

COUNTY OF LETHBRIDGE  
IN THE PROVINCE OF ALBERTA

BY-LAW NO. 1330

A BY-LAW OF THE COUNTY OF LETHBRIDGE  
BEING A BY-LAW PURSUANT TO SECTION 633(1)  
OF THE MUNICIPAL GOVERNMENT ACT, CHAPTER M.26.1

FOR THE ADOPTION OF AN AREA STRUCTURE PLAN

WHEREAS Outlook Commodities Ltd. wish to develop a Grouped Country Residential Subdivision on a portion of the N.W. Section 34, Township 10, Range 23, West of the Fourth Meridian; and a portion of the N.E. Section 33, Township 10, Range 23, West of the Fourth Meridian;

AND WHEREAS an application to reclassify the above land for Country Grouped Residential has also been submitted for consideration by County Council pending further information;

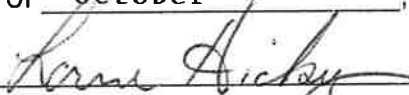

AND WHEREAS the Developer has submitted the "Outlook Acres Area Structure Plan" which will provide a framework for subsequent subdivision and development of the area;

NOW THEREFORE BE IT RESOLVED that the Council of the County of Lethbridge does hereby adopt the "Outlook Acres Area Structure Plan" attached as Appendix "A".

GIVEN first reading this 3rd day of September, 2009.

  
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Reeve  
  
\_\_\_\_\_  
County Manager

GIVEN second reading this 15 day of October, 2009.

  
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Reeve  
  
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County Manager

GIVEN third reading this 15 day of October, 2009.

  
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Reeve  
  
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County Manager



# OUTLOOK ACRES

## Area Structure Plan

August, 2009





Outlook Acres Area Structure Plan  
Outlook Commodities

OUTLOOK ACRES  
AREA STRUCTURE PLAN

August, 2009

*Prepared for*  
OUTLOOK COMMODITIES  
Lethbridge, Alberta

*Prepared by*  
STANTEC CONSULTING LTD.  
Lethbridge, Alberta

*Project No. 112944880*



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# 1 INTRODUCTION

## 1.1 PURPOSE OF THE PLAN

The purpose of the Outlook Acres Area Structure Plan is to set out a planning concept and guidelines for the future subdivision and development of the lands described in this document. The Plan is in accord with, and is intended to complement, the amendment to By-law 1211 the County of Lethbridge Land Use By-law to change these lands from Rural Urban Fringe (RUF) to Grouped Country Residential (GCR).

## 1.2 LOCATION AND BACKGROUND

Outlook Acres is legally described as Lot 1, Block 1, Plan 091 2876 located within the NE¼ Sec. 33, Twp. 10, Rge. 23, W4th and Lot 1, Block 2, Plan 091 2876 located within the NW¼ Sec. 34, Twp. 10, Rge. 23, W4th (see **Figure 1.0, Aerial Photo** and **Figure 2.0, Location Plan**) and comprises a total of 14.43 ha (35.7 acres). The land is owned by Outlook Commodities Ltd. Certificates of Titles are included in **Appendix A – Property Ownership**. It should be noted that application to rezone the western parcel (+/- 5.5 acres) to GCR has been made separately.

This land area is immediately adjacent to the southern boundary of the Village of Nobleford and offers an attractive opportunity for country residential living. Close to the amenities of the Village and yet distinctly separated by a secondary highway, the 'cut off' nature of this property and its topographic characteristics realistically reduce its possibilities to only a few land uses. Even from an agricultural point of view, the site has severe limitations both by the nature of the topography and the relatively confined legal boundaries of the property.

While the lands are next to the Village, their value as an area for future urban expansion is limited. Secondary Highway No. 519 poses a significant planning barrier particularly when measured against other growth direction possibilities for the Village.

In light of these considerations, the developer has seen an opportunity for a GCR project. The proposal envisages eleven country residential parcels ranging in size from approximately 2.03 acres to 5.6 acres. All will have a commanding view of the Rocky Mountains to the west and each site will be properly serviced to meet the respective jurisdictional standards as they relate to servicing, setbacks from the CPR line and access to the secondary highway. Additionally, to ensure the development of a visually attractive community, the developer will apply architectural standards to each of the lots.

## 1.3 APPROVAL PROCESS

This Area Structure Plan together with an application for an amendment to the Land Use By-law will be submitted to the County of Lethbridge in order to create a GCR designation for this site. In accord with the Land Use By-law, the application will be circulated for comment from appropriate authorities including the Chinook Regional Health Authority, Alberta Agriculture Food and Rural Development, Alberta





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May, 2009  
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ORIGINAL SHEET - ANSI A



**Stantec**



Client/Project

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 OUTLOOK ACRES ASP  
 NOBLEFORD ALBERTA

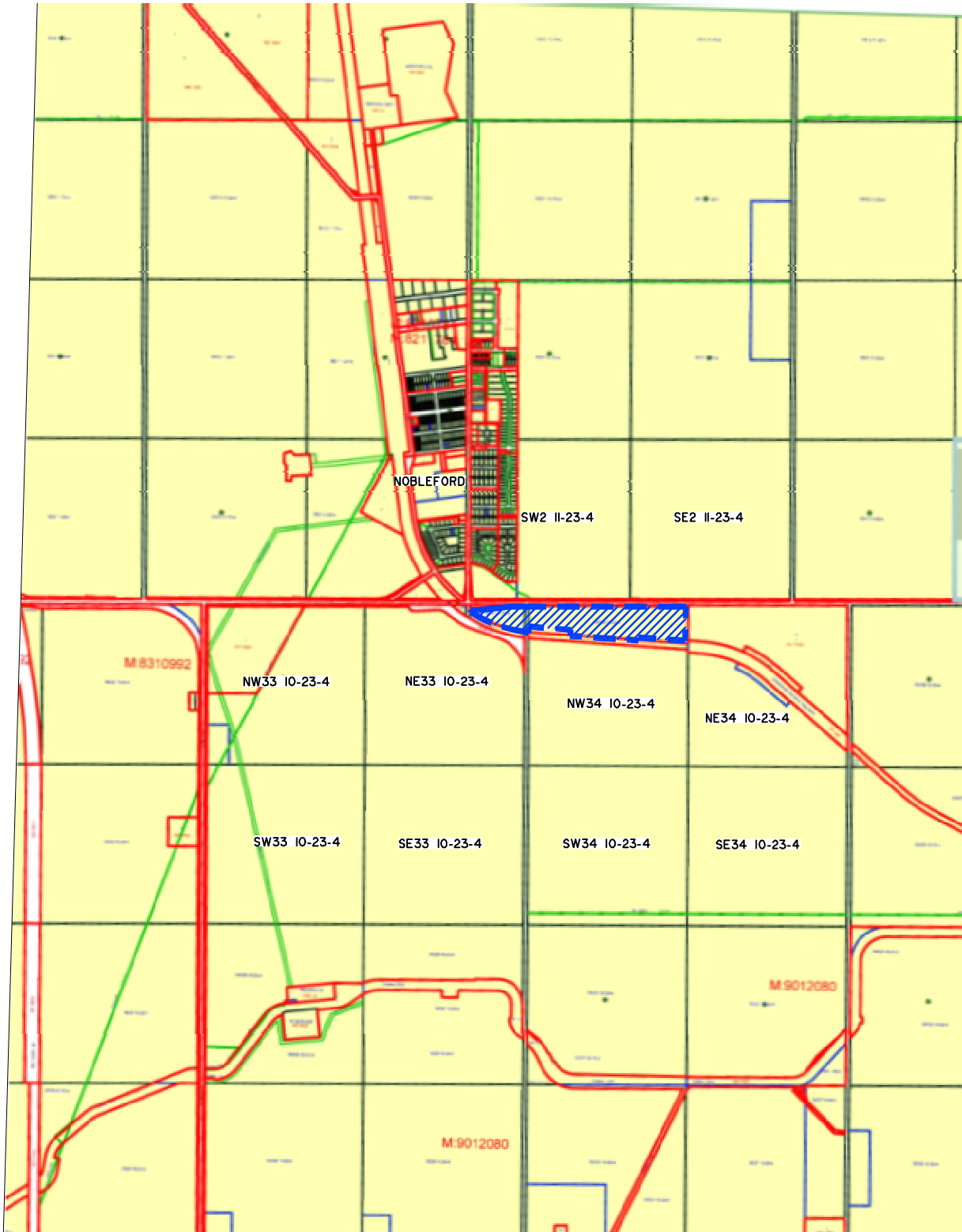
Figure No.

1.0

Title

Aerial Photo





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Client/Project  
 OUTLOOK COMMODITIES LTD  
 OUTLOOK ACRES ASP  
 NOBLEFORD ALBERTA

Figure No.

2.0

Title

Location Plan





Environmental Protection, the irrigation district and the Village of Nobleford. Subsequent to receipt of comments and recommendations from these and other relevant authorities the County Council will render a final decision on the By-law application. The successful approval of the application will permit final consideration to the Area Structure Plan.

## 1.4 LEGISLATIVE FRAMEWORK

### 1.4.1 The Municipal Government Act

The overriding legislation for municipal land use planning rests with the provincial Municipal Government Act (MGA). The two statutory plan documents set out by the MGA that are relevant to this proposal are the Municipal Development Plan and an Area Structure Plan. The relevance of both is outlined in more detail below.

### 1.4.2 The Municipal Development Plan

The County of Lethbridge is presently reviewing a new version of its Municipal Development Plan (MDP). The existing Plan (By-law #1190) provides broad policies on growth and development for the County. An important component of the MDP is its Land Use Policies, noting particularly the relevance of agriculture and that uses other than agriculture may be allowed "...only when the non - agriculture use has been determined to have no adverse affect on the agriculture base of the County".

The MDP also notes when Area Structure plans are required and the information that must be supplied in such Plans. The information provided in this ASP complies with the requirements set out in Section 4.1.3 of the Municipal Development By-law #1190.

### 1.4.3 Subdivision Regulations

Division 7 "Subdivision of Land" of the MGA sets out the requirements for the creation of new parcels. The subdivision of the proposed eleven lots described in the ASP will be carried out following approval of this document by the Municipal Council.

### 1.4.4 Land Use Bylaw

The County of Lethbridge Land Use By-law No. 1211 identifies this area adjacent to the south boundary of the Village of Nobleford as "Rural Urban Fringe". The purpose of this category is "... to protect agriculture land for agricultural use while ensuring that the fringe areas of the urban municipalities are protected for future development by ensuring non- agricultural uses will not conflict with an urban environment and economic base" . "Grouped country residential" is not among the list of uses permitted by this zone. Additionally, policies of the Land Use By-law do not support the subdivision of parcels if they exceed twenty acres. In view of this existing land use classification and policy, an amendment to the Land Use Bylaw is necessary. The amendment would change the classification from RUF to GCR.



# 2 GOALS AND OBJECTIVES

## 2.1 GOALS

The principal goals of the Outlook Acres Area Structure Plan are:

1. To provide certainty to the future development of this land area for both the County of Lethbridge and the adjacent Village of Nobleford by developing the project in harmony with the growth directions and aspirations set out in the Village's Municipal Development Plan.
2. To develop a high quality country residential concept that provides a desirable living environment and complements both the rural and urban communities that surround it.
3. To create a visually pleasing development by utilizing quality standards of development and architectural controls for building construction.

## 2.2 OBJECTIVES

The objectives of the Outlook Acres Area Structure Plan are:

1. To set out the servicing, access and setback standards of Alberta Transportation, Alberta Environment, CPR, and the County and at the same time ensure opportunities for buyers to have a variety of building site choices.
2. To identify a safe and reliable water source to the site via the Lethbridge North County Potable Water Co-op system.
3. To outline the requirements for circulation and servicing systems that will match the needs of any adjacent potential future developments.



# 3 PLAN AREA

## 3.1 SITE ANALYSIS

### 3.1.1 Site Location

The site is immediately south of the Village of Nobleford on the south side of Secondary Highway No. 519 and lies approximately 19.6 km west of Picture Butte, 26km northwest of Lethbridge and approximately 2.4 km east of the intersection of Hwy No. 23 and Secondary Highway No. 519.

### 3.1.2 Existing Land Use

This small area has historically been used for grazing by cattle and shows no evidence of soil tillage or crop growth. The site is covered entirely by grasses with no other vegetation present. Some minor excavation near the railway track, suggests that the CPR may have used these as borrow pits.

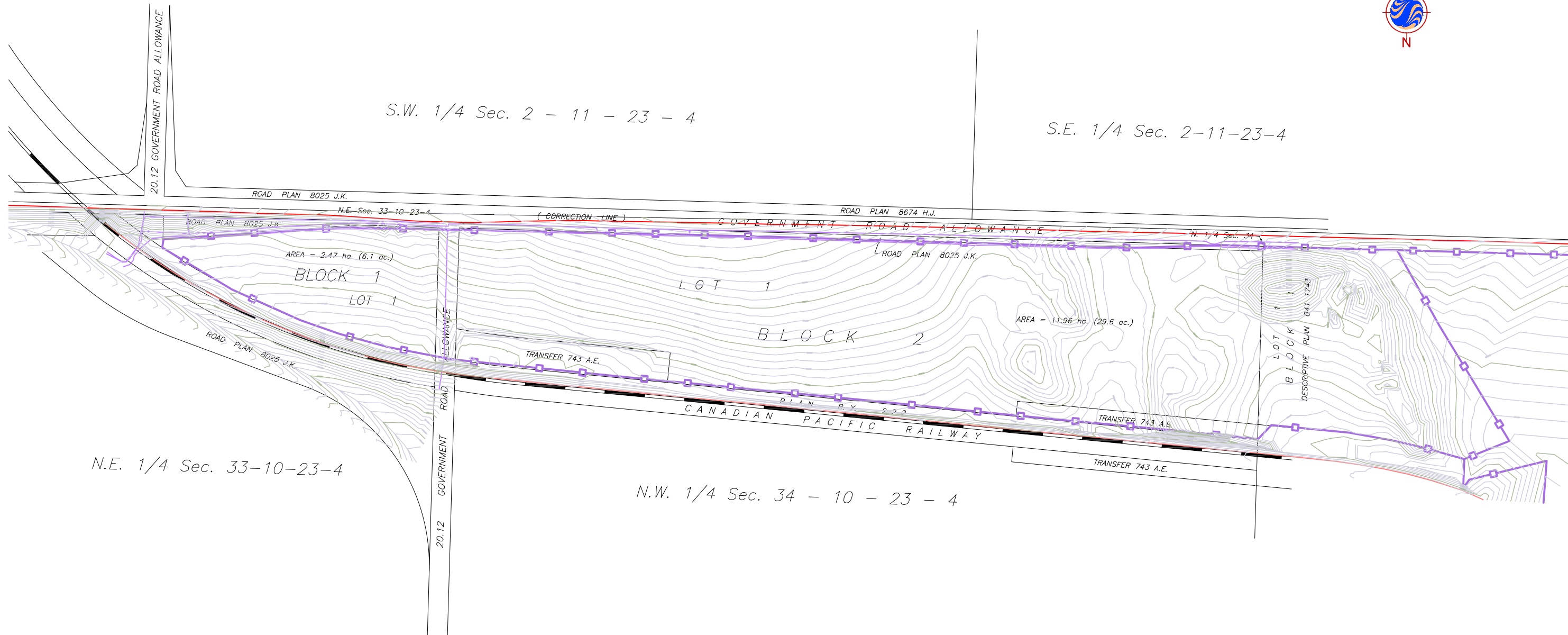
### 3.1.3 Topography and Site Characteristics

The topography of the site is gently sloping towards the south. The elevation ranges between 940–970m. (See **Figure 3.0, Existing Contours**). The soils are generally comprised of a clay-like silt, with trace amounts of fine-grained sand.

### 3.1.4 Railway Considerations

The existing Canadian Pacific Railway (CPR) tracks and right of way pose particular constraints to development of the site. A site meeting with representatives of the railway was held on April 2, 2009. The CPR provided a copy of their guidelines for residential development adjacent to their facilities. A copy of the guidelines is included as **Appendix F – Railway Guidelines**.

Among the key points identified in the document is the recommended setback distance of 75m from the railway right-of-way to occupied dwellings. A 75m setback distance has been shown in **Figure 4.0, Proposed Development Concept**. The CPR guidelines also provide a framework for reduction of the setback distance, to as little as 30m, subject to additional noise-abatement measures being incorporated in the buildings and site development. Therefore, a 30m setback distance is also shown in **Figure 4.0**. The CPR has indicated that they desire a chain-link fence along between the Development and their right-of-way to restrict access to the tracks.



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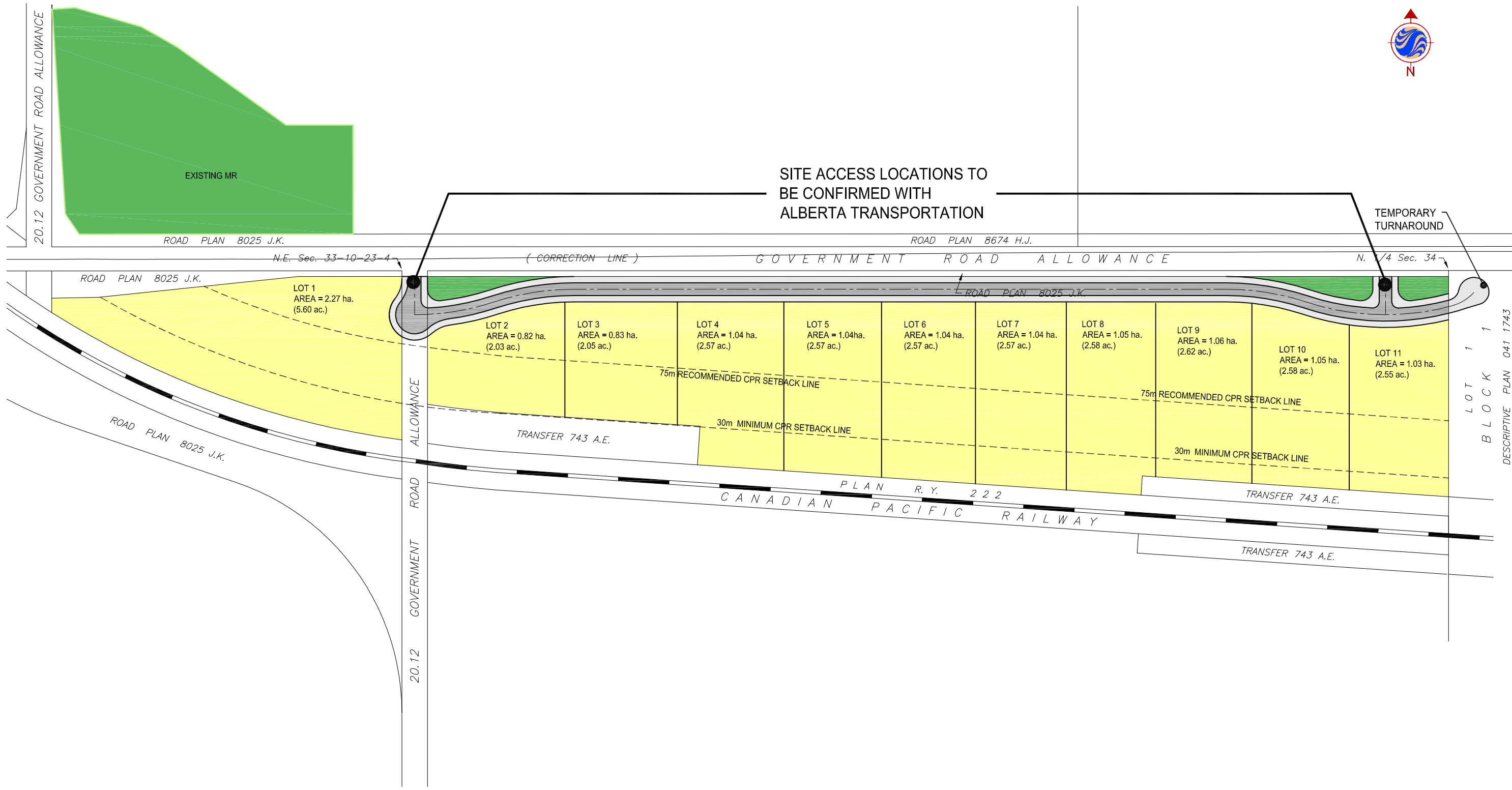


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Figure No.  
3.0

Title  
Existing Contours

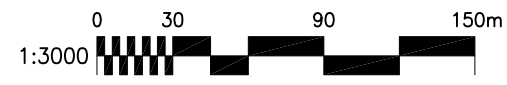




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Note: For Access details please refer to the Approved Alberta Transportation Drawing and Cross section Permit No. 3335-09 Fig 1.0



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OUTLOOK ACRES ASP  
NOBLEFORD ALBERTA

Figure No.  
4.0

Title  
Proposed Development  
Concept



### 3.1.5 Environmental, Historical & Archeological Significance

Based on a review of the document “Environmentally Significant Areas in the Oldman Region, County of Lethbridge” (February 1987) it has been confirmed that there are no significant environmental, historical or archeological sites in or near the Outlook Acres area.

### 3.1.6 Nobleford Growth Considerations

The Municipal Development Plan for the Village of Nobleford prepared in January 2009 identifies three Future Urban Growth Direction possibilities. These are categorized as:

- 1) Preferred Growth Direction
- 2) Growth Direction and
- 3) Less Preferred Growth Direction

The Outlook Acres area is identified as part of the “Less Preferred Growth Direction”. The planning and servicing issues as well as costs related to initiating new development across a secondary road clearly make the lands that form the Outlook Acres site undesirable for expansion by the Village. The development proposed by this Area Structure Plan should therefore not impede growth by the municipality towards its preferred growth directions.

From the perspective of Outlook Acres, the residents of this future community, while not within the boundaries of the Village, would nonetheless benefit by their proximity to the services offered in Nobleford and at the same time contribute to its economy.

### 3.1.7 Constraints and Opportunities

The site has both constraints and opportunities. These are outlined as follows:

#### 3.1.7.1 *Constraints*

Constraints to the site result principally from the proximity to Secondary Highway No. 519 and the CPR line, and to some degree, the availability of services. The access and setback issues from the road and the railway are addressed in separate sections of this Plan. Similarly, the provision of water, sewage treatment considerations, and stormwater management are outlined in detail under Section 5.0 “Proposed Infrastructure”.

Excavation work for the internal roadway will facilitate access to the lots. Indeed, the topography may also justifiably be regarded as an opportunity, with parcels that will have excellent building sites and views.



### 3.1.8.2 *Opportunities*

The location and site factors offer the main opportunities to the Outlook Acres development. Located virtually at the doorstep of the Village of Nobleford, the residents of Outlook Acres will be in a position to utilize the services offered by the community and thus contribute in no small measure to the economy of the Village. Distances to major services in other communities are relatively short. Picture Butte is less than 20 km away while Lethbridge is approximately 25 km to the southeast.

As noted earlier, the sloping north/south oriented topography provides excellent views of the Rocky Mountains. This ideal solar orientation also facilitates house designs for buyers considering the incorporation of solar energy-related technology applications to their new homes.

Acreage owners are typically individuals and families seeking a unique lifestyle: one that provides the best features of rural life with good proximity to urban services. In this respect, Outlook Acres offers the ideal opportunity for such a lifestyle.



# 4 PROPOSED LAND AND DEVELOPMENT CONCEPT

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## 4.1 COUNTRY RESIDENTIAL

The Outlook Acres development concept proposes to create eleven country residential parcels. The size of these range from .82 ha (2.03 ac.) to 2.27 ha (5.60 ac.) thus satisfying the County Land Use By-law's specified minimum of 0.4 ha (1 acre). See **Figure 4.0, Proposed Development Concept**. It should be noted that application to rezone the western parcel (+/- 5.5 acres) has been made separately.

The concept plan includes an internal roadway system with two access points to Alberta Highway No. 519. A temporary turnaround is provided at the eastern edge of the property. The uses and development standards for the project will be in accordance with the regulations set out in the County's Land Use By-law for GCR district.

## 4.2 DEVELOPMENT AGREEMENT

As stipulated by the Land Use By-law requirements, if required by the County, the Developer will enter into an appropriate development agreement with the County of Lethbridge with respect to:

- construction of the internal roadway and access in accord with the County's standards
- storm water management
- such other local improvement deemed necessary and intended to be maintained by the County

## 4.3 BUILDING SETBACKS

The developable building envelope within each lot will depend on setbacks imposed by the County as well as those requested by other authorities. Setbacks required by the respective authorities are as follows:

1. Unless deemed otherwise, no building or structure shall be closer than 53.3 m (175 feet) to the centre line of Secondary Highway No. 519. (County of Lethbridge Land Use Bylaw, Schedule 6, Standards of Development)
2. All buildings shall be set back from the CPR railway line in accordance with recommended policies of the CPR
3. All other setbacks – front, side, and rear yards as set out in the County Land Use By-Law for a GCR district will be met.



#### 4.4 ENVIRONMENTAL/MUNICIPAL/SCHOOL RESERVES

No portion of the Outlook Acres area is deemed to be undevelopable under the standard descriptions set out in the Municipal Government Act. No environmental reserve dedication therefore requires consideration.

The County of Lethbridge has determined that money in place of reserve is preferable to a municipal/school reserve dedication. This requirement will be met therefore in accord with the manner set out in the Municipal Government Act.

#### 4.5 LANDSCAPE APPEARANCE

The developer will work with the Development Officer to determine an appropriate landscaping plan to enhance the visual quality of the development. Landscaping and screening requirements for individual homes will be in accord with the relevant regulations of the Land Use By-law (Schedule 6, Standards of Development).

#### 4.6 ARCHITECTURAL CONTROLS

As noted in his first objective (above), the developer wishes to establish a high standard of building construction in Outlook Acres. The purpose is not only to create a high quality development but to ensure that the standards - from a construction point of view and a visual point of view - match and complement those of the adjoining Village of Nobleford. To that end, the developer, in consultation with the County, will establish suitable architectural control standards and place appropriate instruments on titles to ensure compliance. These standards will be imposed on the lots by means of a Restrictive Covenant applied to the parcel titles.

The proposed conditions for the architectural controls are included in **Appendix G - Architectural Controls**.

#### 4.7 POPULATION DENSITY

For purposes of this project the Area Structure Plan assumes an average of three persons per household (pph). Therefore based on a complete build out of all eleven units in this development, a final population of approximately 33 persons (11 x 3 pph) is anticipated.

Population density for this development is calculated by:

33 persons / 14.3ha (35.7 acres) or approximately 2.3 persons per ha.

#### 4.8 PHASING

The relatively small nature of this project will permit the development to be completed as one phase.





# 5 PROPOSED INFRASTRUCTURE

## 5.1 ACCESS ROADS

Access to the development will be provided by means of two new site access ramps from Alberta Secondary Highway No. 519. The general location of the two site access ramps is generally shown on **Figure 4.0 – Proposed Development Concept**. Permission has been granted by Alberta Transportation for the western access at the location of an existing road widening of Highway No. 519, just east of the entrance to the Village of Nobleford. See **Appendix B – Alberta Transportation Access Approval**. A future application will be made to Alberta Transportation to upgrade an existing farm access and provide the eastern access to the development. The access ramps will be constructed to Alberta Transportation and County of Lethbridge standards.

### 5.1.1 Internal Roads

A new service road will be constructed parallel to Highway No. 519 to provide access to the lots. The service road will be designed and constructed in accordance with the County of Lethbridge Design Guidelines and Minimum Servicing Standards for a local, rural road. The road will consist of an 8.0m wide gravel surface with open ditches. The horizontal and vertical alignment, as well as the other cross-sectional elements will be confirmed at the detailed design stage and will be subject to approval of the County.

### 5.1.2 External Roads

As noted above, access to the development will be provided by two new access ramps to Alberta Highway No. 519. The western of the two access ramps will be located at an existing government road allowance and at the location of an existing widening of Highway No. 519. The eastern of the two access ramps will be constructed at the location of an existing pasture access ramp. Construction of the two new access ramps will constitute the only off-site roadway development for the project.

### 5.1.3 Traffic Generation

The ITE Trip Generation Handbook (7th Edition) was used to estimate peak hourly and total daily vehicle trips from the development. The expected total daily trips generated by eleven single-family detached dwellings (ITE code 210) is 105 trips per day. Due to the low total number of daily vehicle trips no additional analysis of the traffic impact has been undertaken. A review of the intersection site distances will be undertaken as part of the detailed design for the project.



#### 5.1.4 School Bus Routes

The internal roads within the development will be designed to accommodate school bus movements.

#### 5.1.5 Parking

Parking for the development will be provided by means of the driveways and garages on each lot. On-street parking is not anticipated.

### 5.2 SERVICING

#### 5.2.1 Water Supply and Distribution Systems

Potable water supply to the development will be provided by means of individual cisterns for each lot. The developer has secured twelve (12) water units through participation in the Lethbridge North County Potable Water Co-op. A letter from the Co-op confirming this is included in **Appendix E – Agency Referral Documents**. Treated water will be delivered to the cisterns and pumped into each home.

The developer has approached the Village of Nobleford regarding the possibility of extension of the municipal drinking water system to the development to provide water to the cisterns. However, the Village has indicated that it would not be willing to provide a potable water supply to the development at this time.

A non-potable water supply is also proposed for the development. The non-potable water supply line will provide a seasonal supply of non-potable water for the development. The non-potable supply will originate from an existing farm irrigation system on adjacent lands owned by the Developer. The water supply line will be installed through an existing pipe culvert crossing under the railway tracks and will be routed along the rear of the proposed lots, with a separate connection provided for each lot.

#### 5.2.2 Sewage Management

Sanitary wastewater generated on each lot will be treated and disposed through individual on-site wastewater treatment systems consisting of a septic tank and disposal field. The suitability of the site for on-site wastewater treatment systems is reviewed in a preliminary site geotechnical report. The preliminary site geotechnical assessment included percolation testing within each proposed lot to characterize the soils in the vicinity of the proposed septic fields. The site geotechnical assessment is included in **Appendix C – Geotechnical Evaluation**. The following, **Figure 5.0, Borehole Locations** illustrates the locations of the percolation testing boreholes. The design and construction of each septic system will be completed in accordance with the requirements outlined in the Alberta Private Sewage Systems Standard Practice.

#### 5.2.3 Stormwater Management Systems

The stormwater management system for the development will consist of open ditches and culverts where required. The pre- and post-development storm drainage patterns of the development area are described in the attached Stormwater Management Report, attached to this document as **Appendix D – Stormwater Analysis**.



Due to the relatively small amount of impervious area in proportion to the total development area, the increase in peak rate and total volume of stormwater runoff from the site is relatively low. A stormwater management facility will be constructed in the southeast corner of the site to mitigate any increase in rate and total volume of runoff from the site. The stormwater management facility will consist of an unlined dry pond, which will provide the additional benefit of allowing groundwater recharge and water quality improvement.

#### 5.2.4 Solid Waste Disposal

Solid waste disposal for the proposed development will utilize existing services provided by the County of Lethbridge. Residents will have access to the existing solid waste transfer station located on the north side of Nobleford and to the Lethbridge Regional Landfill. In addition, street side garbage pickup is available through private providers for a monthly fee.

#### 5.2.5 Mail Service

Application for mail delivery service will be made to Canada Post at the time of subdivision. Canada Post will determine the requirements for community mailboxes, rural delivery, or post office pick-up per their own guidelines. Canada Post will be responsible for installing any required infrastructure associated with mail service.

### 5.3 PUBLIC UTILITIES

#### 5.3.1 Electricity

Electrical power distribution infrastructure is present in the vicinity of the Development along the north side of Highway No. 519. The existing infrastructure consists of overhead three-phase power lines. Electrical power distribution service in the area of the Development is provided by Fortis as the distributor with Epcor as the recognized electricity provider. Initial discussions with Fortis suggested that there would not be any issues servicing the additional load imposed by the development.

Formal application for extension of the existing power distribution system to the proposed development will be made to Fortis at the time of the application for subdivision. A more detailed system impact analysis will be undertaken by Fortis once a formal application for service is received. A copy of the email correspondence received from Fortis is included in **Appendix E – Agency Referral Documentation**.

#### 5.3.2 Gas

Natural gas distribution service in the vicinity of the Development is provided by the Little Bow Gas Co-op. It is unknown at this time if natural gas distribution infrastructure exists along Highway No. 519. Initial discussions with the Co-op did not identify any concerns related to the development. Application for extension of the natural gas distribution system to the proposed development will be made at the time of the application for subdivision. A copy of the email correspondence received from the Co-op is included in **Appendix E – Agency Referral Documentation**.



### 5.3.3 Telecommunication

Telecommunications infrastructure in the area of the Development is provided by Telus and includes existing underground infrastructure on the south side of Highway No. 519 and in the former government road allowance which divides the site. Telecommunications service will be provided to the proposed development by means of extension of the existing infrastructure to each lot. One existing pedestal will be relocated to accommodate the western site access.

Initial discussions with Telus did not identify any concerns related to the development. A more detailed system impact analysis will be undertaken by Telus once a formal application for service is received or if a formal request for comment is received from the Oldman River Regional Services Commission. Wireless telephone and data communication services are also available at the site.

## 5.4 PROTECTIVE SERVICES

Emergency and protective services in the area of the Development are provided by the County of Lethbridge Emergency Services Department in partnership with the City of Lethbridge Emergency Dispatch Centre and emergency services agencies within the County through emergency services agreements. The development would be served by the provincial 911 system.

### 5.4.1 Fire Protection

Response to fire emergencies would be dispatched by the City of Lethbridge Emergency Dispatch Centre. Where the Development is located close to the Village of Nobleford the response would most likely be provided by the Nobleford Volunteer Fire Department.

### 5.4.2 Police Protection

Policing in the area of the proposed development is provided by the RCMP from the Picture Butte detachment of the Southern Alberta District. In addition, the Alberta Sheriff Highway Patrol has jurisdiction over traffic law enforcement.

### 5.4.3 Ambulance

Emergency medical service for the proposed development will be provided through the County of Lethbridge through emergency services agreements with local emergency service agencies. Responses to emergencies would be dispatched by the City of Lethbridge Emergency Dispatch Centre.



# 6

## STAKEHOLDER CONSULTATION

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During the course of preparing this Area Structure Plan, a number of stakeholders were consulted. They included:

1. **Village of Nobleford:** Meeting between the developer and the Village Council, March 17<sup>th</sup>, 2009, and subsequent correspondence.
2. **County of Lethbridge:** Meeting with administration, March 17, 2009.
3. **Canadian Pacific Railway:** Meeting with representatives, April 2, 2009.
4. **Oldman River Regional Services Commission:** Meeting April 8, 2009.
5. **Alberta Transportation:** Phone and email correspondence from May, 2009.
6. Ongoing consultation with affected utility companies: Telus, Fortis, Little Bow Gas Co-op

A copy of the correspondence received from the utility agencies is included in **Appendix E – Agency Referral Documentation**.





Stantec

Outlook Acres Area Structure Plan  
Outlook Commodities

# 7 CONCLUSION

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Stantec Consulting Ltd. has prepared this document on behalf of the Developer, Outlook Commodities Ltd.

Outlook Commodities Ltd. respectfully requests that the County of Lethbridge accept this document as the Area Structure Plan for the lands described herein.



# APPENDIX A

---

Property Ownership



LAND TITLE CERTIFICATE

S  
LINC                      SHORT LEGAL                      TITLE NUMBER  
0033 932 666            0912876;1;1            091 201 341

LEGAL DESCRIPTION

DESCRIPTIVE PLAN 0912876  
BLOCK 1  
LOT 1  
EXCEPTING THEREOUT ALL MINES AND MINERALS  
AREA: 2.47 HECTARES (6.1 ACRES) MORE OR LESS

ATS REFERENCE: 4;23;10;33;NE  
ESTATE: FEE SIMPLE

MUNICIPALITY: COUNTY OF LETHBRIDGE

REFERENCE NUMBER: 091 164 481

---

REGISTERED OWNER(S)					
REGISTRATION	DATE(DMY)	DOCUMENT	TYPE	VALUE	CONSIDERATION
091 201 341	15/07/2009	TRANSFER OF LAND		\$30,000	\$30,000

---

OWNERS

OUTLOOK COMMODITIES LTD..  
OF P.O. BOX 478  
NOBLEFORD  
ALBERTA T0L 1S0

---

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION	DATE (D/M/Y)	PARTICULARS
NUMBER		
751 086 177	13/08/1975	UTILITY RIGHT OF WAY GRANTEE - LITTLE BOW GAS CO-OP LTD.

( CONTINUED )

ENCUMBRANCES, LIENS & INTERESTS

PAGE 2  
# 091 201 341

REGISTRATION

NUMBER	DATE (D/M/Y)	PARTICULARS
761 095 738	29/07/1976	UTILITY RIGHT OF WAY GRANTEE - ALBERTA GOVERNMENT TELEPHONES. "(PORTION DESCRIBED) TAKES THE PRIORITY OF CAVEAT 741055199 REGISTERED JUNE 7, 1974"
921 008 338	14/01/1992	CAVEAT RE : OPTION TO PURCHASE CAVEATOR - HER MAJESTY THE QUEEN IN RIGHT OF CANADA AS REPRESENTED BY REPRESENTED BY THE MINISTER OF AGRICULTURE C/O PRAIRIE FARM REHABILITATION ADMINISTRATION 1901 VICTORIA AVE REGINA SASKATCHEWAN S4P0R5 AGENT - NATALIE F GIRAUDIER
091 239 360	14/08/2009	EASEMENT AS TO PORTION OR PLAN:PORTION OVER AND FOR BENEFIT OF: SEE INSTRUMENT

TOTAL INSTRUMENTS: 004

THE REGISTRAR OF TITLES CERTIFIES THIS TO BE AN ACCURATE  
REPRODUCTION OF THE CERTIFICATE OF TITLE REPRESENTED  
HEREIN THIS 24 DAY OF AUGUST, 2009 AT 02:00 P.M.

ORDER NUMBER:14682533

CUSTOMER FILE NUMBER:



\*END OF CERTIFICATE\*

THIS ELECTRONICALLY TRANSMITTED LAND TITLES PRODUCT IS INTENDED FOR THE  
SOLE USE OF THE ORIGINAL PURCHASER, AND NONE OTHER, SUBJECT TO WHAT IS  
SET OUT IN THE PARAGRAPH BELOW.

THE ABOVE PROVISIONS DO NOT PROHIBIT THE ORIGINAL PURCHASER FROM  
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).



LAND TITLE CERTIFICATE

S  
LINC                      SHORT LEGAL                      TITLE NUMBER  
0033 932 674            0912876;2;1            091 201 351

LEGAL DESCRIPTION

DESCRIPTIVE PLAN 0912876  
BLOCK 2  
LOT 1  
EXCEPTING THEREOUT ALL MINES AND MINERALS  
AREA: 11.96 HECTARES (29.55 ACRES) MORE OR LESS

ATS REFERENCE: 4;23;10;34;NW  
ESTATE: FEE SIMPLE

MUNICIPALITY: COUNTY OF LETHBRIDGE

REFERENCE NUMBER: 091 164 481 +1

-----  
REGISTERED OWNER(S)  
REGISTRATION      DATE(DMY) DOCUMENT TYPE      VALUE                      CONSIDERATION  
-----  
091 201 351      15/07/2009 TRANSFER OF LAND      \$95,000                      \$95,000

OWNERS

OUTLOOK COMMODITIES LTD..  
OF P.O. BOX 478  
NOBLEFORD  
ALBERTA T0L 1S0

-----  
ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION  
NUMBER              DATE (D/M/Y)              PARTICULARS  
-----  
741 046 907      17/05/1974 UTILITY RIGHT OF WAY  
GRANTEE - ALBERTA GOVERNMENT TELEPHONES.  
"PORTION DESCRIBED"

( CONTINUED )

ENCUMBRANCES, LIENS & INTERESTS

PAGE 2  
# 091 201 351

REGISTRATION  
NUMBER DATE (D/M/Y) PARTICULARS

091 238 959 14/08/2009 EASEMENT  
OVER LOT 1 IN BLOCK 2 ON PLAN 0912876 FOR  
BENEFIT OF LOT 1 IN BLOCK 1 ON PLAN 0411743  
PORTION AS DESCRIBED

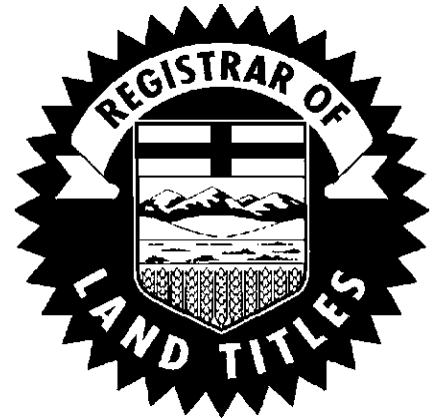
091 239 360 14/08/2009 EASEMENT  
AS TO PORTION OR PLAN:PORTION  
OVER AND FOR BENEFIT OF: SEE INSTRUMENT

TOTAL INSTRUMENTS: 003

THE REGISTRAR OF TITLES CERTIFIES THIS TO BE AN ACCURATE  
REPRODUCTION OF THE CERTIFICATE OF TITLE REPRESENTED  
HEREIN THIS 24 DAY OF AUGUST, 2009 AT 02:00 P.M.

ORDER NUMBER:14682533

CUSTOMER FILE NUMBER:



\*END OF CERTIFICATE\*

THIS ELECTRONICALLY TRANSMITTED LAND TITLES PRODUCT IS INTENDED FOR THE  
SOLE USE OF THE ORIGINAL PURCHASER, AND NONE OTHER, SUBJECT TO WHAT IS  
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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).



Stantec

Outlook Acres Area Structure Plan  
Outlook Commodities

# APPENDIX B

---

Alberta Transportation Access Approval



Office of the Regional Director  
SOUTHERN REGION

Box 314  
3rd Floor, Administration Building  
909 Third Avenue North  
Lethbridge, Alberta T1H 0H5

Toll-Free Connection  
Outside Edmonton - Dial 310-0000  
Telephone 403/381-5426  
Fax 403/382-4057  
www.transportation.alberta.ca

Our Ref.: 2511- NE 33-10-23-W4M (519)  
Permit No. 3335-09

March 11, 2009

Mr. Peter N. Klok  
Outlook Commodities  
Box 478  
Nobleford AB T0L 1S0

Dear Mr. Klok:

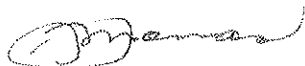
**RE: PROPOSED CONSTRUCTION OF NEW HIGHWAY ACCESS**

Attached is a permit issued under the Highway Development Control Regulation, being Alberta Regulation 242/90 authorizing the above noted development. This permit is subject to the conditions listed on page 2.

Issuance of this permit does not excuse violation of any regulation, bylaw or act which may affect the proposed project.

Upon completion of the project, we ask that you notify Glen Murray, Assistant Development/Planning Technologist or John Thomas, Development/Planning Technologist at Lethbridge, 403/381-5426 who will inspect the conditions of the permit. Your cooperation in this matter will be appreciated.

Yours truly,



John Thomas  
Development/Planning Technologist

GM/bc

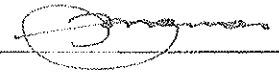
cc: County of Lethbridge – [npaladino@county.lethbridge.ab.ca](mailto:npaladino@county.lethbridge.ab.ca)  
Volker Stevin – [LindseyNakamura@volkerstevin.ca](mailto:LindseyNakamura@volkerstevin.ca)  
Curtis Nagel  
File

Permit forwarded to: Chris Poirier, AECOM, 514 Stafford Drive North, Lethbridge AB T1H 2B2 - [christopher.poirier@aecom.com](mailto:christopher.poirier@aecom.com)

**(To be completed by Alberta Transportation)**

**ROADSIDE DEVELOPMENT APPLICATION APPROVAL  
FOR DEVELOPMENT NEAR A PRIMARY HIGHWAY**

**PERMIT**

Permission is hereby granted to <u>Outlook Commodities</u> to carry out the development in accordance with the plan(s) and specifications attached hereto and subject to the conditions shown below.	
If the development has not been carried out by the <u>11</u> day of <u>March</u> <u>2010</u> this permit lapses and the applicant must reapply for a new permit if they wish to proceed.	
SIGNED 	PERMIT NO. <u>3335-09</u>
TITLE <u>Development/Planning Technologist</u>	FILE NO. <u>NE 33-10-23-W4M-(519)</u>
	DATE <u>March 11, 2009</u>

**PERMIT CONDITIONS:** (Note: This permit is subject to the provisions of Section 23-27 inclusive of the Public Highways Development Act, Chapter P28 RSA 1980, amendments thereto, and Highway Development Control Regulations (Alberta Regulation 242/90) and amendments thereto).

**A. ACCESS CONDITIONS:** (Note: All highway accesses are to be considered temporary. No compensation shall be payable to the applicant or his assigns or successors when the Department removes or relocates the temporary access or if highway access is removed and access provided via service road).

1. (a) ~~No direct highway access will be permitted. Access shall be via the local municipal road.~~  
(b) ~~Use of the existing highway access may continue on a temporary basis.~~  
(c) Permit authorizes construction of proposed access at the location shown and to the attached specifications. (Figure D-3.3b)
2. No additional highway access will be permitted.
3. The applicant shall construct and maintain any highway access to the Operations Manager's satisfaction.
4. Approval of companies having buried utilities shall be obtained prior to access construction or upgrading.

**B. SETBACK CONDITIONS** (Note: Minimum setbacks usually allow for anticipated highway widening and construction of a service road parallel and adjacent to the highway).

1. The proposed N/A is to be set back N/A meters (N/A feet) from the highway property line.
2. The department accepts no responsibility for the noise impact of highway traffic upon any development or occupants thereof.

**C. OTHER CONDITIONS:**

1. This permit is issued subject to the approval of the County of Lethbridge.
2. This permit approves only the development contained herein, and a further application is required for any changes or additions.
3. The department is under no obligation to reissue a permit if the development is not completed before expiry of this permit.
4. Glen Murray, Assistant Development/Planning Technologist or John Thomas, Development/Planning Technologist in Lethbridge, Telephone number 403/381-5426 shall be notified before construction commencement.
5. The Applicant shall not place any signs contrary to Alberta Regulation 242/90. A separate "SIGN APPLICATION" form shall be submitted for any proposed sign.

**D. ADDITIONAL CONDITIONS and/or ADVISEMENTS:**

See attached Schedule "A".

SCHEDULE "A"  
(Permit 3335-09)

D: ADDITIONAL CONDITIONS and/or ADVISEMENTS:

1. Conditions of approval are based on the understanding that AECOM has been retained by the applicant to act on their behalf in regards to the proposed highway access.
2. The applicant will be responsible for constructing the access to a standard outlined in Condition A.1.(c). The roadway width (w) in metres and the radius of the intersection – edge of shoulder (r) are to be the values for "public road allowance" use. These values are shown and highlighted on the attached Figure D-3.3b.
3. The access shall be constructed with suitable compacted material (granular or clay type material – **not top soil**) and overlaid with gravel.
4. The proposed access will not require a drainage structure and therefore may be constructed as a dry access.
5. The applicant will be responsible for placement of topsoil and seeding of all disturbed areas within the highway right-of-way. The local Agricultural Service Board is to be contacted in regard to the agronomic seed mix designated for use in the area. The designated agronomic seed mix is also available on the internet at [www.transportation.alberta.ca/Content/docType233/Production/designbulletin25.pdf](http://www.transportation.alberta.ca/Content/docType233/Production/designbulletin25.pdf) (seeding special provision and seed mixture zone map).
6. A drawing (TCS-B-2.2A) showing the typical signing requirements to be provided by your contractor during the access construction is attached.
7. The usual one-year construction warranty will apply.
8. All information/disclosures noted on the attached application page are considered to be additional conditions and/or advisements and form an integral part of this approval.



Permit No. 3335-09

**ROADSIDE DEVELOPMENT APPLICATION  
FOR DEVELOPMENT NEAR A PRIMARY HIGHWAY**  
(print please)

**APPLICATION IS HEREBY MADE TO:** (please provide a description of the proposed development including all proposed above and below ground installations)

CONSTRUCT AN ACCESS DIRECTLY OFF OF HWY 519 AND WITHIN THE EXISTING ROAD ALLOWANCE FOR THE PURPOSE OF SERVING FUTURE COUNTRY RESIDENTIAL DEVELOPMENT

Note: Please attach a plan showing in detail the location of all existing and proposed development and access relative to the ¼ line and highway. Location of items such as existing or proposed shelterbelts, wells, sewage fields, signs, etc, must also be shown (see attached example).

**PROPERTY DESCRIPTION:**

NE / NW / SE / SW (see attachment)  
(please circle) (Section) (Twp.) (Range) (West of Meridian)  
Lot/Block No. \_\_\_\_\_ Plan No. \_\_\_\_\_ Parcel size \_\_\_\_\_ hectares  
Hwy. No. 519 0.3 kilometers EAST of: Town of Nobleford access road  
(north, south etc.) (City, Town or Village)  
Municipality COUNTY OF LETHBRIDGE  
(County, MD, Town, Village, etc.)

Land use. (e.g. Agricultural, Country Residential, etc)  
AGRICULTURAL COUNTRY RESIDENTIAL  
(Existing) (Proposed)

Estimated cost of proposed development \$ 25,000 (ACCESS ONLY)  
Closest distance of the proposed development from Highway property line 0 metres.

In consideration of any permit issued in respect to this application, the Applicant shall indemnify and hold harmless Alberta Infrastructure and Transportation, its employees and agents from any and all claims, demands, actions and costs whatsoever that may arise, directly or indirectly from anything done or omitted in the construction, maintenance, alteration or operation of the works authorized. The Applicant consents hereby also to a person designated by Alberta Infrastructure and Transportation to enter upon land for the purpose of inspection during the processing of this application.

It is understood that all works will be constructed, altered, maintained or operated at the sole expense of the undersigned, and that any work must not begin before a permit has been issued by Alberta Infrastructure and Transportation. The issuance of a permit by Alberta Infrastructure and Transportation does not relieve the holder of the responsibility of complying with relevant municipal by-laws and this permit once issued does not excuse violation of any regulation, by-law or act which may affect this project.

APPLICANT'S NAME (print please): AECOM ON BEHALF OF PETER N. KLOK, OUTLOOK PARK LTD.  
ADDRESS: Box 478, NOBLEFORD, AB (Outlook Commodities)

POSTAL CODE: T0L 1S0 PHONE: 403-381-4971 FAX: 403-381-4841

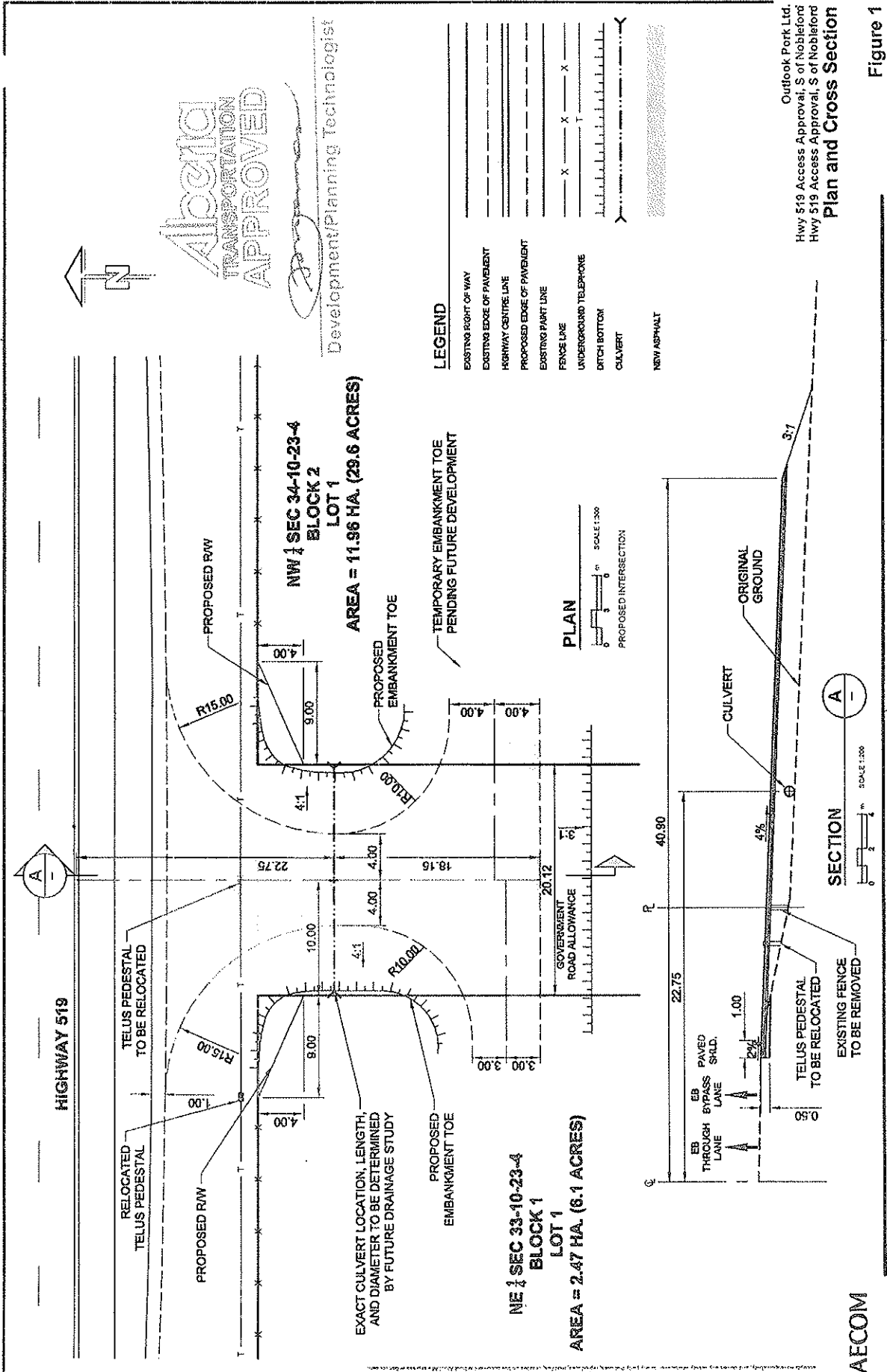
E-MAIL: outlook@figment.ca  
APPLICANT'S SIGNATURE: [Signature] DATE: \_\_\_\_\_

LANDOWNER'S NAME (print please): \_\_\_\_\_  
(if other than applicant's)

ADDRESS: \_\_\_\_\_  
LANDOWNER'S OR AUTHORIZED AGENT'S SIGNATURE: \_\_\_\_\_

## **Property Description**

The access is located within the existing government road allowance bounded on the west by NE  $\frac{1}{4}$  Sec. 33-10-23-4, Block 1, Lot 1 (2.47 ha) and bounded on the east by NW  $\frac{1}{4}$  Sec. 34-10-23-4, Block 2, Lot 1 (11.96 ha).



Outlook Park Ltd.  
 Hwy 519 Access Approval, S of Nobleford  
 Hwy 519 Access Approval, S of Nobleford

**Plan and Cross Section**

**Figure 1**

**AECOM**

FIGURE D-3.3b APPROACH TREATMENT FOR MINOR INTERSECTING ROADWAY  
INTERSECTION OF HIGHWAY AND MINOR ROAD

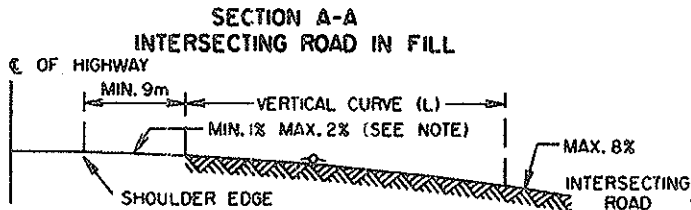
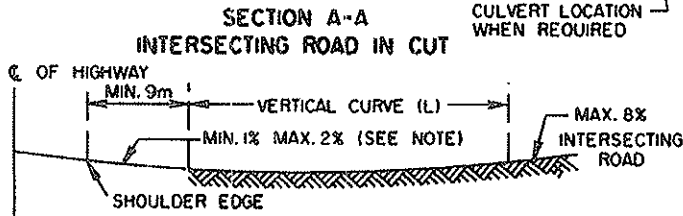
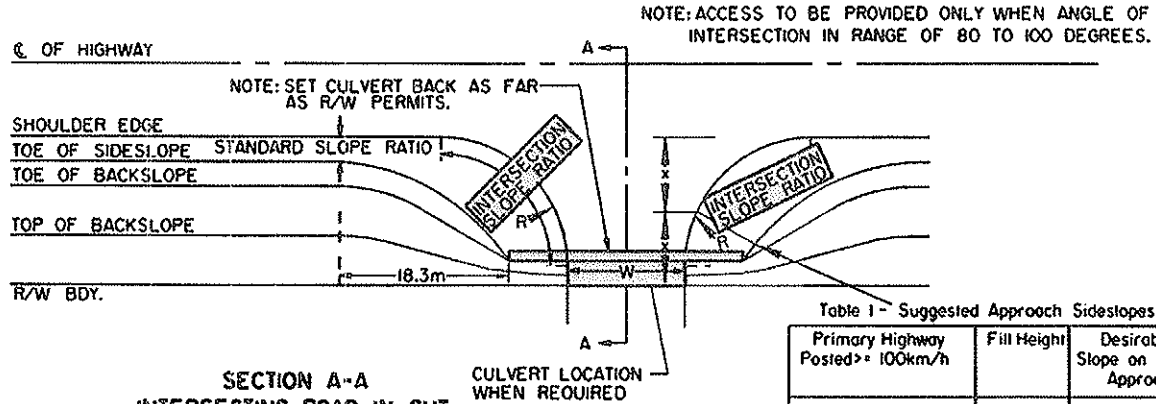


Table 1 - Suggested Approach Sideslopes

Primary Highway Posted > 100km/h	Fill Height	Desirable Slope on New Approach
Undivided Highway AADT < 1,000	< 4m fill	7:1
	> 4m fill	4:1
Undivided Highway 1,000 < AADT < 3,000	< 4m fill	7:1
	> 4m fill	5:1
Undivided Highway AADT > 3,000	< 4m fill	7:1
	> 4m fill	6:1
Divided Highway AADT < 6,000	< 4m fill	7:1
	> 4m fill	7:1
Divided Highway 6,000 < AADT < 15,000	< 4m fill	8:1
	> 4m fill	7:1
Divided Highway AADT < 15,000	< 4m fill	10:1
	> 4m fill	7:1

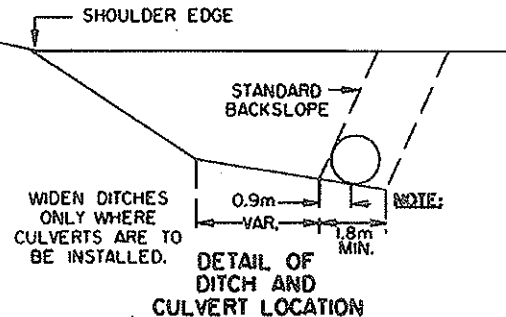
Approach slope to be measured at a point midway between the highway shoulder and basic right-of-way boundary as illustrated on figures D-33a and D-33b

ALGEBRAIC DIFFERENCE IN GRADIENT (%)	MINIMUM LENGTH OF VERTICAL CURVE LENGTH L (m)	
	CREST	SAG
1	6	8
2	12	15
3	18	23
4	24	30
5	30	38
6	37	46
7		46
8		46
9		46

NOTE: WHERE THE MINOR INTERSECTING ROADWAY HAS A LARGE NUMBER OF WB-15 VEHICLES TURNING, THE APPROACH TREATMENT SHOWN IN FIGURE D-3.3a SHOULD BE USED.

USE	ROADWAY WIDTH W (m)		RADIUS OF INTERSECTION EDGE OF SHOULDER (R)
	SINGLE	JOINT	SINGLE OR JOINT ACCESS
RESIDENTIAL	8	10	10
AGRICULTURAL	10	10.5	15
UTILITY MAINTENANCE	8		15
PUBLIC ROAD ALLOWANCE	8		15

ENGINEERING DISCRETION SHOULD BE USED IN SELECTING A ROADWAY WIDTH TO SUIT THE NEEDS OF THE ACCESS.

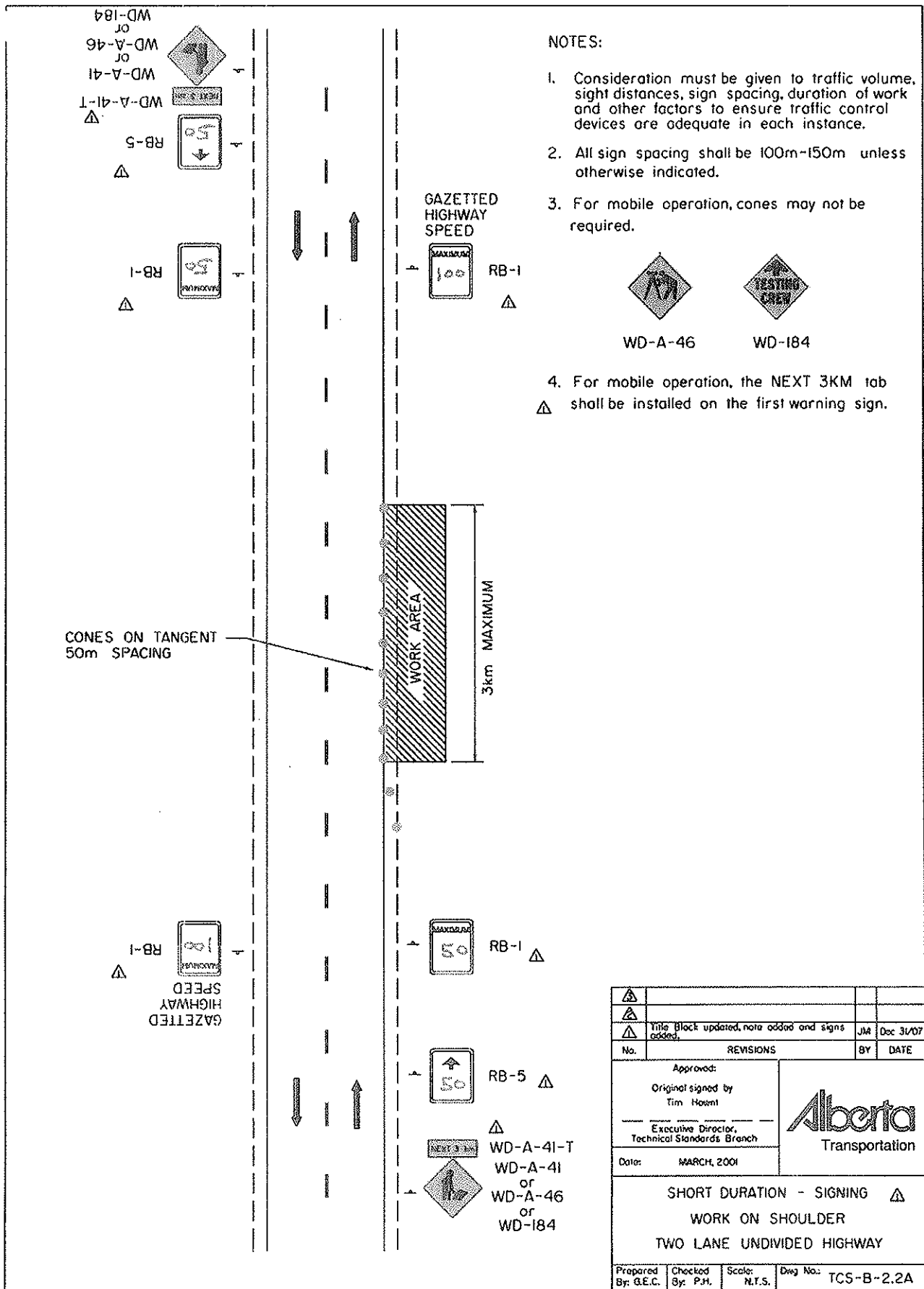


NOTE: DESIRABLE MINIMUM 1% IS TO PREVENT PONDING AND SUBSEQUENT ICING AT THE INTERSECTION.

DESIRABLE MAXIMUM 2% IS FOR EASE OF OPERATION IN ALL WEATHER CONDITIONS.

APPROACH GRADES BETWEEN 0.5% AND 3%, ABSOLUTE MAXIMUM 6% ARE CONSIDERED ACCEPTABLE. APPROACH ROAD GRADES UP TO 1% SLOPING DOWN TOWARD THE HIGHWAY MAY BE USED TO MATCH SUPERELEVATION ON THE HIGHWAY, IF DESIRABLE FOR ENGINEERING REASONS.





△			
△	Title Block updated, note added and signs added.	JM	Dec 31/07
No.	REVISIONS	BY	DATE
Approved:			
Original signed by Tim Howitt			
Executive Director, Technical Standards Branch			
Date:	MARCH, 2001		
SHORT DURATION - SIGNING △ WORK ON SHOULDER TWO LANE UNDIVIDED HIGHWAY			
Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Desig No.: TCS-B-2.2A



# APPENDIX C

---

## Geotechnical Evaluation

Outlook Properties  
Geotechnical Investigation  
Proposed Country Residential  
Nobleford, AB



April 16, 2009  
AMEC File: BX30080

Outlook Properties  
c/o Stantec Consulting Ltd.  
290 – 220 4<sup>th</sup> Street South  
Lethbridge, AB T1J 4J7

**Mr. Trent Purvis, P. Eng.**

**GEOTECHNICAL INVESTIGATION AND  
PERCOLATION TEST RESULTS  
COUNTRY RESIDENTIAL  
OUTLOOK ACRES  
N.W ¼ SECTION 34 TOWNSHIP 10 RANGE 23 WEST OF 4  
NOBLEFORD, ALBERTA**

**1.0 INTRODUCTION**

At the request of Mr. Trent Purvis, P.Eng., AMEC Earth & Environmental, a division of AMEC Americas Limited (AMEC) has been retained to perform a geotechnical investigation and percolation tests for the proposed country residential subdivision near Nobleford, Alberta.

The purpose of the geotechnical investigation was to determine the subsoil and groundwater conditions at the site, so that an allowable bearing pressure could be determined for residences that may be constructed at the site, and a pavement section for a potential access roadway could be determined. The scope of the investigation also included determining soil percolation values as potential septic field locations.

This report summarizes the results of the field and laboratory work and provides recommendations for: allowable bearing pressure for residential footing foundations, site grading, and grade supported slabs, cement type and roadway construction. The report also presents the results of the soil percolation testing completed at the site.

**2.0 PROJECT AND SITE DESCRIPTION**

The project site is located south of Nobleford, Alberta. The proposed development includes eleven lots, and a paved access roadway. The development includes an access roadway. The borehole location plan is included as Figure 1 (Appendix A).

### **3.0 FIELD INVESTIGATION**

A total of five geotechnical boreholes were drilled at the site, and an additional twenty two percolation boreholes were advanced to facilitate percolation testing. The field drilling program was completed on April 15, 2009. The percolation boreholes and testing conducted in these boreholes are discussed in Section 6.0.

The five geotechnical boreholes were located within the proposed building envelope of lots. Boreholes 2009-01 through 2009-05 were located in lots 2, 4, 6, 8 and 10 respectively. A geotechnical technician from the Lethbridge office of AMEC Earth & Environmental logged the boreholes in the field.

The boreholes were advanced with a truck mounted auger rig utilizing continuous flight solid stem augers. Disturbed soil samples were obtained from the auger cuttings for determination of in situ moisture profiles in each borehole. Field classification of the soil types encountered was also determined from the auger cuttings. Due to the method by which the soil cuttings are returned to the surface, the depths noted on the borehole logs may vary by plus or minus 0.3 m from those recorded. Standard Penetration Tests (SPT) were used to assess the in situ strength of the soil types encountered.

Hand slotted PVC standpipes were installed in boreholes 2009-01 through 2009-05 at the completion of drilling to allow for future measurement of groundwater levels.

### **4.0 SITE CONDITIONS**

#### **4.1 Subsurface Conditions**

Figures 2 to 6, Appendix A, present the soil profiles as logged in the field at each borehole location. An explanation of the terms and symbols used on the borehole logs is included in Appendix B.

The general soil profile over the site consisted of topsoil, overlying silt or sand which was underlying by clay till or bedrock.

##### Topsoil

A topsoil layer was encountered at ground surface in all boreholes and was approximately between 50 mm and 100 mm at each borehole location. It should be noted that topsoil thicknesses at other locations on the site may vary from that measured at the borehole locations. The topsoil was organic, silty and was sandy, was brown and moist.

##### Silt

A silt layer was encountered below topsoil in boreholes 2009-01, 02, 03, and 05, and extended to depths of between 1.5 m and 4.5 m below ground surface. The silt contained a trace to some clay, trace of sand, was very stiff to hard in consistency, low to non-plastic, brown and dry to damp.

SPT 'N' values in this stratigraphy ranged from 15 to 62, with an average of 47 blows. Soil moisture content obtained on samples of the silt ranged from 3.1 to 18.4 percent, with an average of 9.6 percent.





### Clay Till

Clay till was encountered below the silt layer in boreholes 2009-01 and 05. The clay till was silty, contained a trace to some sand, trace of gravel, was hard in consistency medium plastic, dark brown and moist. The clay till extended beyond the 6.0 m drilled depths in both borehole locations.

Small coal and oxide inclusions were observed in the clay till. SPT 'N' values in the clay till ranged from 49 to 58, with an average of 54 blows. Soil moisture contents obtained on samples of the clay till ranged from 6.4 to 24.6 percent, with an average of 17.2 percent.

### Bedrock

Bedrock was encountered in boreholes 2009-02 through 2009-04 below the silt or sand, at depths varying between 4.5 m and 4.7 m below existing ground surface. The bedrock consisted of a highly weathered siltstone, was very weak, grey in color and dry to damp.

## **4.2 Groundwater Conditions**

Twenty five millimeter diameter PVC standpipe piezometers were installed in all borehole locations at the completion of the drilling operation to allow for future monitoring of the groundwater levels at the site. The standpipes were backfilled using drill cuttings to the top of the boreholes. Table 4.2 provides the measured depths of the groundwater in the standpipes on April 24, 2009 nine days following completion of drilling.

**Table 4.2  
Measured Groundwater Depths**

<b>Borehole Number</b>	<b>Depth to Groundwater (m)</b>
2009-01	Dry to 6.0
2009-02	Dry to 6.0
2009-03	Dry to 6.0
2009-04	Dry to 6.0
2009-05	Dry to 6.0

## **5.0 GEOTECHNICAL RECOMMENDATIONS**

### **5.1 General**

In general, the site for the proposed subdivision is suitable, but there are some geotechnical concerns that will have an impact on construction of the proposed development.

It is understood that the preferred foundation system for the residential structures is conventional spread and strip footings based on native silt, sand or clay till.

The recommendations given in this section are based upon the results of the soils conditions encountered at the location of the five boreholes.

### **5.2 Site Preparation**

It is understood that site grading operations for the site will be minimal, involving cuts and fills of less than 0.5 m.

Fill required to obtain the design grades, for roadways, should consist of low to medium plastic clay or imported well graded granular material. surficial silts and sand materials can be used as fill, but will require close control of soil moisture to achieve suitable compaction - and the quality of the subgrade will deteriorate quickly if left to dry out or becomes wet prior to placement of overlying gravel. The fill should be compacted to a minimum of 98 percent standard Proctor maximum dry density (SPMDD), in lifts compatible with the compaction equipment used, but not more than 300 mm in compacted thickness. Clay fill should be compacted at moisture contents between optimum and three percent above optimum. Gravel fill should be compacted at moisture contents within three percent of optimum. Over excavated soil from the site can be used as general fill if it does not contain organic or deleterious material and is moisture conditioned as specified.

It should be recognized that it is difficult to compact soils during the winter unless the fill soils are placed and compacted in an unfrozen condition and the working area is prevented from freezing.

Surface water should be drained from the site as quickly as possible, both during and following construction. The finished grade around building perimeters should be such that surface water drains away from the structure and footing backfill zone. The upper 0.3 m of backfill around buildings should consist of compacted clay to act as a seal against the ingress of run off water. The clay should extend for a minimum horizontal distance of 3 metres around buildings, and should be graded at a slope of two percent away from the buildings.

Site grading, both during and following construction, should be provided such that surface runoff is rapidly shed from pavement areas to a positive drainage system. Water should not be allowed to pond on or adjacent to the proposed pavement areas. A minimum grade of two percent is recommended to accommodate surface runoff and to minimize the potential of saturation and degradation of the subgrade. Flatter site grades may be utilized for drainage; however there is increased risk of creating low areas in which water will pond, due to the tolerances available with typical earthwork and paving equipment.



Roadways should be crowned at the subgrade and surface levels. Surface drainage should be directed into a storm sewer, or into drainage ditches. If drainage ditches are used, ditches should be provided on both sides of roadways, and the ditch inverts should be constructed with inverts at least 0.3 m below the adjacent roadway subgrade.

Drainage ditches must be graded an outlet so that runoff water does not pool in the ditches.

### **5.3 Spread Footing foundations**

For the majority of the site the soil conditions at normal footing depths are expected to consist of compact sand or hard silt. The native soil conditions at the site are acceptable for the support of spread and strip footings. Residence footings placed on the native undisturbed sand or silt or on clay till, can be designed using a maximum allowable static bearing pressure of 150 kPa for a combination of live and dead loading. These values may be increased by one-third for transient loads such as those induced by wind. All footings must be constructed in accordance with the current Alberta Building Code requirements.

Separate project specific geotechnical evaluations should be conducted for commercial or industrial buildings, if any such facilities are to be constructed at the site.

The excavation for the footings should be reviewed by a qualified geotechnical engineer to confirm that the bearing soils exposed are as anticipated in design. Loose or disturbed materials should be removed from the footing excavation or the surface recompacted prior to placement of concrete. Hand cleaning may be required to prepare an acceptable bearing surface. The footing subgrade should be protected at all times from rain, snow, freezing temperatures and the ingress of free water. Concrete should not be placed on frozen soil.

It is recommended that foundation elements for heated and unheated portions of the building be provided with a soil cover of 1.4 and 2.1 m, respectively, for frost protection. Insulation may be used, as an alternative to soil cover and AMEC would be pleased to provide additional recommendations, if requested.

### **5.4 On Grade Construction**

The native soils at the site will provide adequate support for a grade supported concrete floor slab, provided the subgrade is proof-rolled and prepared as detailed in Section 5.2

Following preparation of the subgrade surface, a levelling course of 25 mm nominal size well-graded crushed gravel at least 150 mm in compacted thickness, is recommended directly beneath the slab. The gravel should be compacted to at least 98 percent of SPMDD.

The excavated subgrade beneath the slab on grade should be protected at all times from rain, snow, freezing temperatures, excessive drying and the ingress of free water. This applies to during and after the construction period.





To minimize the potential negative effects of settlement or heave in soil below the floor slab, it would be preferable to allow the slab to float with no rigid connections to the walls or foundation elements except at the doorways. Alternatively, the slab may be rigidly connected to the grade beam at all points provided that a parallel construction joint is installed at a distance of about 2.0 m from the points of fixity.

Some relative movement between the floor slabs-on-grade and the adjacent walls or foundations and differential movements within the slabs should be anticipated. If the recommendations outlined in this report are followed, these movements are expected to be within the tolerable limits. If differential movements are considered intolerable, then an alternative slab support system such as a structural slab would have to be considered.

### 5.5 Grade Supported Exterior Slabs Sidewalk

The upper soils at the site are moderately frost susceptible and may undergo volume change (heave) if excess moisture is available. Therefore, site grading and landscaping should be designed to promote rapid drainage of surface runoff water.

### 5.6 Concrete

A water soluble sulphate content test was conducted on a sample of soil from Borehole 2009-02 at depth of 2.0 m. The test indicated that concrete in contact with soil, at this location, has a moderate potential for sulphate attack. It is recommended that concrete in contact with soil at the Site be produced utilizing MS, MSb, LH, HS or HSb cementing materials. The concrete shall have a maximum water to cementing materials ratio of 0.50 and attain a minimum 56 day strength of 30 MPa.

### 5.7 Pavement Structure

Based on the soils encountered, the pavement structure indicated in Table 5.7 is recommended for passenger vehicle traffic with occasional use by trucks as for construction material delivery, moving vans etc. Consideration may be given to delaying the final lift of paving for the access road until most of the residences are constructed. Use of the pavement by other than passenger vehicles should adhere to the same conditions of spring road bans that are implemented for nearby M.D. roads.

**Table 5.7 - Pavement Structure**

Material Type	Parking Lot Structure (mm)
Single Layer City of Lethbridge Type 3 Asphalt	80
25mm crush gravel	75
75mm crush gravel	125
Subgrade Preparation	150 mm at 98 % SPMDD

The performance and maintenance requirements for the design noted are largely dependant upon proper subgrade preparation and subgrade drainage, and must constitute part of the design. In addition, proper surface drainage must exist, and grades should be a minimum of two percent (there should be no ponding of water observed on site following a rain event).

All topsoil or soil containing significant amounts of organics should be removed from areas where fill will be placed, and from areas that will support pavements. The excavated surface should be proof rolled. Soft or weak areas should be over-excavated and backfilled with well-compacted inorganic cohesive or cohesionless soils.

Roadway subgrade should then be scarified to subgrade preparation depth; moisture conditioned to  $\pm 3\%$  of optimum moisture content, thoroughly blade mixed; and uniformly compacted. This procedure may not eliminate any potential heaving and settlement; however it will provide a more uniform support condition under pavements and will reduce differential soil movements due to abrupt transition between soil types or from drier to wetter materials.

Base course gravel should be compacted to a uniform minimum dry density of 98% SPMDD at  $\pm 3\%$  of optimum moisture content for the material. Base course materials should be moisture conditioned prior to placement to reduce potential for segregation.

The asphalt should be compacted to a minimum of 93 percent maximum theoretical density of 50 blow Marshall and conform to the City of Lethbridge Engineering and Environmental Services Department Standard Specifications Street Construction.

Proper annual maintenance such as filling cracks in the pavement is considered part of the design and must constitute part of the life cycle costing of the project. If maintenance is not conducted annually, then the design life of the structure will be reduced.

Concrete pads should be provided for any dumpster and front wheels of front-loading waste disposal trucks.

## **5.8 Testing and Inspection**

All engineering design recommendations presented in this report are based on the assumption that an adequate level of inspection and review will be provided during construction and that all construction will be carried out by a suitably qualified contractor experienced in foundation and earthworks construction. An adequate level of inspection is considered to be:

- For shallow foundations: observation of all bearing surfaces prior to concrete placement
- For earthworks: full time monitoring and compaction testing
- For concrete construction: testing for concrete supplier mix designs for conformance with prescribed and/or performance concrete specifications

AMEC requests the opportunity to review the design drawings and the installation of the footings to confirm that the recommendations in this report have been correctly interpreted.

AMEC would be pleased to provide any further information that may be needed during design and to advise on the geotechnical aspects of specifications for inclusion in contract documents.





## 6.0 Percolation Tests

On 15 April 2009, two percolation boreholes per lot (lot 1 – lot 11) were advanced in the area of the proposed septic fields.

The percolation boreholes were advanced to 0.9 m below existing ground surface utilizing a truck mounted auger rig supplied by RWS Drilling Services of Lethbridge, Alberta. Boreholes were widely spaced and representative of typical soil conditions with a prepared diameter of 200 mm. Drilling was conducted under the supervision of an AMEC representative.

The generalized subsurface profile encountered at the location of the percolation boreholes consisted of about 80 mm of organic topsoil overlying silt with a trace to some clay, a trace of fine sand, hard, non plastic and dry to damp. In nearby companion geotechnical boreholes, the silt was underlain with clay till or bedrock.

Percolation testing was conducted at the site on 16 April 2009. Percolation testing for the septic field followed section A.6. Percolation Test Procedure of the *Alberta Private Sewage System Standard of Practice (1999)*.

The percolation test results and groundwater results are presented below:

**Table 6.0 Percolation Rates**

Lot Number	Borehole Location	Percolation Rate (min/25 mm of Drop)
1	Percolation Hole P1	9.26
--	Percolation Hole P2	13.16
2	Percolation Hole P1	5.81
--	Percolation Hole P2	8.43
3	Percolation Hole P1	12.5
--	Percolation Hole P2	10
4	Percolation Hole P1	9.25
--	Percolation Hole P2	6.88
5	Percolation Hole P1	11
--	Percolation Hole P2	7.97

Lot Number	Borehole Location	Percolation Rate (min/25 mm of Drop)
6	Percolation Hole P1	8.8
--	Percolation Hole P2	19.23
7	Percolation Hole P1	9.49
--	Percolation Hole P2	12.7
8	Percolation Hole P1	6.18
--	Percolation Hole P2	5.81
9	Percolation Hole P1	10
--	Percolation Hole P2	10
10	Percolation Hole P1	20.2
--	Percolation Hole P2	5.3
11	Percolation Hole P1	37.5
--	Percolation Hole P2	5.4

The Alberta Private Sewage System Standard of Practice 1999 guidelines regarding soil percolation rates for sewage treatment by subsurface systems are:

- (a) Soil percolation rates of less than 5.0 min/25 mm of drop – unfavourable
- (b) Soil percolation rates of 5.0 to 60 min/25 mm of drop – **favourable**
- (c) Soil percolation rates of more than 60 min/25 mm of drop – unfavourable

The results of the percolation testing for the 16 April 2009 test indicated the site is **favourable** for construction of a septic field. As per the *Alberta Private Sewage System Standard of Practice 1999* guidelines section A.6.(3). The percolation rate is considered to be a rate not faster than the slowest percolation rate of the percolation Boreholes.

## 7.0 CLOSURE

The recommendations given in the above sections are based upon interpreted conditions found in the five boreholes and twenty-two percolation boreholes advanced at this site. Should subsurface conditions other than those presented in this report be encountered during construction, the Client should notify our office so that the recommendations can be reviewed.

Soil conditions, by their nature, can be highly variable across a construction site. The placement of fill and prior construction activities on a site can contribute to variable near surface soil conditions. A contingency amount should be included in the construction budget to allow for the possibility of variations in soil conditions, which may result in modification of the design, and/or changes in construction procedures.

This design report has been prepared for the exclusive use of Outlook Properties and their designers for specific application to the development described within this report. Any use that a third party makes of this report, or any reliance or decisions based on this report are the sole responsibility of those parties. It has been prepared in accordance with generally accepted soil and foundation engineering practices.

Yours truly,

**AMEC Earth & Environmental**  
**A division of AMEC Americas Ltd.**



Scott Roughead  
Project Manager



Ayoub Ramadan, P.Eng.  
Geotechnical Engineer

Reviewed by;

Kevin Spencer, M.Eng., P.Eng.  
Associate Geotechnical Engineer  
**APEGGA PERMIT P4645**

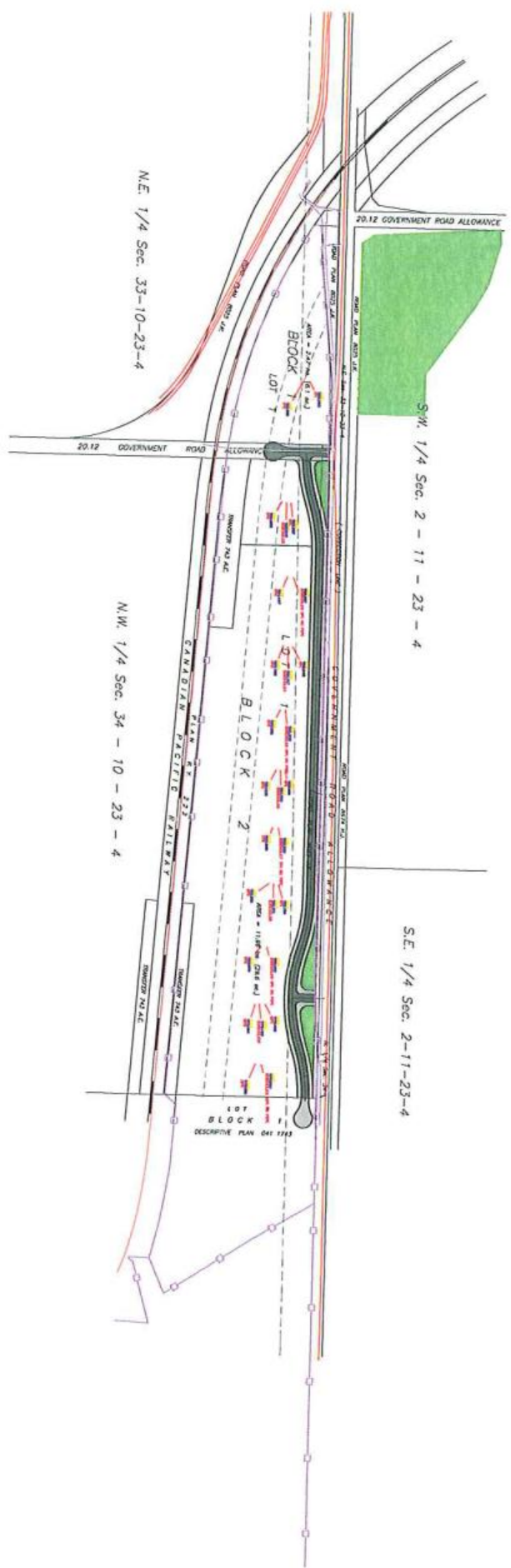
Outlook Properties  
Geotechnical Investigation  
Proposed Country Residential  
Nobleford, AB



## **APPENDIX A**

Figure 1 – Borehole Location Plan  
Figures 2 – 6 – Borehole Logs

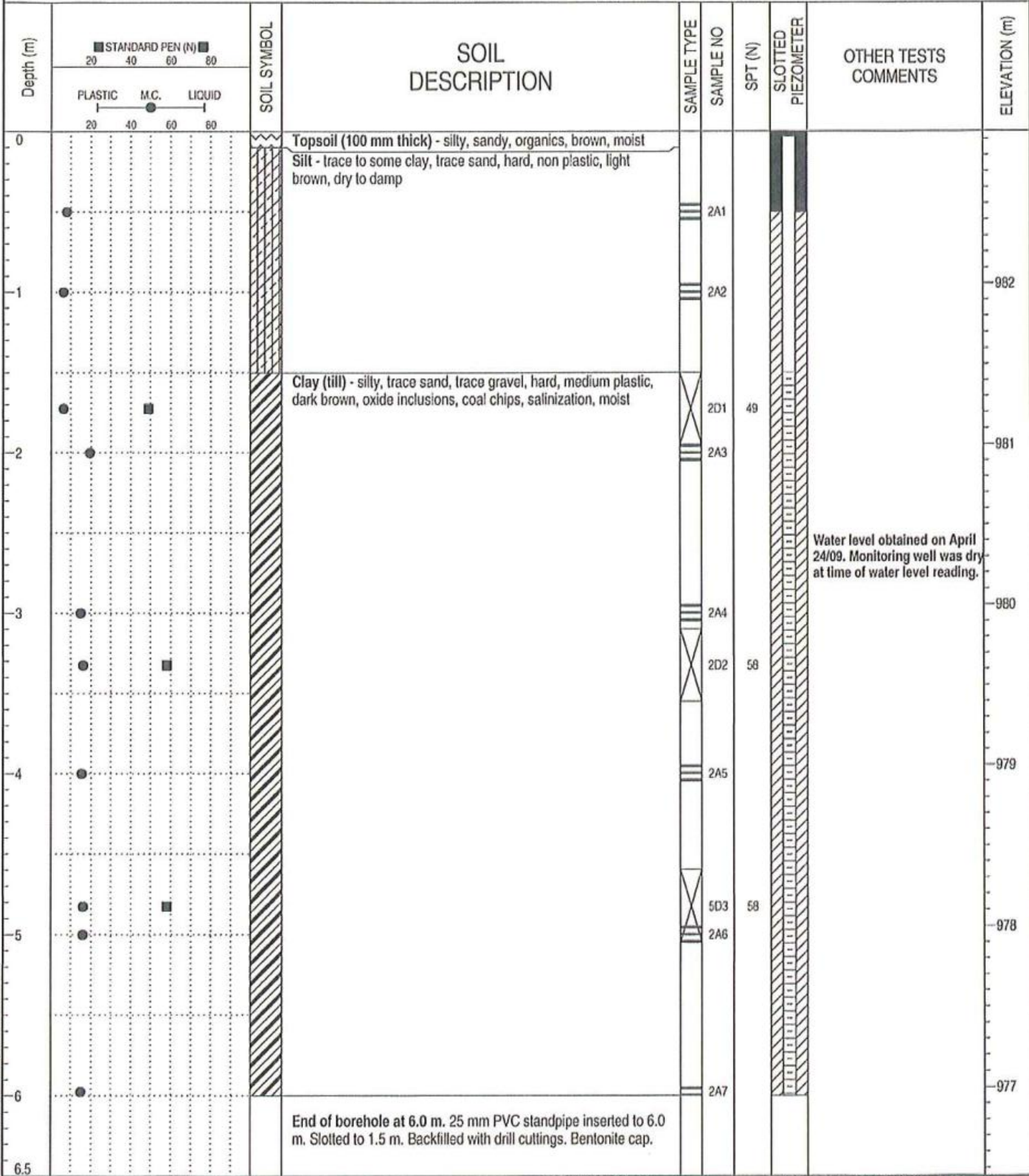






CLIENT: Stantec Consulting Ltd.	PROJECT: Outlook Acres Geo. Investigation	BOREHOLE NO: 2009-01
DRILLER: RWS Drilling Services	NW 1/4 Sec 34 - 10 - 23 - 4M	PROJECT NO: BX30080
DRILL/METHOD: SSA	LOCATION: Lot # 10	ELEVATION: 982.949 m

SAMPLE TYPE	<input checked="" type="checkbox"/> Shelby Tube	<input checked="" type="checkbox"/> No Recovery	<input checked="" type="checkbox"/> SPT Test (N)	<input checked="" type="checkbox"/> Grab Sample	<input checked="" type="checkbox"/> Split-Pen	<input checked="" type="checkbox"/> Core
BACKFILL TYPE	<input checked="" type="checkbox"/> Bentonite	<input type="checkbox"/> Pea Gravel	<input type="checkbox"/> Slough	<input type="checkbox"/> Grout	<input checked="" type="checkbox"/> Drill Cuttings	<input type="checkbox"/> Sand



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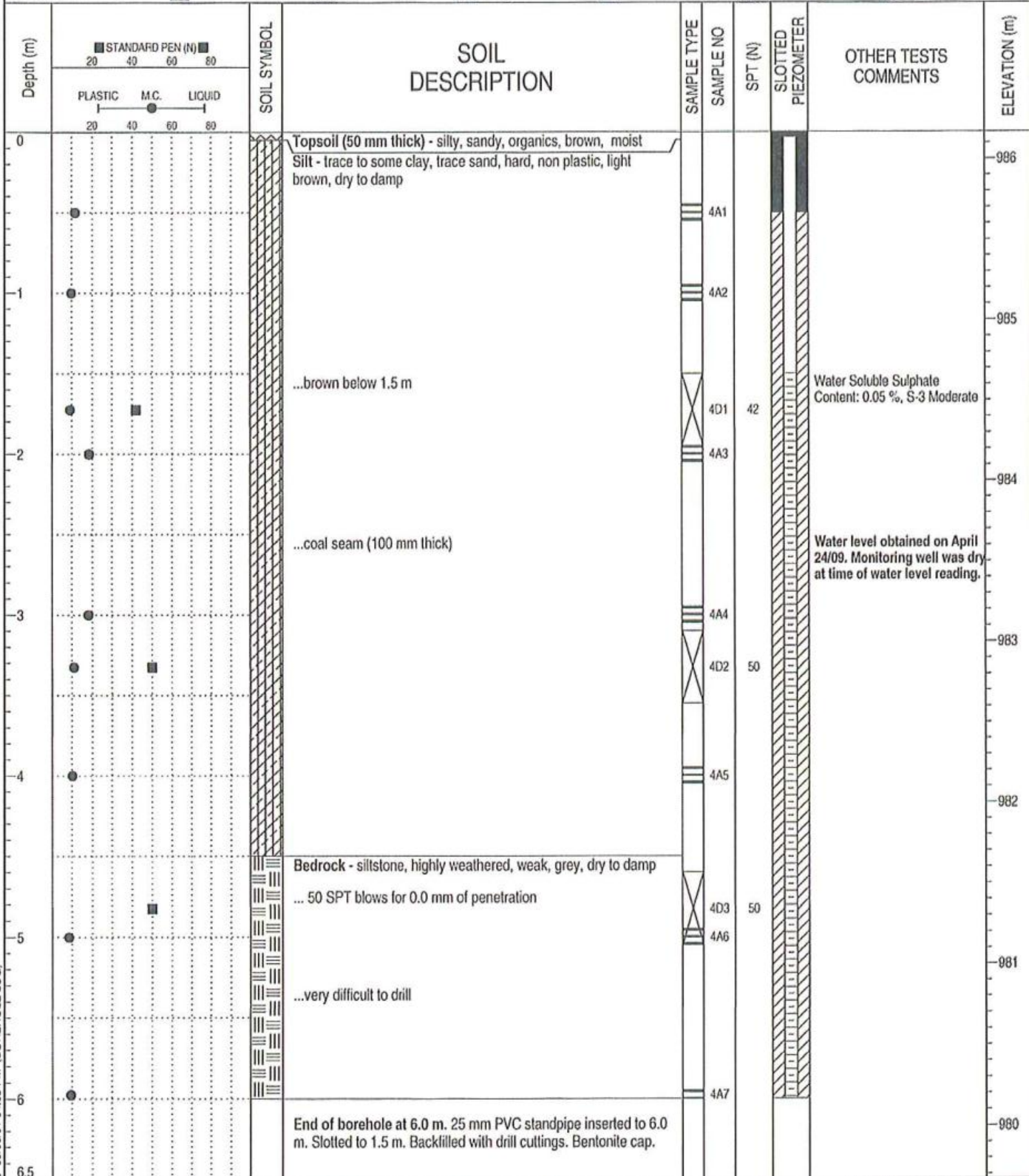


AMEC Earth & Environmental  
Medicine Hat, Alberta T1A 8G3

LOGGED BY: SR  
REVIEWED BY: JF

COMPLETION DEPTH: 6.00 m  
COMPLETION DATE: 4/15/09

CLIENT: Stantec Consulting Ltd.	PROJECT: Outlook Acres Geo. Investigation	BOREHOLE NO: 2009-02
DRILLER: RWS Drilling Services	NW 1/4 Sec 34 - 10 - 23 - 4M	PROJECT NO: BX30080
DRILL/METHOD: SSA	LOCATION: Lot # 4	ELEVATION: 986.167 m
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BACKFILL TYPE	<input checked="" type="checkbox"/> Bentonite <input type="checkbox"/> Pea Gravel <input type="checkbox"/> Slough <input type="checkbox"/> Grout <input checked="" type="checkbox"/> Drill Cuttings <input type="checkbox"/> Sand	



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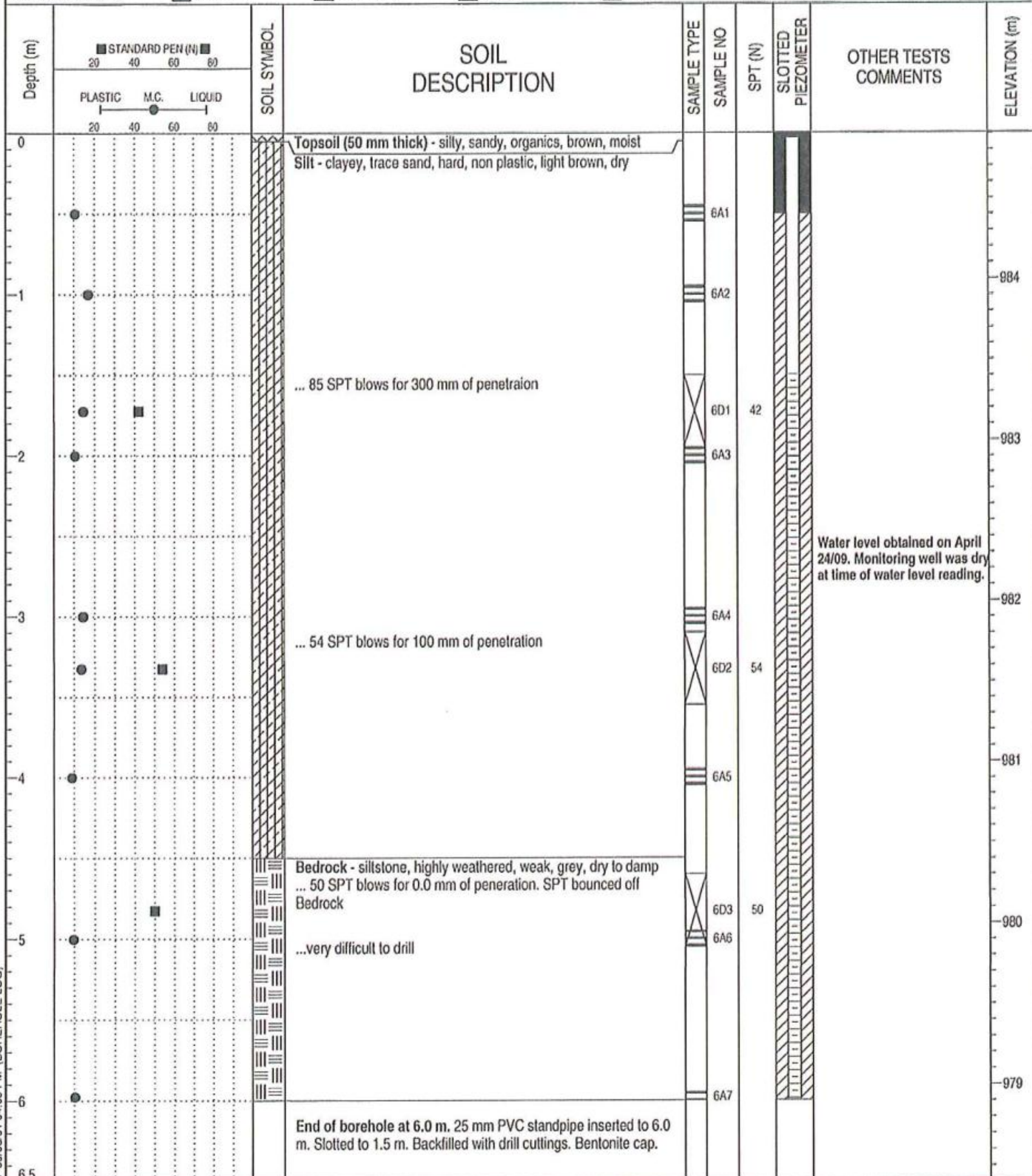
AMEC Earth & Environmental  
Medicine Hat, Alberta T1A 8G3

LOGGED BY: SR  
REVIEWED BY: JF

COMPLETION DEPTH: 6.00 m  
COMPLETION DATE: 4/15/09

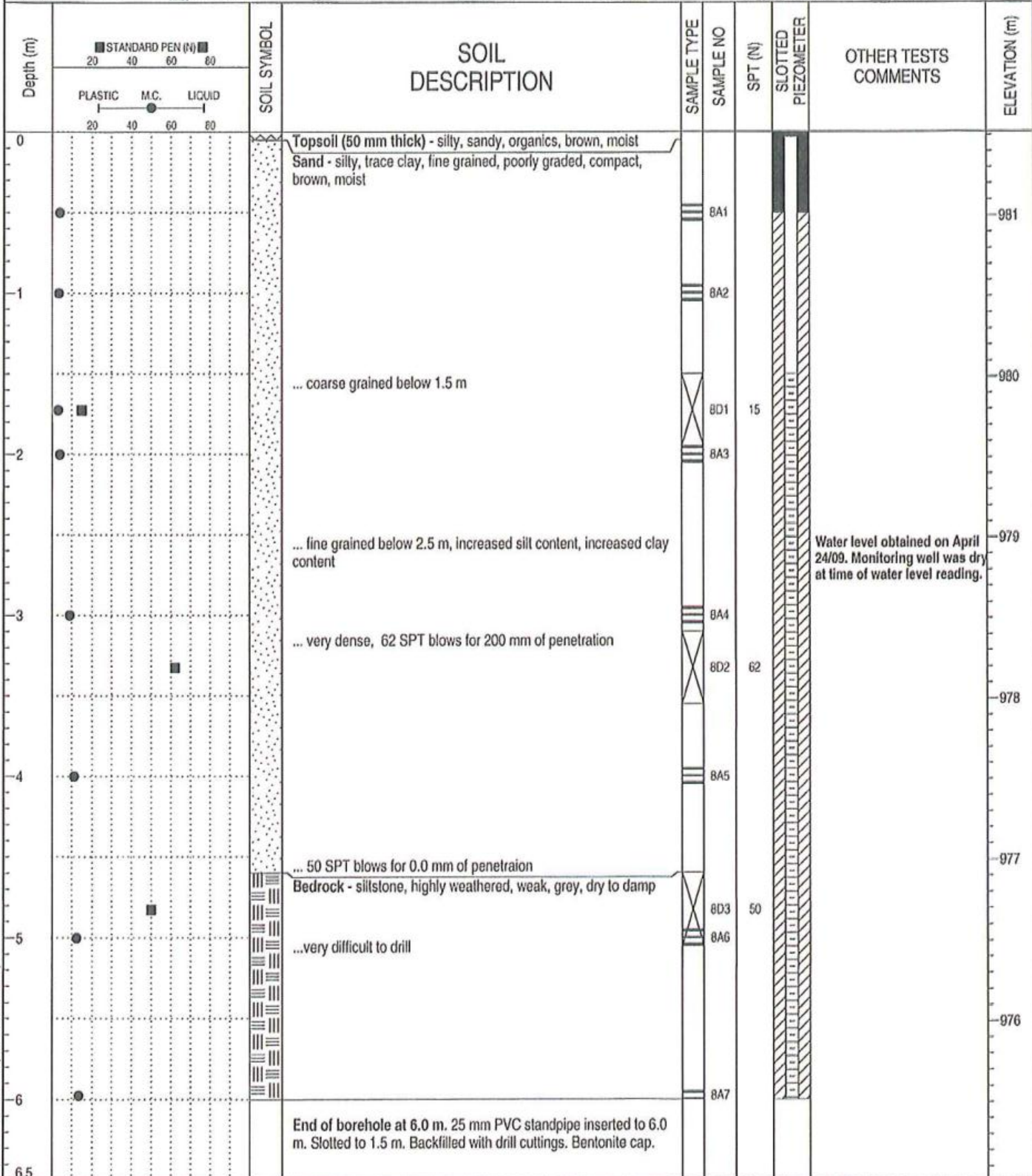


CLIENT: Stantec Consulting Ltd.	PROJECT: Outlook Acres Geo. Investigation	BOREHOLE NO: 2009-03
DRILLER: RWS Drilling Services	NW 1/4 Sec 34 - 10 - 23 - 4M	PROJECT NO: BX30080
DRILL/METHOD: SSA	LOCATION: Lot # 6	ELEVATION: 984.906 m
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BACKFILL TYPE	<input checked="" type="checkbox"/> Bentonite <input checked="" type="checkbox"/> Pea Gravel <input checked="" type="checkbox"/> Slough <input checked="" type="checkbox"/> Grout <input checked="" type="checkbox"/> Drill Cuttings <input checked="" type="checkbox"/> Sand	



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CLIENT: Stantec Consulting Ltd.	PROJECT: Outlook Acres Geo. Investigation	BOREHOLE NO: 2009-04				
DRILLER: RWS Drilling Services	NW 1/4 Sec 34 - 10 - 23 - 4M	PROJECT NO: BX30080				
DRILL/METHOD: SSA	LOCATION: Lot # 8	ELEVATION: 981.521 m				
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BACKFILL TYPE	<input checked="" type="checkbox"/> Bentonite	<input type="checkbox"/> Pea Gravel	<input type="checkbox"/> Slough	<input type="checkbox"/> Grout	<input checked="" type="checkbox"/> Drill Cuttings	<input type="checkbox"/> Sand



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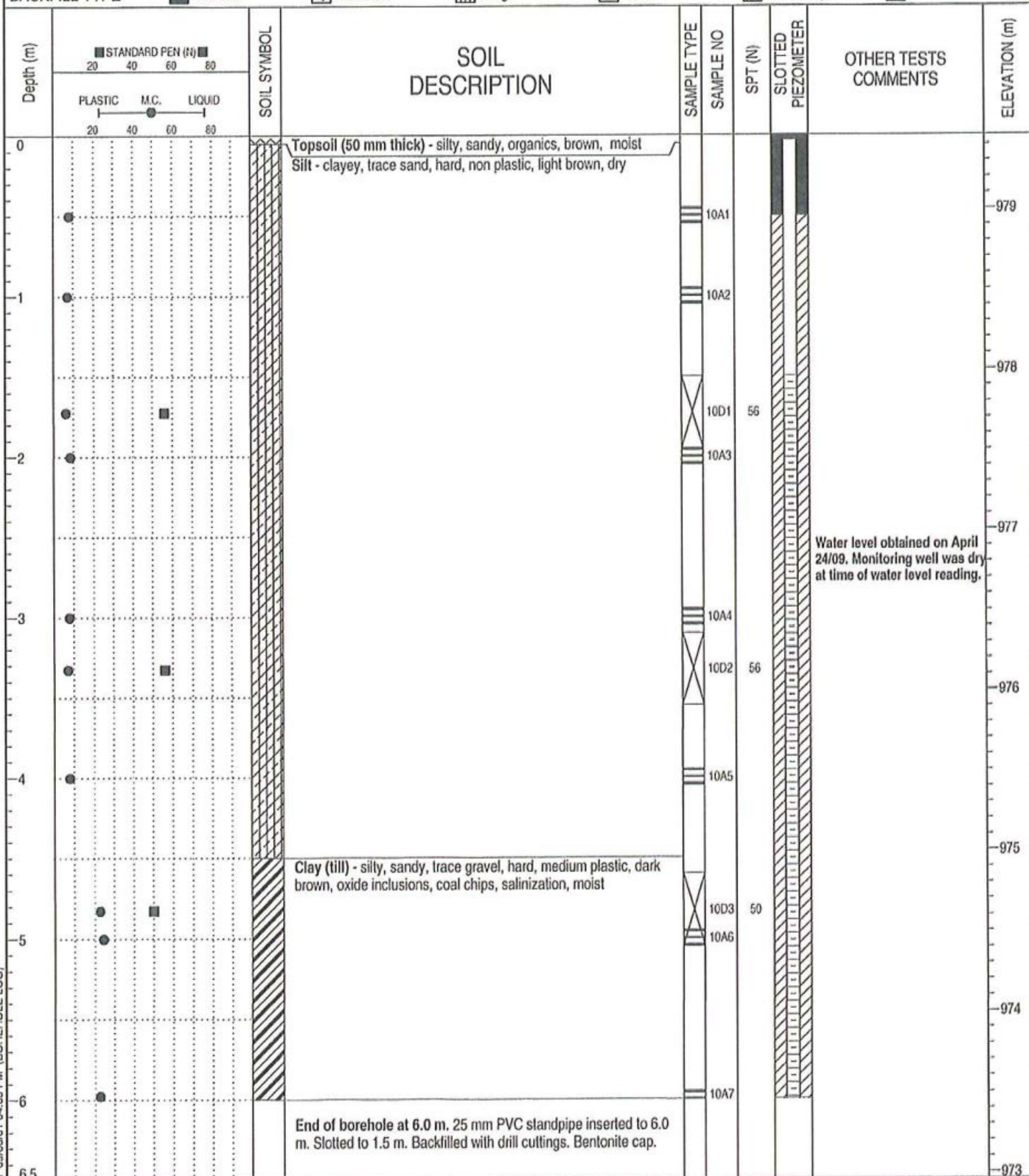
AMEC Earth & Environmental  
Medicine Hat, Alberta T1A 8G3

LOGGED BY: SR  
REVIEWED BY: JF

COMPLETION DEPTH: 6.00 m  
COMPLETION DATE: 4/15/09



CLIENT: Stantec Consulting Ltd.	PROJECT: Outlook Acres Geo. Investigation	BOREHOLE NO: 2009-05				
DRILLER: RWS Drilling Services	NW 1/4 Sec 34 - 10 - 23 - 4M	PROJECT NO: BX30080				
DRILL/METHOD: SSA	LOCATION: Lot # 2	ELEVATION: 979.458 m				
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BACKFILL TYPE	<input checked="" type="checkbox"/> Bentonite	<input type="checkbox"/> Pea Gravel	<input type="checkbox"/> Slough	<input type="checkbox"/> Grout	<input checked="" type="checkbox"/> Drill Cuttings	<input type="checkbox"/> Sand



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Outlook Properties  
Geotechnical Investigation  
Proposed Country Residential  
Nobleford, AB



## **APPENDIX B**

Terms and Symbols

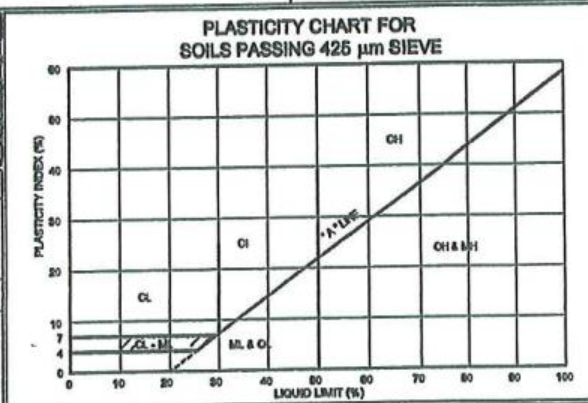


**MODIFIED UNIFIED CLASSIFICATION SYSTEM FOR SOILS**

MAJOR DIVISION		GROUP SYMBOL	GRAPH SYMBOL	COLOUR CODE	TYPICAL DESCRIPTION	LABORATORY CLASSIFICATION CRITERIA		
COARSE GRAINED SOILS (MORE THAN HALF BY WEIGHT LARGER THAN 75µm)	GRAVELS MORE THAN HALF THE COARSE FRACTION LARGER THAN 4.75mm	CLEAN GRAVELS (LITTLE OR NO FINES)	GW		RED	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	$C_u = \frac{D_{60}}{D_{10}} > 4$ ; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}} = 1 \text{ to } 3$	
			GP		RED	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES		NOT MEETING ABOVE REQUIREMENTS
		DIRTY GRAVELS (WITH SOME FINES)	GM		YELLOW	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES	CONTENT OF FINES EXCEEDS 12 %	ATTERBERG LIMITS BELOW "A" LINE OR P.I. LESS THAN 4
			GC		YELLOW	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES		ATTERBERG LIMITS ABOVE "A" LINE P.I. MORE THAN 7
	SANDS MORE THAN HALF THE COARSE FRACTION SMALLER THAN 4.75mm	CLEAN SANDS (LITTLE OR NO FINES)	SW		RED	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	$C_u = \frac{D_{60}}{D_{10}} > 6$ ; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}} = 1 \text{ to } 3$	
			SP		RED	POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES		NOT MEETING ABOVE REQUIREMENTS
		DIRTY SANDS (WITH SOME FINES)	SM		YELLOW	SILTY SANDS, SAND-SILT MIXTURES	CONTENT OF FINES EXCEEDS 12 %	ATTERBERG LIMITS BELOW "A" LINE OR P.I. LESS THAN 4
			SC		YELLOW	CLAYEY SANDS, SAND-CLAY MIXTURES		ATTERBERG LIMITS ABOVE "A" LINE P.I. MORE THAN 7

FINE-GRAINED SOILS (MORE THAN HALF BY WEIGHT SMALLER THAN 75µm)	SILTS BELOW "A" LINE NEGLECTIBLE ORGANIC CONTENT	$W_L < 50\%$	ML		GREEN	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY SANDS OF SLIGHT PLASTICITY	CLASSIFICATION IS BASED UPON PLASTICITY CHART (SEE BELOW)	
		$W_L > 50\%$	MH		BLUE	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS, FINE SANDS OR SILTY SOILS		
	CLAYS ABOVE "A" LINE NEGLECTIBLE ORGANIC CONTENT	$W_L < 30\%$	CL		GREEN	INORGANIC CLAYS OF LOW PLASTICITY, GRAVELLY, SANDY OR SILTY CLAYS, LEAN CLAYS		
		$30\% < W_L < 50\%$	CI		GREEN-BLUE	INORGANIC CLAYS OF MEDIUM PLASTICITY, SILTY CLAYS		
		$W_L > 50\%$	CH		BLUE	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS		
	ORGANIC SILTS & CLAYS BELOW "A" LINE	$W_L < 50\%$	OL		GREEN	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY		WHENEVER THE NATURE OF THE FINES CONTENT HAS NOT BEEN DETERMINED, IT IS DESIGNATED BY THE LETTER "P". E.G. OF IS A MIXTURE OF SAND WITH SILT OR CLAY
		$W_L > 50\%$	OH		BLUE	ORGANIC CLAYS OF HIGH PLASTICITY		
	HIGHLY ORGANIC SOILS			PI		ORANGE		PEAT AND OTHER HIGHLY ORGANIC SOILS

SPECIAL SYMBOLS				
LIMESTONE		OILSAND		
SANDSTONE		SHALE		
SILTSTONE		FILL (UNDIFFERENTIATED)		
SOIL COMPONENTS				
FRACTION	U.S. STANDARD SIEVE SIZE		DEFINING RANGES OF PERCENTAGE BY WEIGHT OF MINOR COMPONENTS	
	PASSING	RETAINED	PERCENT	DESCRIPTOR
GRAVEL	76mm	19mm	35-50	AND
	COARSE	4.75mm		
SAND	4.75mm	2.00mm	20-35	VERY
	COARSE	2.00mm		
	MEDIUM	425µm		
FINES (SILT OR CLAY BASED ON PLASTICITY)	425µm	75µm	1-10	SOME
	75µm			
OVERSIZED MATERIAL				
ROUNDED OR SUBROUNDED:		NOT ROUNDED:		
COBBLES 76mm TO 200mm		ROCK FRAGMENTS > 76mm		
BOULDERS > 200mm		ROCKS > 0.78 CUBIC METRE IN VOLUME		



- NOTES:**
- ALL SIEVE SIZES MENTIONED ON THIS CHART ARE U.S. STANDARD A.S.T.M. E-11
  - COARSE GRAIN SOILS WITH 6 TO 12% FINES GIVEN COMBINED GROUP SYMBOLS, E.G. GW-GC IS A WELL GRADED GRAVEL SAND MIXTURE WITH CLAY BINDER BETWEEN 6 AND 12% FINES.

**AMEC Earth & Environmental**



# APPENDIX D

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## Stormwater Analysis





**Stantec**

May 29, 2009  
File: 112944880

Outlook Commodities Ltd.  
Box 478  
Nobleford, Alberta  
T0L 1S0 Canada

Dear Mr. Klok:

**Reference: Outlook Acres Subdivision – Storm Drainage Analysis**

## **1.0 INTRODUCTION**

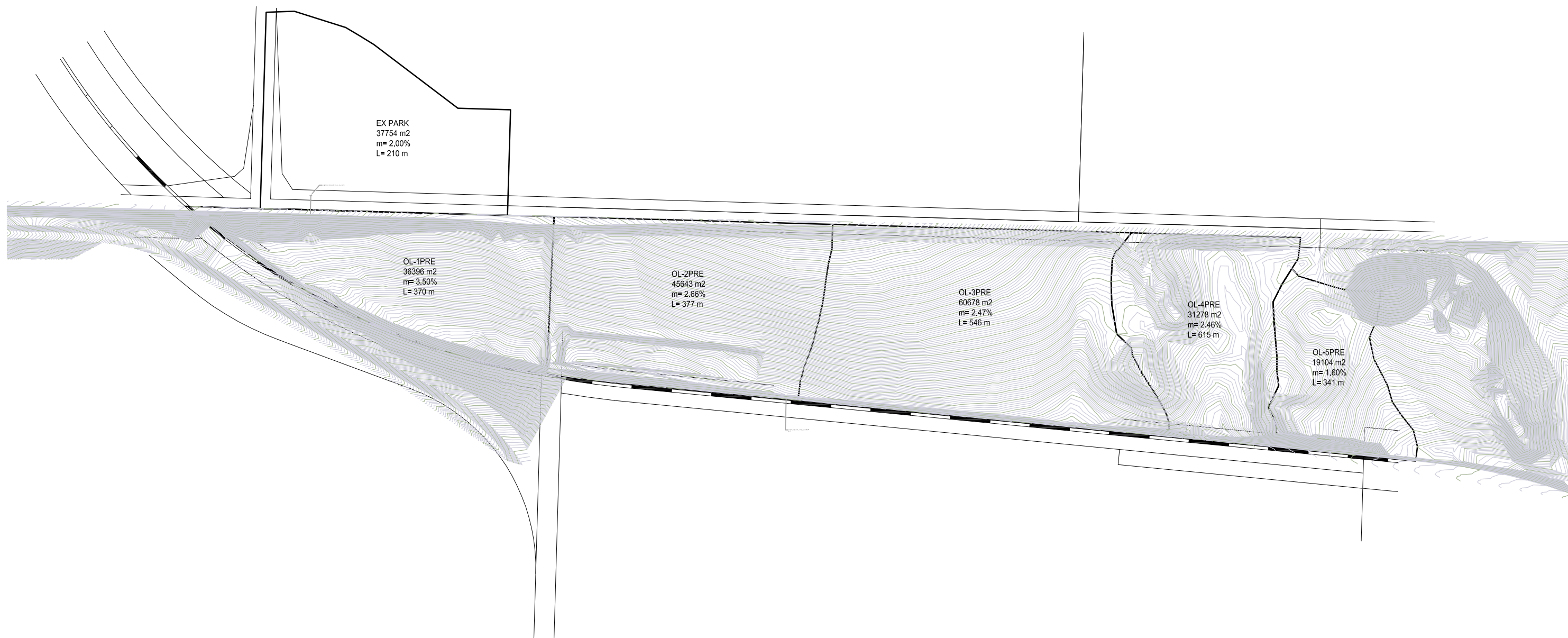
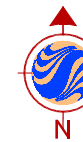
Stantec Consulting Ltd. (Stanted) was retained by Outlook Commodities Ltd. to provide conceptual design services for eleven residential lots in the Outlook Acres Subdivision (the Site), to be located immediately south of the Village of Nobleford, Alberta. The services include a preliminary analysis of the effects of the proposed development on local storm drainage patterns. This report details the methodology, analysis and results of the stormwater analysis.

The Site is located immediately south of the Village of Nobleford, Alberta. The Site is bounded to the south and west by an existing Canadian Pacific Railway (CPR) track, to the east by pasture lands, and to the north by Alberta Highway No. 519. The proposed lots will front on a new service road constructed to the south and parallel to Alberta Highway No. 519. The existing ground slopes to the south away from Highway No. 519 and towards the existing CPR track.

## **2.0 METHODOLOGY**

The storm drainage analysis involved estimation and comparison of pre- and post-development stormwater runoff rates and recommendations for improvements to mitigate the effects of the development. The storm drainage analysis was completed by first undertaking a detailed topographic survey of the site. An elevation contour map was generated to represent the existing ground surface. Existing storm drainage catchments were delineated based on the existing ground contours and verified through site visits by Stantec staff. The pre-development analysis considered the existing site conditions with respect to slope, vegetation, soil type and hydrologic conditions typical of the area. Figure 1.0 illustrates the pre-development storm drainage conditions of the site.

The anticipated post-development drainage areas were delineated based on the proposed



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2009-05-27 11:03AM By: JKellock

May 2009  
112944880



**Stantec**

**Legend**

OL-1PRE  
36396 m2  
m= 3.50%  
L= 370 m  
*Pre Development  
Overland Drainage  
Catchments*



Client/Project

OUTLOOK COMMODITIES LTD  
OUTLOOK ACRES ASP  
NOBLEFORD ALBERTA

Figure No.

1.0

Title

Pre Development Conditions

**Reference: Outlook Acres – Storm Drainage Analysis**

concept plan for the site. The concept plan includes a new local service road parallel to Highway No. 519 to allow access to the residential building lots. The new service road will utilize the typical cross-section used by the County of Lethbridge and will include open ditches on both sides of the road. The post-development analysis also considered development of approximately 350m<sup>2</sup> of impervious surfaces (roofs and driveways) within each of the eleven building lots that will be created. Figure 2.0 illustrates the anticipated post-development storm drainage characteristics of the site.

The Stormwater Management Model (SWMM 5) software package developed by the USEPA was then used to create and analyze two hydrologic models of the Site. The two hydrologic models represented the pre- and post-development drainage characteristics of the site. Runoff rates for both scenarios were estimated for a 1 in 100 year, 24 hour return period storm event having the form of a Chicago storm distribution. Peak runoff rates for both scenarios and recommended improvements appear in the following sections.

**3.0 ANALYSIS****3.1 Pre-development**

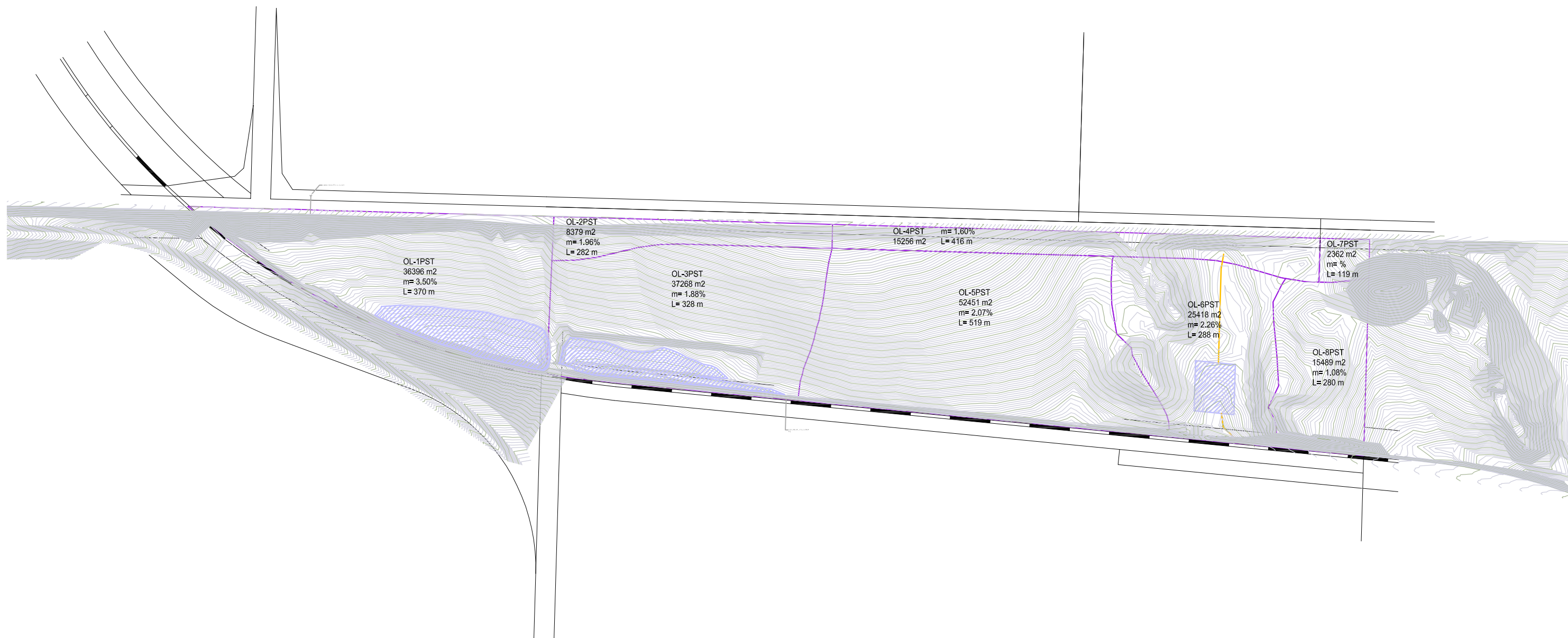
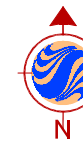
The total pre-development drainage area to be considered was divided into six catchments including an upstream contribution from the existing park on the north side of Highway No. 519 at Highway Avenue. The total area and average slope of each pre-development catchment was calculated using the existing ground contours and is summarized in Table 1 below.

**Table 1: Pre-Development Catchment Areas and Slopes**

<b>Catchment ID</b>	<b>Area (m<sup>2</sup>)</b>	<b>Average % Slope</b>
1	36396	3.50%
2	45268	2.66%
3	59434	2.47%
4	30393	2.46%
5	19104	1.60%
Ex. Park	37754	2.00%

The NRCS – Curve Number Method is an empirical description of the infiltration, depression storage and runoff for a given site in a storm event. A curve number (CN) can be determined based on a site's land use, soil and hydrologic condition. Generally the area was observed to be open grassland. The predominant soil type in the development area is silty-sand, which corresponds to soil group B, moderately low runoff potential, for the purposes of determining a CN. The hydrologic condition was assumed to be fair for all areas. The parameters used for determining the pre-development CN of each catchment are summarized in Table 2. These values were used to represent the runoff characteristics of the Site in the SWMM model.





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2009-05-27 11:05AM By: JKellock

May 2009  
112944880

### Legend

OL-1PST  
36396 m<sup>2</sup>  
m= 3.50%  
L= 370 m  
*Post Development  
Overland Drainage  
Catchments*



Client/Project

OUTLOOK COMMODITIES LTD  
OUTLOOK ACRES ASP  
NOBLEFORD ALBERTA

Figure No.

2.0

Title

Post Development Conditions



**Stantec**

Reference: Outlook Acres – Storm Drainage Analysis

**Table 2: Curve Number Summary (Pre-development Conditions)**

Catchment ID	Land Use	Hydrologic Condition	Soil Group	CN
1	Uncontoured Pasture	Fair	B	69
2	Uncontoured Pasture	Fair	B	69
3	Uncontoured Pasture	Fair	B	69
4	Uncontoured Pasture	Fair	B	69
5	Uncontoured Pasture	Fair	B	69
Ex. Park	Uncontoured Pasture	Fair	B	69

The pre-development model was populated with the area, slope, and curve numbers of each catchment, as summarized in Tables 1 and 2. Channels and storage areas were also represented in the model. Through an examination of the topographic survey data and the site visits it was found that the pre-development drainage patterns concentrate runoff to two existing outlets. The western portion of the site drains to an existing 500mm diameter steel culvert under the CPR tracks immediately west of the abandoned government road allowance. Eastern portions of the Site drain to the existing 1.0m deep ditch along the north side of the CPR tracks.

The model results suggest the peak flow rate from the western portion of the site to the culvert under the CPR tracks will be approximately 0.525m<sup>3</sup>/s. The peak estimated flow from the eastern portion of the site to the ditch along the north side of the CPR tracks is 0.791m<sup>3</sup>/s.

**3.2 Post-development**

The post-development drainage area was divided into nine separate storm drainage catchments including the upstream contribution from the existing park. The post-development model assumed the development of 350 m<sup>2</sup> per lot, and was based on a worst-case scenario where the whole of the developed area was assumed to be impermeable. The 350 m<sup>2</sup> was based on the assumption that each lot was be subject to the construction of a 140 m<sup>2</sup> house, a 100 m<sup>2</sup> driveway, and 110 m<sup>2</sup> of miscellaneous buildings and paving, which could include shops, sheds, decks, patios, add-ons, sidewalks, among other improvements. The post-development model also assumed that the travelled surface of the new service road would be effectively impervious. The impervious area was distributed among the post-development storm drainage catchments as shown below.

The lots will generally be less than 10% developed and will maintain many of the pre-development storm runoff characteristics. The lots will generally slope to the south away from the service road, directing runoff over the permeable grasslands. Runoff will continue to be

**Reference: Outlook Acres – Storm Drainage Analysis**

concentrated to the two existing outlets from the site. However, development of the service road and lots will affect some of the local drainage patterns within the site. The post-development runoff characteristics are summarized in Table 3.

**Table 3: Post-development Condition Summary**

Post-Development Catchment ID	Subcatchment Area (m <sup>2</sup> )	Estimated Developed Area (m <sup>2</sup> )	% Imperv.	Post-Develop. CN
1	36,396	3,998	10.98%	72
2	8,004	4,267	53.32%	85
3	37,268	2,490	6.68%	70
4	13,021	7,299	56.06%	85
5	52,451	2,888	5.51%	70
6	25,418	1,516	5.97%	70
7	2,087	475	22.76%	78
8	15,489	884	5.71%	70
Ex. Park	37,754	4,300	11.39%	73

The results of the post-development model analysis indicate a peak flow rate from the western areas of the Site to the existing culvert to be 0.548m<sup>3</sup>/s and peak flow from the eastern areas to the existing ditch along the CPR tracks to be 0.513m<sup>3</sup>/s, with no additional stormwater storage.

The post-development model was also analyzed with the addition of approximately 700 cubic metres of stormwater storage capacity for the eastern areas of the Site. The additional storage had no effect on the peak flow rates from the western portions of the site. However, the peak flow rate from the eastern portions of the site to the existing ditch along the CPR tracks was reduced to 0.374m<sup>3</sup>/s with the addition of this storage volume. A comparison of the pre- and post-development peak flow rates from the Site appear in Table 4.

Reference: Outlook Acres – Storm Drainage Analysis

#### 4.0 RESULTS

The results of the computer modeling suggest that there will be a negligible increase in flow to the western outlet from the site as a result of the development. The existing 500mm diameter culvert has adequate capacity to convey the anticipated flows from a 24 hour duration, 1:100 year return period storm. Figure 3.0 illustrates the model results for the pre-development, post-development (no storage), and post-development (with storage) for the western outlet.

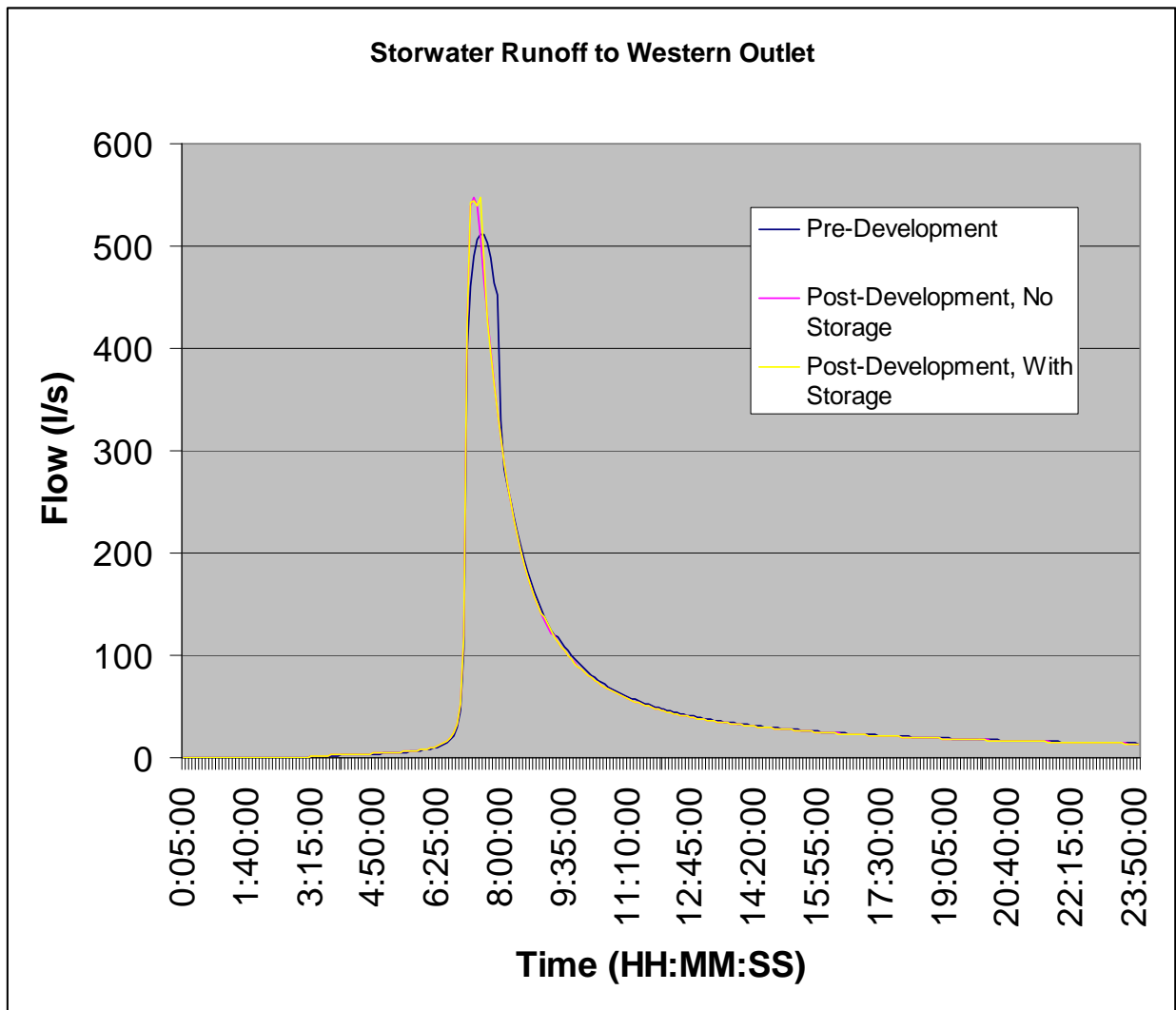


Figure 3.0 – SWMM Model Results, Western Outlet

The rate of stormwater runoff to the eastern outlet from the site will be substantially reduced by the development, even without the provision of additional stormwater detention facilities. This

Reference: Outlook Acres – Storm Drainage Analysis

reduction can be attributed to the additional travel time required for runoff to reach the outlet from the site due to channelization of flows along the . Nonetheless, a stormwater detention pond is proposed in the eastern portion of the Site to attenuate runoff from the site and promote groundwater recharge. The pond will be constructed as a dry pond, with the pond outlet located approximately 50cm above the bottom of the pond. Figure 4 illustrates the model results for the pre-development, post-development (no storage), and post-development (with storage) for the eastern outlet. A comparison of the pre- and post-development peak flow rates also appears in Table 4.

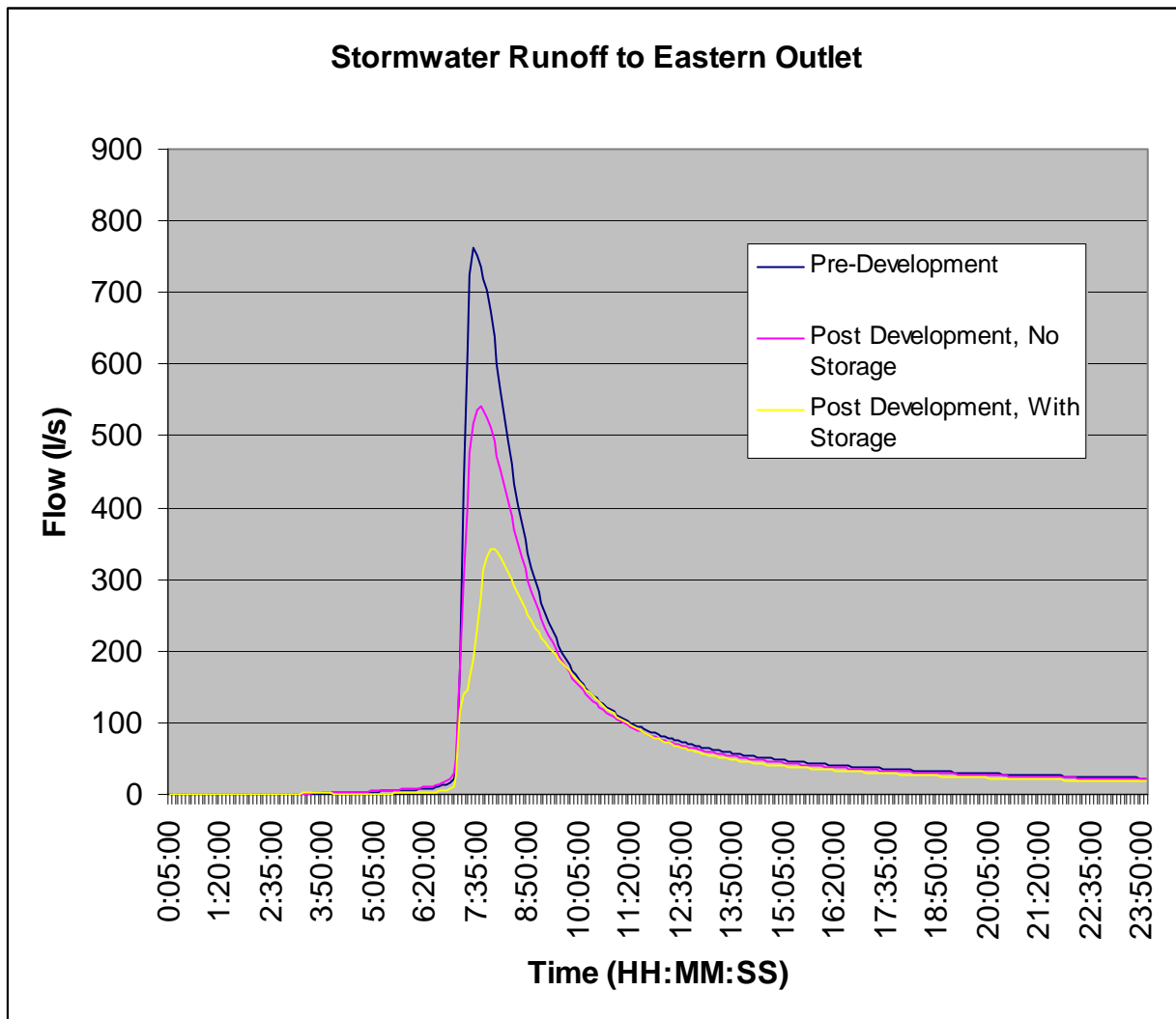


Figure 4.0 – SWMM Model Results, Eastern Outlet



Reference: Outlook Acres – Storm Drainage Analysis

**Table 4: Summary of Model Results**

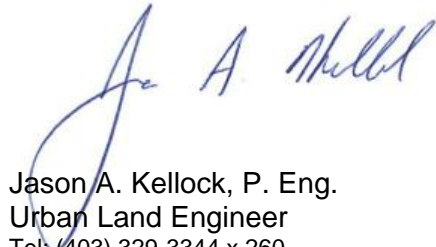
Scenario	Peak Flow to Western Outlet (Existing Culvert)	Difference vs. Pre-Development	Peak Flow to Eastern Outlet (Existing Ditch)	Difference vs. Pre-Development
Pre-Development	0.512 m <sup>3</sup> /s	N/A	0.763 m <sup>3</sup> /s	N/A
Post-development, no storage added	0.547 m <sup>3</sup> /s	+ 0.035 m <sup>3</sup> /s	0.541 m <sup>3</sup> /s	- 0.222 m <sup>3</sup> /s
Post-development, with storage added	0.547 m <sup>3</sup> /s	+ 0.035 m <sup>3</sup> /s	0.343 m <sup>3</sup> /s	- 0.420 m <sup>3</sup> /s

## 5.0 CLOSURE

The results of the SWMM model indicate that the development would cause a negligible increase in the peak flow rate to the existing culvert under the CPR tracks west of the former government roadway allowance. Furthermore, the development is expected to substantially decrease the runoff from the eastern portions of the Site to the existing ditch along the north side of the CPR tracks. In addition, a stormwater management facility will be constructed to further attenuate peak stormwater flows from the eastern portion of the site and promote groundwater recharge.

The above results represent a preliminary analysis of the peak flows that would result from a 1 in 100 year storm event and are based on a preliminary concept for the development. Stormwater storage requirements should be confirmed at the detailed design stage of the development.

Sincerely,

**STANTEC CONSULTING LTD.**Jason A. Kellock, P. Eng.  
Urban Land Engineer  
Tel: (403) 329-3344 x.260  
Fax: (403) 328-0664  
[jason.kellock@stantec.com](mailto:jason.kellock@stantec.com)

C.



# APPENDIX E

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## Agency Referral Documentation

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**From:** Brar, Jay [Jay.Brar@fortisalberta.com]  
**Sent:** Tuesday, April 14, 2009 9:48 AM  
**To:** Michna, Felix  
**Subject:** RE: Proposed Rezoning and Subdivision, County of Lethbridge

Hi Felix,

FortisAlberta has no requirements at this time. The proposed sub-division does not affect our facilities.

Thanks Jay

Jay Brar  
Land Services  
Ph. (403) 514-4119  
Fax (403) 514-4411  
Jay.Brar@fortisalberta.com

-----Original Message-----

**From:** Michna, Felix [mailto:Felix.Michna@stantec.com]  
**Sent:** April 13, 2009 9:08 AM  
**To:** Brar, Jay  
**Subject:** FW: Proposed Rezoning and Subdivision, County of Lethbridge

<<oa\_conceptual\_layout\_fig2.0\_cpr.pdf>>

Hello Jay. Further to our conversation of last week, I'm attaching a copy of the rezoning and subdivision proposal in the County of Lethbridge that we discussed. The legal description of the sites are: NE 1/4 33-10-23 W4th and NW 1/4 34-10-23 W4th. The area is immediately south of the Village boundaries of Nobleford. At this point we are still in the preliminary stages of this application and are seeking to determine if there are any concerns from affected parties. We would therefore appreciate if you could review this proposal and provide us with any comments you may have from the point of view of Fortis.

If you have any questions, please feel free to contact the writer

Regards

Felix Michna, ACP, MCIP  
Senior Community Planner  
Stantec  
290 - 220 - 4th Street South  
Lethbridge AB T1J 4J7  
Ph: (403) 329-3344  
Fx: (403) 328-0664  
Cell: (403) 360-1182  
felix.michna@stantec.com  
www.stantec.com

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Please consider the environment before printing this email.

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**Subject:**

**FW: Proposed Rezoning and Subdivision, County of Lethbridge**

From: LITTLE BOW GAS CO-OP LTD. [mailto:LBGAS@telusplanet.net]  
Sent: Thursday, April 30, 2009 9:05 AM  
To: Michna, Felix  
Subject: Re: Proposed Rezoning and Subdivision, County of Lethbridge

April 30, 2009

Felix,

Upon looking at the proposed subdivision we have no objections to it but welcome the opportunity to service the new subdivision with natural gas that is within close proximity to the subdivision.  
Wishing you all the best in your application.

Thanks,

Sheldon Albrecht, Manager  
----- Original Message -----  
From: "Michna, Felix" <Felix.Michna@stantec.com>  
To: <lbgas@telusplanet.net>  
Sent: Tuesday, April 14, 2009 8:11 AM  
Subject: FW: Proposed Rezoning and Subdivision, County of Lethbridge

<<oa\_conceptual\_layout\_fig2.0\_cpr.pdf>>

Dear Sir

Further to my telephone call of this morning, I'm attaching a copy of a rezoning and subdivision proposal in the County of Lethbridge that I am submitting on behalf of our client. The legal description of the sites are: NE 1/4 33-10-23 W4th and NW 1/4 34-10-23 W4th. The area is immediately south of the Village boundaries of Nobleford. At this point we are still in the preliminary stages of this application and are seeking to determine if there are any concerns from affected parties. We would therefore appreciate if you could review this proposal and provide us with any comments you may have from the point of view of Little Bow Gas Co-op.

If you have any questions, please feel free to contact the writer

Regards

Felix Michna, ACP, MCIP  
Senior Community Planner  
Stantec  
290 - 220 - 4th Street South  
Lethbridge AB T1J 4J7  
Ph: (403) 329-3344  
Fx: (403) 328-0664  
Cell: (403) 360-1182  
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www.stantec.com

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**May 15, 2009**

**Attn: John Van Liere – Van Liere Chartered Accountants**

**Re: Peter Klok (Outlook Pork Ltd.) & the LNCPWC**

It is my understanding that Peter Kolk (of Outlook Pork Ltd.) has intentions of providing 11 units of water to the following properties through his commitment with the Lethbridge North County Potable Water Co-op, and that he has indeed paid full deposits towards the units as specified.

NW 34-10-23 (North Portion), north of the tracks – 9 units

NE 34-10-23, north of the tracks – 1 unit

NE 33-10-23, Lot 1, north of the tracks – 1 unit

Deposit invested on specified properties = \$13,750.00

\*1 unit at this time = 500 gallons of water/day. Specific details regarding the water hook up in this area can be discussed with our Project Facilitator – Mr. Scott Jeffery, 403-332-2724.

**Regards,**

**Rae Lynne Friesen – LNCPWC Administrator**





Stantec

Outlook Acres Area Structure Plan  
Outlook Commodities

# APPENDIX F

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Railway Guidelines



**CANADIAN  
PACIFIC  
RAILWAY**

Suite 500  
Gulf Canada Square  
401 - 9<sup>th</sup> Avenue SW  
Calgary, Alberta  
T2P 4Z4

## **Residential Development Adjacent to the CPR**

### **General:**

The CPR opposes all residential development adjacent to our right-of-way, as it is not compatible with railway operations as there is the possibility that the safety, health, and welfare of residents could be adversely affected by railway activities.

Notwithstanding our opposition stated above, should a proposed residential subdivision application adjacent to railway right of way receive approval, Canadian Pacific Railway Co. requests that consideration be given to the following recommendations:

### **Safety:**

To safeguard against issues arising out of possible train derailments, it is recommended that:

- a) No dwellings should be built within 75 meters of the CPR property line.
- b) Should a 75 meter separation from the CPR property line not be achievable, dwellings must be no closer than 30 meters, and berm is to be erected on adjoining property, parallel to the railway right-of-way with construction according to the following specifications:
  - i) Berm minimum height to be 2.5 metres and side slopes not steeper than 2.5 to 1.
  - ii) No part of berm is to be constructed on railway property.

While no dwelling may be within 30 meters, an unoccupied building, such a garage, may be built closer.

Because of the nature of a residential subdivision, there is a high possibility of trespass on railway property, and the CPR has concerns with respect to pedestrian trespass and the safety issues associated with same. As such, should no solid noise attenuation fence be required as per item a) under the heading Health and Welfare following, it is recommended that a 1.83 metre high chain link fence be constructed and maintained along the common property line of the Railway and the development by the developer at his expense. The developer is to also include a covenant running with the lands, in all deeds, obliging the purchasers of the land to maintain the fence in a satisfactory condition at their expense.

### **Health and Welfare:**

The CPR property is used for train operations, which result in the transmission of noise, vibration and other related industrial nuisances to adjacent properties. As such it is recommended that:

- a) Dwellings be constructed such that the interior noise levels meet the criteria of the appropriate ministry. A noise study should be carried out by a professional noise consultant to determine what impact, if any, railway noise would have on residents of proposed subdivisions and to recommend mitigation measures if required. The recommendations of the study are to be implemented. Should the study recommend a sound attenuation fence, the fence, must be constructed without openings and of a durable material weighing not less than 20 kg per square metre (4 lb./sq.ft) of surface area.

b) Ground vibration transmission should be estimated through site tests. If in excess of the acceptable levels, all dwellings within 75 metres of the nearest track should be protected.

The measures employed may be:

1. Support the building on rubber pads between the foundation and the occupied structure so that the maximum vertical natural frequency of the structure on the pads is 12 Hz;
2. Insulate the building from the vibration originating at the railway tracks by an intervening discontinuity or by installing adequate insulation outside the building, protected from compaction that would reduce its effectiveness so that vibration in the building became unacceptable; or
3. Other adequate measures that will retain their effectiveness over time.

**Buyer Awareness:**

A clause should be inserted in all offers to purchase, agreements of sale and purchase or lease, and in the title deed or lease of each dwelling, informing prospective purchasers or tenants of the existence of the Railway's operating right-of-way; the possibility of alterations, including the possibility that the Railway may expand its operations, which expansion may affect the living environment of the residents notwithstanding the inclusion of noise and vibration attenuating measures in the design of the subdivision and individual units; and that the Railway will not be responsible for complaints or claims arising from use of its facilities and/or operations.

An additional clause should be inserted in all offers to purchase, agreements of sale and purchase or lease, and in the title deed or lease for each dwelling affected by any noise and vibration attenuation measures, advising that any berm, fencing, or vibration isolation features implemented are not to be tampered with or altered, and further that the owner shall have the sole responsibility for maintaining these features.

In addition to the preceding recommendations, the following conditions, where applicable must be met in all instances:

**Existing Drainage Patterns:**

Any proposed alterations to the existing drainage pattern affecting railway property including but not limited to acceleration of surface runoff must receive prior concurrence from the Railway, and be substantiated by a drainage report.

**Services:**

Any proposed utilities under, over or along railway property to serve the development must be designed in accordance with the appropriate CSA standards, Railway Association of Canada Standards and American Railway Engineering Association Standards as may be applicable. All plans for utility occupancies of railway property must be approved by the Railway prior to construction and installation.

**Access Across Railway Property:**

Any access roads across the railway will be subject to Railway approval, and must be in compliance with the latest Transport Canada regulations concerning same. If the crossing is approved, the owner will be required to execute a license agreement with respect to the terms and conditions of the crossing.

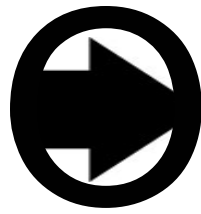


# APPENDIX G

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## Architectural Controls

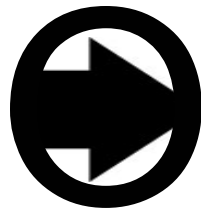




**Restrictive Covenant for Outlook Acres  
Updated as of May 8, 2009**

1. All properties must be kept neat, clean and free of any weeds, garbage, accumulated materials, etc.
2. Buildings starts must begin within two years of purchase date, and must be completed no later than one year after start date.
3. Lots on which building starts are not started within 2 years of purchase date will be repossessed by the developer at 80% of purchase price. Lots on which building has commenced but has not been completed within one year of start date will be penalized \$5,000 / month in order to ensure development progresses and property values are not depressed due to unsightly lots.
4. An irrigation-water line will be provided by the developer. Initial hook-up costs will be \$5,000, and all future operating costs will be shared with other property owners within the same water co-op. Monthly charges will commence the month in which water-line has been completed and is operational.
5. All property owners must plant a row of trees along the north side of their property creating a barrier between the high-way and the acreages within one year of lot purchase. These trees must be spaced a maximum 20 ft from each-other.
6. No on-street parking will be provided or allowed.
7. Keeping of livestock upon any of the lots is prohibited with the exception of domestic pets, and one large animal per acre.
8. All houses must be minimum 1500 sq ft, and must be approved by developer.
9. Development is restricted to one detached single family dwelling on each lot, and accessory buildings such as garages, sheds, etc. Accessory buildings to be restricted to 250 sq meters, and must be approved by developer.
10. Except for the following no sign shall be erected upon any lot:
  - a. A temporary sign not to exceed the exterior dimensions of 3 feet by 3 feet for the purposes of advertising the sale of the property. A temporary sign shall not remain upon the property subsequent to the sale of the property;
  - b. An identification light standard showing house or lot number or residential address; and
  - c. Signs erected by the Developer for the identification of the subdivision or sale of the lots,
11. Fence heights will be restricted to 6 feet maximum.
12. Mobile homes and modular structures are not allowed
13. No building may be moved onto a lot, and all buildings must be constructed on site, from new materials
14. The developer must give approval for all buildings, fences and other structure. Architectural deposit of \$5,000 required at time of purchase, to be refunded on completion of development.

Box 478  
Nobleford, Alberta  
T0L 1S0



**utlook**  

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**Commodities Ltd.**  

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Phone (403) 381-4971  
Fax (403) 381-4841  
outlook@figment.ca

15. Exterior of homes cannot be clad with vinyl siding. The developer proposes brick, wood, stucco or James Hardi siding. All roofing to be completed with cedar shakes, tiles or shingles. All exterior colors to be approved by the developer. Garage entries cannot face north on houses.
16. Speed limit of 50 km/hr on service road
17. The restrictive covenant runs with the land, and the rights of the developer under the covenant will transfer to the new owners of the subdivision lots as they are developed and sold. Any deviation from architectural controls to be reviewed & approved by developer.