Total	560	

TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Taffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

TURNING MOVEMENT ABBREVIATIONS

AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehilces per day for period of May 1 to September 30 (153 days)

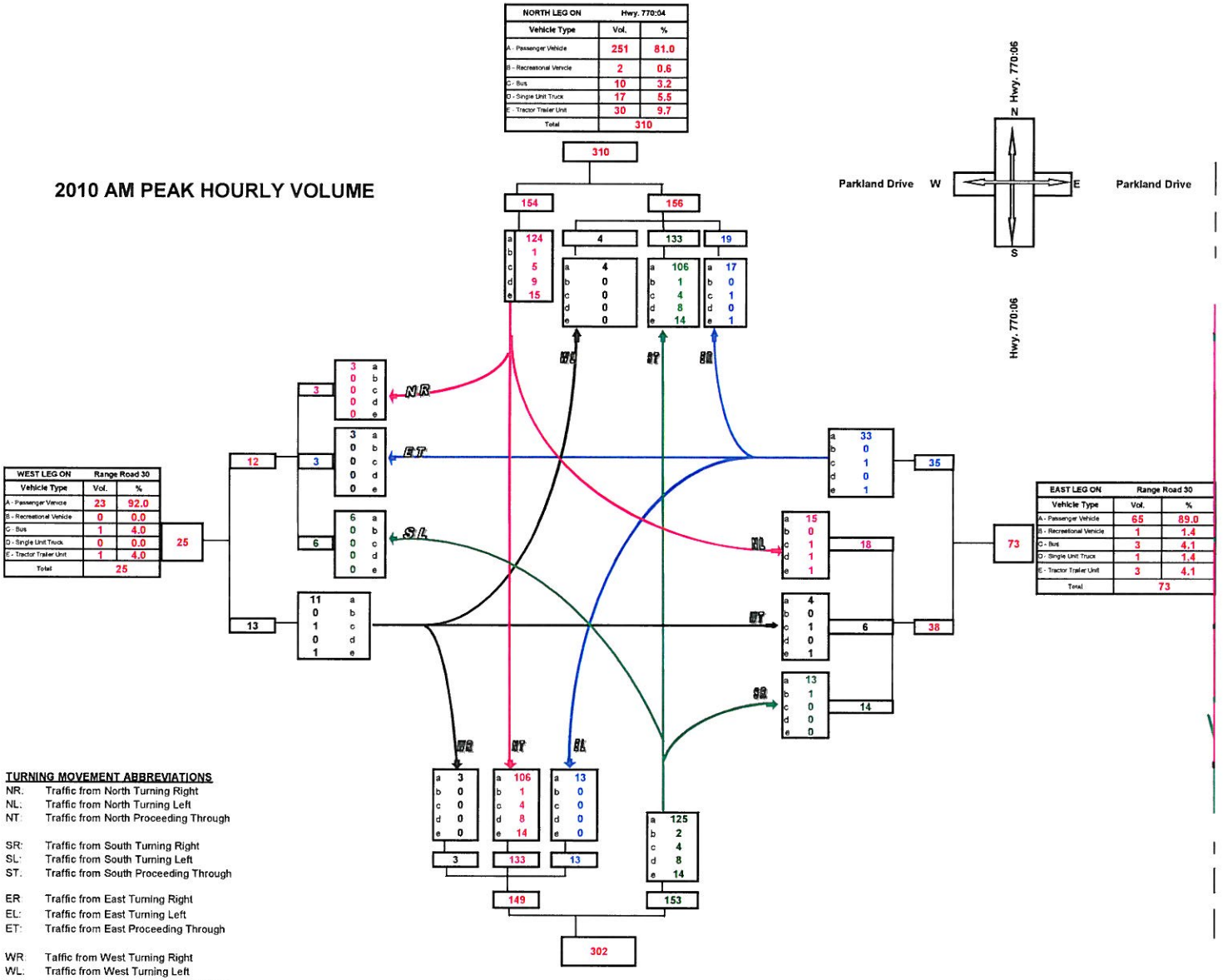
SOUTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	1937	81.83
B - Recreational Vehicle	26	1.10
C - Bus	60	2.53
D - Single Unit Truck	120	5.07
E - Tractor Trailer Unit	224	9.46
Total	2367	

Estimated

AADT Conversion Factor
1.812

Turning Movement Summary Diagram

2010 AM PEAK HOURLY VOLUME



TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Taffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

TURNING MOVEMENT ABBREVIATIONS

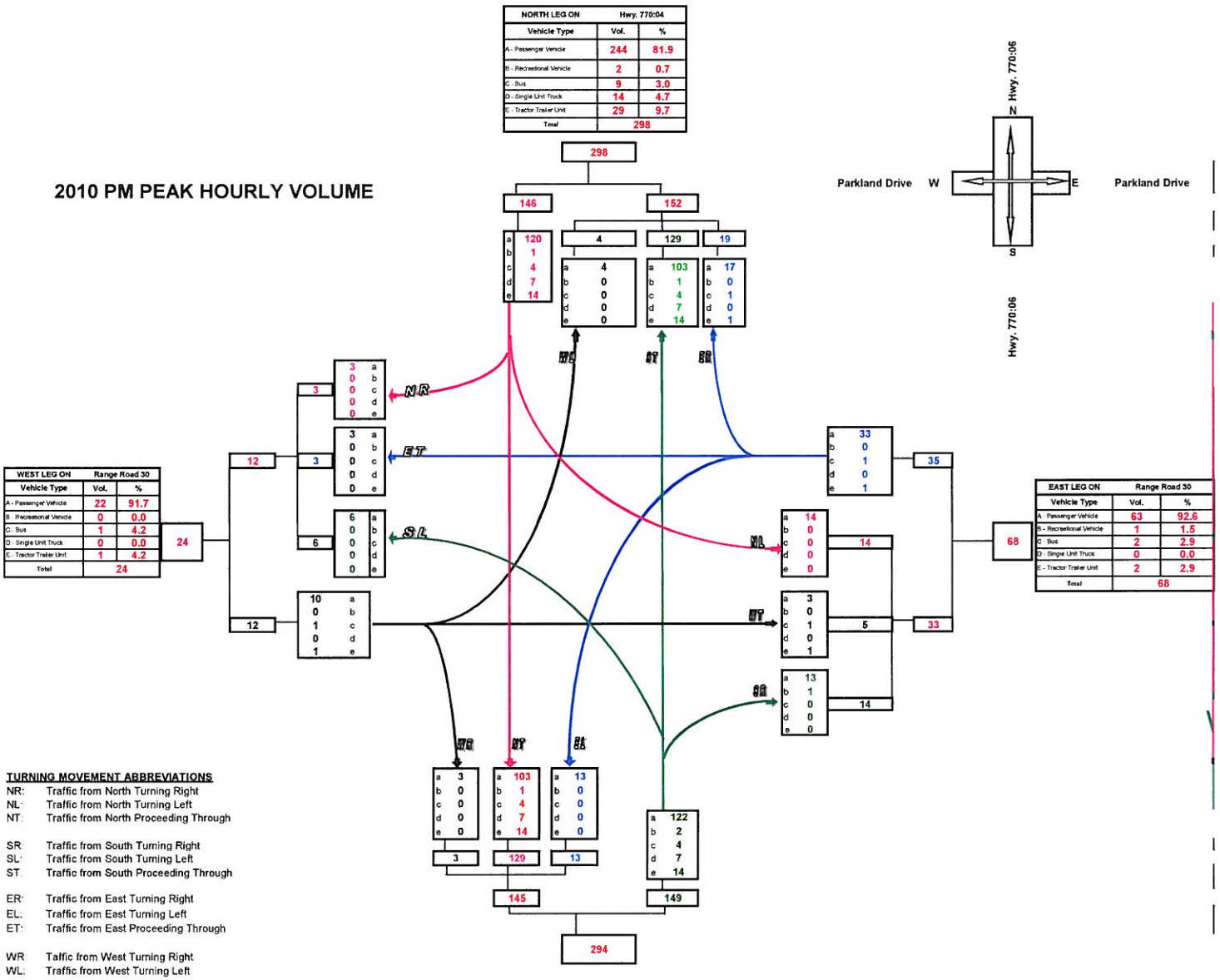
AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehilces per day for period of May 1 to September 30 (153 days)

AM Peak 0 1278
PM Peak 0 124066

Turning Movement Summary Diagram

2010 PM PEAK HOURLY VOLUME



NORTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	244	81.9
B - Recreational Vehicle	2	0.7
C - Bus	9	3.0
D - Single Unit Truck	14	4.7
E - Tractor Trailer Unit	29	9.7
Total	298	

WEST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	22	91.7
B - Recreational Vehicle	0	0.0
C - Bus	1	4.2
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	1	4.2
Total	24	

EAST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	63	92.6
B - Recreational Vehicle	1	1.5
C - Bus	2	2.9
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	2	2.9
Total	68	

SOUTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	241	82.0
B - Recreational Vehicle	3	1.0
C - Bus	8	2.7
D - Single Unit Truck	14	4.8
E - Tractor Trailer Unit	28	9.5
Total	294	

TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Talfic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

TURNING MOVEMENT ABBREVIATIONS

AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehilces per day for period of May 1 to September 30 (153 days)

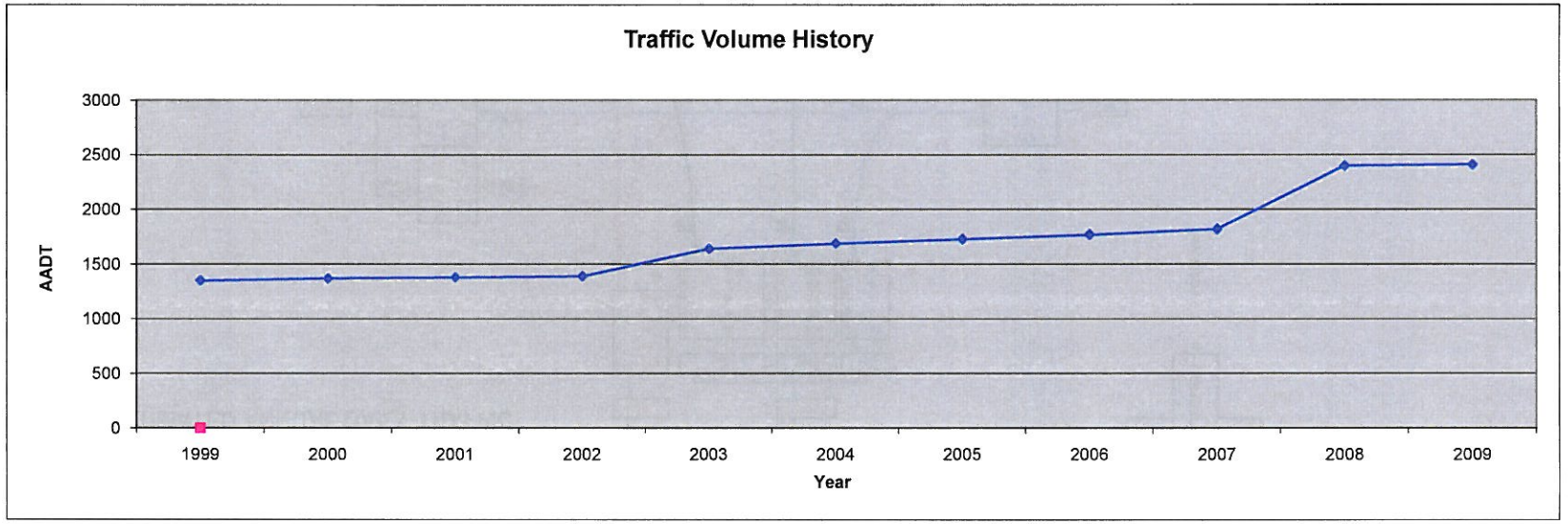
AM Peak	0 1278
PM Peak	0 124066

TRAFFIC VOLUME HISTORY & GROWTH RATES

Highway: **Hwy. 770:06**

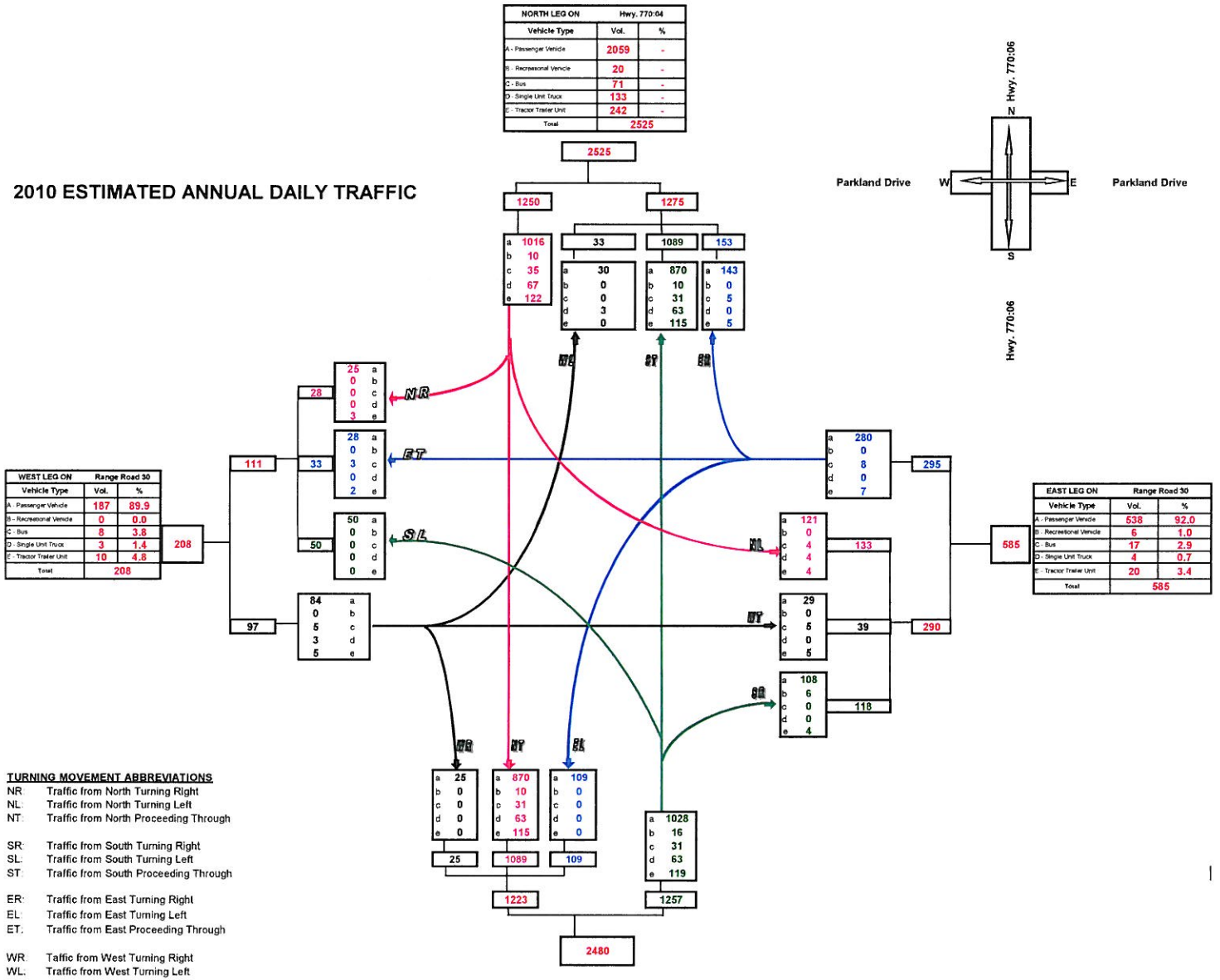
TRAFFIC VOLUME HISTORY												
Location	**AADT 1999**	**AADT 2000**	**AADT 2001**	**AADT 2002**	**AADT 2003**	**AADT 2004**	**AADT 2005**	**AADT 2006**	**AADT 2007**	**AADT 2008**	**AADT 2009**	**Growth Rate (1999 to 2009)**
S. of 16 W. of Manly Corner	1350	1370	1380	1390	1640	1690	1730	1770	1820	2400	2410	7.85%
										Provincial Average:		2.00%
										Average:		**4.93%**

Note: Data obtained from Alberta Transportation at http://www.transportation.alberta.ca/2639.htm



Turning Movement Summary Diagram

2010 ESTIMATED ANNUAL DAILY TRAFFIC



TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Taffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

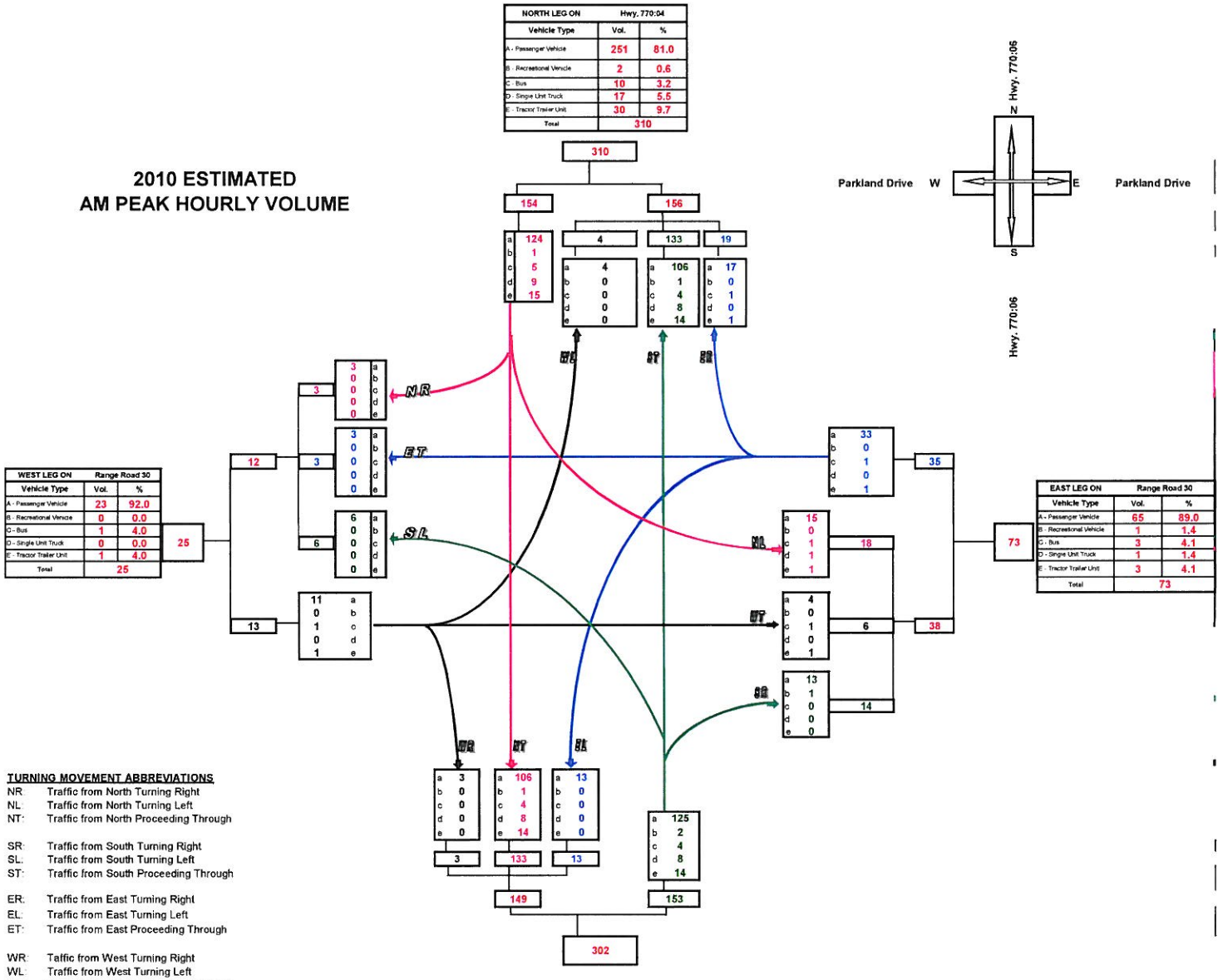
TURNING MOVEMENT ABBREVIATIONS

AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehilces per day for period of May 1 to September 30 (153 days)

Turning Movement Summary Diagram

2010 ESTIMATED AM PEAK HOURLY VOLUME



NORTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	251	81.0
B - Recreational Vehicle	2	0.6
C - Bus	10	3.2
D - Single Unit Truck	17	5.5
E - Tractor Trailer Unit	30	9.7
Total	310	

WEST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	23	92.0
B - Recreational Vehicle	0	0.0
C - Bus	1	4.0
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	1	4.0
Total	25	

EAST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	65	89.0
B - Recreational Vehicle	1	1.4
C - Bus	3	4.1
D - Single Unit Truck	1	1.4
E - Tractor Trailer Unit	3	4.1
Total	73	

SOUTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	247	81.8
B - Recreational Vehicle	3	1.0
C - Bus	8	2.6
D - Single Unit Truck	16	5.3
E - Tractor Trailer Unit	28	9.3
Total	302	

TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Taffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

TURNING MOVEMENT ABBREVIATIONS

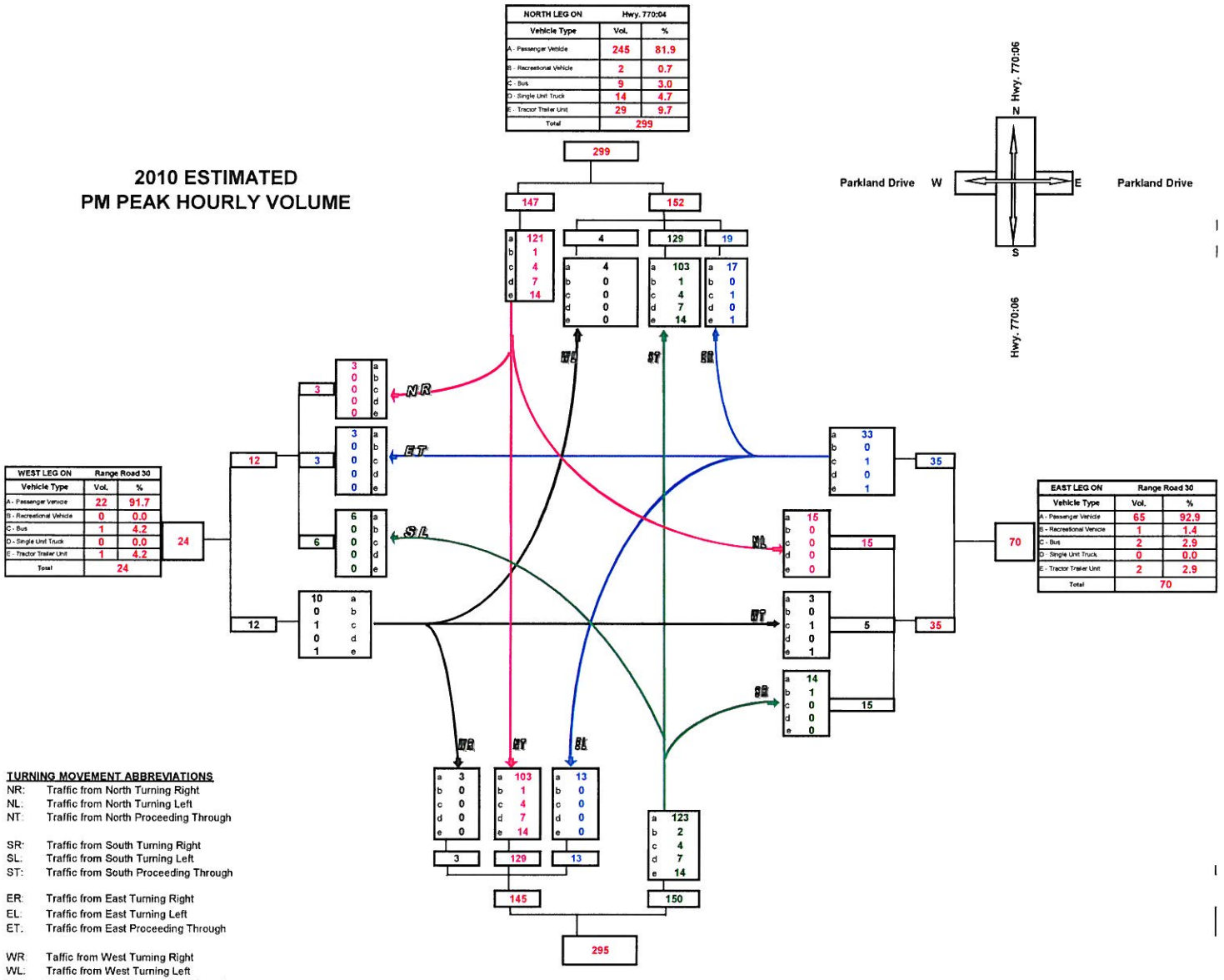
AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehilces per day for period of May 1 to September 30 (153 days)

AM Peak	0.098	2010
PM Peak	0.11457	2010
		0

Turning Movement Summary Diagram

2010 ESTIMATED
PM PEAK HOURLY VOLUME



NORTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	245	81.9
B - Recreational Vehicle	2	0.7
C - Bus	9	3.0
D - Single Unit Truck	14	4.7
E - Tractor Trailer Unit	29	9.7
Total	299	

WEST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	22	91.7
B - Recreational Vehicle	0	0.0
C - Bus	1	4.2
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	1	4.2
Total	24	

EAST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	65	92.9
B - Recreational Vehicle	1	1.4
C - Bus	2	2.9
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	2	2.9
Total	70	

SOUTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	242	82.0
B - Recreational Vehicle	3	1.0
C - Bus	8	2.7
D - Single Unit Truck	14	4.7
E - Tractor Trailer Unit	28	9.5
Total	295	

TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Traffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

TURNING MOVEMENT ABBREVIATIONS

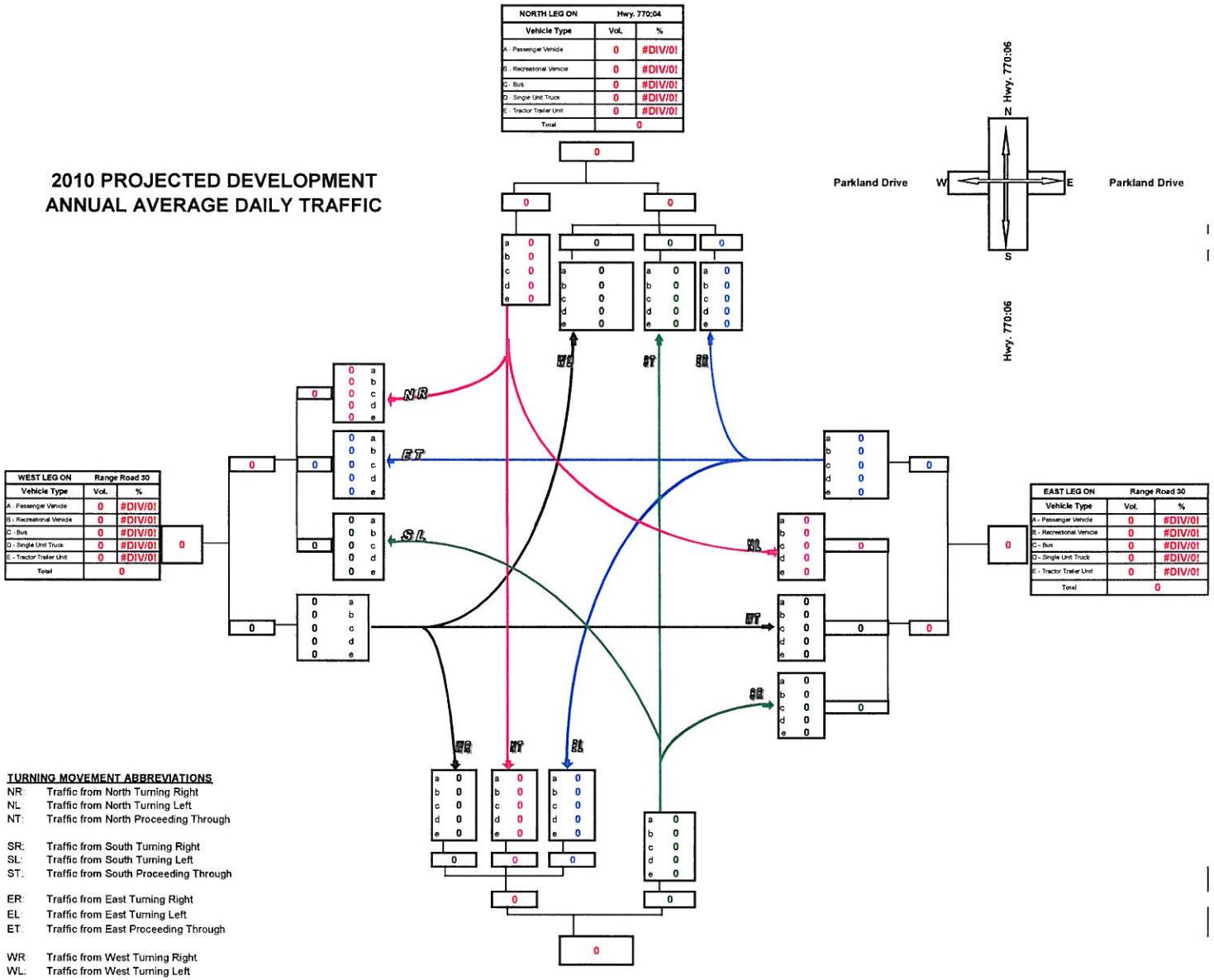
AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehicles per day for period of May 1 to September 30 (153 days)

2010
2010
0

Turning Movement Summary Diagram

2010 PROJECTED DEVELOPMENT
ANNUAL AVERAGE DAILY TRAFFIC



NORTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	0	#DIV/0!
B - Recreational Vehicle	0	#DIV/0!
C - Bus	0	#DIV/0!
D - Single Unit Truck	0	#DIV/0!
E - Tractor Trailer Unit	0	#DIV/0!
Total	0	

WEST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	0	#DIV/0!
B - Recreational Vehicle	0	#DIV/0!
C - Bus	0	#DIV/0!
D - Single Unit Truck	0	#DIV/0!
E - Tractor Trailer Unit	0	#DIV/0!
Total	0	

EAST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	0	#DIV/0!
B - Recreational Vehicle	0	#DIV/0!
C - Bus	0	#DIV/0!
D - Single Unit Truck	0	#DIV/0!
E - Tractor Trailer Unit	0	#DIV/0!
Total	0	

SOUTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	0	#DIV/0!
B - Recreational Vehicle	0	#DIV/0!
C - Bus	0	#DIV/0!
D - Single Unit Truck	0	#DIV/0!
E - Tractor Trailer Unit	0	#DIV/0!
Total	0	

TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Traffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

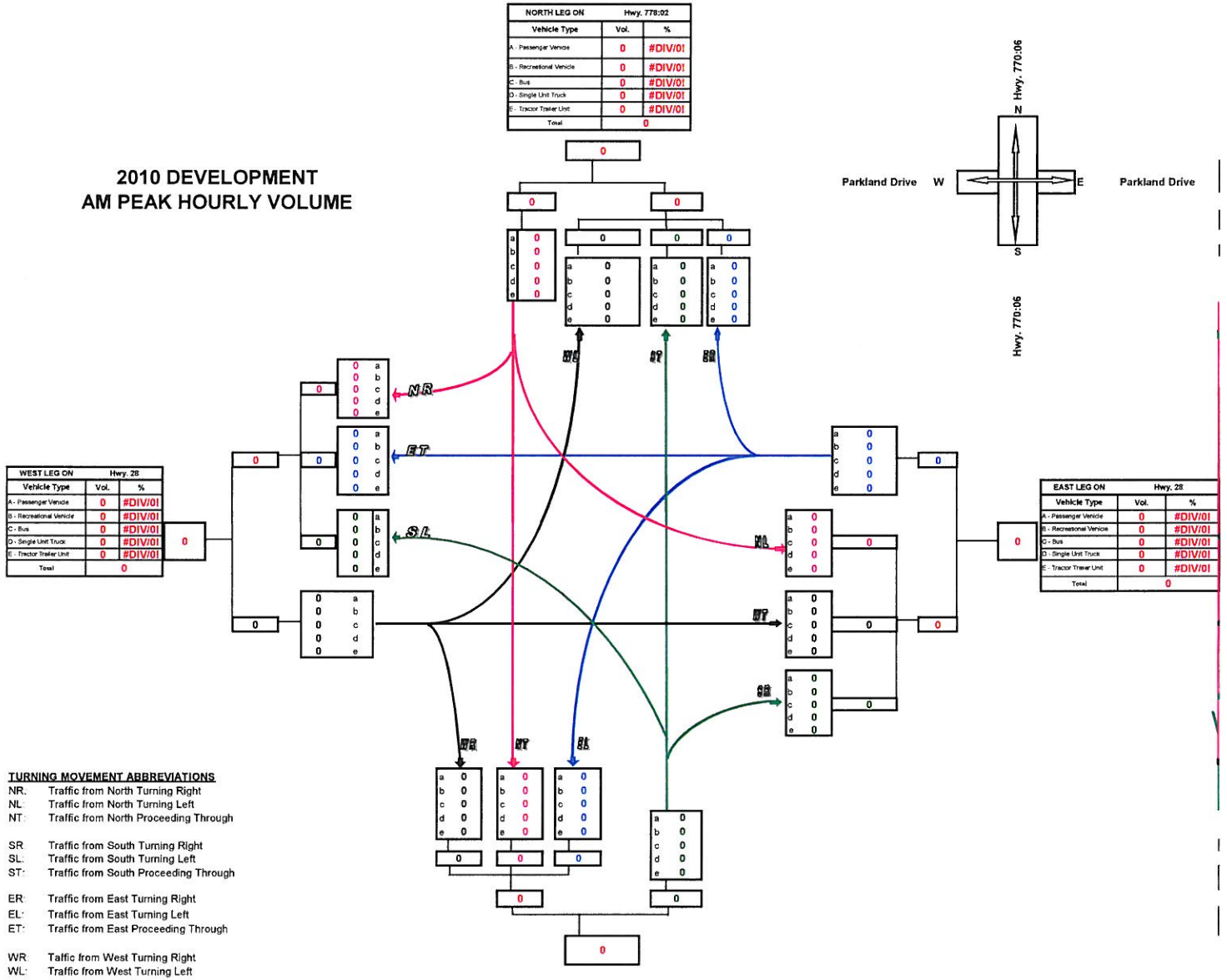
TURNING MOVEMENT ABBREVIATIONS

AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehicles per day for period of May 1 to September 30 (153 days)

Turning Movement Summary Diagram

2010 DEVELOPMENT
AM PEAK HOURLY VOLUME



TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Taffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

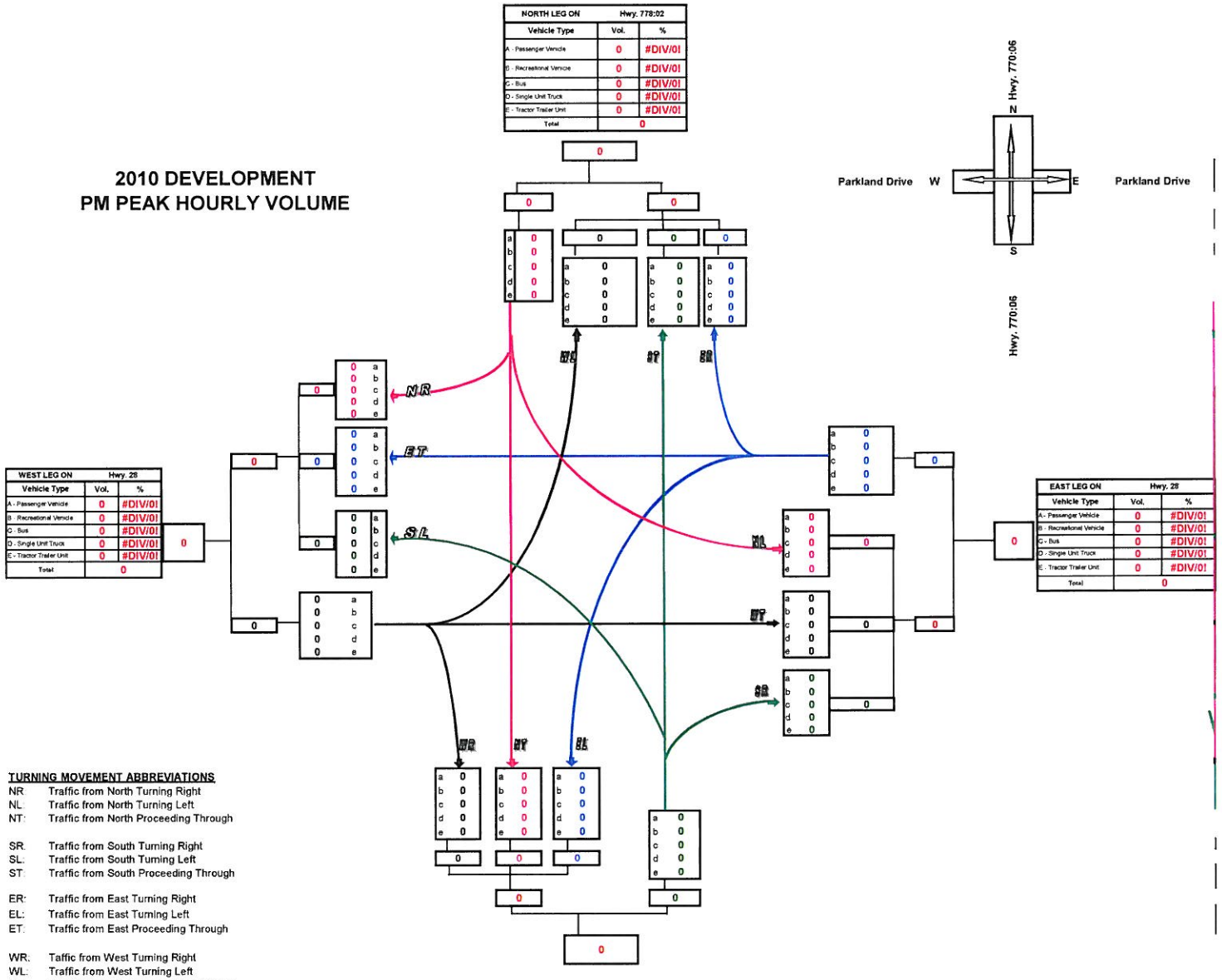
TURNING MOVEMENT ABBREVIATIONS

AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehilces per day for period of May 1 to September 30 (153 days)

Turning Movement Summary Diagram

2010 DEVELOPMENT
PM PEAK HOURLY VOLUME



TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Taffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

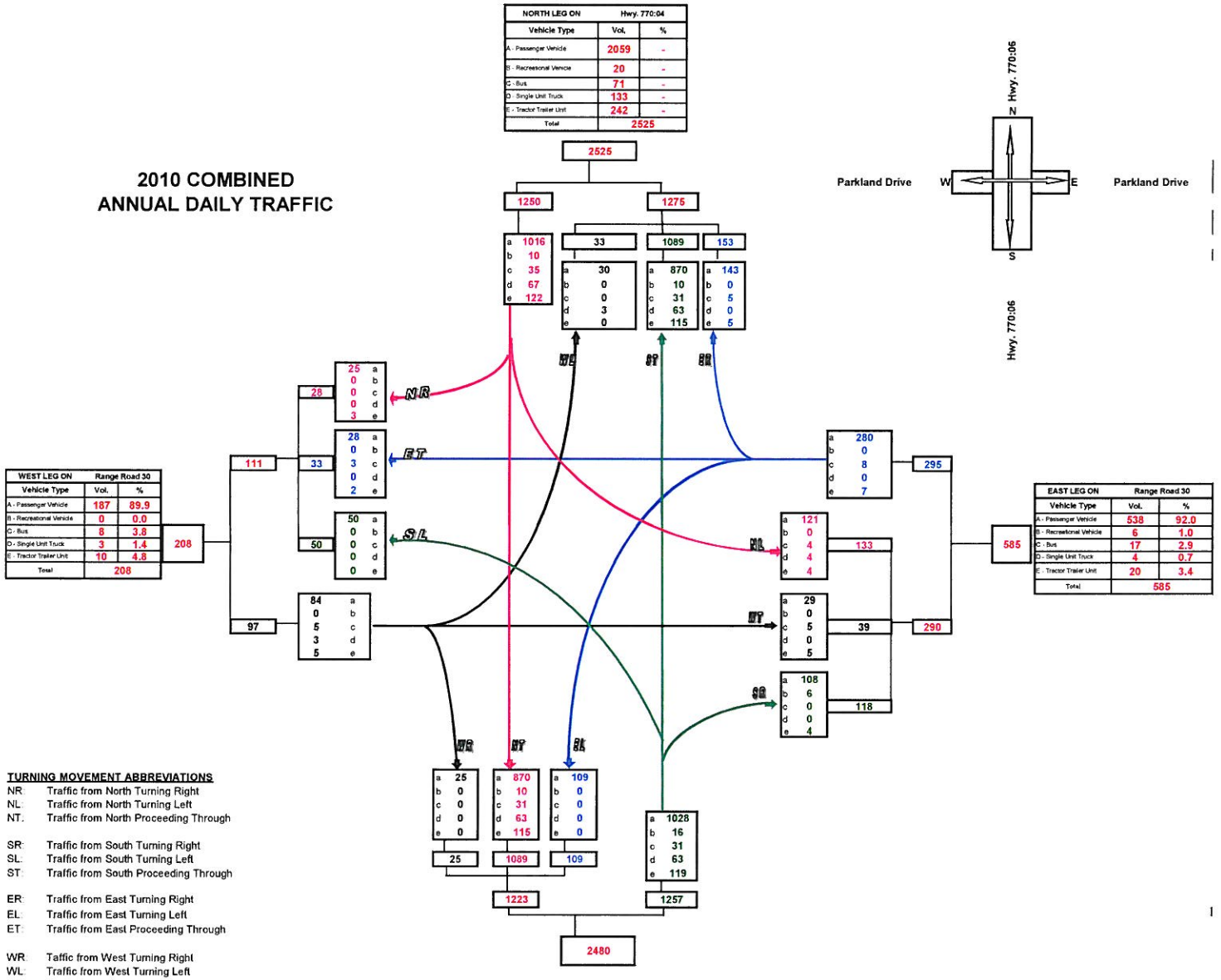
TURNING MOVEMENT ABBREVIATIONS

AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehilces per day for period of May 1 to September 30 (153 days)

Turning Movement Summary Diagram

2010 COMBINED ANNUAL DAILY TRAFFIC



NORTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	2059	-
B - Recreational Vehicle	20	-
C - Bus	71	-
D - Single Unit Truck	133	-
E - Tractor Trailer Unit	242	-
Total	2525	

WEST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	187	89.9
B - Recreational Vehicle	0	0.0
C - Bus	8	3.8
D - Single Unit Truck	3	1.4
E - Tractor Trailer Unit	10	4.8
Total	208	

EAST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	538	92.0
B - Recreational Vehicle	6	1.0
C - Bus	17	2.9
D - Single Unit Truck	4	0.7
E - Tractor Trailer Unit	20	3.4
Total	585	

SOUTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	2032	81.9
B - Recreational Vehicle	26	1.0
C - Bus	62	2.5
D - Single Unit Truck	126	5.1
E - Tractor Trailer Unit	234	9.4
Total	2480	

TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Taffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

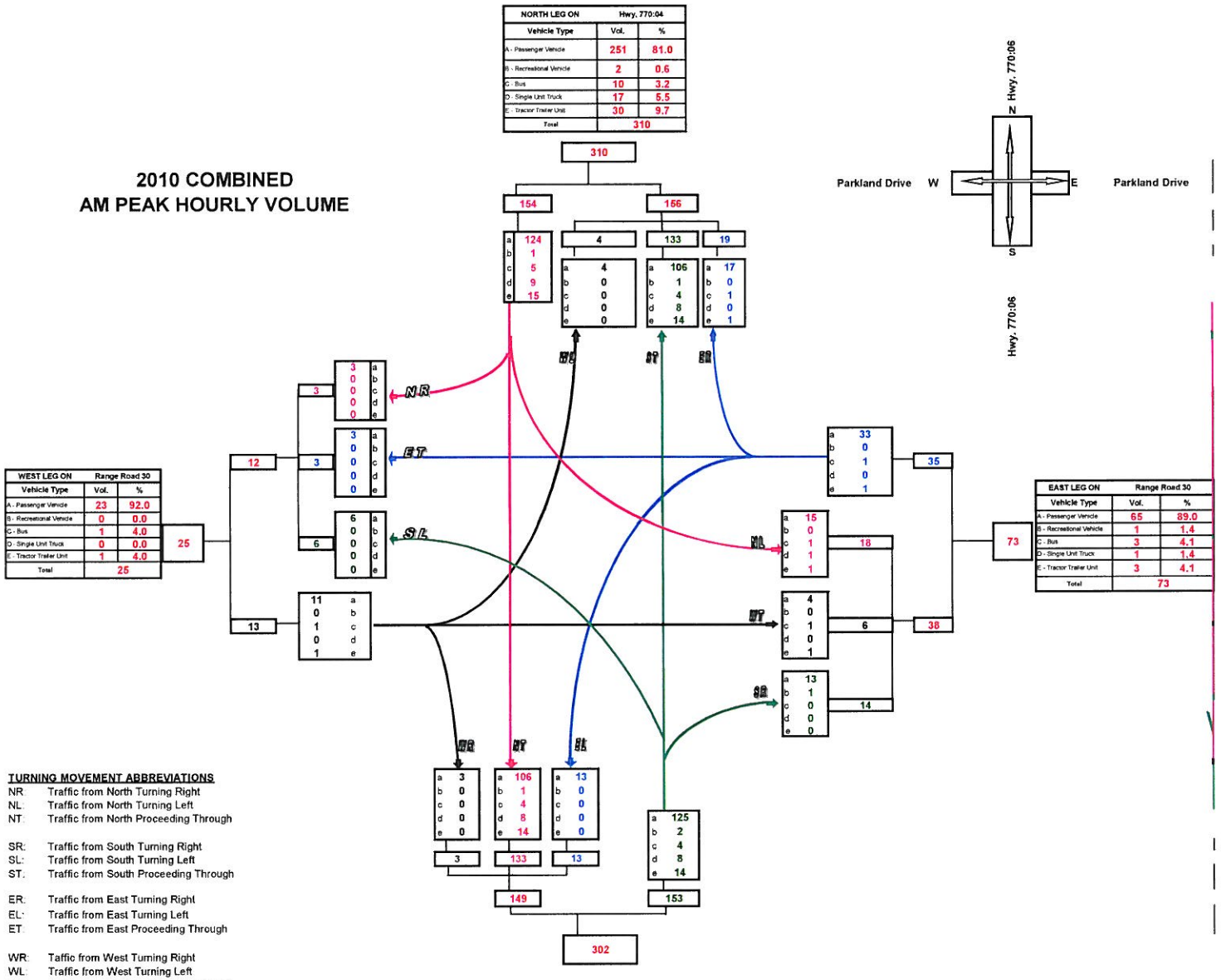
TURNING MOVEMENT ABBREVIATIONS

AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehilces per day for period of May 1 to September 30 (153 days)

Turning Movement Summary Diagram

2010 COMBINED
AM PEAK HOURLY VOLUME



NORTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	251	81.0
B - Recreational Vehicle	2	0.6
C - Bus	10	3.2
D - Single Unit Truck	17	5.5
E - Tractor Trailer Unit	30	9.7
Total	310	

WEST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	23	92.0
B - Recreational Vehicle	0	0.0
C - Bus	1	4.0
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	1	4.0
Total	25	

EAST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	65	89.0
B - Recreational Vehicle	1	1.4
C - Bus	3	4.1
D - Single Unit Truck	1	1.4
E - Tractor Trailer Unit	3	4.1
Total	73	

SOUTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	247	81.8
B - Recreational Vehicle	3	1.0
C - Bus	8	2.6
D - Single Unit Truck	16	5.3
E - Tractor Trailer Unit	28	9.3
Total	302	

TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Taffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

TURNING MOVEMENT ABBREVIATIONS

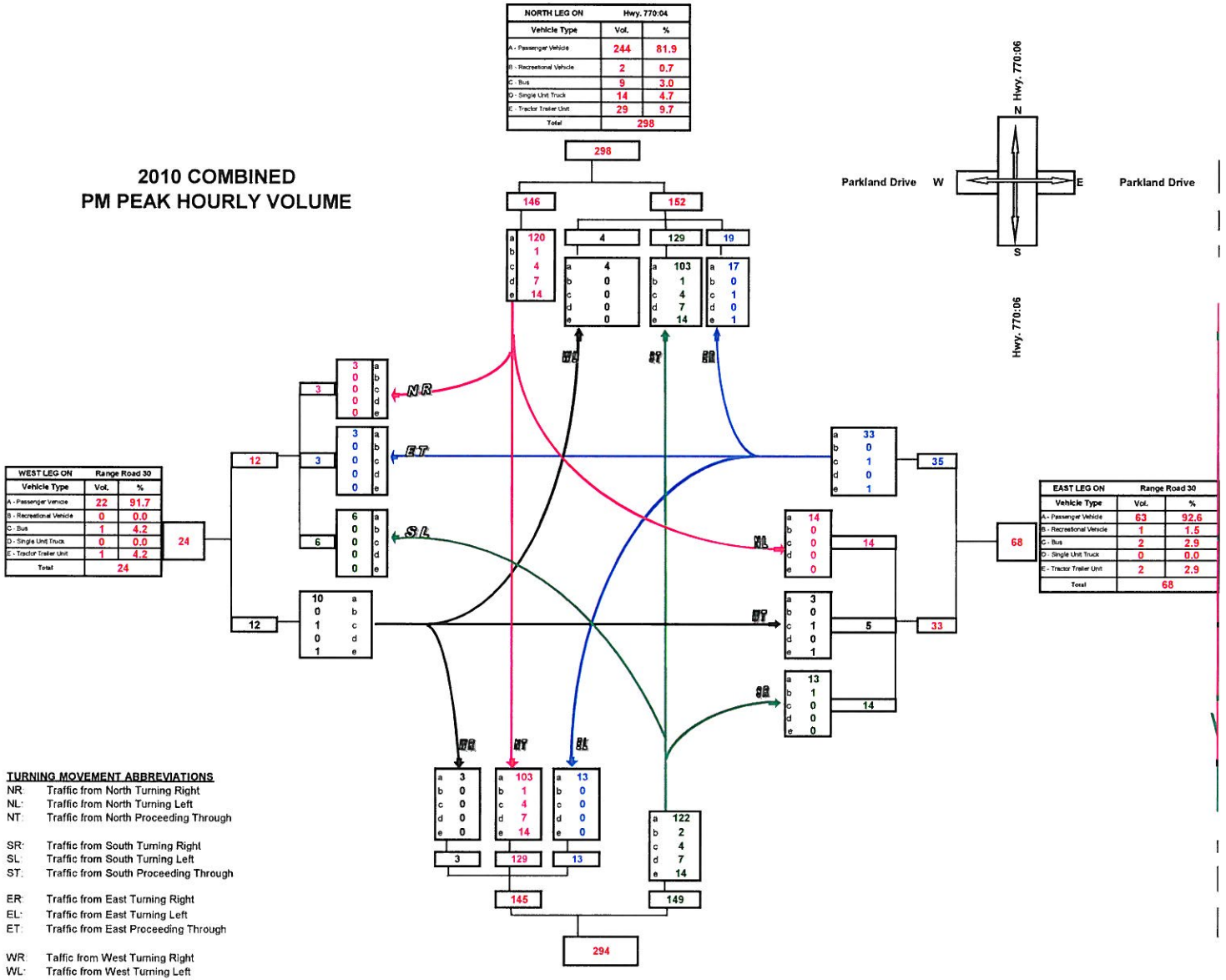
AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehilces per day for period of May 1 to September 30 (153 days)

2010
2010
0

Turning Movement Summary Diagram

2010 COMBINED
PM PEAK HOURLY VOLUME



WEST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	22	91.7
B - Recreational Vehicle	0	0.0
C - Bus	1	4.2
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	1	4.2
Total	24	

NORTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	244	81.9
B - Recreational Vehicle	2	0.7
C - Bus	9	3.0
D - Single Unit Truck	14	4.7
E - Tractor Trailer Unit	29	9.7
Total	298	

EAST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	63	92.6
B - Recreational Vehicle	1	1.5
C - Bus	2	2.9
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	2	2.9
Total	68	

SOUTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	241	82.0
B - Recreational Vehicle	3	1.0
C - Bus	8	2.7
D - Single Unit Truck	14	4.8
E - Tractor Trailer Unit	28	9.5
Total	294	

TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Taffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

TURNING MOVEMENT ABBREVIATIONS

AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

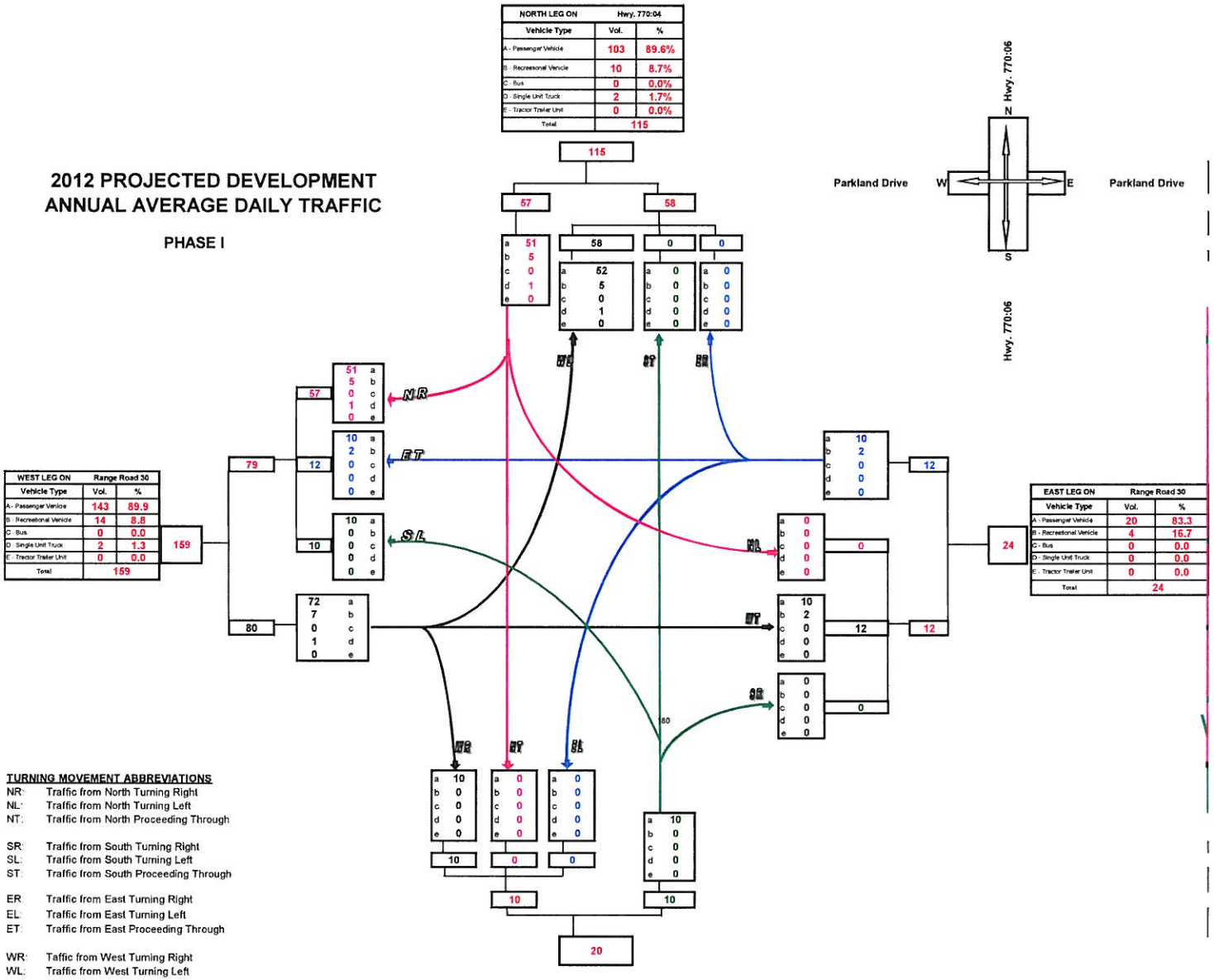
ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehilces per day for period of May 1 to September 30 (153 days)

2010
2010
0

Turning Movement Summary Diagram

2012 PROJECTED DEVELOPMENT
ANNUAL AVERAGE DAILY TRAFFIC

PHASE I



NORTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	103	89.6%
B - Recreational Vehicle	10	8.7%
C - Bus	0	0.0%
D - Single Unit Truck	2	1.7%
E - Tractor Trailer Unit	0	0.0%
Total	115	

WEST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	143	89.9
B - Recreational Vehicle	14	8.8
C - Bus	0	0.0
D - Single Unit Truck	2	1.3
E - Tractor Trailer Unit	0	0.0
Total	159	

EAST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	20	83.3
B - Recreational Vehicle	4	16.7
C - Bus	0	0.0
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	0	0.0
Total	24	

SOUTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	20	100.0
B - Recreational Vehicle	0	0.0
C - Bus	0	0.0
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	0	0.0
Total	20	

TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Taffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

TURNING MOVEMENT ABBREVIATIONS

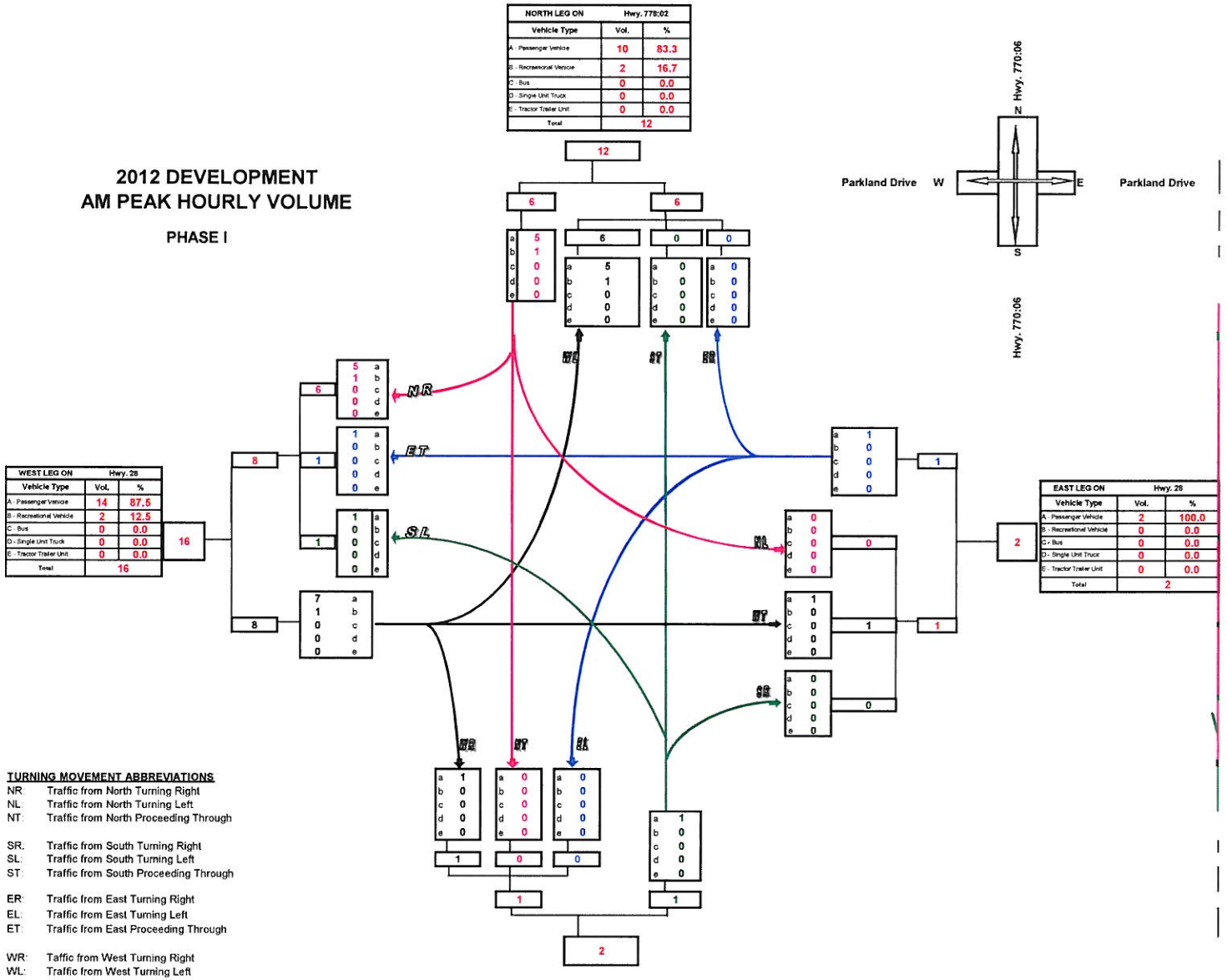
AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehilces per day for period of May 1 to September 30 (153 days)

Turning Movement Summary Diagram

2012 DEVELOPMENT
AM PEAK HOURLY VOLUME

PHASE I



NORTH LEG ON	Hwy. 778:02	
Vehicle Type	Vol.	%
A - Passenger Vehicle	10	83.3
B - Recreational Vehicle	2	16.7
C - Bus	0	0.0
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	0	0.0
Total	12	

WEST LEG ON	Hwy. 28	
Vehicle Type	Vol.	%
A - Passenger Vehicle	14	87.5
B - Recreational Vehicle	2	12.5
C - Bus	0	0.0
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	0	0.0
Total	16	

EAST LEG ON	Hwy. 28	
Vehicle Type	Vol.	%
A - Passenger Vehicle	2	100.0
B - Recreational Vehicle	0	0.0
C - Bus	0	0.0
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	0	0.0
Total	2	

SOUTH LEG ON	60th Street	
Vehicle Type	Vol.	%
A - Passenger Vehicle	2	100.0
B - Recreational Vehicle	0	0.0
C - Bus	0	0.0
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	0	0.0
Total	2	

TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Taffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

TURNING MOVEMENT ABBREVIATIONS

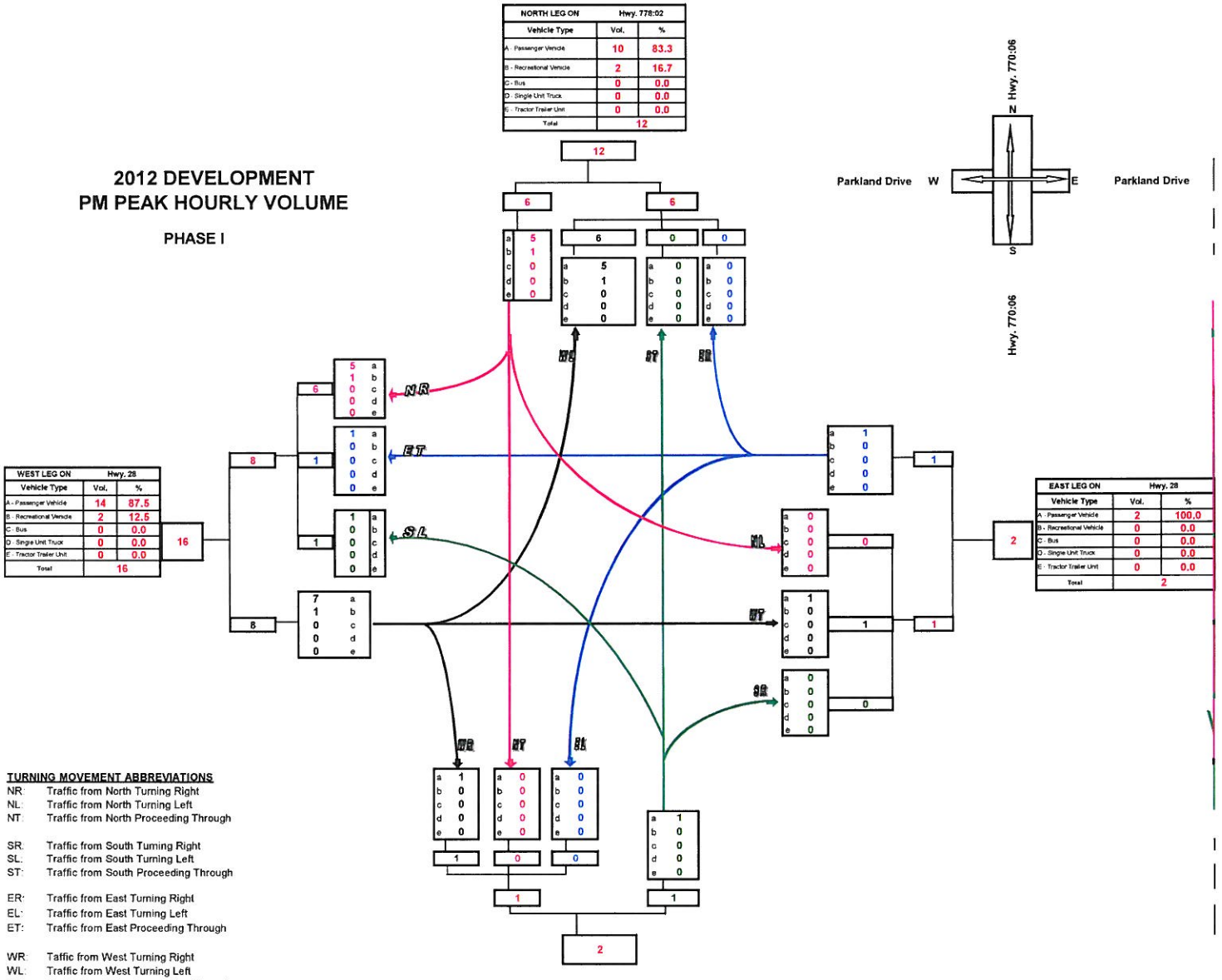
AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehilces per day for period of May 1 to September 30 (153 days)

Turning Movement Summary Diagram

2012 DEVELOPMENT
PM PEAK HOURLY VOLUME

PHASE I



TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Taffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

TURNING MOVEMENT ABBREVIATIONS

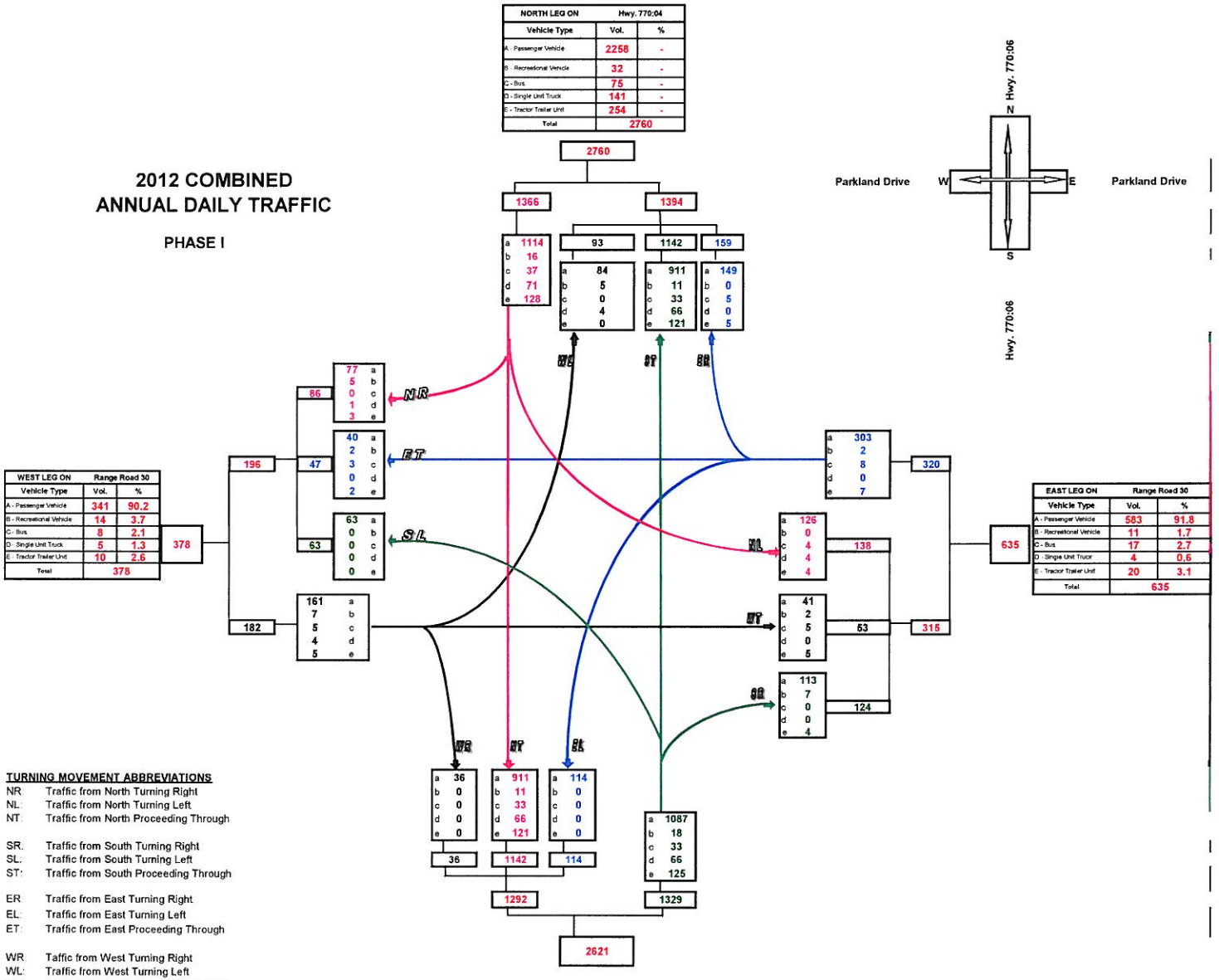
AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehilces per day for period of May 1 to September 30 (153 days)

Turning Movement Summary Diagram

2012 COMBINED ANNUAL DAILY TRAFFIC

PHASE I



NORTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	2258	-
B - Recreational Vehicle	32	-
C - Bus	75	-
D - Single Unit Truck	141	-
E - Tractor Trailer Unit	254	-
Total	2760	

WEST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	341	90.2
B - Recreational Vehicle	14	3.7
C - Bus	8	2.1
D - Single Unit Truck	5	1.3
E - Tractor Trailer Unit	10	2.6
Total	378	

EAST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	583	91.8
B - Recreational Vehicle	11	1.7
C - Bus	17	2.7
D - Single Unit Truck	4	0.6
E - Tractor Trailer Unit	20	3.1
Total	635	

SOUTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	2148	82.0
B - Recreational Vehicle	29	1.1
C - Bus	66	2.5
D - Single Unit Truck	132	5.0
E - Tractor Trailer Unit	246	9.4
Total	2621	

TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Taffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

TURNING MOVEMENT ABBREVIATIONS

AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

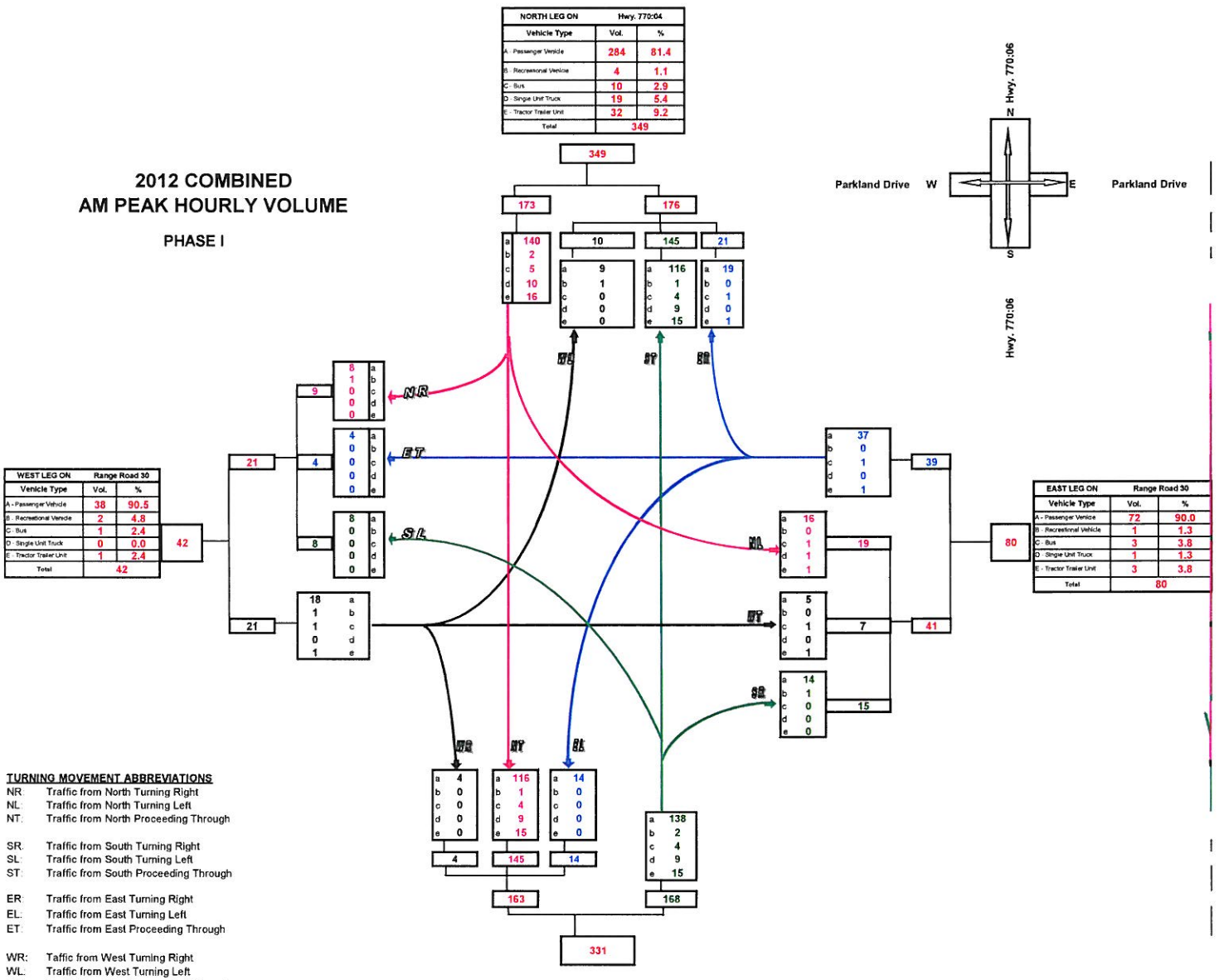
ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehilces per day for period of May 1 to September 30 (153 days)

2012
2010
2

Turning Movement Summary Diagram

2012 COMBINED
AM PEAK HOURLY VOLUME

PHASE I



TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Taffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

TURNING MOVEMENT ABBREVIATIONS

AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

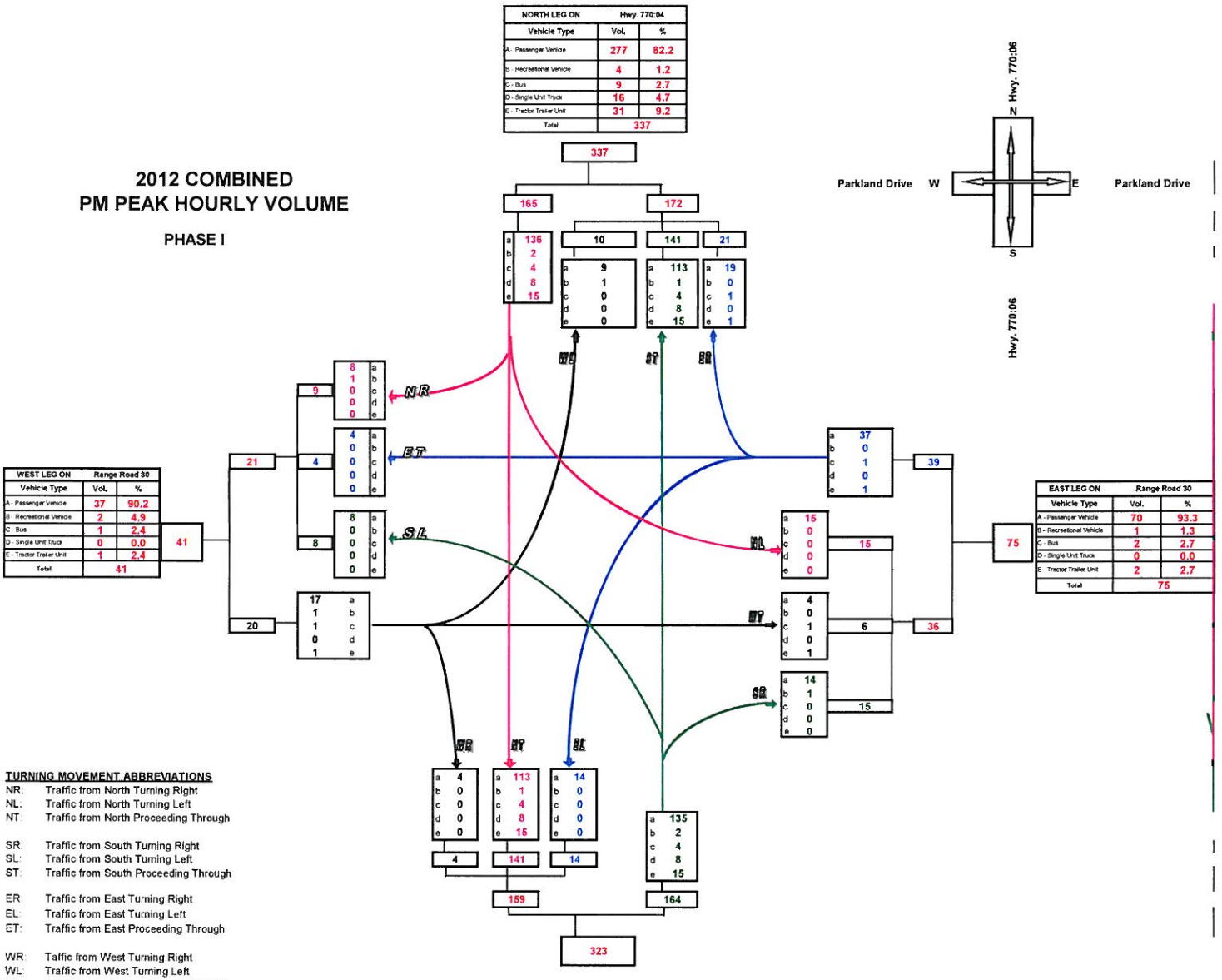
ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehilces per day for period of May 1 to September 30 (153 days)

2012
2010
2

Turning Movement Summary Diagram

2012 COMBINED
PM PEAK HOURLY VOLUME

PHASE I



NORTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	277	82.2
B - Recreational Vehicle	4	1.2
C - Bus	9	2.7
D - Single Unit Truck	16	4.7
E - Tractor Trailer Unit	31	9.2
Total	337	

WEST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	37	90.2
B - Recreational Vehicle	2	4.9
C - Bus	1	2.4
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	1	2.4
Total	41	

EAST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	70	93.3
B - Recreational Vehicle	1	1.3
C - Bus	2	2.7
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	2	2.7
Total	75	

SOUTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	266	82.4
B - Recreational Vehicle	3	0.9
C - Bus	8	2.5
D - Single Unit Truck	16	5.0
E - Tractor Trailer Unit	30	9.3
Total	323	

TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Taffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

TURNING MOVEMENT ABBREVIATIONS

AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehilces per day for period of May 1 to September 30 (153 days)

Turning Movement Summary Diagram

2014 PROJECTED DEVELOPMENT ANNUAL AVERAGE DAILY TRAFFIC

PHASE II

100% of TOTAL VOLUME

NORTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	103	89.6%
B - Recreational Vehicle	10	8.7%
C - Bus	0	0.0%
D - Single Unit Truck	2	1.7%
E - Tractor Trailer Unit	0	0.0%
Total	115	

WEST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	143	89.9
B - Recreational Vehicle	14	8.8
C - Bus	0	0.0
D - Single Unit Truck	2	1.3
E - Tractor Trailer Unit	0	0.0
Total	159	

EAST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	20	83.3
B - Recreational Vehicle	4	16.7
C - Bus	0	0.0
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	0	0.0
Total	24	

SOUTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	20	100.0
B - Recreational Vehicle	0	0.0
C - Bus	0	0.0
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	0	0.0
Total	20	

Parkland Drive (W) (E) Parkland Drive

Hwy. 770:06 (N) (S) Hwy. 770:06

TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Taffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

TURNING MOVEMENT ABBREVIATIONS

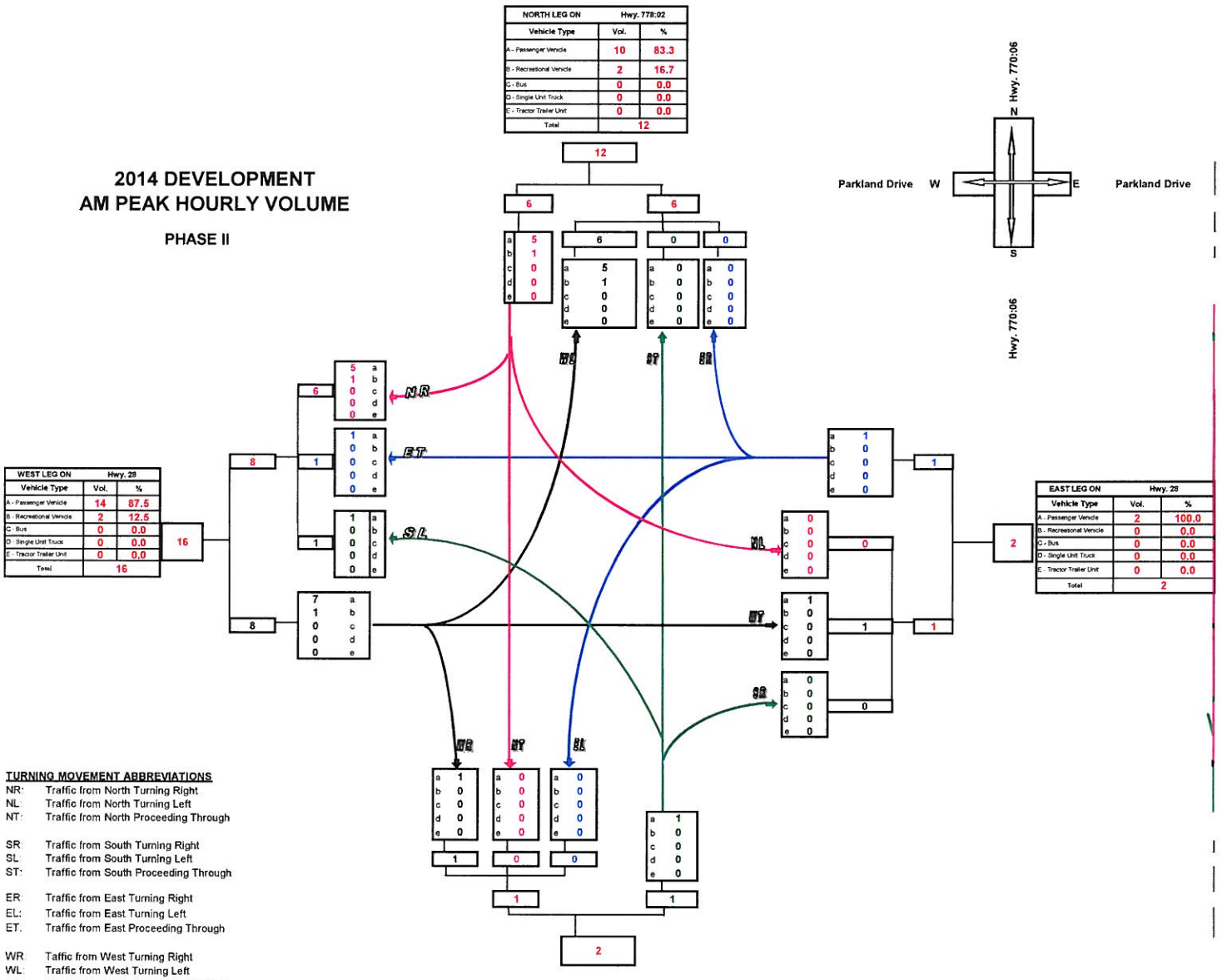
AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehicles per day for period of May 1 to September 30 (153 days)

Turning Movement Summary Diagram

2014 DEVELOPMENT
AM PEAK HOURLY VOLUME

PHASE II



NORTH LEG ON	Hwy. 778:02	
Vehicle Type	Vol.	%
A - Passenger Vehicle	10	83.3
B - Recreational Vehicle	2	16.7
C - Bus	0	0.0
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	0	0.0
Total	12	

WEST LEG ON	Hwy. 28	
Vehicle Type	Vol.	%
A - Passenger Vehicle	14	87.5
B - Recreational Vehicle	2	12.5
C - Bus	0	0.0
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	0	0.0
Total	16	

EAST LEG ON	Hwy. 28	
Vehicle Type	Vol.	%
A - Passenger Vehicle	2	100.0
B - Recreational Vehicle	0	0.0
C - Bus	0	0.0
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	0	0.0
Total	2	

SOUTH LEG ON	60th Street	
Vehicle Type	Vol.	%
A - Passenger Vehicle	2	100.0
B - Recreational Vehicle	0	0.0
C - Bus	0	0.0
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	0	0.0
Total	2	

TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Taffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

TURNING MOVEMENT ABBREVIATIONS

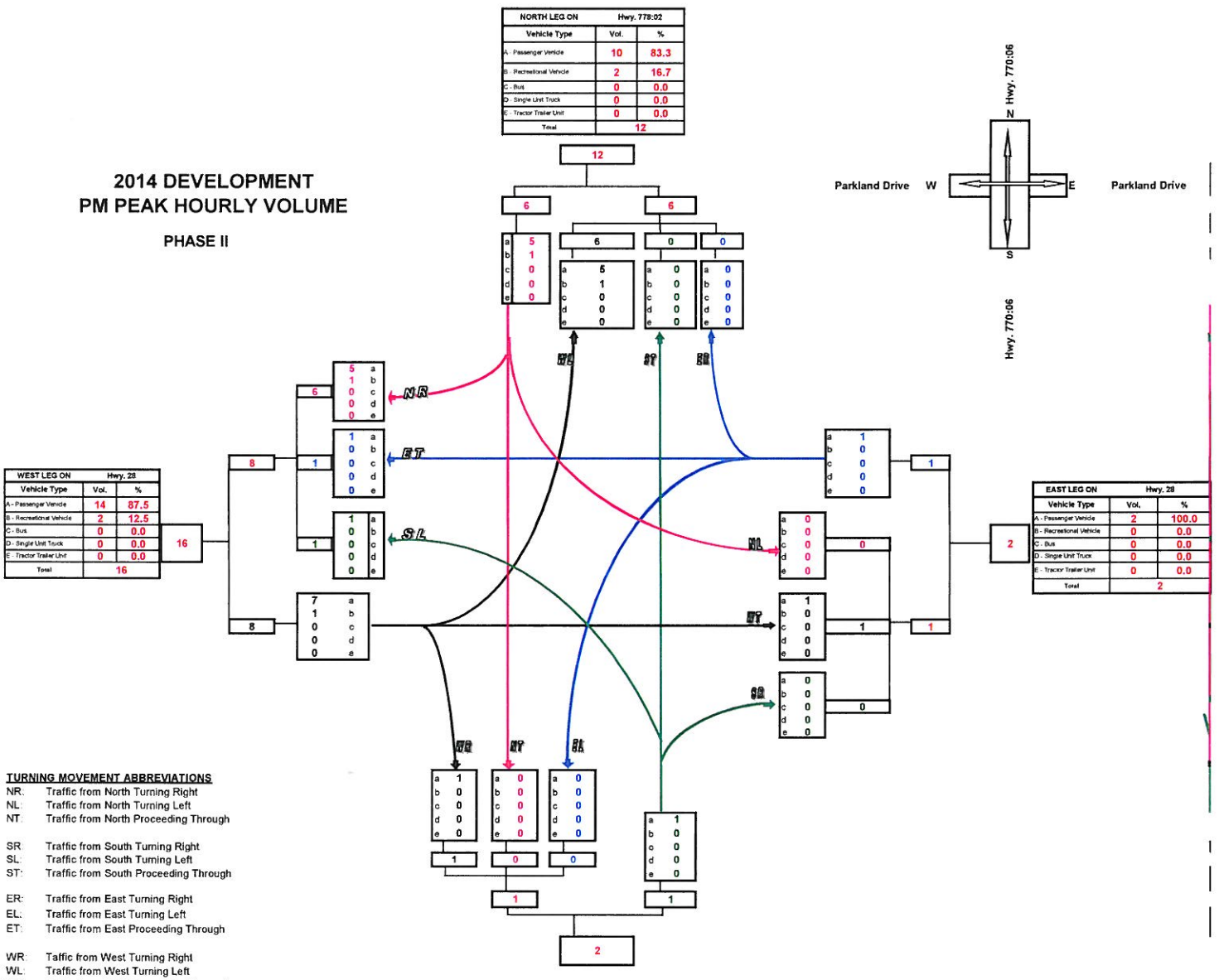
AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehilces per day for period of May 1 to September 30 (153 days)

Turning Movement Summary Diagram

2014 DEVELOPMENT
PM PEAK HOURLY VOLUME

PHASE II



NORTH LEG ON	Hwy. 778:02	
Vehicle Type	Vol.	%
A - Passenger Vehicle	10	83.3
B - Recreational Vehicle	2	16.7
C - Bus	0	0.0
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	0	0.0
Total	12	

WEST LEG ON	Hwy. 28	
Vehicle Type	Vol.	%
A - Passenger Vehicle	14	87.5
B - Recreational Vehicle	2	12.5
C - Bus	0	0.0
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	0	0.0
Total	16	

EAST LEG ON	Hwy. 28	
Vehicle Type	Vol.	%
A - Passenger Vehicle	2	100.0
B - Recreational Vehicle	0	0.0
C - Bus	0	0.0
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	0	0.0
Total	2	

SOUTH LEG ON	60th Street	
Vehicle Type	Vol.	%
A - Passenger Vehicle	2	100.0
B - Recreational Vehicle	0	0.0
C - Bus	0	0.0
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	0	0.0
Total	2	

TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Taffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

TURNING MOVEMENT ABBREVIATIONS

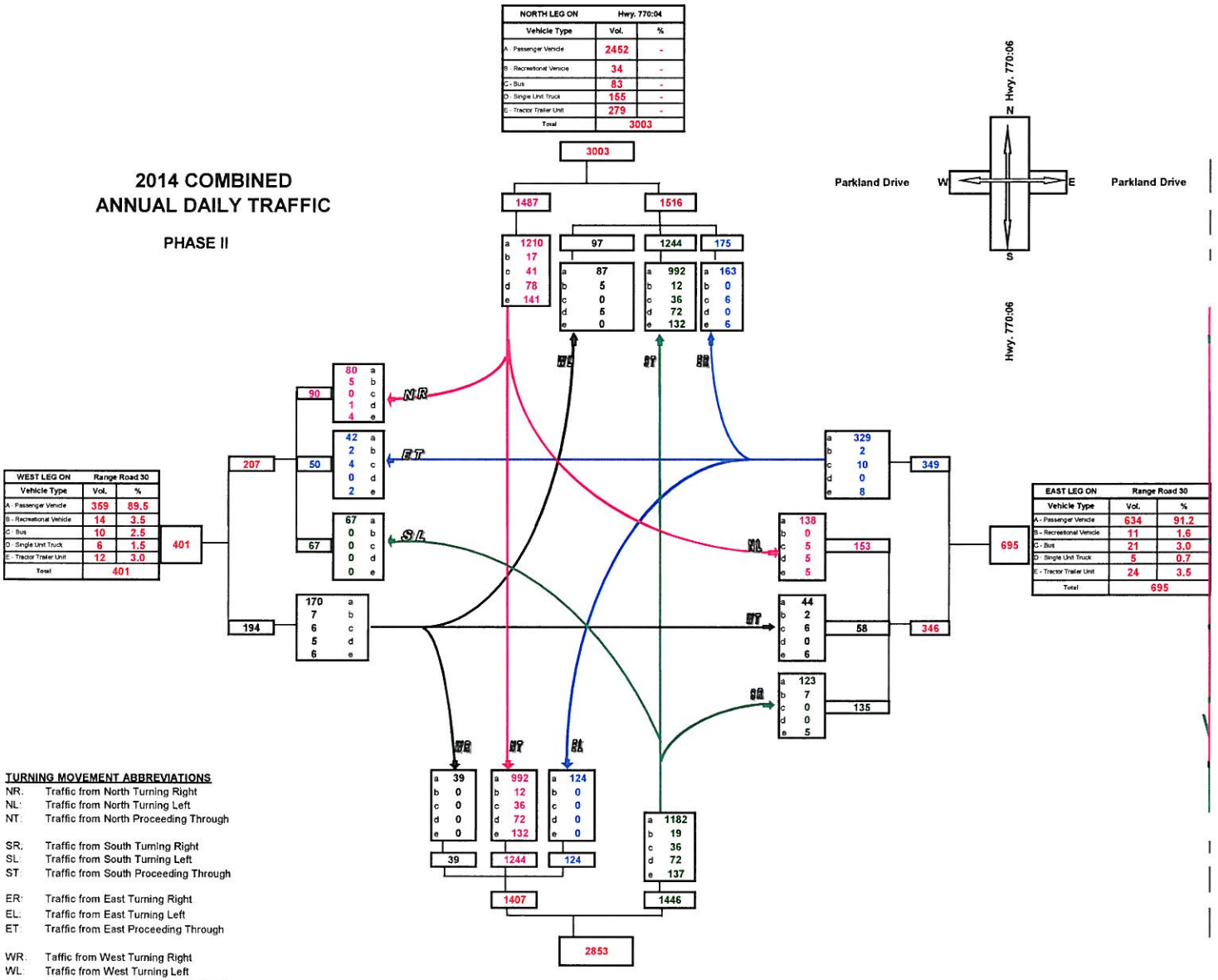
AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehilces per day for period of May 1 to September 30 (153 days)

Turning Movement Summary Diagram

2014 COMBINED ANNUAL DAILY TRAFFIC

PHASE II



NORTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	2452	-
B - Recreational Vehicle	34	-
C - Bus	83	-
D - Single Unit Truck	155	-
E - Tractor Trailer Unit	279	-
Total	3003	

WEST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	359	89.5
B - Recreational Vehicle	14	3.5
C - Bus	10	2.5
D - Single Unit Truck	6	1.5
E - Tractor Trailer Unit	12	3.0
Total	401	

EAST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	634	91.2
B - Recreational Vehicle	11	1.6
C - Bus	21	3.0
D - Single Unit Truck	5	0.7
E - Tractor Trailer Unit	24	3.5
Total	695	

SOUTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	2337	81.9
B - Recreational Vehicle	31	1.1
C - Bus	72	2.5
D - Single Unit Truck	144	5.0
E - Tractor Trailer Unit	269	9.4
Total	2853	

TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Taffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

TURNING MOVEMENT ABBREVIATIONS

AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

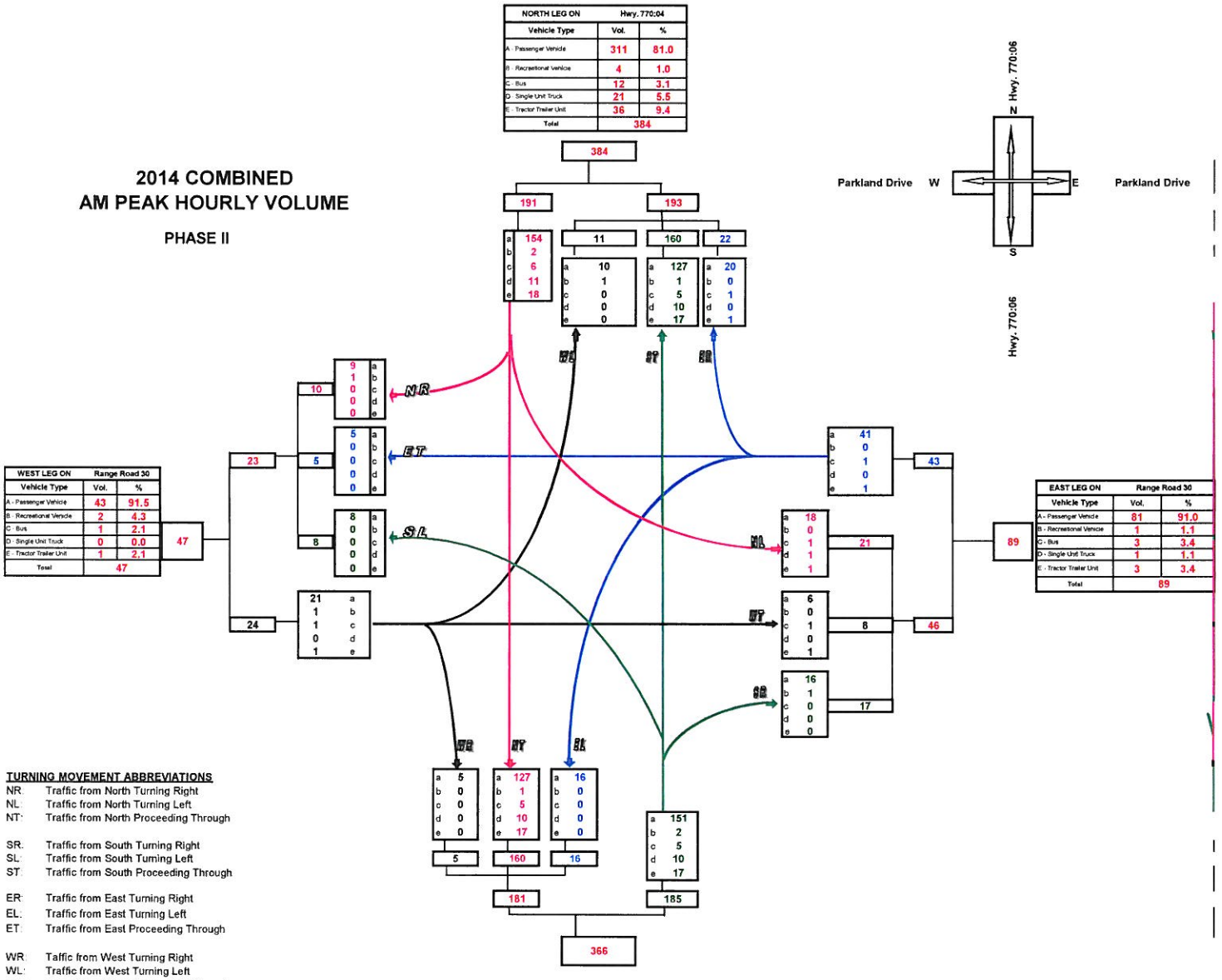
ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehilces per day for period of May 1 to September 30 (153 days)

2014
2010
4

Turning Movement Summary Diagram

2014 COMBINED
AM PEAK HOURLY VOLUME

PHASE II



NORTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	311	81.0
B - Recreational Vehicle	4	1.0
C - Bus	12	3.1
D - Single Unit Truck	21	5.5
E - Tractor Trailer Unit	36	9.4
Total	384	

WEST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	43	91.5
B - Recreational Vehicle	2	4.3
C - Bus	1	2.1
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	1	2.1
Total	47	

EAST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	81	91.0
B - Recreational Vehicle	1	1.1
C - Bus	3	3.4
D - Single Unit Truck	1	1.1
E - Tractor Trailer Unit	3	3.4
Total	89	

SOUTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	299	81.7
B - Recreational Vehicle	3	0.8
C - Bus	10	2.7
D - Single Unit Truck	20	5.5
E - Tractor Trailer Unit	34	9.3
Total	366	

TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Taffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

TURNING MOVEMENT ABBREVIATIONS

AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

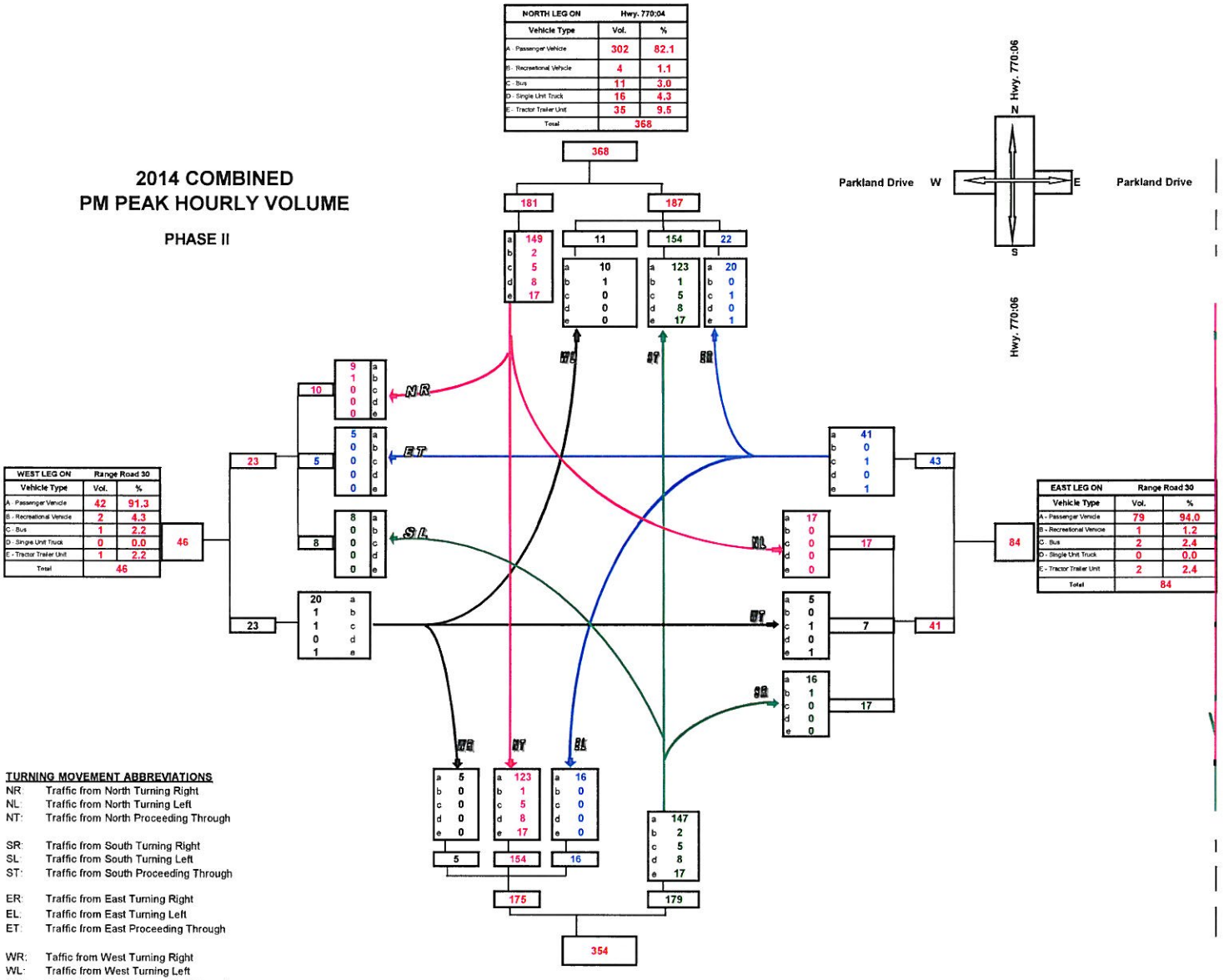
ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehilces per day for period of May 1 to September 30 (153 days)

2014
2010
4

Turning Movement Summary Diagram

2014 COMBINED
PM PEAK HOURLY VOLUME

PHASE II



WEST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	42	91.3
B - Recreational Vehicle	2	4.3
C - Bus	1	2.2
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	1	2.2
Total	46	

NORTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	302	82.1
B - Recreational Vehicle	4	1.1
C - Bus	11	3.0
D - Single Unit Truck	16	4.3
E - Tractor Trailer Unit	35	9.5
Total	368	

EAST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	79	94.0
B - Recreational Vehicle	1	1.2
C - Bus	2	2.4
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	2	2.4
Total	84	

SOUTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	291	82.2
B - Recreational Vehicle	3	0.8
C - Bus	10	2.8
D - Single Unit Truck	16	4.5
E - Tractor Trailer Unit	34	9.6
Total	354	

TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Taffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

TURNING MOVEMENT ABBREVIATIONS

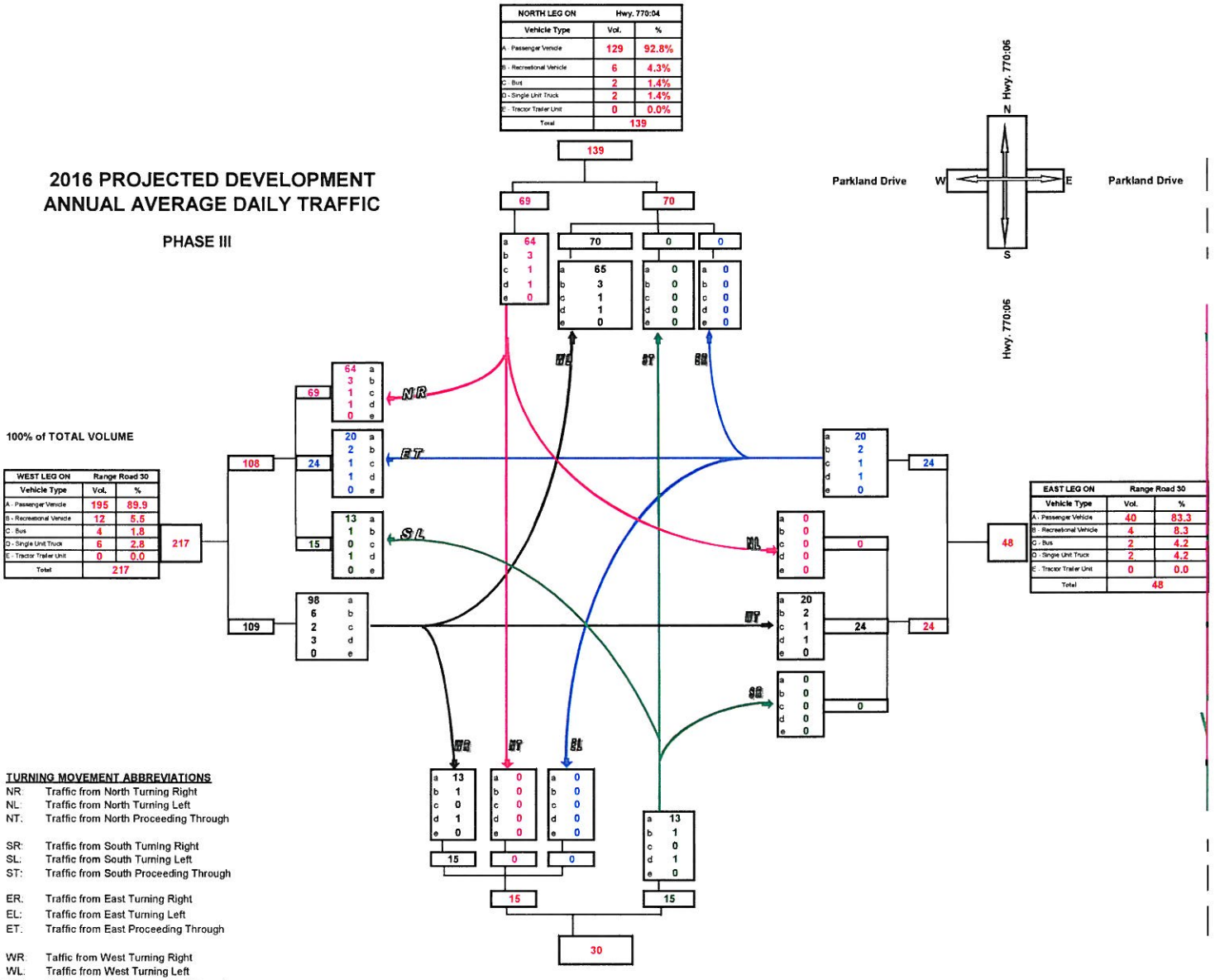
AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehilces per day for period of May 1 to September 30 (153 days)

Turning Movement Summary Diagram

2016 PROJECTED DEVELOPMENT ANNUAL AVERAGE DAILY TRAFFIC

PHASE III



100% of TOTAL VOLUME

NORTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	129	92.8%
B - Recreational Vehicle	6	4.3%
C - Bus	2	1.4%
D - Single Unit Truck	2	1.4%
E - Tractor Trailer Unit	0	0.0%
Total	139	

WEST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	195	89.9
B - Recreational Vehicle	12	5.5
C - Bus	4	1.8
D - Single Unit Truck	6	2.8
E - Tractor Trailer Unit	0	0.0
Total	217	

EAST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	40	83.3
B - Recreational Vehicle	4	8.3
C - Bus	2	4.2
D - Single Unit Truck	2	4.2
E - Tractor Trailer Unit	0	0.0
Total	48	

SOUTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	26	86.7
B - Recreational Vehicle	2	6.7
C - Bus	0	0.0
D - Single Unit Truck	2	6.7
E - Tractor Trailer Unit	0	0.0
Total	30	

TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Taffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

TURNING MOVEMENT ABBREVIATIONS

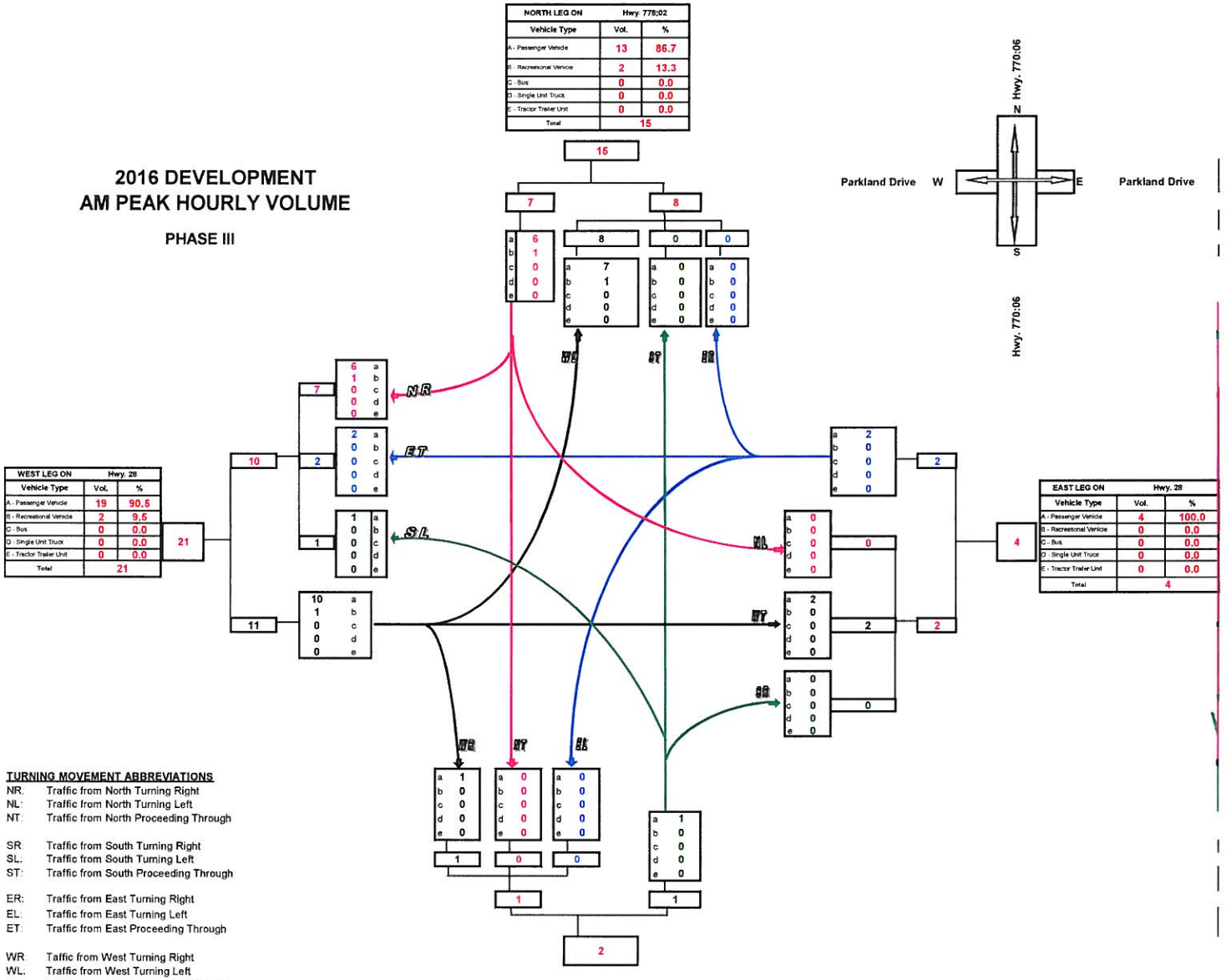
AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehilces per day for period of May 1 to September 30 (153 days)

Turning Movement Summary Diagram

2016 DEVELOPMENT
AM PEAK HOURLY VOLUME

PHASE III



TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Taffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

TURNING MOVEMENT ABBREVIATIONS

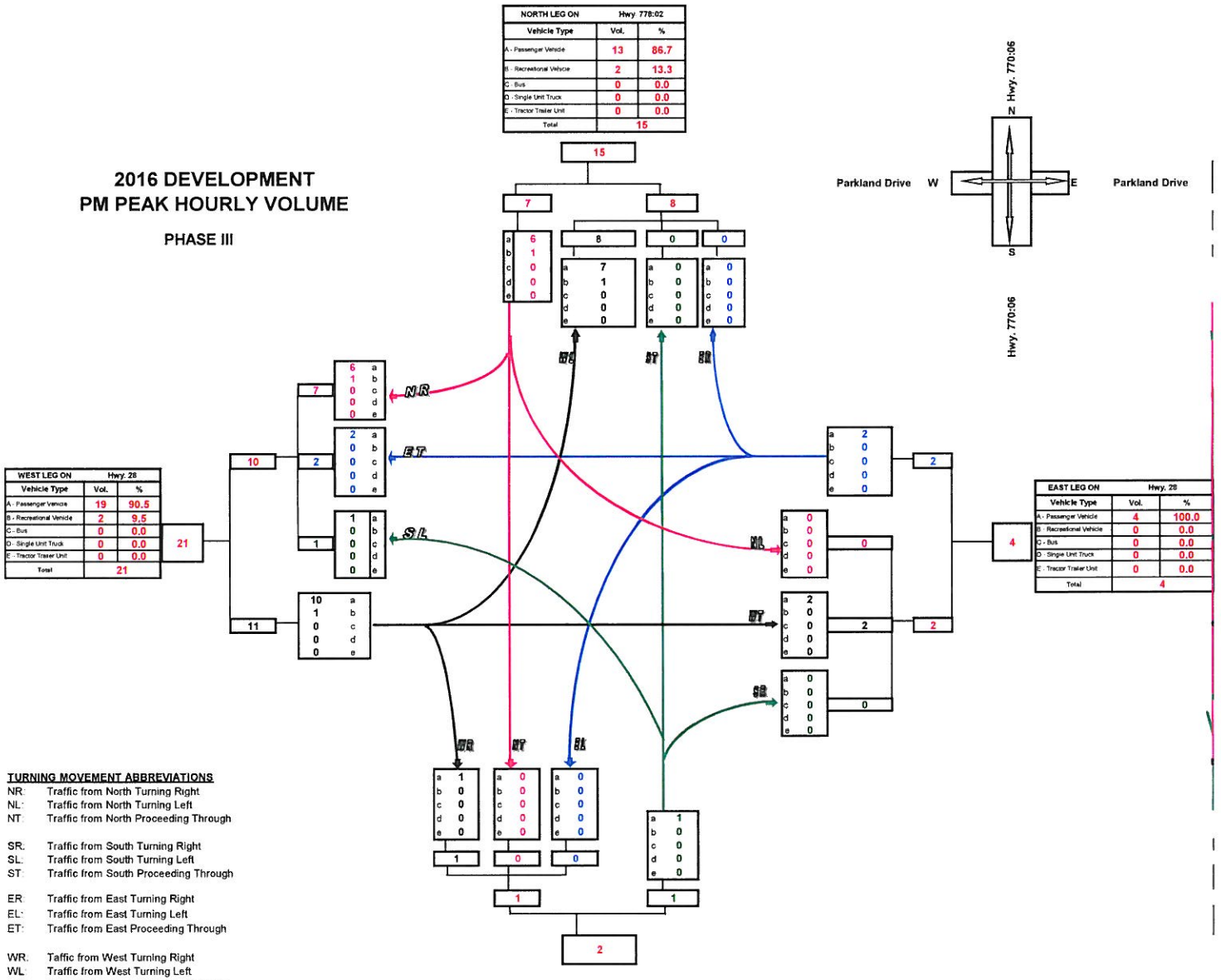
AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehilces per day for period of May 1 to September 30 (153 days)

Turning Movement Summary Diagram

2016 DEVELOPMENT
PM PEAK HOURLY VOLUME

PHASE III



NORTH LEG ON	Hwy. 778:02	
Vehicle Type	Vol.	%
A - Passenger Vehicle	13	86.7
B - Recreational Vehicle	2	13.3
C - Bus	0	0.0
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	0	0.0
Total	15	

WEST LEG ON	Hwy. 28	
Vehicle Type	Vol.	%
A - Passenger Vehicle	19	90.5
B - Recreational Vehicle	2	9.5
C - Bus	0	0.0
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	0	0.0
Total	21	

EAST LEG ON	Hwy. 28	
Vehicle Type	Vol.	%
A - Passenger Vehicle	4	100.0
B - Recreational Vehicle	0	0.0
C - Bus	0	0.0
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	0	0.0
Total	4	

SOUTH LEG ON	60th Street	
Vehicle Type	Vol.	%
A - Passenger Vehicle	2	100.0
B - Recreational Vehicle	0	0.0
C - Bus	0	0.0
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	0	0.0
Total	2	

TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Taffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

TURNING MOVEMENT ABBREVIATIONS

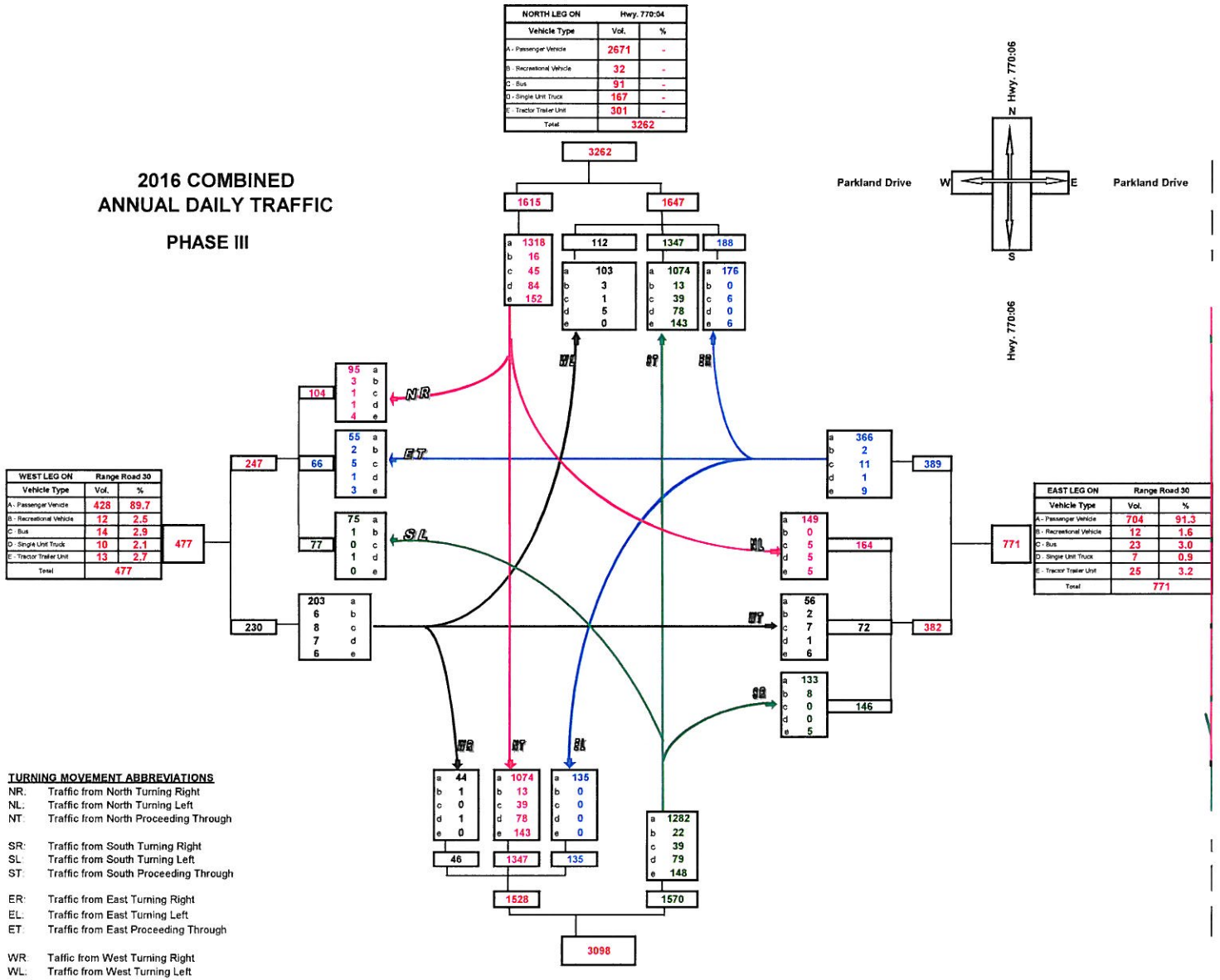
AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehilces per day for period of May 1 to September 30 (153 days)

Turning Movement Summary Diagram

2016 COMBINED ANNUAL DAILY TRAFFIC

PHASE III



WEST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	428	89.7
B - Recreational Vehicle	12	2.5
C - Bus	14	2.9
D - Single Unit Truck	10	2.1
E - Tractor Trailer Unit	13	2.7
Total	477	

EAST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	704	91.3
B - Recreational Vehicle	12	1.6
C - Bus	23	3.0
D - Single Unit Truck	7	0.9
E - Tractor Trailer Unit	25	3.2
Total	771	

NORTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	2671	-
B - Recreational Vehicle	32	-
C - Bus	91	-
D - Single Unit Truck	167	-
E - Tractor Trailer Unit	301	-
Total	3262	

SOUTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	2535	81.8
B - Recreational Vehicle	36	1.2
C - Bus	78	2.5
D - Single Unit Truck	158	5.1
E - Tractor Trailer Unit	291	9.4
Total	3098	

TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Taffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

TURNING MOVEMENT ABBREVIATIONS

AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

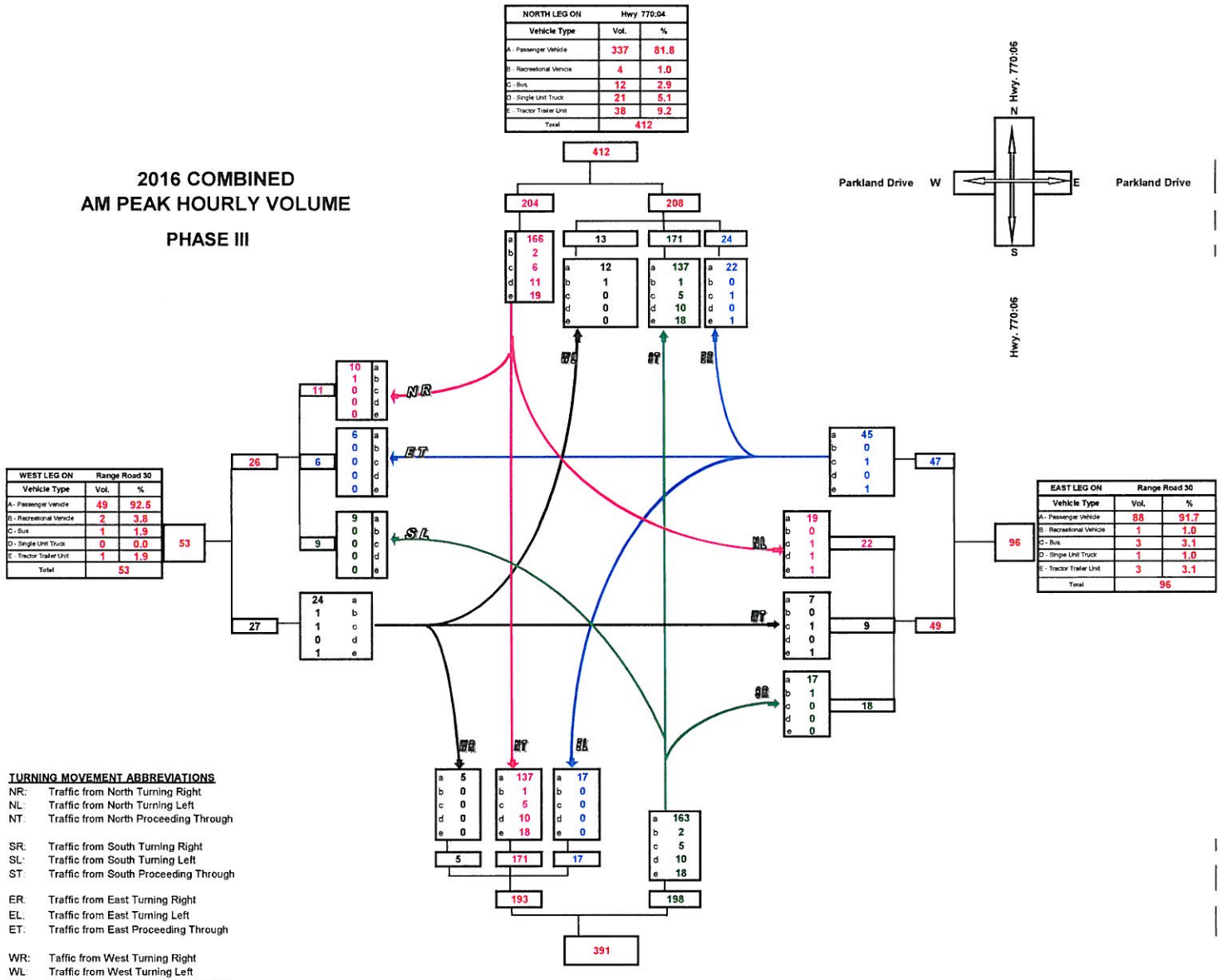
ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehilces per day for period of May 1 to September 30 (153 days)

2016
2010
5

Turning Movement Summary Diagram

2016 COMBINED
AM PEAK HOURLY VOLUME

PHASE III



NORTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	337	81.8
B - Recreational Vehicle	4	1.0
C - Bus	12	2.9
D - Single Unit Truck	21	5.1
E - Tractor Trailer Unit	38	9.2
Total	412	

WEST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	49	92.5
B - Recreational Vehicle	2	3.8
C - Bus	1	1.9
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	1	1.9
Total	53	

EAST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	88	91.7
B - Recreational Vehicle	1	1.0
C - Bus	3	3.1
D - Single Unit Truck	1	1.0
E - Tractor Trailer Unit	3	3.1
Total	96	

TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Taffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

TURNING MOVEMENT ABBREVIATIONS

AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehilces per day for period of May 1 to September 30 (153 days)

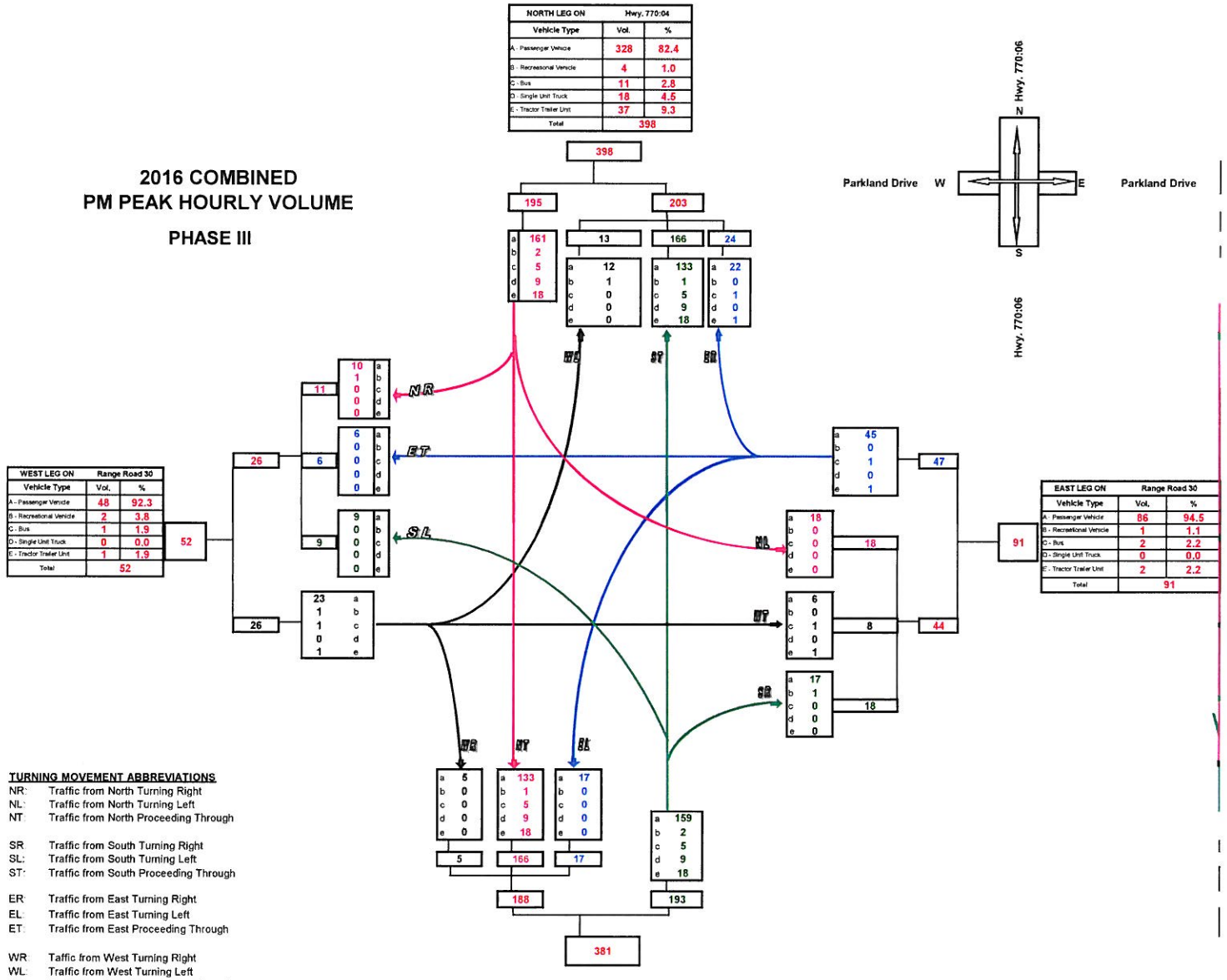
SOUTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	322	82.4
B - Recreational Vehicle	3	0.8
C - Bus	10	2.6
D - Single Unit Truck	20	5.1
E - Tractor Trailer Unit	36	9.2
Total	391	

2016
2010
6

Turning Movement Summary Diagram

2016 COMBINED
PM PEAK HOURLY VOLUME

PHASE III



NORTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	328	82.4
B - Recreational Vehicle	4	1.0
C - Bus	11	2.8
D - Single Unit Truck	18	4.5
E - Tractor Trailer Unit	37	9.3
Total	398	

WEST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	48	92.3
B - Recreational Vehicle	2	3.8
C - Bus	1	1.9
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	1	1.9
Total	52	

EAST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	86	94.5
B - Recreational Vehicle	1	1.1
C - Bus	2	2.2
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	2	2.2
Total	91	

SOUTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	314	82.4
B - Recreational Vehicle	3	0.8
C - Bus	10	2.6
D - Single Unit Truck	18	4.7
E - Tractor Trailer Unit	36	9.4
Total	381	

TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Taffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

TURNING MOVEMENT ABBREVIATIONS

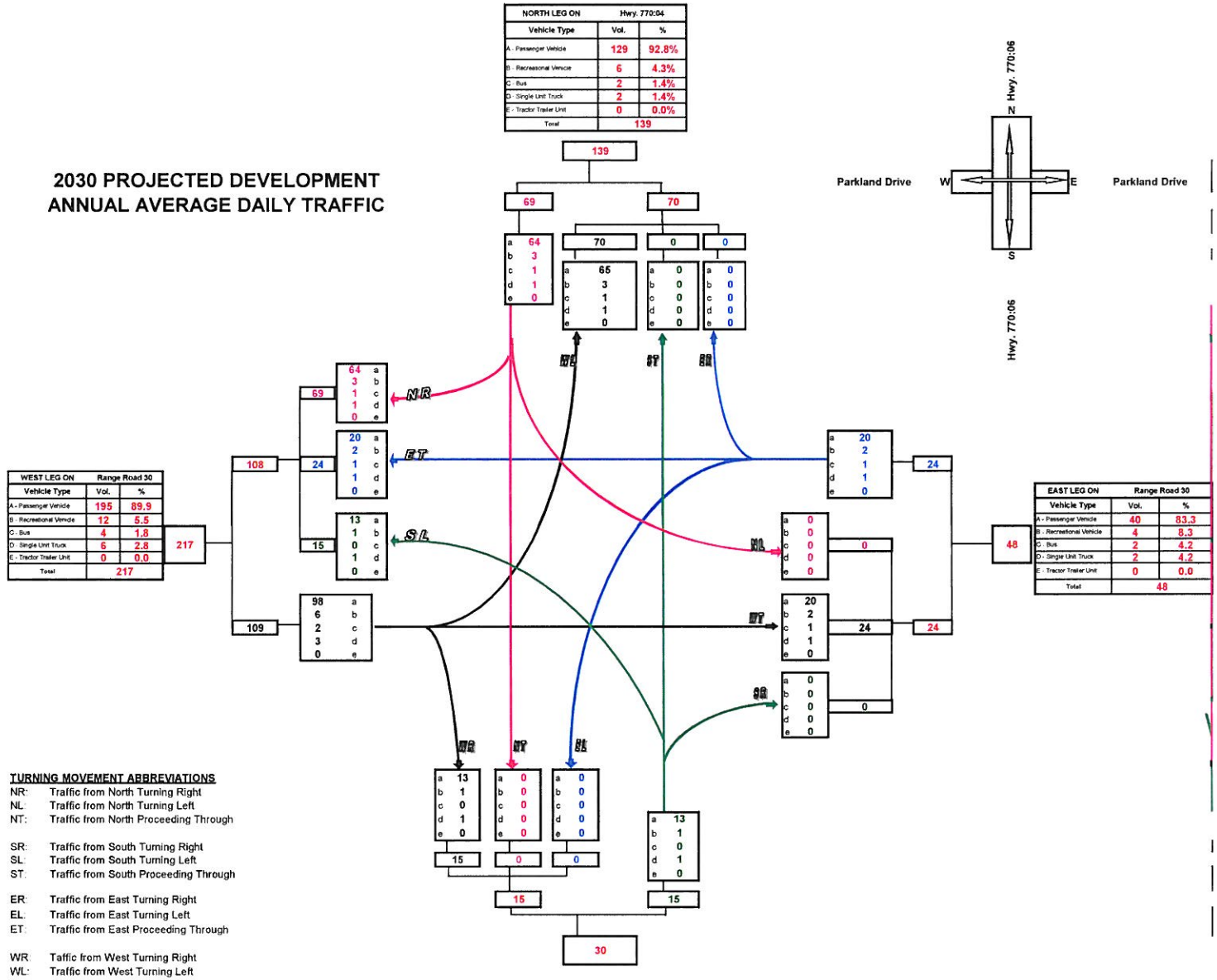
AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehilces per day for period of May 1 to September 30 (153 days)

2016
2010
6

Turning Movement Summary Diagram

2030 PROJECTED DEVELOPMENT
ANNUAL AVERAGE DAILY TRAFFIC



TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Taffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

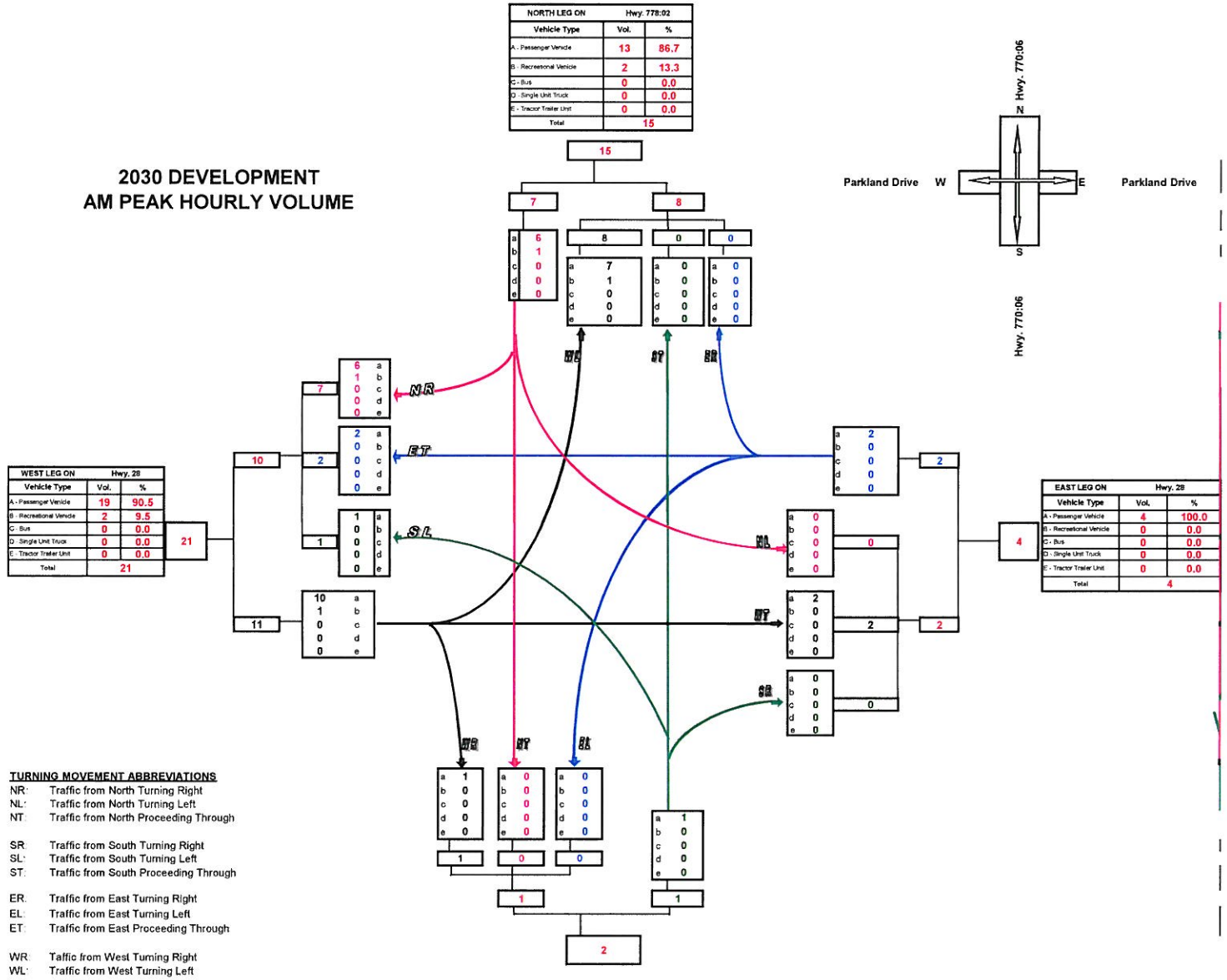
TURNING MOVEMENT ABBREVIATIONS

AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehilces per day for period of May 1 to September 30 (153 days)

Turning Movement Summary Diagram

2030 DEVELOPMENT
AM PEAK HOURLY VOLUME



TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Taffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

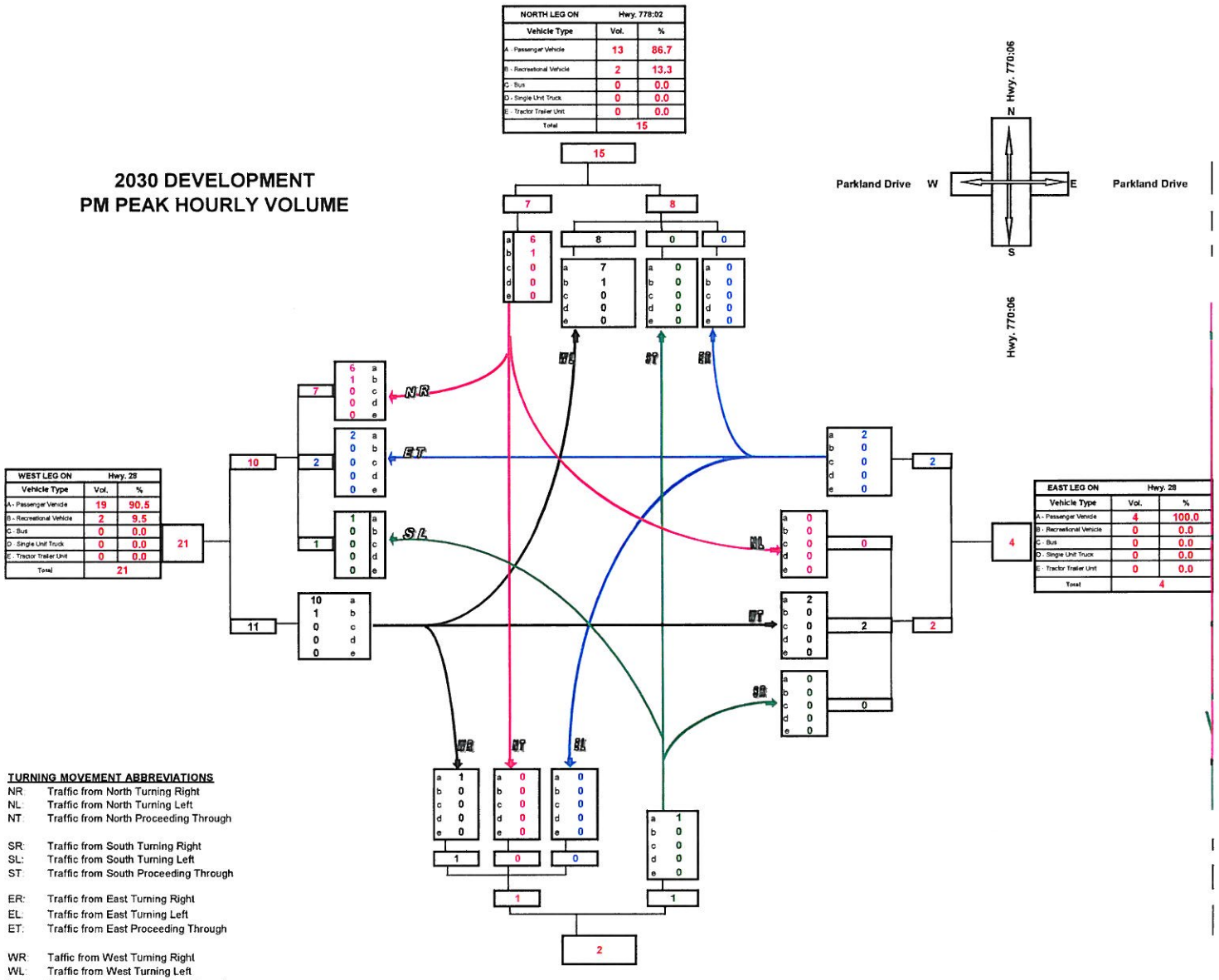
TURNING MOVEMENT ABBREVIATIONS

AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehilces per day for period of May 1 to September 30 (153 days)

Turning Movement Summary Diagram

2030 DEVELOPMENT
PM PEAK HOURLY VOLUME



TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Taffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

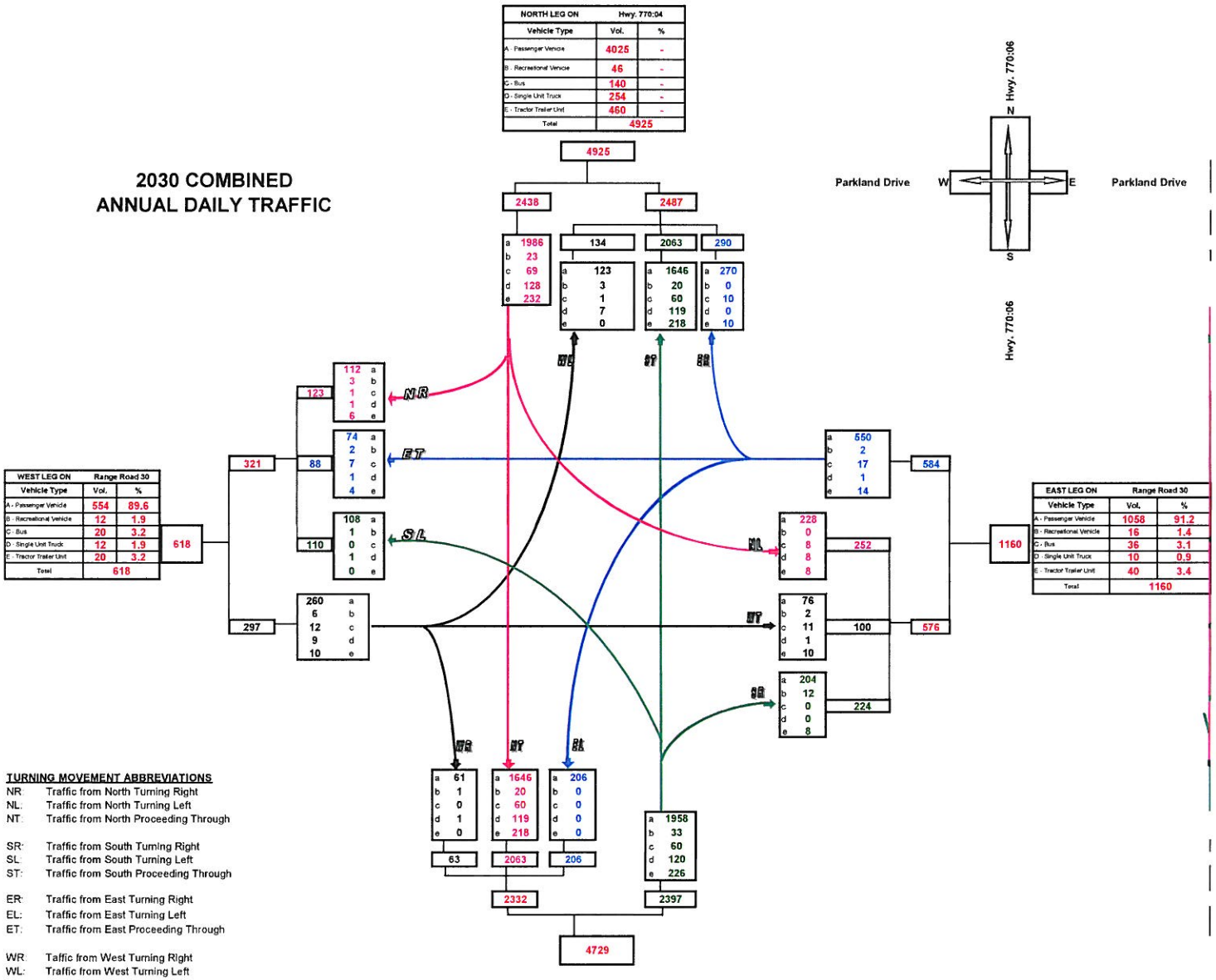
TURNING MOVEMENT ABBREVIATIONS

AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehilces per day for period of May 1 to September 30 (153 days)

Turning Movement Summary Diagram

2030 COMBINED ANNUAL DAILY TRAFFIC



TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Taffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

TURNING MOVEMENT ABBREVIATIONS

AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

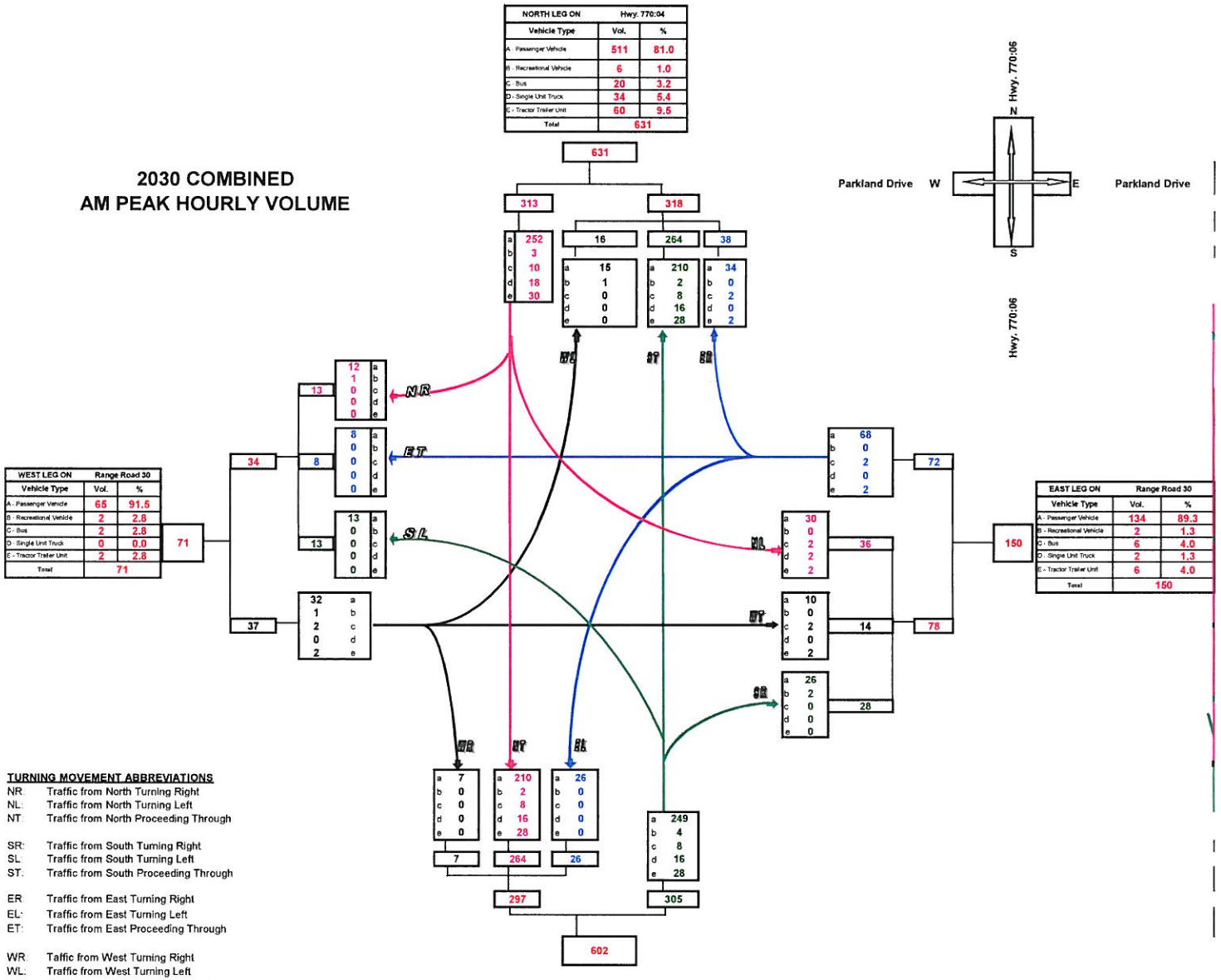
ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehilces per day for period of May 1 to September 30 (153 days)

SOUTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	3871	81.9
B - Recreational Vehicle	54	1.1
C - Bus	120	2.5
D - Single Unit Truck	240	5.1
E - Tractor Trailer Unit	444	9.4
Total	4729	

2030
2010
20

Turning Movement Summary Diagram

2030 COMBINED
AM PEAK HOURLY VOLUME



NORTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	511	81.0
B - Recreational Vehicle	6	1.0
C - Bus	20	3.2
D - Single Unit Truck	34	5.4
E - Tractor Trailer Unit	60	9.5
Total	631	

WEST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	65	91.5
B - Recreational Vehicle	2	2.8
C - Bus	2	2.8
D - Single Unit Truck	0	0.0
E - Tractor Trailer Unit	2	2.8
Total	71	

EAST LEG ON	Range Road 30	
Vehicle Type	Vol.	%
A - Passenger Vehicle	134	89.3
B - Recreational Vehicle	2	1.3
C - Bus	6	4.0
D - Single Unit Truck	2	1.3
E - Tractor Trailer Unit	6	4.0
Total	150	

SOUTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	492	81.7
B - Recreational Vehicle	6	1.0
C - Bus	16	2.7
D - Single Unit Truck	32	5.3
E - Tractor Trailer Unit	56	9.3
Total	602	

TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Taffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

TURNING MOVEMENT ABBREVIATIONS

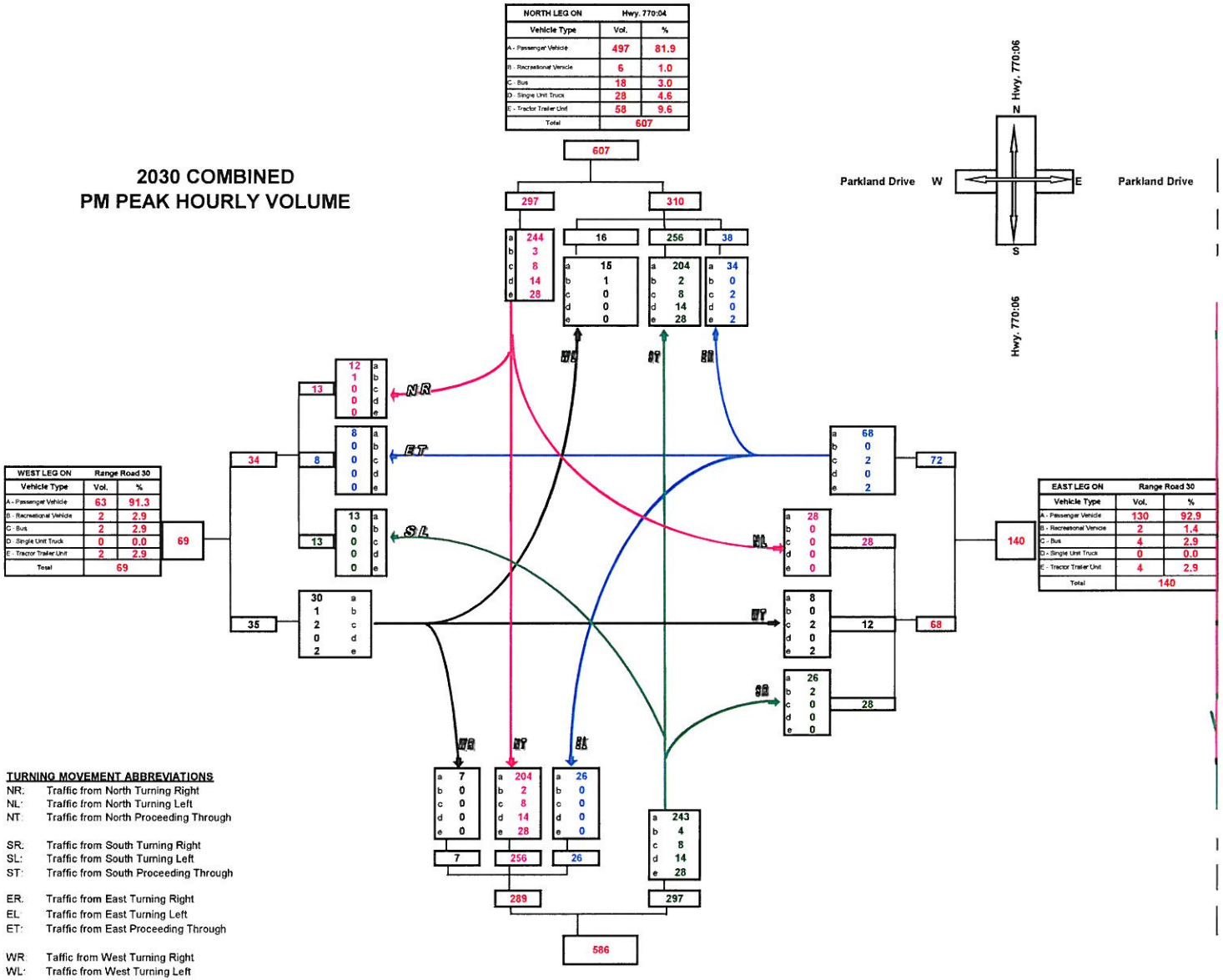
AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehilces per day for period of May 1 to September 30 (153 days)

2030
2010
20

Turning Movement Summary Diagram

2030 COMBINED
PM PEAK HOURLY VOLUME



TURNING MOVEMENT ABBREVIATIONS

NR: Traffic from North Turning Right
NL: Traffic from North Turning Left
NT: Traffic from North Proceeding Through

SR: Traffic from South Turning Right
SL: Traffic from South Turning Left
ST: Traffic from South Proceeding Through

ER: Traffic from East Turning Right
EL: Traffic from East Turning Left
ET: Traffic from East Proceeding Through

WR: Taffic from West Turning Right
WL: Traffic from West Turning Left
WT: Traffic from West Proceeding Through

TURNING MOVEMENT ABBREVIATIONS

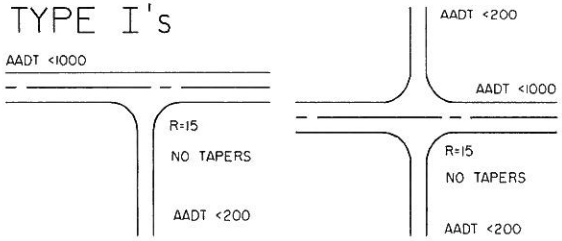
AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day for period of January 1 to December 31 (365 days)

ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehilces per day for period of May 1 to September 30 (153 days)

SOUTH LEG ON	Hwy. 770:04	
Vehicle Type	Vol.	%
A - Passenger Vehicle	480	81.9
B - Recreational Vehicle	6	1.0
C - Bus	16	2.7
D - Single Unit Truck	28	4.8
E - Tractor Trailer Unit	56	9.6
Total	586	

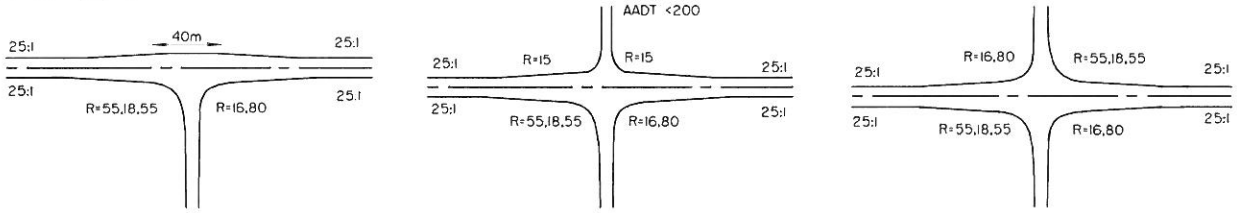
2030
2010
20

TYPE I's



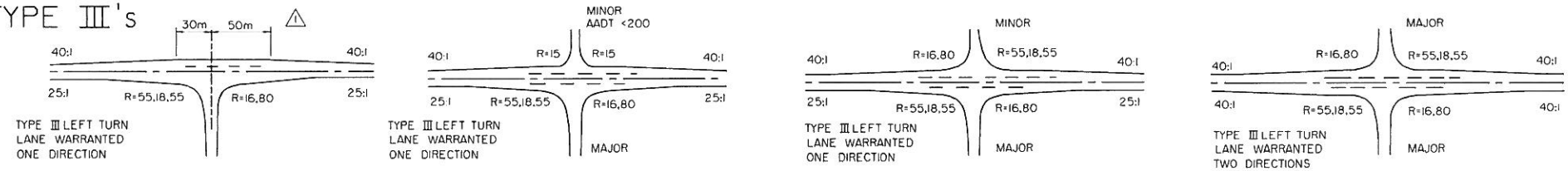
TYPE Ia TYPE Ib

TYPE II's



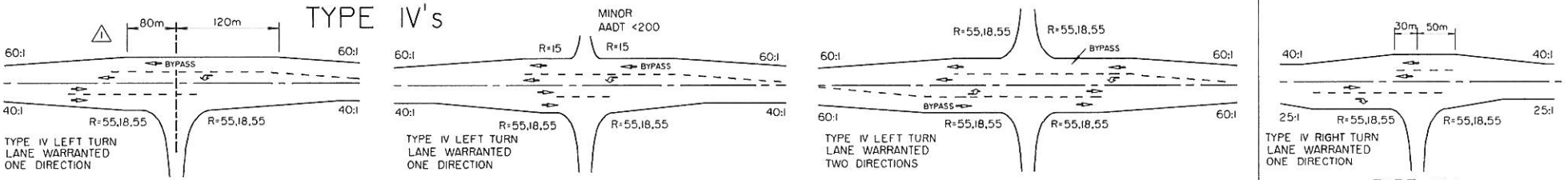
TYPE IIa TYPE IIb TYPE IIc

TYPE III's



TYPE IIIa TYPE IIIb TYPE IIIc TYPE IIId

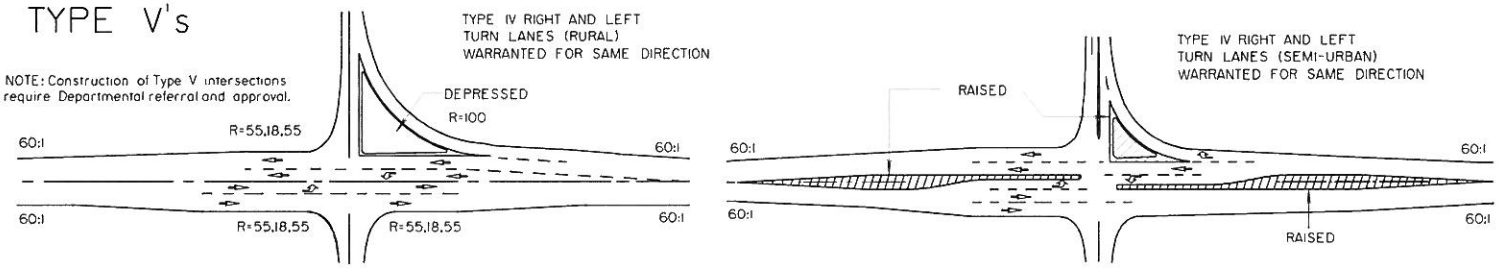
TYPE IV's



TYPE IVa TYPE IVb TYPE IVc TYPE IVd

TYPE V's

NOTE: Construction of Type V intersections require Departmental referral and approval.



TYPE Vb TYPE Vc

NOTES:
1. This is not a pavement marking drawing.
2. This figure depicts the typical layouts used for at-grade intersections. Detailed design considerations may dictate some minor alterations for particular intersections. The tapers shown here are typical for a 110 km/h design speed on the main highway.

No.	REVISIONS	BY	DATE
2			
1	REVISED LANE DIMENSIONS	TDN	05/95

Alberta INFRASTRUCTURE

FIGURE D-7.5

Date: APRIL 1995

STANDARD AT-GRADE INTERSECTION LAYOUTS FOR TWO-LANE HIGHWAYS

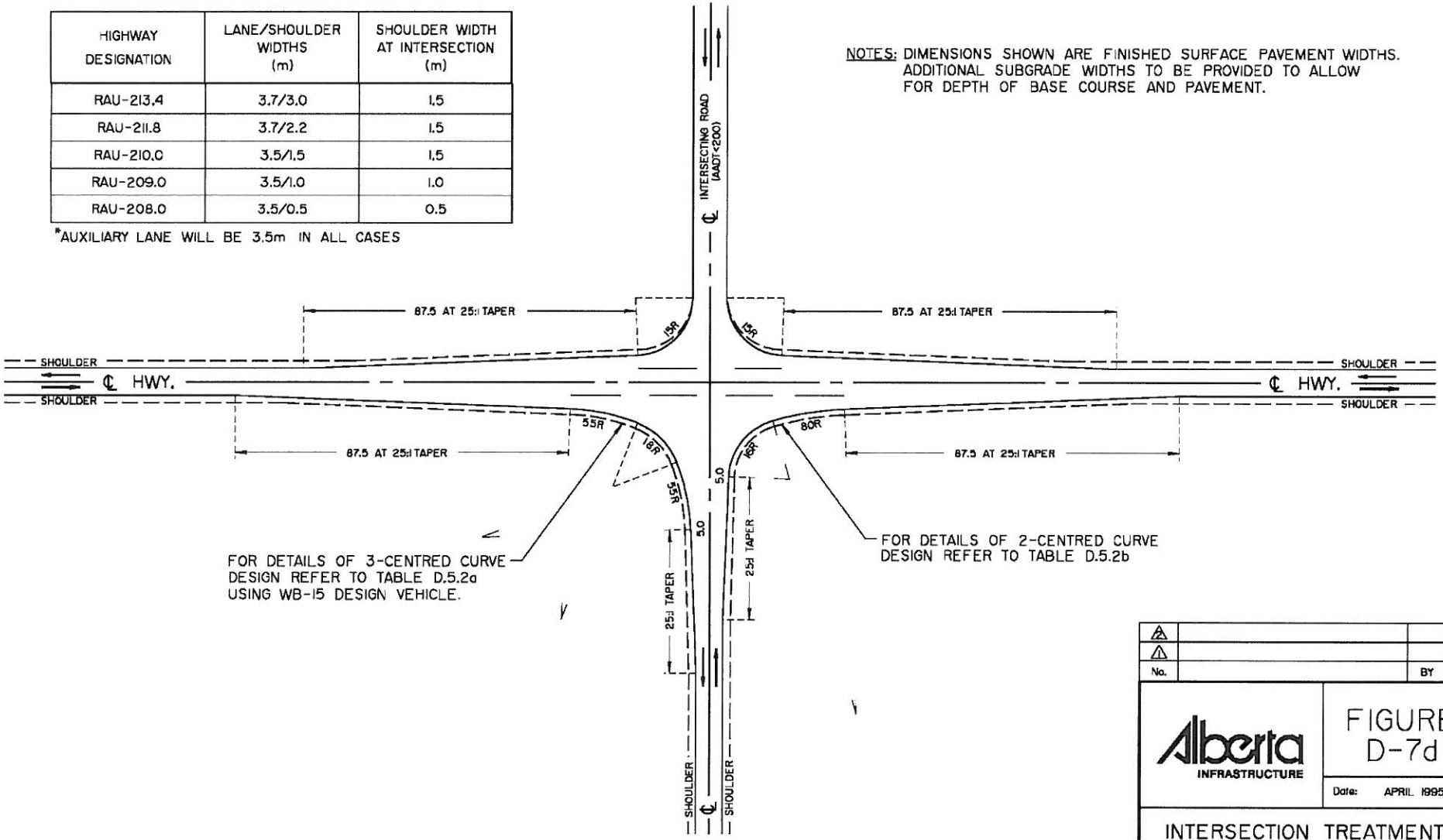
Prepared By: LT	Checked By: B.K.	Scale: N.T.S.	PAGE D-111

Graphics File: deb175 man

HIGHWAY DESIGNATION	LANE/SHOULDER WIDTHS (m)	SHOULDER WIDTH AT INTERSECTION (m)
RAU-213.4	3.7/3.0	1.5
RAU-211.8	3.7/2.2	1.5
RAU-210.0	3.5/1.5	1.5
RAU-209.0	3.5/1.0	1.0
RAU-208.0	3.5/0.5	0.5

*AUXILIARY LANE WILL BE 3.5m IN ALL CASES

NOTES: DIMENSIONS SHOWN ARE FINISHED SURFACE PAVEMENT WIDTHS. ADDITIONAL SUBGRADE WIDTHS TO BE PROVIDED TO ALLOW FOR DEPTH OF BASE COURSE AND PAVEMENT.



No.		BY	DATE

Alberta INFRASTRUCTURE

FIGURE D-7d

Date: APRIL 1995

INTERSECTION TREATMENT (TYPE IIb) (TWO-LANE HIGHWAY)

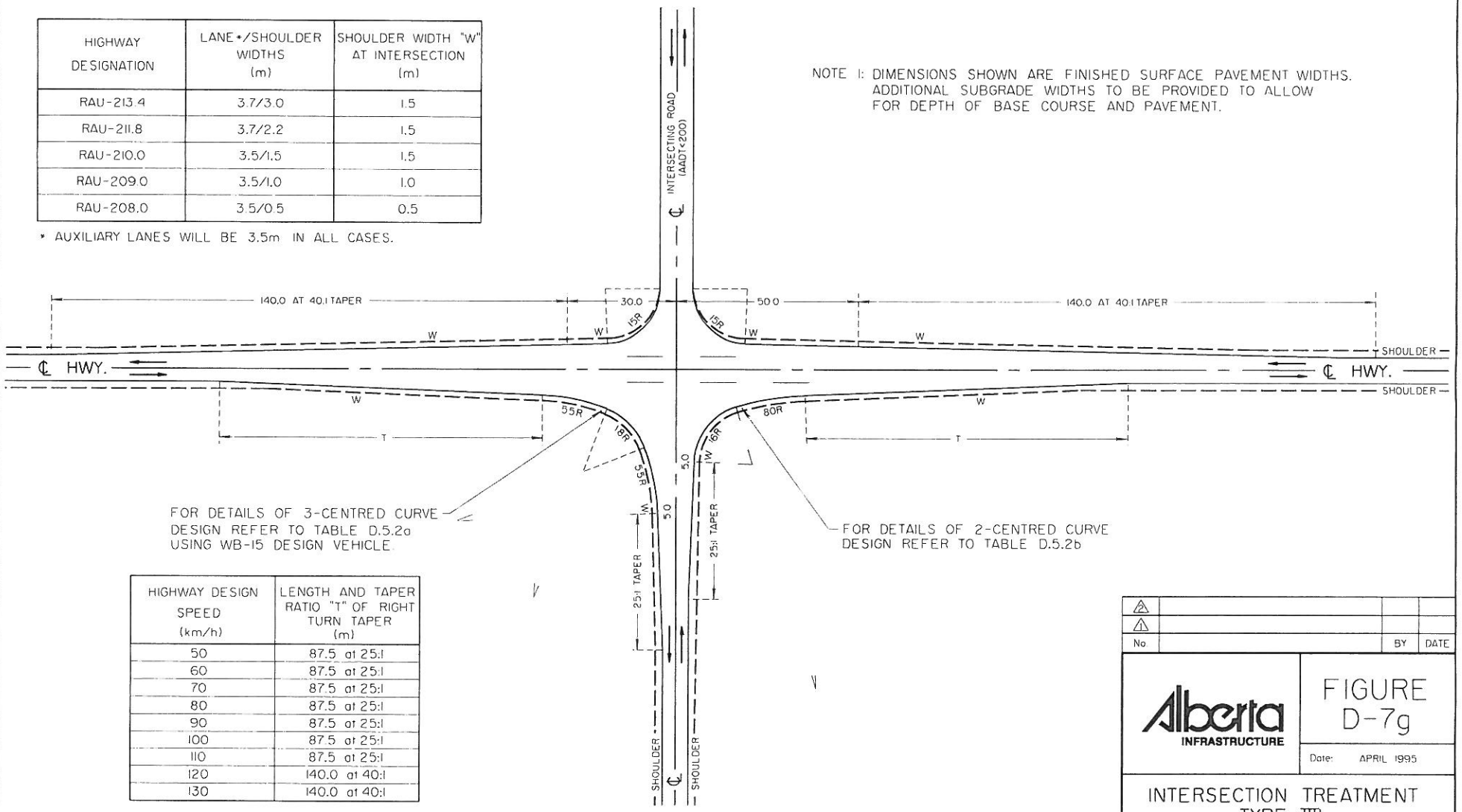
Prepared By: Cgk	Checked By: B.K.	Scale: N.T.S.	PAGE D-119

Graphics File: TIGSFSONREB\MANUAL\CHAPTERS\CHAP-D\DEBD7D.MAN

HIGHWAY DESIGNATION	LANE*/SHOULDER WIDTHS (m)	SHOULDER WIDTH "W" AT INTERSECTION (m)
RAU-213.4	3.7/3.0	1.5
RAU-211.8	3.7/2.2	1.5
RAU-210.0	3.5/1.5	1.5
RAU-209.0	3.5/1.0	1.0
RAU-208.0	3.5/0.5	0.5

* AUXILIARY LANES WILL BE 3.5m IN ALL CASES.

NOTE 1: DIMENSIONS SHOWN ARE FINISHED SURFACE PAVEMENT WIDTHS. ADDITIONAL SUBGRADE WIDTHS TO BE PROVIDED TO ALLOW FOR DEPTH OF BASE COURSE AND PAVEMENT.



HIGHWAY DESIGN SPEED (km/h)	LENGTH AND TAPER RATIO "T" OF RIGHT TURN TAPER (m)
50	87.5 at 25:1
60	87.5 at 25:1
70	87.5 at 25:1
80	87.5 at 25:1
90	87.5 at 25:1
100	87.5 at 25:1
110	87.5 at 25:1
120	140.0 at 40:1
130	140.0 at 40:1

No		BY	DATE
2			
1			

Alberta INFRASTRUCTURE

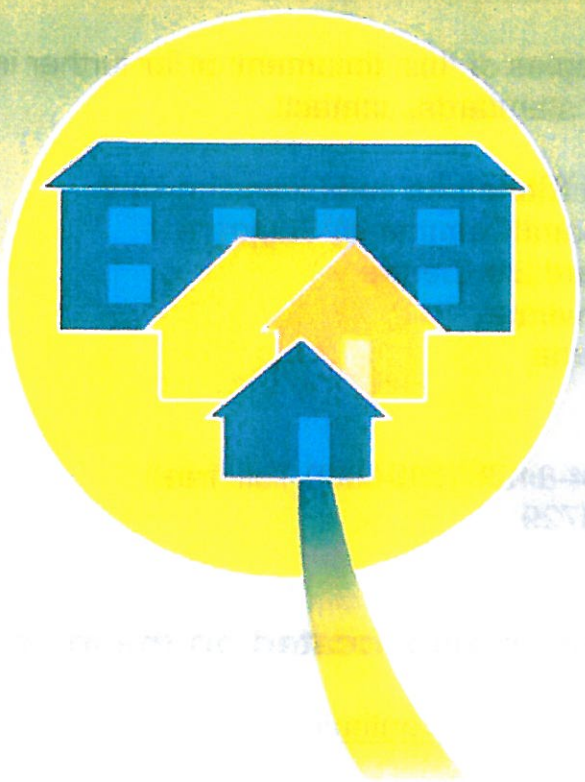
FIGURE D-7g

Date: APRIL 1995

INTERSECTION TREATMENT TYPE IIIb (TWO-LANE HIGHWAY)

Prepared By: Cgk	Checked By: B.K.	Scale: N.T.S.	PAGE D-125

Graphics File: deb07g.man



SUPPORTIVE LIVING ACCOMMODATION STANDARDS

Government of Alberta

Alberta

Supportive Living Accommodation Standards
April 2010

For further information:

For additional copies of this document or for further information about accommodation standards, contact:

Accommodation Standards and Licensing Unit
Alberta Seniors and Community Supports
4th floor, Standard Life Centre
10405 Jasper Avenue
Edmonton, Alberta
T5J 4R7

Phone (780) 644-8428 (310-0000 Toll free)
Fax (780) 644-8729

This document is also located on the Internet:

www.seniors.alberta.ca/ContinuingCare/Licensing/

For inquiries on supportive living or Alberta Seniors and Community Supports, contact:

Seniors Information line:
Toll-free in Alberta: 1-800-642-3853
Edmonton area: (780) 427-7876

Deaf or Hearing impaired with TDD/TTY units:
Toll-free in Alberta: 1-800-232-7215
Edmonton area: (780) 427-9999

Alberta Seniors and Community Supports Public Reporting website:

http://www.asalreporting.gov.ab.ca/astral/

STANDARDS INDEX

This document comprises a re-printing of the accommodation standards as presented in Schedule 1 of the Supportive Living Accommodation Licensing Regulation. Compliance with these standards, the Supportive Living Accommodation Licensing Regulation and the *Act* is mandatory for accommodations licensed under the *Supportive Living Accommodation Licensing Act.*

The accommodation standards provide the standards for voluntary, public, and private organizations operating supportive living accommodations. The standards direct operators of supportive living accommodation in the delivery of quality accommodation services to residents.

The purpose of the accommodation standards is to ensure that all supportive living accommodations maintain a high quality of accommodation services that promote the safety, security and quality of life for Albertans living in those accommodations.

Operators of supportive living accommodation will also be able to provide assurances to residents, employees, the public and municipalities that their accommodations are operating in accordance with established accommodation standards.

There is a separate set of accommodation standards that apply to long-term care accommodations.

Schedule 1

Building Code Requirements

Standard 1

1(1) Any changes that are made to the physical structure of a building that houses a supportive living accommodation or to the supportive living accommodation itself must meet the requirements of the *Alberta Building Code*.

1(2) Where changes are made in the use of, or to the population residing in, a building that houses a supportive living accommodation, the building must continue to meet the requirements of the *Alberta Building Code*.

Safety Requirements

Standard 2

2 An operator must ensure that the building that houses the supportive living accommodation, the supportive living accommodation itself and its grounds or common areas are in a safe condition and maintained so as to remain free of hazards.

Maintenance Requirements

Standard 3

3(1) An operator must ensure that the building that houses the supportive living accommodation, the supportive living accommodation itself and any equipment and operator-owned furnishings are well maintained and in good working order.

3(2) An operator shall develop, maintain and implement a scheduled preventative maintenance and repair program to inspect the condition of the supportive living accommodation, the building that houses it and its equipment and operator-owned furnishings and ensure that repairs, service and, where applicable, replacements are provided as needed.

Environmental Requirements

Standard 4

4 In a supportive living accommodation where residents are unable to adjust the temperature in their rooms and in the common areas of any supportive living accommodation, the operator shall ensure that heating, cooling and ventilation systems are operated at a level that maintains a temperature that supports the safety of all residents and the comfort of the majority of the residents.

Personalizing Spaces

Standard 5

5 An operator shall ensure that each resident of a supportive living accommodation has the opportunity to personalize the resident's room.

Window Coverings

Standard 6

6 An operator of a supportive living accommodation shall ensure that appropriate window coverings are provided in the supportive living accommodation as necessary for the comfort and privacy of the residents, including in each resident's room if the resident has not provided his or her own window coverings in accordance with section 5.

Bedding

Standard 7

7(1) Where an operator provides bedding, towels or other linens for the use of residents, the operator shall ensure that they are clean, fresh, dry and in good condition and changed on a regularly scheduled basis to ensure a clean living environment for each resident.

7(2) Where the operator provides bedding and towels for residents, the operator shall do so in keeping with the particular needs of each resident.

Laundry

Standard 8

8(1) Where residents of a supportive living accommodation provide their own bedding and towels, the operator shall ensure either

(a) that laundry services are provided, or

(b) that laundry facilities are made available for the residents to do their own laundry,

and shall inform the residents regarding the services provided or the facilities available, as the case may be.

8(2) Where the operator provides laundry equipment for the personal use of residents, their representatives or their service providers, the operator shall ensure that the equipment and the laundry area are appropriate, clean and in good repair.

Personal Choice Services

Standard 9

9(1) In this section, "personal choice services" includes optional services that may be provided or offered to residents of a supportive living accommodation such as hairdressing, barbering, personal laundry services, manicures, pedicures, massages and facials.

9(2) Where an operator provides or offers personal choice services, the operator shall ensure that the personal choice services

(a) are offered or provided based on the needs and preferences of the residents,

(b) are provided in a space that is appropriate for the purpose, and

(c) are provided by a person who holds the required licence or other certification, if any, for the provision of those personal choice services.

Medication Assistance or Medication Reminders

Standard 10

10(1) In this section,

(a) "medication assistance" means assistance with taking prescribed medication that is provided to a resident who recognizes the need to take the medication and who consents to the assistance provided, but does not include monitoring or coordination of the medical regime for that resident;

(b) "medication reminder" means a reminder given to a resident to take prescribed medication, but does not include medication assistance.

10(2) Where an operator provides medication assistance or medication reminders to residents, the operator shall develop and maintain written processes that

(a) support and promote the safe self-administration of medication for residents,

(b) ensure secure storage of medications,

(c) specify the training or education required for employees involved in delivering medication reminders or medication assistance to residents, and

(d) address procedures for dealing with errors in the provision of medication reminders or medication assistance.

Contracted Services

Standard 11

11 Where an operator contracts for services to be provided in a supportive living accommodation, the contract must include, at a minimum,

(a) the nature and scope of the service to be provided,

(b) who will provide the service,

(c) that person's qualifications to provide the service, if applicable,

(d) a requirement that the contractor carry any required insurance, and

(e) a provision that addresses the handling of personal information about the residents of the supportive living accommodation.

Social or Leisure Activities

Standard 12

12(1) Where an operator provides social or leisure activities for residents, the operator shall

(a) provide activities that address the needs and preferences of the residents,

(b) periodically solicit and consider the opinions of residents in planning and providing social or leisure activities, and

(c) respond to residents' opinions and comments regarding social or leisure activities.

12(2) An operator shall ensure that information about social or leisure activities is communicated to residents in an appropriate manner.

12(3) An operator shall ensure that employees or service providers who are required to plan, develop, coordinate and deliver social or leisure activities have the necessary education and knowledge to do so in a way that meets the needs of the residents.

Nutritional Requirements

Standard 13

13(1) An operator of a supportive living accommodation who provides residents with a meal, fluids and a snack daily shall ensure that a menu for residents, representing at a minimum a 3-week cycle, is prepared and that

(a) the meals, fluids and snacks provided meet the current nutritional requirements of the Canada Food Guide,

(b) the meals, fluids and snacks are

(i) palatable, safe and pleasingly presented, and

(ii) provided in sufficient quantities to ensure adequate hydration and that the residents' nutritional needs are met, and

(c) the menu and times at which the meals, fluids and snacks will be served are communicated to each resident in an appropriate manner.

13(2) In addition to the requirements of subsection (1), an operator of a supportive living accommodation that accommodates 11 or more residents shall ensure that the menu referred to in subsection (1) is reviewed and approved as meeting the current nutritional requirements of the Canada Food Guide by a registered dietitian or a food and nutrition manager registered with the Canadian Society of Nutrition Management.

Menu Requirements

Standard 14

14(1) The operator of a supportive living accommodation shall ensure that the menu provided for residents

(a) offers variety and seasonal variation,

(b) provides residents with a choice from within at least one food group at every meal, and

(c) as far as is reasonably practicable, recognizes residents' food preferences, religious practices and cultural customs in the planning, preparation and service of meals.

14(2) Where substitutions must be made respecting items on a menu, those substitutions must be

(a) from within the same food groups and provide similar nutritional value as the original menu items, and

(b) communicated to the residents.

14(3) An operator shall ensure that residents' opinions and feedback regarding meals, fluids and snacks are periodically collected and considered in the development of the menu.

14(4) An operator shall ensure that residents are consulted on a periodic basis respecting the times of the day at which meals, fluids and snacks are to be provided or made available to them and shall respond to the residents' comments or concerns.

14(5) An operator shall ensure that a record is created of meals served and any substitutions made to the menu and that the record is maintained for at least 3 months.

Cleaning Requirements

Standard 15

15(1) An operator shall ensure that a clean and comfortable environment is provided for residents, employees, volunteers, service providers and visitors.

15(2) A supportive living accommodation must be thoroughly cleaned on a regularly scheduled basis and the level of cleanliness must be maintained as necessary between regularly scheduled cleanings while respecting the preferences of the residents as much as possible.

15(3) Written cleaning procedures must be established and followed at all times to ensure a clean living environment.

15(4) Appropriate mechanisms must be used to minimize unpleasant odours in the supportive living accommodation.

Continuation of Services

Standard 16

16(1) An operator shall develop, maintain and implement as necessary contingency plans to provide for the continuation of necessary services as set out in this Schedule to residents in the event of the failure of electrical power or other utilities, the breakdown of essential equipment, extreme weather conditions, employment disputes and other disruptions.

16(2) A contingency plan must

(a) mitigate the impact of the disruption on the residents,

(b) be communicated and made available to residents and their representatives, visitors, volunteers, employees and service providers,

(c) be practicable in the circumstances in which it is intended to be used, and

(d) be reviewed on an annual basis to ensure that it remains effective.

Prevention of Abuse

Standard 17

17(1) An operator shall develop and maintain written processes that

(a) promote the prevention of abuse of the residents of the supportive living accommodation, and

(b) provide information respecting the reporting of suspected abuse to the proper authorities.

17(2) An operator shall ensure that all employees receive appropriate education respecting the identification and reporting of suspected abuse and the prevention of abuse of residents.

17(3) An operator shall ensure that information respecting the identification and reporting of suspected abuse and the prevention of abuse of residents is provided to residents, their representatives, volunteers and service providers.

Resident Safety and Security

Standard 18

18(1) An operator shall develop and maintain written processes that promote the safety and security of residents, including processes that

(a) account for all residents on a daily basis, and

(b) ensure that monitoring mechanisms or personnel are in place on a round-the-clock basis.

18(2) Where a supportive living accommodation has a security system, the security system must be maintained, inspected and tested as recommended by the manufacturer of the security system.

18(3) Where a supportive living accommodation has a communication system or an emergency call system, the system must be one that is appropriate to the type of building in which it is located and suitable for the needs of the residents and must be maintained, inspected and tested as recommended by the manufacturer of the system.

18(4) Any incident within the supportive living accommodation or its grounds in which the safety or security of a resident is breached must be documented and reported to the director along with the actions taken to address the incident or remedy the breach, as the case may be.

18(5) An operator shall ensure that all employees and, where appropriate, residents, service providers and volunteers receive adequate training respecting any security, communication or emergency call system in use in the supportive living accommodation.

Trust Accounts

Standard 19

19(1) Where an operator holds funds on behalf of a resident for a period longer than 31 days, the operator shall

(a) deposit those funds into a trust account opened and maintained for that purpose, and

(b) provide a receipt for each transaction.

19(2) An operator shall ensure that easily understandable records are maintained in respect of the trust account showing opening and closing balances and make those records available for inspection by residents or their representatives free of charge.

19(3) An operator shall return funds held in trust to the resident or the resident's representative on receiving a request in writing to do so.

Safeguarding of Personal Possessions

Standard 20

20 Where an operator agrees to safeguard personal possessions for a resident, the operator shall develop and maintain written policies for the safeguarding of those personal possessions.

Water Temperature

Standard 21

21(1) An operator shall ensure that the temperature of flowing water provided for personal use in areas used by the residents does not exceed the maximum safe level established in the *Alberta Building Code*.

21(2) An operator shall ensure that safe water temperatures for the personal use of residents are maintained through

(a) employee and resident training and education,

(b) proper maintenance and monitoring of equipment, and

(c) appropriate risk mitigation procedures.

21(3) An operator shall ensure that all maintenance personnel and employees involved with the water system are sufficiently knowledgeable in the function and proper operation of the water gauges, water mixing valves and therapeutic tub controls, if any, to maintain safe water temperatures.

21(4) Where a supportive living accommodation has one or more therapeutic tubs, the operator of the supportive living accommodation shall ensure that a sufficiently knowledgeable employee or service provider tests the temperature of the hot water flowing into each therapeutic tub each day prior to the first bath of the day and documents the temperature in a log book or on a log sheet kept in the tub room for that purpose.

General Information

Standard 22

22 An operator shall make available as necessary to residents and their representatives current general information respecting relevant community, municipal, provincial and federal programs.

Information respecting the Supportive Living Accommodation

Standard 23

23(1) An operator shall provide on request to applicants, residents and their representatives current information and, where necessary, forms respecting the operation of the supportive living accommodation, including:

(a) eligibility requirements,

(b) the application process,

(c) the capacity of the supportive living accommodation and the services provided to accommodate the needs of residents,

(d) the process of moving in and orientation,

(e) basic accommodation and service charges on a monthly basis,

(f) available personal choice services and their charges,

(g) cleaning and maintenance schedules,

(h) the policy respecting the giving of gifts by residents to employees and volunteers,

(i) the policy respecting involvement by employees or volunteers in the financial or non-financial affairs of residents,

(j) the notice period applicable to rate increases,

(k) the house rules of the supportive living accommodation and circumstances that could lead to the termination of residency,

(l) information respecting the measures taken by the operator to protect the privacy and personal information of residents,

(m)information respecting

i) a risk management process, if the operator has established a process,

ii) trust accounts, if the operator maintains trust accounts, and

iii) services to safeguard the personal possessions of residents, if the operator provides such services,

(n) information respecting the results of required inspections of the supportive living accommodation, and

(o) the written process for resolving concerns or complaints.

23(2) An operator shall ensure that a residential services agreement is signed by each resident or the resident's representative and by an authorized representative of the supportive living accommodation.

23(3) A residential services agreement

(a) may be a separate document on its own or may form part of another document, and

(b) must clearly state

(i) the residential services provided,

(ii) the rates charged for those services, and

(iii) the notice periods that apply to rate increases and the termination of services or residency.

Concerns and Complaints

Standard 24

24 An operator shall develop and maintain a written process for the resolution of concerns and complaints about the supportive living accommodation and the services provided and shall document every concern or complaint received and the measures taken to resolve it.

Assessment

Standard 25

25 An operator shall develop and maintain written processes for the assessment of applicants for residency in the supportive living accommodation, including the assessment of

(a) applicants' physical, emotional and cognitive abilities in relation to the physical design and available services of the supportive living accommodation,

(b) applicants' behaviours in relation to the needs of current residents, and

(c) the suitability of available services in relation to the needs, safety and security of applicants.

Reassessment

Standard 26

26 Where a resident's physical, emotional or cognitive condition changes, the operator of the supportive living accommodation shall ensure that the resident's needs are reassessed in relation to the supportive living accommodation and its available services and the needs of the other residents.

Risk Management

Standard 27

27(1) An operator shall advise each resident or the resident's representative of the limitations of the services offered in the supportive living accommodation and ensure that the resident or the representative, as the case may be, is aware of and acknowledges the increased risk associated with living in the supportive living accommodation given the resident's identified needs and capabilities.

27(2) An operator may enter into a written agreement with a resident or the resident's representative to manage risk to the resident based on the resident's identified needs and the capacity of the supportive living accommodation to meet those needs.

27(3) An agreement referred to in subsection (2) must be reviewed and, if necessary, amended each time a resident is reassessed in accordance with section 26.

Policies respecting Safety and Security

Standard 28

28(1) An operator shall create and maintain policies and procedures related to the safety and security of residents to be followed by employees.

28(2) An operator shall ensure that all employees are aware of and have access to the policies and procedures referred to in subsection (1).

Job Descriptions

Standard 29

29(1) An operator shall ensure that a written job description is prepared and made available for each employee employed in the supportive living accommodation.

29(2) The job description referred to in subsection (1) must set out

(a) the job qualifications,

(b) the responsibilities of the position, and

(c) the scope of the position.

Residents' Personal Affairs

Standard 30

30(1) An operator shall develop and maintain written policies respecting the involvement of employees or volunteers in the personal affairs of residents.

30(2) The written policies referred to in subsection (1) must at a minimum address

(a) the accepting of gifts by employees or volunteers from residents,

(b) the involvement of employees or volunteers in the financial affairs of residents, including matters relating to powers of attorney, wills and estate planning, and

(c) the involvement of employees or volunteers in the non-financial affairs of residents, including matters relating to personal directives, decision-making and guardianship.

30(3) The written policies referred to in subsection (1) must be provided to residents, their representatives, employees and volunteers.

Criminal Record Check

Standard 31

31 An operator shall ensure that each new employee, each new volunteer and each new service provider whose duties involve the provision of services directly to residents must provide a criminal record check.

Privacy and Personal Information

Standard 32

32(1) An operator shall ensure that the privacy and personal information of residents are protected.

32(2) An operator shall develop and maintain written policies respecting the protection of residents' privacy and personal information and shall

(a) train employees and volunteers in implementing the policies, and

(b) ensure that residents and their representatives are informed respecting the policies.

For further information on the Supportive Living Accommodation Standards, Regulation and *Act* please consult the Accommodation Standards and Licensing Information Guide located on-line at:

www.seniors.alberta.ca/ContinuingCare/Licensing/InformationGuide.pdf

Full versions of the *Supportive Living Accommodation Licensing Act* and the Supportive Living Accommodation Licensing Regulation can be accessed from Queen's Printer on-line at: www.qp.alberta.ca.

Province of Alberta

SUPPORTIVE LIVING ACCOMMODATION LICENSING ACT

Statutes of Alberta, 2009
Chapter S-23.5

Current as of April 1, 2010

Office Consolidation

Queen's Printer Bookstore
Main Floor, Park Plaza
10611 - 98 Avenue
Edmonton, AB T5K 2P7
Phone: 780-427-4952
Fax: 780-452-0668

E-mail: qp@gov.ab.ca
Shop on-line at www.qp.alberta.ca

Note

All persons making use of this consolidation are reminded that it has no legislative sanction, that amendments have been embodied for convenience of reference only. The official Statutes and Regulations should be consulted for all purposes of interpreting and applying the law.

Regulations

The following is a list of the regulations made under the *Supportive Living Accommodation Licensing Act* that are filed as Alberta Regulations under the Regulations Act

SUPPORTIVE LIVING ACCOMMODATION LICENSING ACT

Chapter S-23.5

Table of Contents

HER MAJESTY, by and with the advice and consent of the Legislative Assembly of Alberta, enacts as follows:

Definitions

1 In this Act,

(a) "Court" means the Court of Queen's Bench;

(b) "director" means the director designated under section 5;

(c) "legal representative" means a guardian or surrogate decision-maker pursuant to a court order;

(d) "licence" means a licence for a supportive living accommodation;

(e) "Minister" means the Minister determined under section 16 of the *Government Organization Act* as the Minister responsible for this Act;

(f) "operator" means a person who provides supportive living accommodation as described in section 2;

(g) "supportive living accommodation" means buildings or units in buildings that are intended for permanent residential living where an operator also provides or arranges for services in order to assist residents to live as independently as possible.

Application

2(1) This Act applies to supportive living accommodation provided by an operator where

(a) the supportive living accommodation is provided to 4 or more adults who are not related to the operator,

(b) the operator provides or arranges for services related to safety and security for the persons referred to in clause (a) in accordance with the standards set out or adopted in the regulations, and

(c) the operator provides, offers or arranges for

(i) at least one meal per day, or

(ii) housekeeping services,

for the persons referred to in clause (a).

(2) This Act does not apply to

(a) a nursing home under the *Nursing Homes Act*,

(b) an approved hospital or an auxiliary hospital under the *Hospitals Act*,

(c) a facility referred to in section 1(h)(v) of the *Social Care Facilities Licensing Act*, or

(d) a class, type or category of supportive living accommodation designated as exempt in accordance with the regulations.

Licence required

3(1) An operator must hold a subsisting licence for each location at which the operator provides supportive living accommodation as set out in section 2(1).

(2) An operator shall comply with the conditions of the licence issued to the operator.

(3) Unless the director permits otherwise, an operator shall post the licence issued to the operator in a prominent place in the supportive living accommodation to which it pertains.

(4) If the director has given permission under subsection (3) to dispense with posting a licence, the operator shall keep the licence in a place in the supportive living accommodation to which it pertains where it is available and accessible for viewing.

(5) A licence is not transferable.

Application for licence

4(1) Subject to subsection (2), a person may apply to the director in accordance with the regulations for a licence or for the renewal of a licence.

(2) A person who

(a) has been refused a licence or a renewal of a licence under subsection (3)(b),

(b) has had a licence cancelled under section 15(1), or

(c) has failed to comply with a stop order issued under section 16(1),

is ineligible, for a period of 2 years after the date of the refusal, cancellation or failure to comply,

(d) to apply for a licence or a renewal of a licence in respect of the supportive living accommodation that was the subject of the refusal, cancellation or failure to comply, and

(e) to apply for a licence for a supportive living accommodation that has not previously been licensed.

(3) Subject to the regulations, the director may, in the director's discretion, in respect of an application under subsection (1),

(a) issue or renew a licence for a term of up to 3 years, with or without conditions, or

(b) refuse to issue or to renew a licence.

(4) If the director refuses to issue or to renew a licence, the director shall at that time provide to the applicant written reasons for the refusal.

(5) The written reasons referred to in subsection (4) must include information respecting the applicant's right to appeal the director's refusal in accordance with section 20.

Designation of director

5(1) The Minister may designate a director for the purposes of this Act.

(2) The director designated under subsection (1) may delegate to any person any of the duties imposed or powers conferred on the director under this Act, including the power to form an opinion.

(3) The director has all the powers of an inspector, a complaints officer and an investigator under this Act.

Inspectors

6 The Minister may designate one or more persons as inspectors for the purposes of this Act.

Inspections

7(1) Subject to subsection (2), at the request of the director, for the purposes of ensuring compliance with this Act, the regulations, an order issued under this Act or a condition of a licence, an inspector may, with the permission of the operator of a supportive living accommodation,

(a) at any reasonable hour enter the supportive living accommodation and inspect that supportive living accommodation;

(b) require the production of any books, records or other documents in respect of the supportive living accommodation or place and examine them, make copies of them or remove them temporarily for the purpose of making copies;

(c) inspect and take samples of any material, food or equipment being used in the supportive living accommodation;

(d) perform tests, take photographs or make recordings in respect of the supportive living accommodation;

(e) interview the operator of the supportive living accommodation with respect to matters relevant to the inspection.

(2) An inspector may enter the supportive living accommodation of a particular resident only with the permission of that resident or that resident's legal representative.

(3) An inspector may interview employees and residents of the supportive living accommodation, relatives of residents, legal representatives of residents and any other person who may have information relevant to the inspection.

(4) When an inspector removes any books, records or other documents under subsection (1)(b), the inspector shall

(a) give a receipt for those items to the person from whom those items were taken, and

(b) forthwith return the items to the person from whom they were taken when they have served the purposes for which they were taken.

(5) When an inspector takes samples of any material, food or equipment under subsection (1)(c), the inspector shall

(a) give a receipt for those items to the person from whom those items were taken, and

(b) on that person's request, return those items to that person when those items have served the purposes for which they were taken.

(6) An operator shall provide on request a complete list of names and contact information of residents of the supportive living accommodation, including the names and contact information of each resident's legal representative, if any, to the inspector.

(7) If permission is refused or cannot be reasonably obtained under subsection (1) or if anyone prevents an inspector from exercising powers under subsection (1) or obstructs or hinders the inspector in the exercise of those powers, a judge of the Court of Queen's Bench may on the application of the inspector make any order that the judge considers necessary to permit the inspector to conduct an inspection or exercise those powers.

(8) An application under subsection (7) may be made ex parte if the Court considers it appropriate in the circumstances.

(9) The inspector shall inform the operator and the director of the results of an inspection of the operator's supportive living accommodation.

Order after inspection

8(1) Where, after a supportive living accommodation has been inspected, the director is of the opinion that this Act, the regulations, an order issued under this Act or a condition of a licence is not being complied with, the director may in writing

(a) order the operator of the supportive living accommodation to take the measures specified in the order within the time limits specified in the order,

(b) issue a stop order in accordance with section 16, or

(c) cancel the licence issued to the operator in respect of that supportive living accommodation in accordance with section 15.

(2) The director may direct that an order issued under subsection (1)(a) be posted in a prominent place in the supportive living accommodation.

Complaints officers

9(1) The Minister may designate one or more persons as complaints officers for the purposes of this Act.

(2) For the purposes of section 10(2)(a), a complaints officer has all the powers of an inspector or an investigator under this Act.

Complaints

10(1) A person who has reason to believe that an operator has failed to comply with this Act, the regulations, an order issued under this Act or a condition of a licence may make a complaint to a complaints officer in the manner determined by the director.

(2) A complaints officer shall

(a) review any complaint received under subsection (1) to decide whether an investigation of the complaint is necessary, and for that purpose may

(i) make inquiries, and

(ii) take any other action the complaints officer considers appropriate in the circumstances, including, without limitation, attempting to resolve the complaint through mediation or conciliation and notifying the director of an offence under this Act,

and

(b) if the complaints officer decides that an investigation of the complaint is necessary, refer the complaint to an investigator.

(3) A complaints officer may refuse to refer a complaint to an investigator if

(a) the complaints officer considers the complaint to be frivolous or vexatious, or

(b) the complaints officer has resolved the complaint under subsection (2)(a)(ii).

(4) A complaints officer shall inform the complainant, if the identity of the complainant is known, and any other person the complaints officer considers appropriate of a decision made under subsection (3).

(5) The decision of a complaints officer under subsection (3) may be appealed to the director in accordance with the regulations.

Investigators

11 The Minister may designate one or more persons as investigators for the purposes of this Act.

Investigations

12(1) When a complaint is referred to an investigator under section 10(2)(b), the investigator, for the purposes of investigating the complaint, has all the powers of an inspector under section 7 in addition to the powers set out in section 13.

(2) An investigator shall inform the operator and the director of the results of an investigation of the operator's supportive living accommodation.

(3) The director shall notify the complainant, if the identity of the complainant is known, the operator of the supportive living accommodation and any other person the director considers appropriate of the results of an investigation of the supportive living accommodation, including whether the complaint was founded or not founded.

(4) Where, after a supportive living accommodation has been investigated, the director is of the opinion that this Act, the regulations, an order issued under this Act or a condition of a licence is not being complied with, the director may in writing

(a) order the operator of the supportive living accommodation to take the measures specified in the order within the time limits specified in the order,

(b) issue a stop order in accordance with section 16, or

(c) cancel the licence issued to the operator in respect of that supportive living accommodation in accordance with section 15.

(5) The director may direct that an order issued under subsection (4)(a) be posted in a prominent place in the supportive living accommodation.

Collection, use and disclosure of information

13(1) An investigator or an inspector

(a) may collect and use personal information for the purposes of conducting an investigation or an inspection, and

(b) shall not disclose any personal information collected under this section except as provided in this section.

(2) An investigator or an inspector may use or disclose personal information

(a) if the use or disclosure is necessary for the purposes of section 7 or 12, including making an application to the Court under section 7(6), or

(b) if the disclosure is authorized or required under the *Freedom of Information and Protection of Privacy Act* or another enactment.

Notification of authorities

14(1) If the director reasonably believes that the subject-matter of a complaint could constitute

(a) an offence under the *Criminal Code* (Canada), the director shall refer the complaint to a police service,

(b) abuse against a person under the *Protection for Persons in Care Act*, the director shall refer the complaint to the Minister responsible for that Act, or

(c) an offence under a statute or regulation of Alberta, the director shall refer the complaint to the Minister of Justice and Attorney General.

(2) The director may, when referring a complaint under subsection (1), disclose information that the director reasonably believes relates to the possible offence or abuse.

Cancellation of licence

15(1) When the director is of the opinion, as the result of an inspection or investigation, that an operator has not complied with

(a) this Act or the regulations,

(b) a condition of a licence, or

(c) an order issued under section 8 or 12,

the director may, on 45 days' notice in writing to the operator, cancel the licence in respect of that supportive living accommodation.

(2) A notice to an operator under subsection (1) must inform the operator of the right to appeal the cancellation in accordance with section 20.

(3) When a notice has been given under subsection (1), the director shall post a notice of the cancellation of the licence in a prominent place in the supportive living accommodation.

Issue of stop order

16(1) If the director is of the opinion as the result of an inspection or investigation that an operator has contravened or is contravening this Act, a regulation, a condition of a licence or an order issued under this Act, the director may issue a stop order to the operator in accordance with subsection (2).

(2) In a stop order the director may require that the operator to whom it is directed do one or more of the following, either permanently or for a specified period:

(a) cease the contravention specified in the stop order;

(b) stop any activity occurring at a supportive living accommodation specified in the stop order;

(c) stop operating the supportive living accommodation specified in the stop order.

(3) A stop order must contain the reasons for making it.

(4) Not more than 48 hours after issuing a stop order, the director shall cause a copy of it to be served on the operator to whom it is directed, and on receipt of the copy, the operator to whom the stop order is directed shall comply with the order forthwith.

(5) An operator to whom a stop order is directed who fails to comply with the stop order forthwith on service of a copy of it on the operator or subsequently is guilty of an offence and liable to a fine in accordance with section 22.

(6) A stop order served on an operator under this section must inform the operator of the right to appeal the stop order in accordance with section 18.

(7) When a stop order has been issued to an operator, the director shall post the stop order in a prominent place in the supportive living accommodation.

Court order

17(1) If the operator to whom a stop order is directed fails to comply with the stop order forthwith on service of a copy of it on the operator or subsequently, the director may, notwithstanding that the operator has filed an application under section 18, apply to the Court of Queen's Bench for an order of the Court directing

(a) the operator to comply with the stop order,

(b) any peace officer to assist the director and other persons referred to in subsection (2)(b) in enforcing their powers and performing their duties under subsection (2)(b), and

(c) any other relief in respect of matters coming under this Act that the Court considers appropriate in the circumstances.

(2) If the operator to whom a stop order is directed fails to comply with the stop order forthwith on service of a copy of the order of the Court of Queen's Bench under subsection (1) on the operator or subsequently,

(a) the failure to comply with the stop order may be dealt with by the Court as a civil contempt of the Court,

(b) any person authorized by the director for the purpose and any other persons assisting that person may, without further leave of the Court and without incurring liability for it, enter the supportive living accommodation and take any actions that are necessary to carry out the stop order, and

(c) the director may recover by action any expenses incurred under clause (b) in carrying out the stop order from the operator to whom the stop order is directed.

Appeal

18(1) An operator to whom a stop order is directed may appeal to the Court of Queen's Bench by

(a) filing an application with the clerk of the Court, and

(b) serving a copy of the application on the director,

within 15 days from the date on which a copy of the stop order was served on the operator.

(2) A stop order remains in effect unless the Court orders that it be stayed pending the disposition of the appeal.

(3) A judge of the Court of Queen's Bench may extend the time for filing or service under subsection (1).

(4) On an appeal under this section, the Court of Queen's Bench

(a) shall inquire into all matters leading to the issuing of the stop order,

(b) shall determine whether, in its opinion, there were sufficient grounds for the issuing of the stop order,

(c) shall confirm, vary or revoke the stop order, and

(d) may make any other order in respect of matters coming under this Act that the Court considers appropriate in the circumstances, including issuing an order under section 17(1).

(5) This section and section 17 apply to a stop order issued under section 16 whether or not the contravention of this Act or the regulation or order concerned constitutes an offence and whether or not a conviction has been adjudged for the offence.

Notification

19(1) On receiving a copy of a stop order under section 16 or a notice cancelling a licence under section 15(1), the operator shall forthwith provide to the director a list of

(a) the names and contact information of residents in the supportive living accommodation, and

(b) the names and contact information of the legal representatives, if any, of the residents in the supportive living accommodation.

(2) On receiving the list referred to in subsection (1), the director shall notify in writing the persons on the list respecting the cancellation or stop order, as the case may be.

Appeal

20(1) A person

(a) who has been refused a licence or renewal of a licence under section 4(3), or

(b) whose licence has been cancelled,

may appeal the refusal or cancellation by serving the Minister with a notice of appeal in the prescribed form within 15 days after being notified in writing of the refusal or cancellation.

(2) The Minister shall, within 30 days after being served with the notice of appeal, appoint an appeal panel consisting of 3 individuals to hear the appeal.

(3) The Minister shall designate one of the members of the appeal panel as chair.

(4) The Minister may set the time within which the appeal panel is to hear an appeal and render a decision and the Minister may extend that time.

(5) An appeal panel that hears an appeal under this section may by order

(a) confirm the refusal or cancellation,

(b) direct that a licence or renewal of a licence be issued, or

(c) reinstate a cancelled licence.

(6) Members of the appeal panel who are not employees of the Government may be paid remuneration, and may receive reasonable travelling and living expenses while away from their ordinary places of residence in the course of their duties as members of the appeal panel, at the rates prescribed by the Minister.

(7) A decision of the appeal panel under this section is final and binding and may not be appealed.

Service of notice or order

21 When an order is issued under section 8 or 12, a notice is given under section 15(1) or an order is issued by an appeal panel under section 20, that order or notice, as the case may be, may be served

(a) by personal service,

(b) by any form of mail that requires a receipt in acknowledgment of delivery if the post office receipt is signed by the person to whom the notice or order is directed or by a person on behalf of that person, or

(c) in any manner that may be directed by the Court.

Offences

22(1) A person who contravenes this Act or the regulations or fails to comply with an order issued under this Act or the regulations is guilty of an offence and liable to a fine of not more than $100 000 and, in the case of a continuing offence, to a further fine of not more than $1000 per day for each day or part of a day that the contravention or failure to comply continues after the first day.

(2) No prosecution may be commenced under this section later than 2 years following the date on which the subject-matter of the prosecution first came to the knowledge of the Minister.

Protection from liability

23 No action lies against the Minister, the director, a complaints officer, an investigator or an inspector, or anyone acting under the authority of any of them, for anything done or omitted to be done in good faith in exercising powers or authority or carrying out duties, responsibilities or functions under this Act.

Regulations

24(1) The Lieutenant Governor in Council may make regulations

(a) designating classes, types or categories of supportive living accommodation as exempt from some or all of the provisions of this Act;

(b) establishing criteria for the exemption of a class, type or category of supportive living accommodation for the purposes of clause (a);

(c) respecting any other matter that the Lieutenant Governor in Council considers necessary to carry out the intent of this Act.

(2) The Minister may make regulations

(a) governing the licensing of supportive living accommodations, including, without limitation, the information that must appear on the licence, the application process and other requirements;

(b) respecting the operation of supportive living accommodations;

(c) respecting standards, including the adoption of applicable standards made by another authority, for supportive living accommodations;

(d) respecting the establishment of alternative standards for a class, type or category of supportive living accommodation, including the circumstances in which alternative standards may be appropriate, whether the alternative standards apply temporarily or permanently, and the process by which an operator may be authorized to comply with the alternative standards;

(e) respecting records and other documents that an operator is required to create and maintain for the purposes of this Act;

(f) respecting providing information to the public regarding the status of supportive living accommodations that are subject to this Act;

(g) respecting the employment of persons in supportive living accommodations and the qualifications that must be met by those persons;

(h) respecting the procedure for an appeal from the decision of a complaints officer under section 10(3);

(i) prescribing forms for the purposes of this Act;

(j) subject to section 25, respecting the transition of any matter from the *Social Care Facilities Licensing Act* to this Act;

(k) defining terms used but not defined in this Act.

Transitional

25(1) A licence issued under the *Social Care Facilities Licensing Act* with respect to a facility that is a supportive living accommodation as defined in this Act that is in existence immediately before the coming into force of this Act is deemed to be a licence issued under this Act until the term of the licence expires, unless the licence is cancelled earlier under section 15.

(2) An appeal before an appeal board under the *Social Care Facilities Licensing Act* that commenced before the coming into force of this Act is to be concluded under the *Social Care Facilities Licensing Act* as if this Act had not come into force.

(3) An order of a director under the *Social Care Facilities Licensing Act* cancelling a licence or issuing a stop order with respect to a facility that is a supportive living accommodation as defined in this Act is deemed to be an order issued by the director under this Act.

26 *(This section amends other Acts; the amendments have been incorporated into those Acts.)*

Coming into force

27 This Act comes into force on Proclamation.

(NOTE: Proclaimed in force April 1, 2010.)

Supportive Living Standards