AREA STRUCTURE PLAN FOR SEILLER ESTATES SUBDIVISION
A PORTION OF NE ¼ 18-9-22-4

Submitted to
County of Lethbridge

Environmental
Agricultural
Structural
Civil
Municipal

PREPARED FOR:
Bluestone Developments
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February 4, 2008 **Our File #: 07-295**

Bluestone Developments
Box 474
Lethbridge, Alberta
T1J 3Z1

Re: Seiller Estates Subdivision Area Structure Plan

Dear Sir:

Attached please find the Area Structure Plan submitted for the proposed Seiller Estates subdivision located in the County of Lethbridge.

Please review this document and contact our office with any questions or comments. This document was prepared under my supervision.

Yours truly,

PROFESSIONAL ENGINEER MARK HASEGAWA

Mark Hasegawa, P.Eng.
HASEGAWA ENGINEERING
Consulting Professional Engineers
MAH/dd

PERMIT TO PRACTICE
HASEGAWA ENGINEERING LTD
Signature
Date 2/4/08
PERMIT NUMBER: P 582
The Association of Professional Engineers Geologists and Geophysicists of Alberta

Attachment

cc:

TABLE OF CONTENTS

1 INTRODUCTION

This document outlines the Area Structure Plan for the proposed Seiller Estates subdivision of NE ¼ 18-9-22-4 located in the county of Lethbridge No. 26. The 27-acre parcel under consideration currently is used as native grassland (refer to Figure 1). A Land Use zoning change application has been filed with the County of Lethbridge No. 26 to meet the by-law requirements for this Area Structure Plan. The proposed subdivision is surrounded by county land that is currently used for agricultural purposes.

The proposed land use is country residential with a 1 acre minimum lot size. This is intended to match the County's land use bylaw requirements.

The client is proposing to subdivide the property into 20 lots each being equal to or greater than 1 acre in area. The enclosed conceptual plan, survey data, engineering analysis, and architectural controls are designed to assure a quality subdivision.

2 PLANS AND DRAWINGS

In order to illustrate the location of the property, site drainage, and the proposed subdivision layout, seven figures have been prepared. The figures are provided in Appendix A and are as follows:

1. Location map
2. Contour map of subject property
3. Conceptual site plan of subdivision
4. Water tie into existing services
5. Existing north-south profiles
6. Existing east-west profiles 1
7. Existing east west profiles 2

These maps are conceptual in nature and to be used for planning purposes only. Upon ASP acceptance design drawing and plans will be prepared and submitted for review.

3 SERVICING

3.1 Sanitary Sewer System

Sanitary sewage will be handled individually on each lot with a private sewage disposal system. The soil characteristics, as detailed in the Geotechnical Evaluation of slope stability Report (Refer to Appendix B; EBA 2008), verifies the suitability of the soil for this type of a disposal system and supplies the base design criterion for the required septic fields. All septic designs must comply with the criteria set forth in Appendix B and County and Alberta Environment Criteria. AENV requirements indicate that the soil within the septic field foot print must be tested in two locations prior to installation.

3.1.1 Septic Systems

Five boreholes were advanced and percolation test performed on site (refer to Figure 2 and Appendix B for locations). The observed soil type was sandy, silty, stiff, brown plastic clay. The percolation results are shown in Table 1.

Table 1: Percolation Test Results

Percolation test location	Results (min/cm)	Safety Codes Council acceptable values (min/cm)
P001	3	2 - 25
P002	3	2 - 25
P003	10	2 - 25
P004	10	2 - 25
P005	15	2 - 25

These results indicate that the surface soils in this area generally satisfy Safety Code design standards (*Alberta Private Sewage System Hand Book).*

EBA also verified the depth to groundwater which cannot be within 1.5 meters below the septic field. The test holes were advanced to a depth of 3 m and no groundwater was observed in any of the holes. This indicates the water table is at levels conforming to the Alberta private sewage standards.

There will be no requirements for a sewer system since all treatment will occur within each lot.

3.2 Water System

The developer will provide a water main for water delivery to the property line of each lot within the development. This water system will be for potable water.

3.2.1 Potable Water

The source of water will be Monarch Shared Water Users Co-op. The access point to the Co-Op line location is shown on Figure 1 and 4. Bluestone Developments has purchased 60 water shares from the Coop (refer to attachment). There is adequate supply in the water system to supply water to the 20 lots proposed in this development.

The developer will provide a water main for water delivery to each lot within the development. Since the water supply line is low pressure and called a "drip system" onsite storage will be required to support fire flows and daily residential usage. As a result, Residents will use cisterns and pumps on their property to store water adequate water supply and provide pressure to their homes. The water to the Coop line is fed from the City of Lethbridge infrastructure and is already treated.

The developer will provide a 150 mm main from the water Coop turn out to the water line servicing the development as shown on Figure 3 and 4. The water main will also feed the lagoon designate to store water to support fire flow. The water distribution system within the development will be designed with 150 mm water mains to accommodate pressure flow if that service ever became available to the development. The water lines will be installed to meet County, City of Lethbridge and AENV standard.

3.2.2 Fire Protection & Landscape Water

The developer will ensure fire protection capability is provided for the property. This water will be provided from a water lagoon located onsite, as shown in Figure 3. The lagoon will be equipped with a County approved and properly designed dry hydrants that pull from the bottom of the lagoon. Separate water lines will be provided to service the two hydrants proposed for the development (refer to Figure 3)

The lagoon has been designed to accommodate 2-hr fire at a flow rate of 2000 lpm. The lagoon will hold a minimum of 350,000 l with a minimum depth of 3.5 m (refer to Figure 3). The lagoon will be properly fenced.

Landscape water will be provided through the Coop water shares. This will also allow the water to be used for irrigation and to water the lots.

3.3 Gas

ATCO will supply natural gas to the development. The existing line is located south of the property (refer to Figure 4) and has sufficient pressure for the subdivision. The developer will bring natural gas to each property line.

3.4 Electrical Power

Fortis will provide services to the proposed subdivision and underground services to each property line. An overhead power service is located south of the property and is shown on Figure 4.

3.5 Telephone

Telus will provide services to the lots, but each individual owner must apply for the service when building. There is an existing service in County road east of the property but it is not adequate in size to service 20 homes. An additional line will be required to allow for adequate service.

4 ROADS

Access to all lots will be from a new road created within the development (refer to Figure 3). The road onsite will meet County of Lethbridge No. 26 design criteria and will have a 20 meter right of way. Minimal area disturbance and natural drainage will be emphasized. The road surface will be paved with sides seeded to grass. The roadway will be adequate in width to accommodate local traffic and meet County requirements. An example of a design cross-section is included in Figure 4.

Each lot will have direct access, with culverts being the responsibility of each property owner. The road will be paved but there will be no curb and gutter but ditches on each side of the road. A cross-section of the proposed road structure is shown in Figure 4. In addition EBA has proposed Street sub grade preparation criteria to be used in road design (refer to Appendix B).

The developer also may propose to add surface pavement to County Range Road 22-5 from the entrance of this development to the intersection with Highway 509. This may not occur until after the development is mostly complete and more information on road design requirements will be reviewed prior to making the final decisions as to when and if this will occur. All design and construction will conform to County Standards and requirements.

5 SITE DRAINAGE AND GRADING

As can be seen in Figure 2, according to area topography information, the drainage on the site generally flows towards the northwest corner. All drainage onsite must conform to County, and Alberta Environmental requirements. Documents referred to when completing this analysis included the Alberta Environment Storm Water Management Guidelines (1999). This document also includes descriptions of Best Management Practices (BMPs) which are used to mitigate peak runoff values over the entire development and to minimize the need for centralized mitigation measures such wet ponds and dry ponds.

5.1 Site Drainage Results

A detailed drainage analysis was performed on this property to compare pre and post development surface runoff. Detailed results of the surface runoff analysis are provided in Appendix C.

This analysis was conducted using the "TR-55 Urban Hydrology for Small Watersheds" which is a model approved by AENV. Based on these results there should not be an increase in peak flow from pre to post development. Although this development is expected to result in approximately 20% impermeable surface, the overall peak runoff flow is mitigated due to increased flow paths, lowered grade on the lots as compared to pre-existing slopes, maintaining ditch grade at 1% or less and storage in the ditch system. Based on this analysis it appears that there is no need to create a retention pond.

As a precautionary measure, runoff from this development will also be chanelled to an existing storm pond located at the bottom of the coulee This pond was utilized for storm water retention during gravel mining activities.

5.2 Grading and Best Management Practices

Since the proposed land use is country residential, impact to the existing land will be kept to a minimum. As a result, grading will be kept to a minimum on this property. All developed areas with impermeable surfaces (or concentrated flows) and from the back edge of the house to the front of the lot, must be designed to flow toward the proposed road right of way. Areas of the back yards that are permeable and do not yield concentrated flows may be allowed to flow to the coulee crest. In addition, driveways designed to access the lots must be designed with a swale or culvert that will not restrict storm water flow in the ditch. Culverts must be properly designed by an engineer and will be constructed of reinforce concrete.

The following BMPs will also be implemented to minimize peak runoff from the property and to keep water quality of runoff within acceptable parameters.

1. Grading within 4 m of a structure must be at least 2% grade away from the structure.
2. All flow from developed areas where concentrated flow occurs (from the back of the house to the front of lot) must be designed to flow to the road right of way at a grade of no greater than 2%.
3. The slope of the road ditch is to be kept below 1%
4. The ditch system and discharge point is to be designed to allow for the storage of 1280 m3 of storm water during a large storm event

6 SOLID WASTE DISPOSAL

As part of the codes and covenants of the subdivision, regular trash disposal will be a requirement.

7 GEOTECHNICAL TESTING AND SLOP STABILITY

Geotechnical testing was conducted by EBA Engineers and Consultants. They also evaluated the soil for slope stability purposes. An overview of their results is presented in this section and the detailed report included in Appendix B.

The allowable development setback line is shown on Figure 3. This safe setback is also used as the property lines for lots adjacent the Coulee. The detailed results of the analysis are shown in Appendix B. The City of Lethbridge has completed extensive studies on slope stability adjacent the Oldman River Coulee. This work is summarized in the River Valley Area Redevelopment Plan (RVARP). EBA used this criteria in completing the analysis for this site.

Also included in the Geotechnical report are design considerations (as related to soil testing) for:

1. Shallow foundation design
2. Slab on grade design
3. Excavation and trenching backfill design
4. Concrete type and surface work
5. Frost protection
6. Seismic design

When preparing the design of the subdivision, these criteria are to be followed and EBA or Hasegawa to be consulted when appropriate.

8 ARCHITECTURAL CONTROLS

The following controls are designed to ensure an aesthetically pleasing environment. The intent is to create the subdivision such that it enhances the natural beauty of its surroundings. The following criteria will apply:

1. Earth tones and/or neutral colors, as determined by the Development Officer, are to be used on all physical structures.
2. Wire fences, chain link excepted, are not permitted.
3. Fences in front yards of residences need to be limited to one metre in height or less.
4. Each residence is to be a minimum of 1500 square feet on the main floor and is to be constructed on site. Mobile homes are not permitted.
5. Each property owner is to be responsible for upkeep of utility right-of-way along property frontage.

APPENDIX A

FIGURES

Notes:

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Contractor to check and verify all dimensions before construction, any errors and omissions reported to Engineer immediately.

Drawing not to be used for construction until so approved.

Do not scale Drawing.

All construction shall be in accordance with the latest code, may it be construction, mechanical, etc., code.

No.	Revision	Date	By

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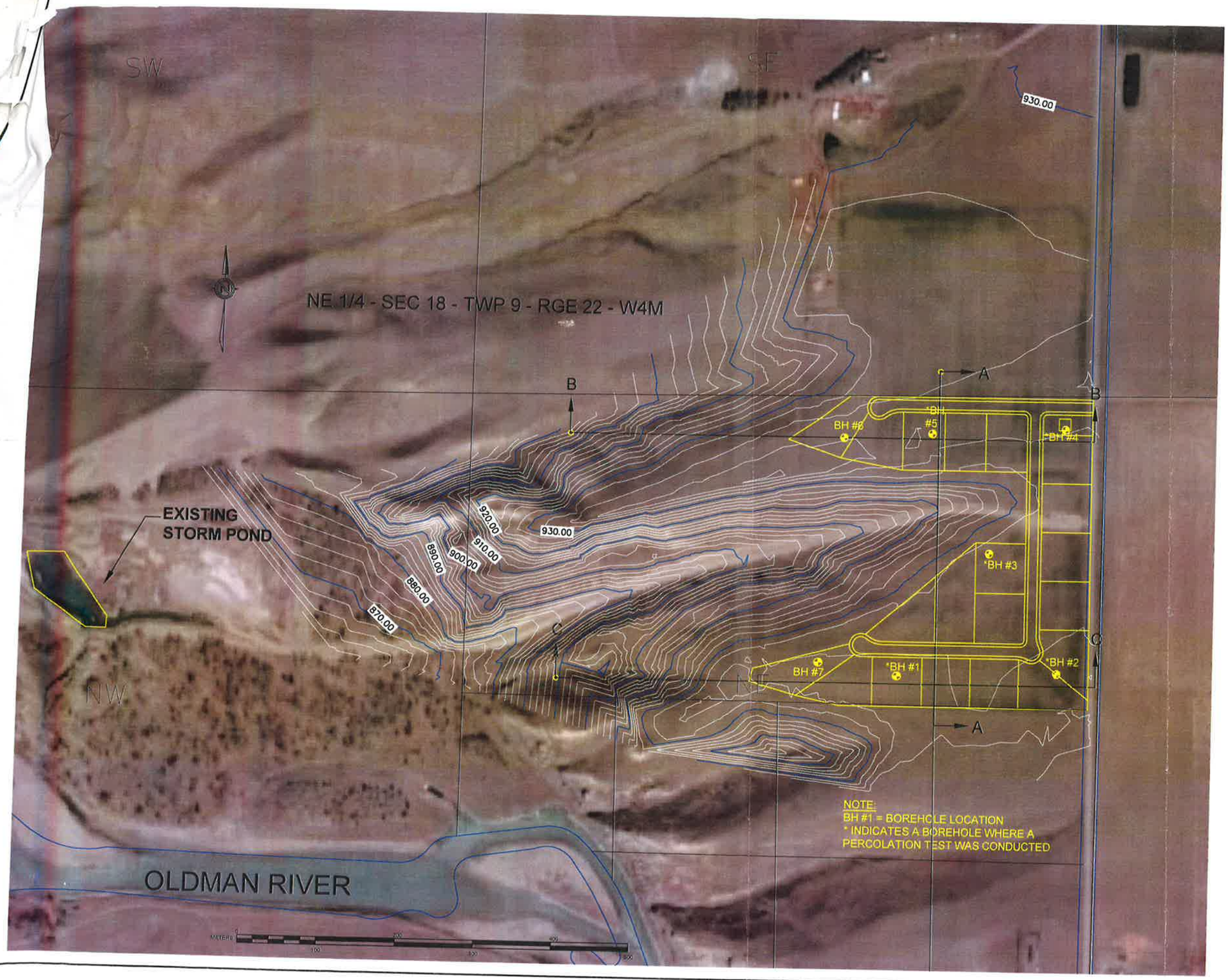
CLIENT
BLUESTONE DEVELOPMENTS

PROJECT TITLE
SEILLER ESTATES

DRAWING TITLE
AREA MAP

DESIGN: HE	PROJECT NO: 07295
DRAWN: DPB	SCALE: 1:1000
CHECKED: HE	DWG. NO: FIGURE 1
APPROVED: HE	
DATE DRAWN: FEB4.08	



PROFESSIONAL ENGINEER ALBERTA
G. HASEGAWA

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CLIENT
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PROJECT TITLE
SEILLER ESTATES

DRAWING TITLE
EXISTING SITE CONTOURS

DESIGN HE	PROJECT NO 07295
DRAWN DPB	SCALE 1:5000
CHECKED HE	DRAWING NO FIGURE 2
APPROVED HE	
DATE FEB4,08	