

COUNTY OF LETHBRIDGE
IN THE PROVINCE OF ALBERTA

BY-LAW NO. 1362

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

WHEREAS Stewart Weir Engineering on behalf of Edgewood Stables Ltd. wishes to develop a country residential subdivision on Block 1, Plan 9912364 located in the S.W. ¼ of Section 29, Township 9, Range 21, and West of the Fourth Meridian;

AND WHEREAS the County's Municipal Development Plan requires that developers prepare an Area Structure Plan to ensure sound development occurs;

AND WHEREAS the Municipal Development Plan also suggests country residential areas be located on poor quality farm land and adjacent to geotechnical sound coulee edges;

AND WHEREAS the landowner/developer has submitted the "Edgewood Stables Area Structure Plan" which contains engineering, survey and geotechnical information to support above conditions;

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

GIVEN first reading this 24th day of January, 2011.



Reeve


County Manager

GIVEN second reading this 17th day of March, 2011.



Reeve


County Manager

GIVEN third reading this 21st day of April, 2011.



Reeve


County Manager



Edgewood Stables

Area Structure Plan

Bylaw No. 1362
County of Lethbridge
Portion SW 29-9-21 W4M

Prepared For: Edgewood Stables

Prepared By: Stewart Weir

Our File No: LB35 33737

Date: April 11, 2011

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1.0 INTRODUCTION

1.1 Plan Purpose

The Area Structure Plan (ASP) is intended to provide the framework to establish the transition of the poor agricultural lands currently designated Lethbridge Urban Fringe to Grouped Country Residential use. This ASP will provide development and implementation guidelines and a framework for the Developer to efficiently and, in an environmentally responsible manner, create a new Country Residential Subdivision.

This ASP provides a framework for the development of a parcel of land in the County of Lethbridge located in the SW 29-9-21 W4M, being legally described as Lot 9, Block 1, Plan 991 2364. The ASP will guide land use and infrastructure development of the subject site, facilitate the protection of the portion of the plan area adjacent to tributary coulee valleys to the north, and demonstrate the way in which new development will integrate into the surrounding land use. The ASP will also contain a conceptual subdivision design for the plan area in accordance with the County of Lethbridge standards.

The Area Structure Plan has been prepared in accordance with the provisions of Section 633 of the Municipal Government Act, which states the following:

Area structure plan

“633(1) For the purpose of providing a framework for subsequent subdivision and development of an area of land, a council may by bylaw adopt an area structure plan.

(2) An area structure plan

(a) must describe

(i) the sequence of development proposed for the area,

(ii) the land uses proposed for the area, either generally or with respect to specific parts of the area,

(iii) the density of population proposed for the area either generally or with specific parts of the area, and

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(iv) *the general location of major transportation routes and public utilities,*

and

(b) *may contain any other matters the council considers necessary.”*

1.2 Plan Vision and Objectives

1.2.1 Vision

Vision Statement: To provide a high quality grouped country residential development within the County of Lethbridge striking a balance between existing land uses, recreational pursuits and protection of the environment and which is in line with similar developments in place in the two parcels of land to the north.

1.2.2 ASP Objectives

- Maintain or enhance the quality of life within and adjacent to the ASP area,
- Provide mechanisms to ensure the quality of surface and groundwater is not impacted by the proposed development,
- Minimize the impacts on neighbouring properties and the community at large.

1.3 Plan Area

The ASP applies to a portion of the SW 29-9-21 W4M, legally described as Lot 9, Block 1, Plan 991 2364, which is located in the south western region of the County of Lethbridge, immediately north of the City of Lethbridge boundary. The subject lands are contained in a single Certificate of Title containing ± 15.95 hectares (39.41 Acres). The location is highlighted in Figure 01.

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Figure 1 - Project Area

The ASP area is primarily a rural agricultural landscape with small land holdings. The site is bounded by The City of Lethbridge corporate limits to the south, tributary coulee valleys of the Oldman River to the North and West and farmed agricultural land to the east. Country Residential subdivisions are located to the north of the proposed development. Road access to the site is available from Township Road 94 and Range Road 214A. Figure 02 illustrates the plan area's local context.

2.0 EXISTING CONDITIONS

2.1 Surface Geology and Topography

The proposed Edgewood Stables development is bounded on the north by tributary coulee valleys, comprising the Old Man River Valley; to the south by municipal Township Road 94; to the east by municipal Range Road 214A and

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to the west by a local gravel access road. The existing site supports prairie grasses with an overall gradient towards the coulee valleys.

The lands are primarily vacant agricultural with a number of tree stands in the coulees. The predominant land use in the surrounding area is agricultural, interspersed with pockets of country residential developments. The landform is gently rolling pasture characterized by minor depressions and hollows.

The plan area drains to the North into the Oldman River valley. Minor depressions and hollows pond small amounts of water, but ultimately drain into the surface soils. This soil is reported to have very rapid permeability rates. The geotechnical report did not indicate a high water table in this area.

The area south of the top of the coulee bank has no environmental, topographical, or physical constraints that would inhibit the proposed use of these lands for residential purposes. The lands lying north of the development setback line (as determined by the Development Setback Assessment – Appendix A) will be protected from development impact by dedicating the lands as Municipal Reserve (MR) and Environmental Reserve (ER).

The Development Setback Assessment, completed by EBA Engineering Consultants of Lethbridge, concluded that a setback of 4H:1V (4 metres horizontal distance to 1 metre vertical difference) would be appropriate for this site. This restriction takes into account the recommendations of the City of Lethbridge Bylaw #5277, specifically with regards to translational failures along the top of the Lenzie Silts deposit. This assumed failure line extends from the contact elevation at the slope face to the existing ground surface at prairie level.

A second factor would require a minimum setback distance of 6 metres from the Top of Bank to protect developed property from shallow crest failures. The contact elevation of the Lenzie Silts deposit has been taken by EBA as elevation 875.0 m. This contact elevation is based on published data from the AMEC report conducted as part of the development of City Bylaw #5277.

Based on the various aspects of the slope stability analysis conducted for the development, a development setback line using the minimum requirements of Bylaw #5277 was recommended. This setback line was established by extending a 4H:1V line from topographic elevation 875 m. Where this line extends less than 6.0m from the Top of Bank, the minimum recommended setback distance is 6.0 m.

The EBA report also provided recommended development guidelines for the area within the Development Setback line which are consistent with an Environmental and Municipal Reserve dedication.

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Figure 04 depicts the topography of the plan area and shows the established Development Setback line.

2.2 Existing Land Use

The existing Land Use Area is zoned as Lethbridge Urban Fringe (LUF). The ASP area is covered with prairie grasses and slopes toward the coulee valleys to the north/north west. The western portion of the site is currently in use as a boarding stable whereas the eastern portion is currently used for pasture and is vacant, except for the dugout located on the south central portion of the property.

The proposed development will be developed in a single phase with the existing stable and out-buildings in the western portion of the site left as one large lot.

2.3 Existing Services and Utilities

There is a local water line supplying potable water from the City of Lethbridge owned by the County of Lethbridge Rural Water Association Ltd. near the development area. The water line runs parallel to Range Road 214A just east of the subdivision.

There currently is no regional municipal sanitary service in the area. Local wastewater is disposed via septic tanks and septic fields or mound systems.

The development area is bounded by gravel roadways on the south by Township Road 94 and on the east by Range Road 214A. Range Road 214A is paralleled by a gas pipeline and waterline to the east of the road.

The site is bisected by two gas pipeline right-of-ways. A high pressure gas line (GL 32 AP) owned by ATCO Pipelines and a low pressure gas pipeline (2602IC) owned by ATCO Gas bisect the development area. ATCO has no plans to move the gas lines and the setbacks and restrictions associated with the existence of these lines have been incorporated into the conceptual plan for the lot design.

A low pressure gas service line owned by ATCO Gas services the existing facilities located in the western portion of the site.

Regional storm water is managed through the use of open drainage ditches adjacent to municipal roads.

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2.4 County of Lethbridge Policy Framework

2.4.1 Municipal Development Plan

The County of Lethbridge Municipal Development Plan's (MDP) Special Planning Areas map shows the plan area as "Area B". The MDP identifies Area B as being well suited to highway service type development. The MDP also states, "Land uses other than agricultural may be considered if conditions can be demonstrated that altering the land use is a sound consideration". The proposed Isolated Country Residential development proposed is a logical use for this area and would serve to complement similar developments to the north.

2.4.2 County of Lethbridge Municipal Development Plan

According to Section 6.3.3 (c) I of The County of Lethbridge MDP:

"The County shall encourage the design of residential areas that provide open space and incorporate natural areas while minimizing fragmentation and safeguarding the environmental sustainability of the area under development".

This proposed development of 14 lots, comprised of 1 Public Utility Lot, one MR lot, one ER lot and 11 residential lots, varying in size from 0.7 ha (1.73 Acres) to 4.7 hectares (11.61 Acres), along with the preservation of the natural state of the coulees and areas contained within the Development Setback line, would satisfy the MDP.

2.4.3 Land Use Bylaw

The County of Lethbridge Land Use Bylaw (LUB) shows the subject site districted as LUF.

The LUB states:

"Grouped country residential uses will be encouraged to locate within the areas shown in the municipal development plan as being areas where confined feeding operations are restricted. In these areas, with an approved area structure plan, council may redesignate parcels of land having consideration for:

- (i) protection of high quality agricultural land,*
- (ii) comments from affected persons,*
- (iii) effects on the irrigation system."*

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Site suitable testing is required before subdivision approval and includes but is not limited to water supply, water table levels, percolation rates, contours, environmental impact assessments and review of past mining activities. The Land Use By-law states that the minimum parcel size is 0.40 ha (1 acre).

2.4.4 Intermunicipal Development Plan (County Bylaw #1254)

As this development is directly adjacent to the limits of the City of Lethbridge and thus falls within the boundaries of the Intermunicipal Development Plan, comments from the City of Lethbridge have been taken into account.

2.5 Issues Arising From Public Process

2.5.1 Public Hearing

The public hearing for the Edgewood Stables development was held March 17, 2011 in the County of Lethbridge council chambers. The public hearing was attended by approximately 30 local residents, the developer and representatives from Stewart Weir & Co Ltd. Comments from the public hearing are summarized below:

- Residents to the west expressed concerns with the density of the proposed subdivision.
- One resident to the west would prefer not to have a subdivision opposite their driveway.
- All residents expressed the need for architectural controls.

3.0 DEVELOPMENT CONCEPT

3.1 Plan Goals

The goals of this Area Structure Plan are as follows:

1. To provide a detailed framework for future development within the plan boundaries that is consistent with the objectives outlined in the County of Lethbridge Municipal Development Plan.
2. To ensure that development is compatible with existing land uses.
3. To provide efficient and economically feasible servicing options for the plan area.
4. To maintain a safe development setback from the coulee valley.

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3.2 Land use Concepts

The concept for the plan area is residential rural estate development with a net density of 1 unit per 1.13 hectare. The MR dedication would amount to approximately 16% which exceeds the MGA requirement of 10%.

The proposed development consists of 14 lots, comprised of one Public Utility Lot, one MR lot, one ER lot and 11 residential lots.

Each residential lot meets the bylaw's minimum requirement of 1 acre of developable area.

4.0 POLICY

4.1 Environment

The adjacent coulee valley is tributary to the Oldman River and will be carefully protected throughout the development of the plan area. A Development Setback Assessment conducted by EBA Engineering Consultants Ltd. provided a recommended development setback from the top of bank based on site reconnaissance, stability analysis and assumed post-development groundwater conditions. The area between the coulees and the Development Setback line will be protected through the dedication of an Environmental Reserve (ER) and a Municipal Reserve (MR), which will restrict the use and development of those areas. The County will assume ownership of the Reserve lands.

4.2 Residential

The plan area is generally a rural, agricultural landscape with some similar country residential developments to the north. The current policies, provisions and regulations of the Municipal Development Plan and Land Use Bylaw will apply to the proposed country residential subdivision.

4.3 Municipal Reserve

The developer is prepared to dedicate the lands between the development setback line and the top of bank as Municipal Reserve (MR). The vision for the MR is as a link between the river valley trails in Pavan Park and the areas to the north and east of the development. The proposed trails would be located to the north of the City of Lethbridge's cemetery located in the NE ¼ Sec. 19-9-21 W4M. This link would provide a safe route for recreational users to gain access to the river valley and the Park. See Figure 7.

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4.4 Environment Reserve

The area between the top of bank and the coulees will be protected through the dedication of the lands as ER.

4.5 Roadways

The nearest provincial highway to the development area is Secondary Highway 843 located approximately 3.3 km east of the development.

The primary access to the subdivision will be from Range Road 214A and 13th Street North. Both accesses are gravel surfaces. No off-site improvements to the County owned roads are anticipated. The internal road will require asphalt surfacing, to be provided at the developer's expense. Where possible, the developer will provide shared approaches for those parcels gaining access from the County roads.

4.6 Potable Water

County of Lethbridge Rural Water Association Ltd. (CLRWA) has a rural potable water distribution line running parallel to Range Road 214A. The developer has placed a deposit to ensure service from the CLRWA and provide priority to the development when allocating resources within the CLRWA's water license.

If the CLRWA has insufficient capacity to provide water service to the Edgewood Stables development water will be the responsibility of the individual lot owners to have potable water provided by truck haul to private cisterns located within each property.

4.7 Wastewater

A site assessment was performed by means of a geotechnical investigation. Soil samples were collected for laboratory testing. The results from the site assessment and soil sample tests support on-site sewage treatment by private on site sewage treatment mound systems. See Appendix B.

The means of selecting an on site sewer system will be in accordance with "Alberta Private Sewage Systems Standard of Practice 2009". The sewer systems will be engineered to meet these standards. Based on the soil logs collected and defined within the soils investigation report, the site has mixed soil compositions. Half of the test pits indicated soils classified as heavy clay; the remainder of the test holes indicated marginal

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conformance with Safety Codes Council 2009 Handbook for design and construction of septic disposal fields. In general terms site specific soil testing would be required to support in-field septic systems at time of construction or an alternative means of providing a disposal field is adopted, such as a septic field mound system.

Treatment mounds are an effective method in difficult soil conditions such as too fast or too slow soil percolation rates. The percolation rate for the plan area is 0.53 minutes per 25mm (1 inch). According to the “Alberta Private Sewage Systems Standard of Practice 2009” handbook a percolation rate in the range of 5 to 60 minutes per 25mm (1 inch) is necessary for the proper operation and long term success of a disposal field. Therefore a treatment mound for the plan area will be a viable method of effluent treatment and disposal. Despite the clay content the site is heavily dispersed with large rock lenses which aid in the drainage and dispersal of surface water.

A sewage treatment mound is a seepage bed elevated by clean sand fill to provide an adequate separation distance between the clay and rock layer in the mound and the barrier layer such as saturated soil conditions or bedrock. The mound must be carefully constructed to provide adequate sewage treatment. A treatment mound includes a layer of specifically graded, clean sand that the effluent is spread over then slowly percolates through as more effluent is applied. This provides an excellent aerobic environment for the removal of organic loading in the sewage effluent. It operates similar to a sand filter in removing the organic loading.

Once the organic loading has been removed by the sand layer, higher long term infiltration rates into the soil can be achieved. The sand layer is overlain with gravel or chambers to assist in the distribution of the effluent over the entire surface of the sand layer and provide a brief storage area for the effluent as it is pumped onto the mound. This is then covered and a side berm created using loamy sand. The covering soil (the loamy sand) must be very porous to assure good aerobic conditions in the sand layer.

4.8 Storm Water Management

4.8.1 Existing Drainage

Contours generated from the site topographic survey indicate natural drainage toward the North West of the site, draining into the coulee valley. Existing ground slope varies from 1.5% to 8.0%.

Figure 05 shows existing surface drainage paths within and around the proposed subdivision.

4.8.2 Proposed Storm Water Management

Overview

The County of Lethbridge Engineering Guidelines and Minimum Servicing Standards (May, 2009) requires new development areas to be designed using the major/minor system concept, and shall be of sufficient capacity to carry storm runoff from the ultimate development.

Minor System

In general, a minor system is designed for drainage to accommodate the runoff, which would occur in relative frequent (e.g. 1:5 year) return period rainfall events and snowmelt during spring season. More specifically, the minor system is typically applied to the buried drainage network of local and trunk sewers, inlets and street gutters, which have traditionally provided conveyance of storm water runoff from road surface.

Major System

The major system is designed to control flooding and to accommodate runoff rates and volumes for a 100-year return period rainfall event. For instance, when the rate of storm runoff generated by less frequent, more intense, rainfall events may exceed the capacity of the minor system, subsequent ponding may occur in depression areas or follow whatever overflow escape route is available.

Runoff Control

The increased rate of runoff can usually be controlled by means of stormwater retention facilities that temporarily hold the excess runoff and release it at a controlled rate. Normally, the form of runoff control includes:

- Catchbasin inlet control
- Detention/Retention pond
- Infiltration areas

Wet or dry retention ponds are the most commonly used for runoff control. They are used for temporary storage of excess runoff which is released at a pre-defined rate. In less frequent cases where discharge is not feasible, a retention facility is constructed, where evaporation and infiltration maintain water levels.

We propose to utilize a wet pond system constructed for storage of stormwater runoff, to provide the added benefit of sediment settling and reduction of organic contaminants. Dry ponds only retain storm water during the actual rainfall event and are not considered to provide treatment benefits. As the configuration requirements for dry ponds tend to be less restrictive than those for wet ponds, the dry pond storage concept can be applied in a very linear form, such as natural or manmade channel.

Design Considerations

The majority of surface runoff will be captured and directed to the proposed detention pond located in the low lying terrain, in the northwest corner of the proposed subdivision. This facility would be designed to accommodate current drainage patterns and the intention of improving quality of storm water effluent before it discharges into Oldman River.

The proposed detention pond will centralize the collection of storm water and be designed to have adequate water available for fire protection. The proposed location will be accessible to emergency vehicles serving the proposed subdivision as well as future development.

Since this is only a preliminary conceptual study other concerns should be included for Municipal Reserves (MR), Environmental Reserves (ER) and flood plain level. All these factors need to be verified and investigated during the detailed design.

Other Considerations

In urban areas without an underground storm water system, road side ditches provide drainage for both the minor and major storm water systems. Comments from the City of Lethbridge indicated that driveway access onto lots have in the past caused issues with ditch drainage. The subdivision will minimize accesses from municipal roads as shown on Figure 3. Culverts under these accesses will be sized correctly to not impede ditch drainage.

4.8.3 Proposed System

Storm drainage system for the proposed subdivision will incorporate the concept as outlined previously. Individual lots will be graded for positive drainage into the roadside ditches/municipal reserve. Lot grading design will prevent any lot to lot drainage. Due to the natural gradient the proposed layout favors walk out basement developments. Split lot drainage will be incorporated into the design. There will be controlled drainage from driveways and walkways to roadside ditches, and all other areas will follow natural drainage patterns.

A detention pond will be designed to accommodate the 1:100 year storm event and to control discharge from the subdivision to under the allowable limit.

Figure 05 provides the proposed drainage directions and the location of the Storm Pond. Final location and sizing of the pond will be determined during the detailed design phase. It should be noted that the area of the PUL can be adjusted to accommodate an appropriately sized storm pond.

The Storm Water Management Plan has been prepared in accordance with Alberta Environment requirements. At the time of subdivision approval, the developer will obtain any approvals required under the Water Act.

4.8.4 Existing Dugout

It is anticipated that the existing dugout will be filled in prior to the development of Lot 4.

4.9 Fire Protection

The County of Lethbridge Municipal Development Plan (Bylaw #1331) under Section 6.16.3 Policies requires:

Fire Protection – The County shall require an applicant/developer to provide a plan or method for fire protection / suppression, which meets the guidelines set forth in the County Municipal Engineering Guidelines and Minimum Servicing Standards.

4.10 Summary

The following table provides a statistical overview of the area and percentages of gross developable area by land use in the plan area.

Table 4.1 Land Use Area Estimate

Land Use Category	Total (ha)	%
Gross Development Area (GDA)	15.95	100
ER / MR	2.59	16.3
Residential Lots	12.48	78.2
Internal Roadways	0.27	1.7
Storm Ponds (PUL)	0.61	3.8

5.0 IMPLEMENTATION

The re-designation to Group Country Residential was adopted on March 17 under Bylaw 1363. Upon adoption of the Area Structure Plan, the developer will submit an application for subdivision.

5.1 Subdivision and Development

- 5.1.1 All developers shall be required to enter into development agreements with the County as a condition of subdivision approval.
- 5.1.2 Detailed engineering drawings and specifications for roads, water, sanitary sewer, storm sewer, and shallow utilities shall be prepared by the developer and approved by the County prior to executing the development agreement on the subject lands.
- 5.1.3 As the lot sizes and yields identified in this plan are conceptual, a development of 11 residential lots, one Public Utility lot, one MR lot and one ER lot shall be permitted in the plan area without amendment to this ASP.
- 5.1.4 In order to minimize direct access to the County roads, shared access will be provided where possible.
- 5.1.5 All development must meet the County of Lethbridge Engineering Guidelines and Minimum Servicing Standards (May, 2009)

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6.0 ENVIRONMENTAL ASSESSMENT

Approximately 16 hectares of grassed pasture and a previously developed horse stable encompass the plan area. The predominant land use in the surrounding area is agricultural, interspersed with pockets of County residential developments.

The plan area has no sign of surface contamination. There are two gas pipeline right of ways that bisect the property, running from southwest to northeast. One is a high pressure gas line and the other a low pressure line. ATCO Gas has no plans to move the pipelines. Crossing agreements will be required for driveways crossing the pipeline in the east cul-de-sac. No development will be allowed on the right of ways. There are no active well heads, leases, or abandoned leases in the plan area.

7.0 MINIMUM SERVICING STANDARD


The County of Lethbridge Land Use Bylaw No. 1211 for Grouped Country Residential (GCR) states that the minimum parcel size is 0.4 ha (1 acre). The minimum setback for side yards is 6.1 meters (20 ft.) and for front yards is 15.2 meters (50 ft.).

Site suitability testing is required before subdivision approval and includes but is not limited to water supply, water table levels, percolation rates, contours, environmental impact assessment, etc.

8.0 FIRE PROTECTION

Each development must have adequate water available for fire protection. For residential developments the requirement is generally 4000 gallons (15.14 m³) of usable water per household. The plan area of 11 lots will have a requirement of 40,000 gallons (227.10 m³) available for fire protection. In addition to providing the required water (which must be available for use at all times) the developer will be required to provide access to it; this will require the construction of an approach, the installation of one dry fire hydrant. The storm pond will require safety measures such as berms and fencing at the County's discretion. According to the County design guidelines and construction standards for subdivision developments fire protection requirements are to be in accordance with the NFPA 1142. The design of fire pond would also need to be in accordance with Alberta Environment's wet pond standards in the publication entitled "Storm Water Management Guidelines for the Province of Alberta".

Some general design parameters to consider for fire ponds are:



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- a) Maximum 4:1 to 5:1 side slopes above active storage zone
- b) Maximum 5:1 to 7:1 interior side slopes in active storage zone
- c) Maximum 3:1 exterior side slopes
- d) Permanent depth to be a maximum of 3.0m and a minimum of 2.0m
- e) Maximum water level should be below adjacent house basement footings.

Incorporated into the design of the fire pond will be a dry hydrant. A dry hydrant is a non-pressurized pipe system permanently installed in ponds that provide a suction supply of water to a fire department tank truck. In any area without water mains and domestic fire hydrants, the dry hydrant concept can provide a simple cost-effective solution to the need for access to water sources without delay.

9.0 ARCHITECTURAL CONTROLS

Further to concerns expressed at the Public Hearing, the Developer has provided proposed Architectural Controls which are attached as Appendix D.

10.0 CONCLUSION

The proposed site meets with the requirements established in the Municipal Development Plan and Land Use Bylaw of Lethbridge County for the development of a “County Residential” multi-lot subdivision. The site investigation and soils investigation performed indicate the site is suitable for this purpose.

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FIGURES

N.E. 1/4 SEC. 29
9-21-4

29
9-21-4



LOT 1
BLOCK 4
PLAN 951 2579

LOT 2
BLOCK 4
PLAN 991 1484

LOT 3
BLOCK 4
PLAN 991 1484

LOT 1
PLAN 971 0469

LOT 5
BLOCK 1
PLAN 901 0426

LOT 6

LOT 7

LOT 8
BLOCK 1
PLAN 901 0426

S.W. 1/4 SEC. 29
9-21-4

CANADIAN PACIFIC RAILWAY PLAN RY 136

**PROPOSED
DEVELOPMENT
AREA**

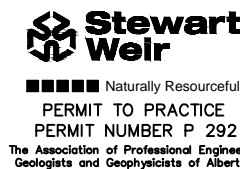
COUNTY OF LETHBRIDGE

CITY OF LETHBRIDGE

ENGINEERING RECORD

DESCRIPTION	INITIALS	DATE
SURVEYED		
DESIGNED		
DRAWN	BP/AES	10/07/28
CHECKED	CP	10/07/28
APP'D BY		
ISSUED FOR CONSTRUCTION		
ISSUED FOR APPROVAL		

CONSULTANT



FILE No.: LB35.33737

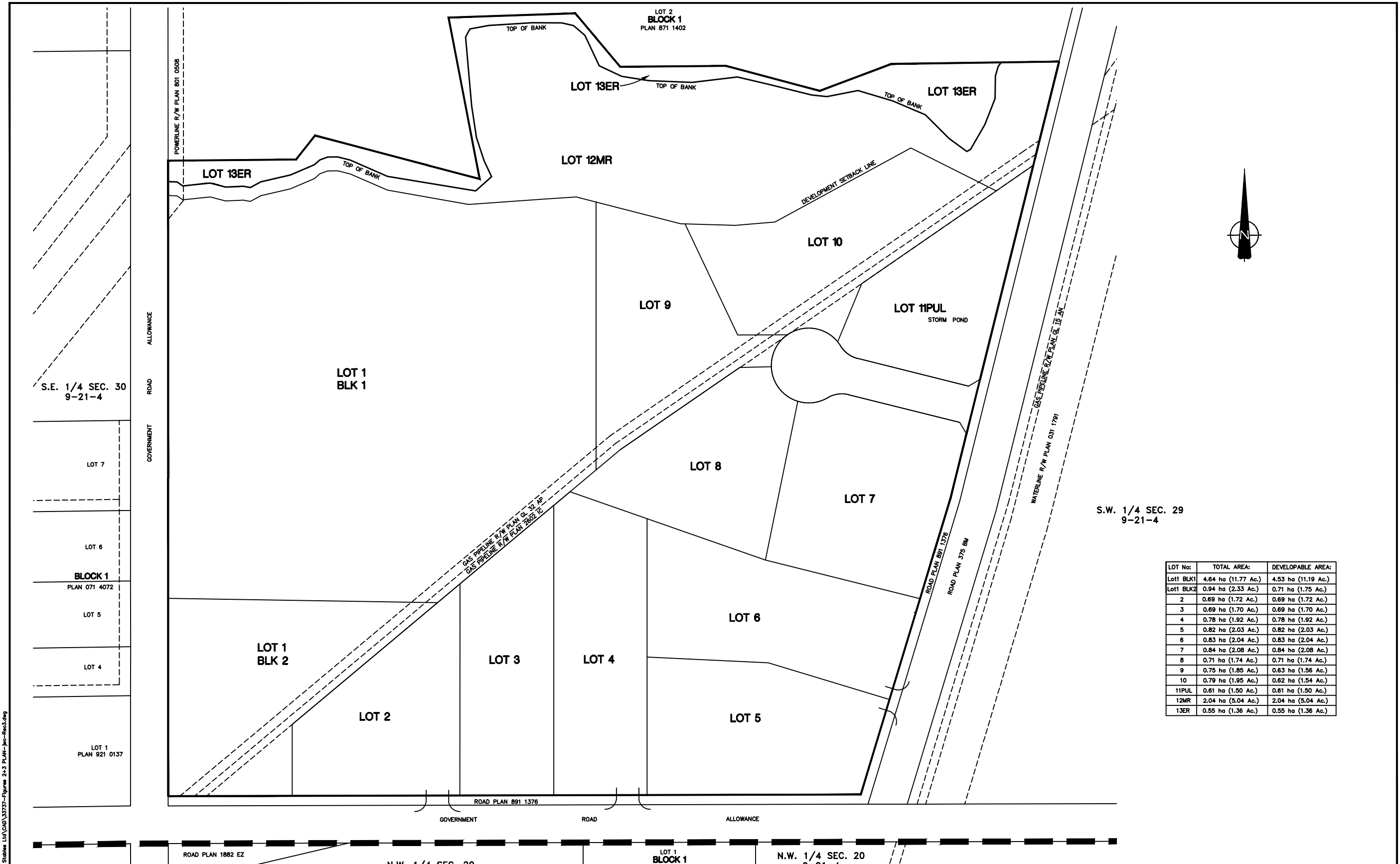
EDGEWOOD STABLES LTD.

OVERALL PLAN
OF
PROPOSED SUBDIVISION AND AREA
LOT 9, BLOCK 1, PLAN 991 2364
(S.W. 1/4 SEC. 29 - TWP. 9 - RGE. 21 - W. 4M.)
COUNTY OF LETHBRIDGE - ALBERTA

SCALE: 1:5000

FIGURE 2

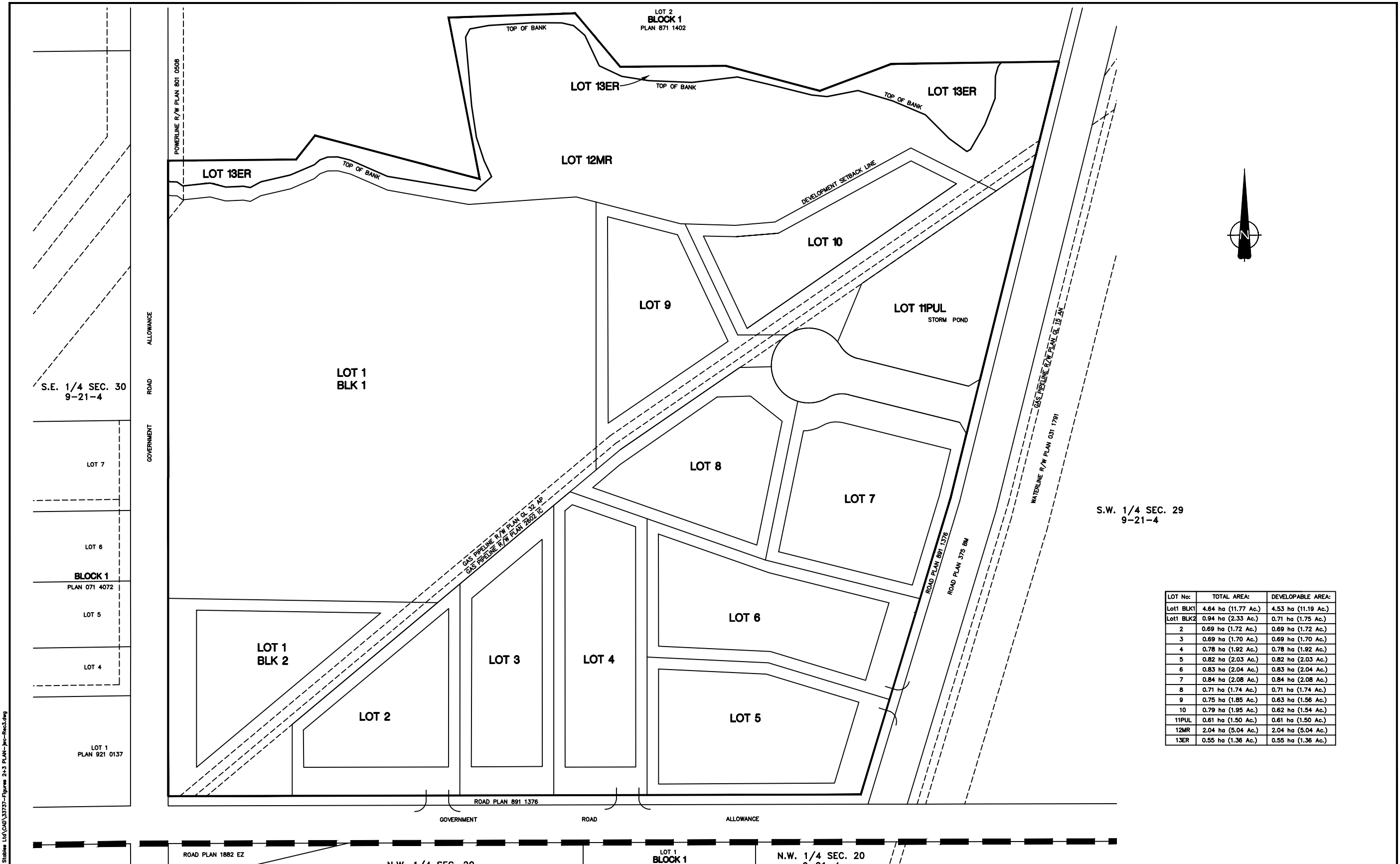
\\P:\eng\l\m\l\33000\33737 - Edgewood Stables L\A\CAD\33737-Figures 2-3 PLAN-jw-Roc3.dwg



LOT No:	TOTAL AREA:	DEVELOPABLE AREA:
Lot1 BLK1	4.64 ha (11.77 Ac.)	4.53 ha (11.19 Ac.)
Lot1 BLK2	0.94 ha (2.33 Ac.)	0.71 ha (1.75 Ac.)
2	0.69 ha (1.72 Ac.)	0.69 ha (1.72 Ac.)
3	0.69 ha (1.70 Ac.)	0.69 ha (1.70 Ac.)
4	0.78 ha (1.92 Ac.)	0.78 ha (1.92 Ac.)
5	0.82 ha (2.03 Ac.)	0.82 ha (2.03 Ac.)
6	0.83 ha (2.04 Ac.)	0.83 ha (2.04 Ac.)
7	0.84 ha (2.08 Ac.)	0.84 ha (2.08 Ac.)
8	0.71 ha (1.74 Ac.)	0.71 ha (1.74 Ac.)
9	0.75 ha (1.85 Ac.)	0.63 ha (1.56 Ac.)
10	0.79 ha (1.95 Ac.)	0.62 ha (1.54 Ac.)
11PUL	0.61 ha (1.50 Ac.)	0.61 ha (1.50 Ac.)
12MR	2.04 ha (5.04 Ac.)	2.04 ha (5.04 Ac.)
13ER	0.55 ha (1.36 Ac.)	0.55 ha (1.36 Ac.)

ENGINEERING RECORD			CONSULTANT		EDGEWOOD STABLES LTD.	
DESCRIPTION	INITIALS	DATE	 Stewart Weir ■■■■■ Naturally Resourceful PERMIT TO PRACTICE PERMIT NUMBER P 292 <small>The Association of Professional Engineers, Geologists and Geophysicists of Alberta</small>		CONCEPT PLAN OF PROPOSED SUBDIVISION LOT 9, BLOCK 1, PLAN 991 2364 (S.W. 1/4 SEC. 29 - TWP. 9 - RGE. 21 - W. 4M.) COUNTY OF LETHBRIDGE - ALBERTA	
SURVEYED						
DESIGNED						
DRAWN	BP/ES	10/07/28				
CHECKED	CP	10/07/28				
APP'D BY						
ISSUED FOR CONSTRUCTION			FILE No.: LB35.33737	SCALE: 1:2000	FIGURE 3	
ISSUED FOR APPROVAL						

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 DATE: November 3, 2010



S.E. 1/4 SEC. 30
9-21-4

LOT 7

LOT 6

BLOCK 1
PLAN 071 4072

LOT 5

LOT 4

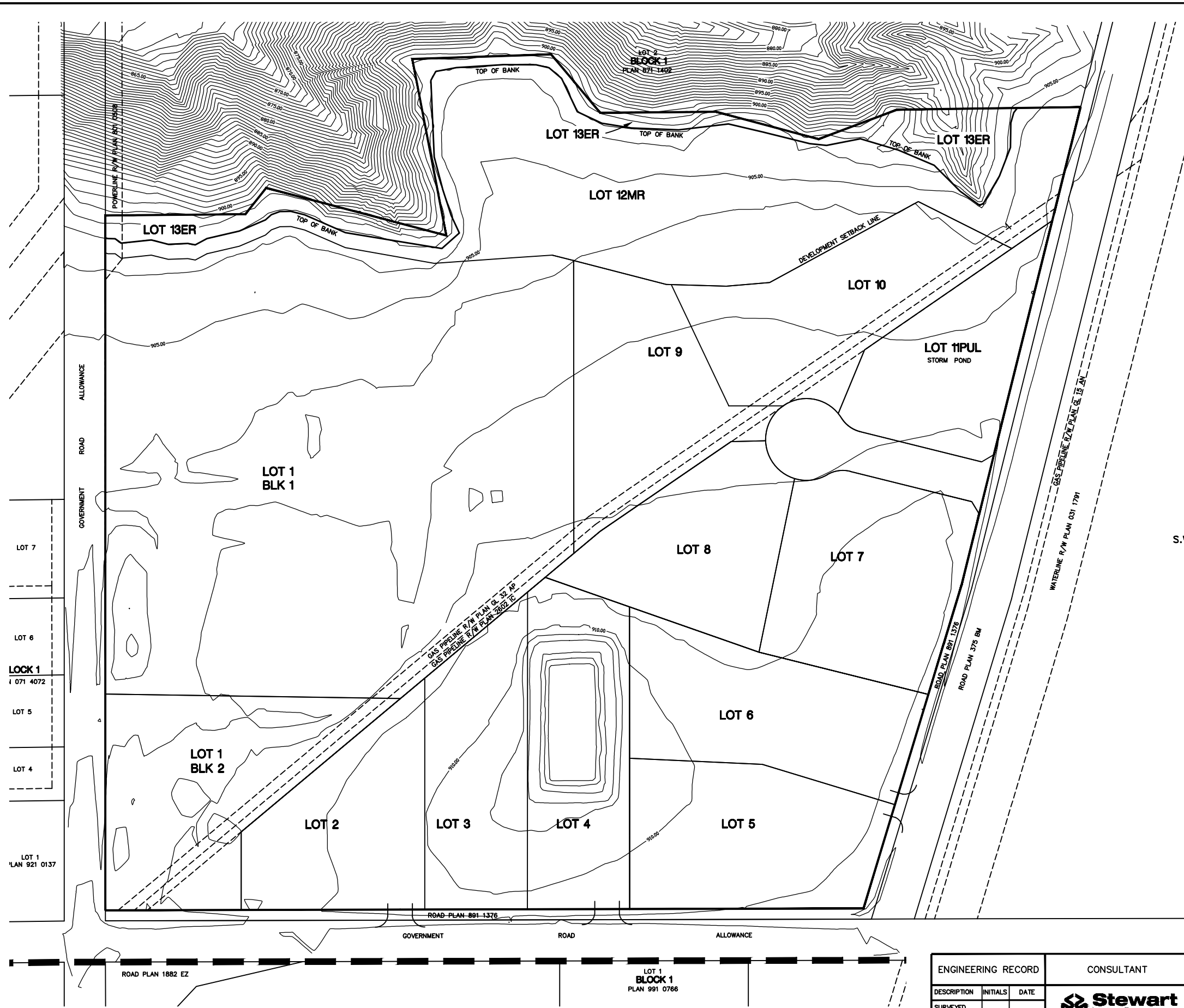
LOT 1
PLAN 921 0137

S.W. 1/4 SEC. 29
9-21-4

LOT No:	TOTAL AREA:	DEVELOPABLE AREA:
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Lot1 BLK2	0.94 ha (2.33 Ac.)	0.71 ha (1.75 Ac.)
2	0.69 ha (1.72 Ac.)	0.69 ha (1.72 Ac.)
3	0.69 ha (1.70 Ac.)	0.69 ha (1.70 Ac.)
4	0.78 ha (1.92 Ac.)	0.78 ha (1.92 Ac.)
5	0.82 ha (2.03 Ac.)	0.82 ha (2.03 Ac.)
6	0.83 ha (2.04 Ac.)	0.83 ha (2.04 Ac.)
7	0.84 ha (2.08 Ac.)	0.84 ha (2.08 Ac.)
8	0.71 ha (1.74 Ac.)	0.71 ha (1.74 Ac.)
9	0.75 ha (1.85 Ac.)	0.63 ha (1.56 Ac.)
10	0.79 ha (1.95 Ac.)	0.62 ha (1.54 Ac.)
11PUL	0.61 ha (1.50 Ac.)	0.61 ha (1.50 Ac.)
12MR	2.04 ha (5.04 Ac.)	2.04 ha (5.04 Ac.)
13ER	0.55 ha (1.36 Ac.)	0.55 ha (1.36 Ac.)

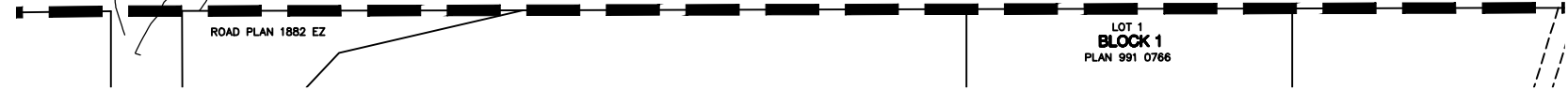
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 DATE: November 3, 2010

ENGINEERING RECORD			CONSULTANT		EDGEWOOD STABLES LTD.	
DESCRIPTION	INITIALS	DATE	 Stewart Weir Naturally Resourceful PERMIT TO PRACTICE PERMIT NUMBER P 292 <small>The Association of Professional Engineers, Geologists and Geophysicists of Alberta</small>		CONCEPT PLAN OF PROPOSED SUBDIVISION LOT 9, BLOCK 1, PLAN 991 2364 (S.W. 1/4 SEC. 29 - TWP. 9 - RGE. 21 - W. 4M.) COUNTY OF LETHBRIDGE - ALBERTA	
SURVEYED						
DESIGNED						
DRAWN	BP/ES	10/07/28				
CHECKED	CP	10/07/28				
APPD BY			FILE No.: LB35.33737		SCALE: 1:2000	
ISSUED FOR CONSTRUCTION					FIGURE 3a	
ISSUED FOR APPROVAL						



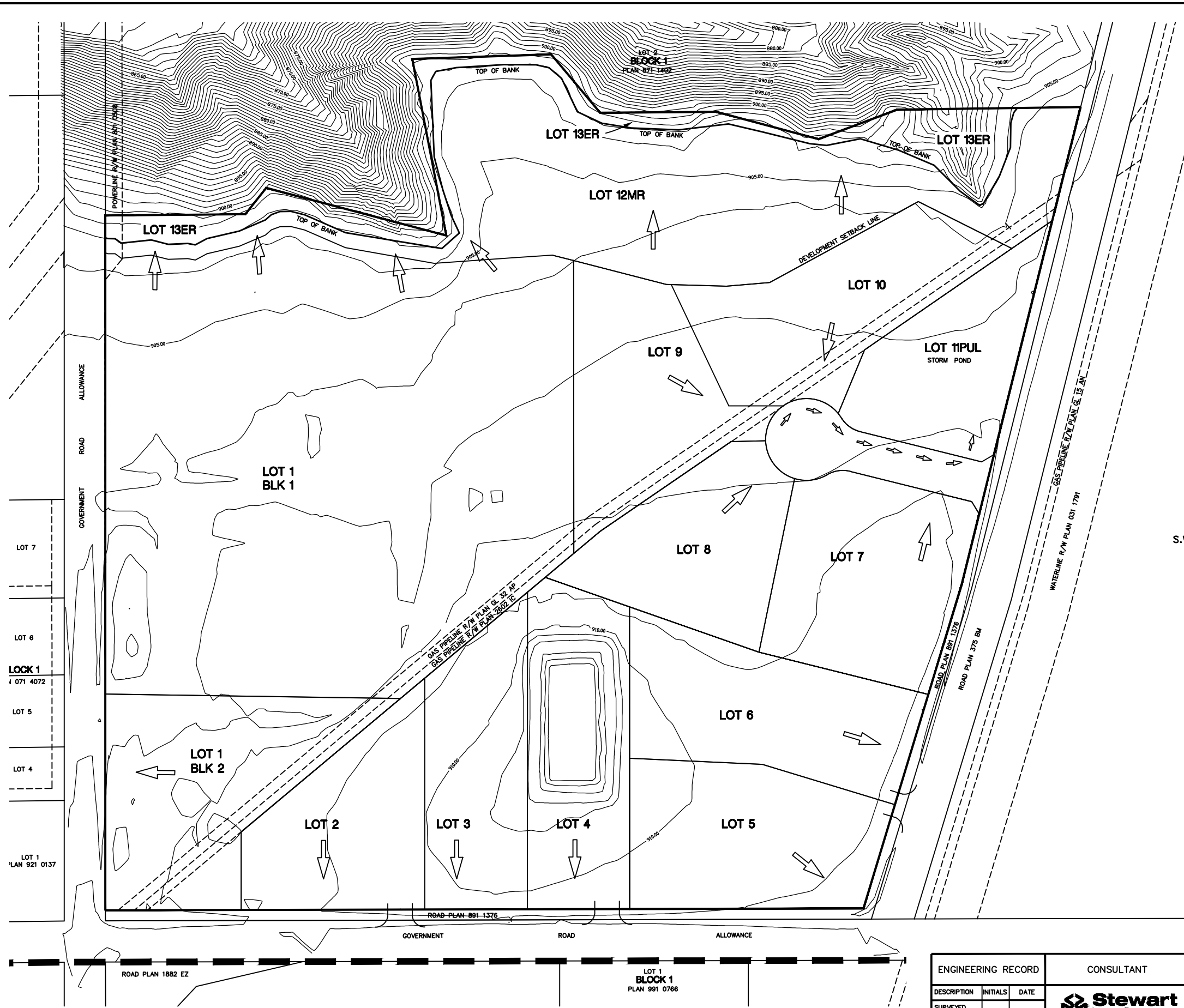
S.W. 1/4 SEC. 29
9-21-4

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 DATE: November 3, 2010

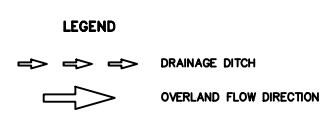


ENGINEERING RECORD			CONSULTANT		EDGEWOOD STABLES LTD.	
DESCRIPTION	INITIALS	DATE	 Stewart Weir Naturally Resourceful PERMIT TO PRACTICE PERMIT NUMBER P 292 <small>The Association of Professional Engineers, Geologists and Geophysicists of Alberta</small>		CONTOUR PLAN SHOWING PROPOSED SUBDIVISION OF LOT 9, BLOCK 1, PLAN 991 2364 (S.W. 1/4 SEC. 29 - TWP. 9 - RGE. 21 - W. 4M.) COUNTY OF LETHBRIDGE - ALBERTA	
SURVEYED						
DESIGNED						
DRAWN	BP/AES	10/07/28				
CHECKED	CP	10/07/28				
APP'D BY			FILE No.: LB35.33737		SCALE: 1:2000	FIGURE 4
ISSUED FOR CONSTRUCTION						
ISSUED FOR APPROVAL						

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 DATE: November 3, 2010

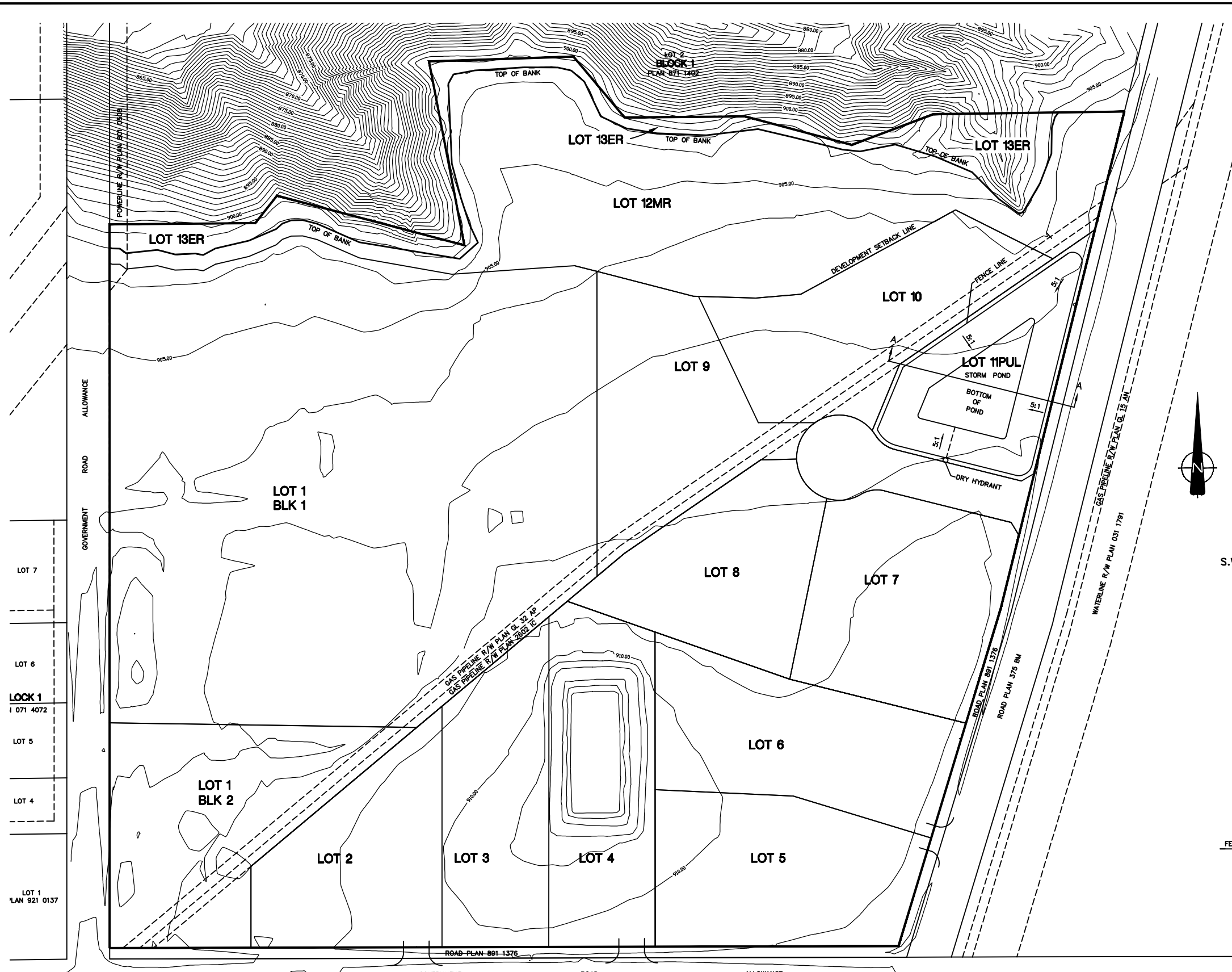


S.W. 1/4 SEC. 29
9-21-4

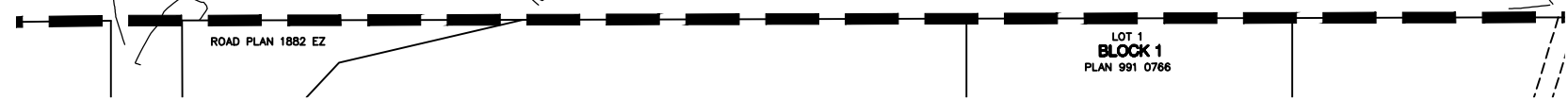
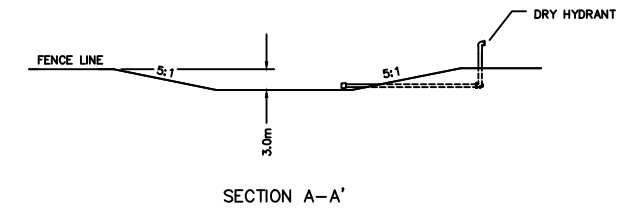


ENGINEERING RECORD			CONSULTANT		EDGEWOOD STABLES LTD.	
DESCRIPTION	INITIALS	DATE	 Stewart Weir ■■■■■ Naturally Resourceful PERMIT TO PRACTICE PERMIT NUMBER P 292 <small>The Association of Professional Engineers, Geologists and Geophysicists of Alberta</small>		STORMWATER DRAINAGE PLAN SHOWING PROPOSED SUBDIVISION OF LOT 9, BLOCK 1, PLAN 991 2364 (S.W. 1/4 SEC. 29 - TWP. 9 - RGE. 21 - W. 4M.) COUNTY OF LETHBRIDGE - ALBERTA	
SURVEYED						
DESIGNED						
DRAWN	BP/ES	10/07/28				
CHECKED	CP	10/07/28				
APP'D BY			FILE No.: LB35.33737		SCALE: 1:2000	FIGURE 5
ISSUED FOR CONSTRUCTION						
ISSUED FOR APPROVAL						

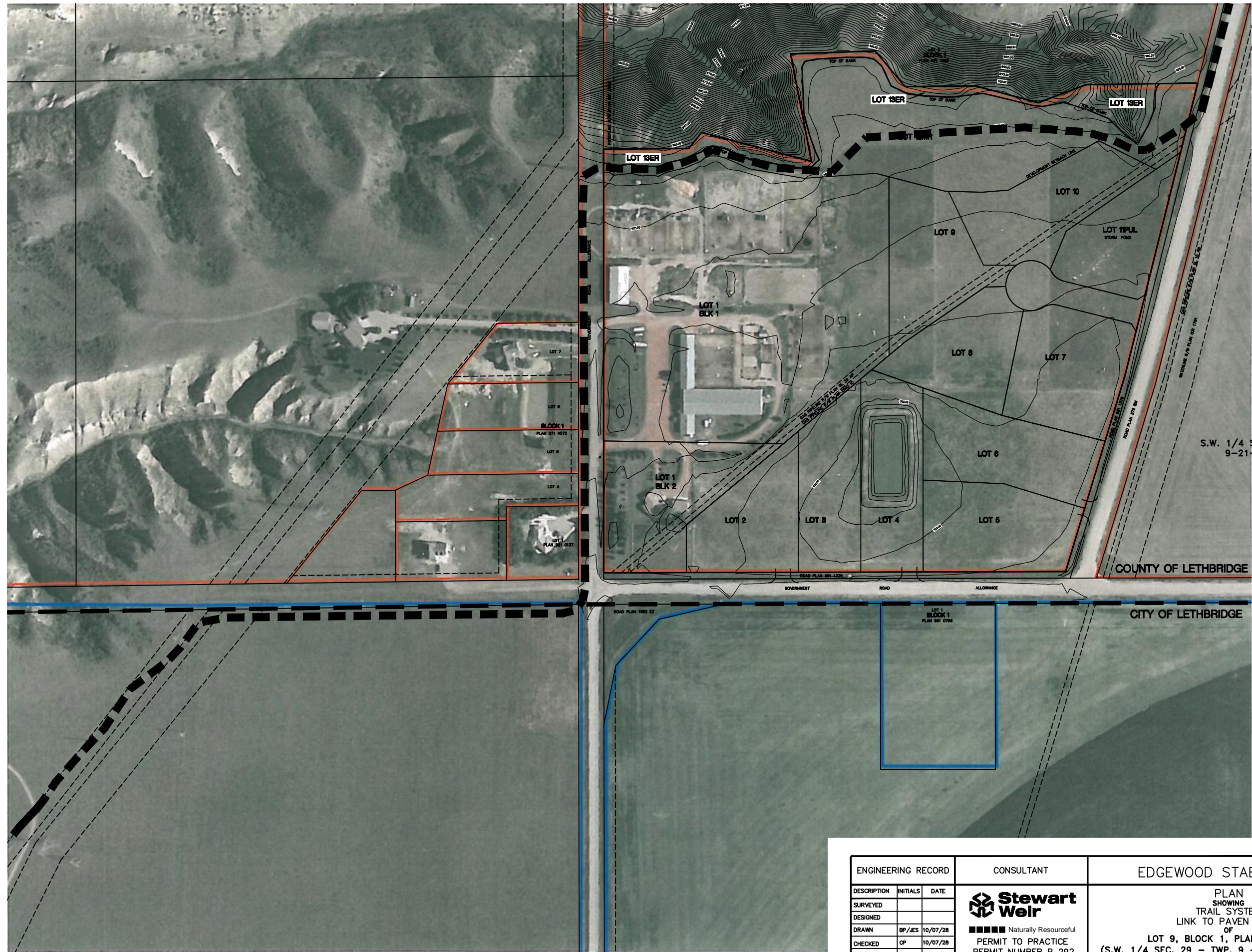
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S.W. 1/4 SEC. 29
9-21-4



ENGINEERING RECORD			CONSULTANT		EDGEWOOD STABLES LTD.	
DESCRIPTION	INITIALS	DATE	 Stewart Weir Naturally Resourceful PERMIT TO PRACTICE PERMIT NUMBER P 292 <small>The Association of Professional Engineers, Geologists and Geophysicists of Alberta</small>		PLAN SHOWING FIRE PROTECTION POND OF LOT 9, BLOCK 1, PLAN 991 2364 (S.W. 1/4 SEC. 29 - TWP. 9 - RGE. 21 - W. 4M.) COUNTY OF LETHBRIDGE - ALBERTA	
SURVEYED						
DESIGNED						
DRAWN	BP/ES	10/07/28				
CHECKED	CP	10/07/28				
APP'D BY			FILE No.: LB35.33737		SCALE: 1:2000	FIGURE 6
ISSUED FOR CONSTRUCTION						
ISSUED FOR APPROVAL						



LEGEND
 ■■■■■ TRAIL SYSTEM

ENGINEERING RECORD		CONSULTANT	EDGEWOOD STABLES LTD.
DESCRIPTION	INITIALS	DATE	PLAN SHOWING TRAIL SYSTEM LINK TO PAVEN PARK OF LOT 9, BLOCK 1, PLAN 991 2364 (S.W. 1/4 SEC. 29 - TWP. 9 - RGE. 21 - W. 4M.) COUNTY OF LETHBRIDGE - ALBERTA
SURVEYED			
DESIGNED			
DRAWN	BP /AES	10/07/28	
CHECKED	CP	10/07/28	
APP'D BY			
ISSUED FOR CONSTRUCTION			
ISSUED FOR APPROVAL			SCALE: 1:3000 FIGURE 7

Stewart Weir
 ■■■■■ Naturally Resourceful
 PERMIT TO PRACTICE
 PERMIT NUMBER P 292
 The Association of Professional Engineers,
 Geologists and Geophysicists of Alberta

\\Sengco\Users\John\33000\33737 LB35 Edgewood Stables LUC\CD\33737-Figure 4-5467 PLAN-JOB-REC2.dwg

SW 29-9-21 W4M

APPENDIX 'A'
DEVELOPMENT SETBACK ASSESSMENT

Stewart Weir

ISSUED FOR USE

**DEVELOPMENT SETBACK ASSESSMENT
EDGEWOOD STABLES SUBDIVISION
LETHBRIDGE, ALBERTA**

L12101748

April 2010



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- Figure 1 Site Plan
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- Appendix A Geotechnical Report – General Conditions
- Appendix B Site Photographs

1.0 INTRODUCTION

This report presents the results of a geotechnical slope stability assessment conducted by EBA Engineering Consultants Ltd. (EBA) for a proposed rural residential development to be located north of Lethbridge, Alberta.

The scope of work for the slope stability assessment was outlined in a proposal issued to Mrs. Connie Petersen, P.Eng, of Stewart Weir. The objective was to determine the stability of the slopes abutting the proposed development area and to recommend appropriate minimum development setback distance requirements from the Top of Bank¹.

The minimum development setback distance requirements were established from a slope stability assessment conducted for this site, as well as a review of the recommended setback guidelines established by the City of Lethbridge Bylaw #5277, "River Valley Area Redevelopment Plan" (RVARP), as adopted on July 26, 2004 by the City of Lethbridge.

Authorization to proceed with this evaluation was provided by Mrs. Petersen.

2.0 PROJECT DETAILS AND SCOPE OF WORK

The property is located in the County of Lethbridge, Alberta, in Lot 9, Block 1, Plan 9912364, within the SW ¼ of Section 29, Township 9, Range 21, W4M. The subject site is shown on Figure 1. The proposed development is bounded to the north by tributary coulee valleys, comprising the Oldman River Valley, to the south by Township Road 94, to the east by Range Road 214A, and to the west by a gravel driveway.

Given the proximity of the adjacent slopes to the development, the scope of work for this evaluation included visual reconnaissance of the development site and surrounding slopes, as well as a geotechnical review of the adjacent slopes' stability. As part of EBA's review of the RVARP guidelines, the evaluation also considered the recommendations pertaining to safe development setbacks as detailed in the study conducted by AMEC Earth and Environmental Limited (AMEC) entitled "City of Lethbridge Phase II Development Setback Assessment Oldman River Valley Slopes" issued in November 2002. The guidelines were considered in the recommendations for development setback distances for this development.

3.0 SITE DESCRIPTION

3.1 SURFACE DESCRIPTION

Visual site reconnaissance was completed by EBA's geotechnical engineers, Mr. Nana Addo, E.I.T. and Mr. Trevor Curtis, E.I.T. on March 23, 2010. A number of photographs were taken during the site reconnaissance conducted by EBA for this evaluation and are included in this report.

¹ Top of Bank: means the line where the general trend of the slope changes from greater than 15% to less than 15%, as determined by field survey.

The development property was covered with prairie grasses, with an overall surface gradient towards the coulee valleys, generally to the north/northwest. The west portion of the site was noted to be in use as a horse ranch. There is a retention pond east of the horse ranch, as shown on Figure 1. EBA understands that both the ranch and retention pond are to remain post development. A gas pipeline right-of-way bisects the property, running from southwest to northeast, as shown on Figure 1.

To the north/northwest of the site is a deeply incised coulee draw, which extends towards the Oldman River Valley to the west. Based on a topographical map provided by Mike Spencer Geometric (Spencer), the northern slope extends downward for approximately 40 m. Figure 2 depicts the three slope profiles surveyed for this development by Spencer. The general slope profiles in the middle and lower zones are approximately 1.5 horizontal to 1 vertical (1.5H:1V), as surveyed by Spencer. The upper portions of the slope appear to average approximately 3 horizontal to 1 vertical (3H:1V), with some localized steeper sections. The slope faces are well vegetated with prairie grasses, weeds, and some shrubs. Small, isolated surficial slumps, skin failures, and cracks were noted within the slope faces, attributed to surficial precipitation runoff and desiccation. Areas of heavy brush cover, shown on the photographs, are indications of trace water seepage out of the slope face.

As part of the evaluation, EBA reviewed aerial photographs taken of the project area between 1950 and present day. The review indicated that the subject property has remained undeveloped with respect to structures or rural development, with adjacent lands being used for crop cultivation and ranch land. There appears to be no evidence of significant slope instabilities within the slopes bordering the property (north-facing slopes), however, some more severe slope failures, comprising surficial slope face slumping, were noted within the south-facing slopes on the opposite side of the coulee draw. Further discussion on slope stability is presented in subsequent sections of this report.

4.0 SUBSURFACE CONDITIONS

4.1 GEOLOGY

EBA reviewed published reports regarding the geological history of the Lethbridge area. A brief summary, in descending order, of the general stratigraphy is presented below.

- Lacustrine Deposit; a fine-grained Lacustrine deposit overlies the Buffalo Lake Till, with thickness varying from non-existent to 8 m.
- Buffalo Lake Till; characterized by a lack of cohesion which often leads to slumping of this deposit. A single period of consolidation has resulted in the development of vertical stress cracks, well oxidized, with some limited bedding.
- Lenzie Silts; unit consists of buff, stratified, calcareous silt and silty sand. The deposit includes black or grey varved clays and poorly sorted till-like colluvium with coarse fragments. This is a glacial lake deposit that formed in a peri-glacial (prior to deposition

of Buffalo Lake Till) lake environment during a temporary halt, as continental ice advanced. Overlying the cross-bedded sediments are lake clays deposited in thin, well-bedded laminae. Based on the AMEC report data, the elevation of the top of the Lenzie layer is approximately 875 m.

- Labuma Till; columnar, massive till, which is hard as a result of consolidation pressure from overlying ice, deposited during Laurentide glaciation.
- Basal Till; massive till, hard, brown to grey.
- Saskatchewan Sands and Gravels; clean, well-sorted and bedded, rounded to subrounded river gravel deposit with a sandy matrix. The depth of this layer appears to be below the base of valley elevation.
- Oldman Formation Bedrock; relatively massive, sedimentary deposit in both brackish and freshwater environments (non-marine), light grey to light brownish grey in colour, contains cross-bedded silty clay shales, siltstones, calcareous sandstones, ironstones, bentonitic clay, and coal layers. The depth of bedrock is well below the base of coulee valley elevation in this area.

4.2 MINING ACTIVITY

Research was conducted to review the possible existence of mine workings within the boundary of the proposed development area using a publication (#88 – 45) by ERCB (Coal Mine Atlas, Operating and Abandoned Coal Mines in Alberta, 1988). Based on this publication, there was an underground mine, #1219, located on the NW ¼ of Sec. 29-9-21, W4M. EBA recommends further review of coal mine workings underlying the site boundaries prior to any development.

5.0 SLOPE STABILITY EVALUATION

5.1 GENERAL

EBA's scope of work included a review of the present stability of the coulee slopes abutting the perimeter limits of the site (primarily north perimeter) and of any potential future slope instability affecting development on the property (i.e., setback requirements).

The recommendations for stability analyses and appropriate development setback limits, as presented in Bylaw #5277 (referenced in Section 1.0) were also reviewed by EBA and incorporated as part of EBA's recommendations. The slope stability analysis and review is discussed in the following sections. The minimum factor of safety (FOS) recommended for slope instability affecting the property is 1.5, which is considered acceptable by current engineering practices.

5.2 PRESENT SLOPE STABILITY

The present stability of the slopes adjacent to the development area has been reviewed, based on site reconnaissance and analytical techniques for circular and block failures. Visual observations of the slopes in the project area generally indicate the slopes are currently stable, as evidenced by a lack of recent slope instability (visual reconnaissance and aerial photograph review), excepting some minor skin failures.

The current stability of the slopes adjacent to the proposed development footprint has been evaluated by means of limit equilibrium analyses. It is noted that potential failure surfaces (block or circular) within the upper soil deposits, as well as deep seated failures have been analyzed. It is noted that slope instabilities founded on the bedrock are not considered relevant for this development, considering the depth of bedrock (in excess of 5 m and below the valley base).

Representative soil parameters were selected for the analytical review. It should be noted that these parameters represent an assumed soil profile, as no borehole exploration was conducted as part of this evaluation. Stability analyses have been developed from a collaboration of local geotechnical experience.

The slope stability analyses, using representative soil parameters, indicate that the existing slopes are currently stable, corroborating the existing visual evidence noted during the site reconnaissance. The analyses indicate FOS for shallow slope face failures are slightly higher than 1.0 for the slope faces, using the soil strength parameters assumed for this evaluation. With respect to moderate depth instability affecting the slope crests, the factor of safety is approximately 1.5. Deeper seated failures indicate factors of safety affecting the slope crest of greater than 1.7.

5.3 IMPACT OF DEVELOPMENT ON SLOPE STABILITY

As the moisture content of a soil mass approaches saturation, the friction between soil particles decreases thus reducing the soils strength and ability to resist slope movements. Any increase in the level of soil saturation will reduce the stability of the slopes.

Development of the site will bring about changes in the factors which contribute to the present stability of the slopes. Evaporation of soil moisture will be reduced by the presence of ground cover such as the proposed building(s) and roadway structures. Irrigation and possible leakage of water from underground utilities in addition to septic fields will increase the amount of water infiltrating the site subsoils. This combination of reduced evaporation of subsoil moisture and increased infiltration of water to the subsoils is considered to be the most significant influence of development on the factors that contribute to the present stability of the slopes. Increasing soil moisture content produces a reduction in the total cohesion, as the apparent cohesion is reduced or lost, and an increase in the pore pressure ratio reduces the effective stress. The result is a corresponding decrease in the factor of safety. Post development conditions, including a general increase in soil saturation, have been considered in this stability analysis.

5.4 DEVELOPMENT SETBACK REQUIREMENTS

Based on the stability analysis and findings during the site reconnaissance, as well as assumed post-development groundwater conditions, appropriate development setbacks were derived for the slopes with the setback limits measured from the Top of Bank.

In addition, two other factors were given consideration in determining the recommending minimum development setback limits for this development. The first was taking into account the recommendations of the City of Lethbridge Bylaw #5277, specifically with regards to translational failures along the top of the Lenzie Silts deposit. Where the Lenzie Silts contact elevation is encountered, the worst case scenario for an instability impacting property at the Top of Bank is represented by a 4H:1V assumed failure line, extending from the contact elevation at the slope face to the existing ground surface at prairie level.

The second factor would require a minimum setback distance of 6 m from the Top of Bank to protect developed property from shallow crest failures.

As noted, given the depth of bedrock well below the coulee valley elevation, the Bylaw requirements for bedrock failures are not considered to apply.

The contact elevation of the Lenzie Silts deposit has been taken by EBA as elevation 875.0 m. This contact elevation is based on published data from the AMEC report conducted as part of the development of City Bylaw #5277.

Based on the various aspects of the slope stability analysis conducted for the development, as provided in this report, a development setback line using the minimum requirements of Bylaw #5277 is recommended, as shown on Figure 1. This setback line was established by extending a 4H:1V line from topographic elevation 875 m. Where this line extends less than 6.0 m from the Top of Bank, the minimum recommended setback distance is 6.0 m.

5.5 RECOMMENDED DEVELOPMENT GUIDELINES

Figure 1 presents the minimum recommended setback line recommended. Precautionary measures which should also be included in this development (with respect to slope stability issues) are outlined as follows.

- Any fill excavated during development should not be disposed of within the development restriction zone unless directed otherwise after a review by the project's geotechnical engineer. The development restriction zone is the area of land between the development setback line and the Top of Bank and on the slopes.
- Positive grading should be provided to ensure surface drainage from the development is directed as either sheet flow over the crest of the slopes or away from the slopes into a stormwater management facility.
- All utilities and plumbing should be carefully installed and inspected to ensure they are in good working order.

- Irrigation within the restrictive development zone should be prohibited.
- The development recommendations of this geotechnical report should be closely adhered to.

The upper coulee slopes should be treated as a restricted development zone. This involves:

- No excavation on the valley slope without review by a geotechnical engineer;
- No clearing of vegetation;
- No fill to be placed on the crest of the slopes or on the slopes;
- No water is to be discharged directly on to the slope face; and
- Maintain vegetation cover along the crest and on the slope.

Notwithstanding the setback distances recommended, some sloughing and slope movements will occur. The development will result in a general increase in the degree of saturation of the site subsoils which may cause minor sloughing of the top portion of the slope. The setback distance is not intended to prevent failure of the slope but rather to prevent such failures from directly affecting developed areas of the site.

6.0 REVIEW OF DESIGN AND CONSTRUCTION

EBA should be given the opportunity to review the final footprint location of any structures proposed for the site, as well as details of the design and specifications related to geotechnical aspects of this project, prior to development of the site.

7.0 LIMITATIONS

Recommendations presented herein are based on a geotechnical evaluation comprising a field reconnaissance and a review of geotechnical data from literature sources and historical air photos. The conditions discussed in this report are considered to be reasonably representative of the site. If, however, conditions other than those reported are noted during subsequent phases of the project, EBA should be notified and given the opportunity to review our current recommendations in light of new findings. Recommendations presented herein may not be valid if an adequate level of monitoring is not provided during development of the site.

This report and its contents are intended for the sole use of Stewart Weir and their agents. EBA does not accept any responsibility for the accuracy of any of the data, the analysis or the recommendations contained or referenced in the report when the report is used or relied upon by any Party other than Stewart Weir and their agents, or for any Project other than the proposed development at the subject site. Any such unauthorized use of this report is at the sole risk of the user. Use of this report is subject to the terms and conditions stated in EBA's Services Agreement and in the General Conditions provided in Appendix A of this report.

8.0 CLOSURE

We trust this report satisfies your present requirements. We would be pleased to provide further information that may be needed during design and to advise on the geotechnical aspects of specifications for inclusion in contract documents. Should you require additional information or monitoring services, please do not hesitate to contact our office.

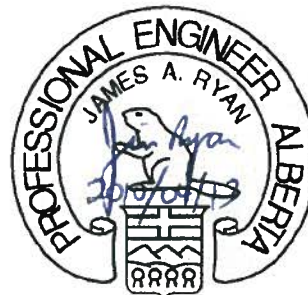
Respectfully submitted,
EBA Engineering Consultants Ltd.

Prepared by:



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Senior Project Engineer
Engineering Practice
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/hms

<p>PERMIT TO PRACTICE EBA ENGINEERING CONSULTANTS LTD.</p> <p>Signature: <u>James Ryan</u></p> <p>Date: <u>April 17, 2010</u></p> <p>PERMIT NUMBER: P245</p> <p>The Association of Professional Engineers, Geologists and Geophysicists of Alberta</p>
--



FIGURES





LEGEND

- · — · DEVELOPMENT SETBACK LINE
- · — · APPROXIMATE TOP OF BANK
- · — · LENZIE SILT LAYER EL. 875 m.

CLIENT

Stewart Weir

**EGDEWOOD STABLES SUBDIVISION
SLOPE STABILITY ASSESSMENT**

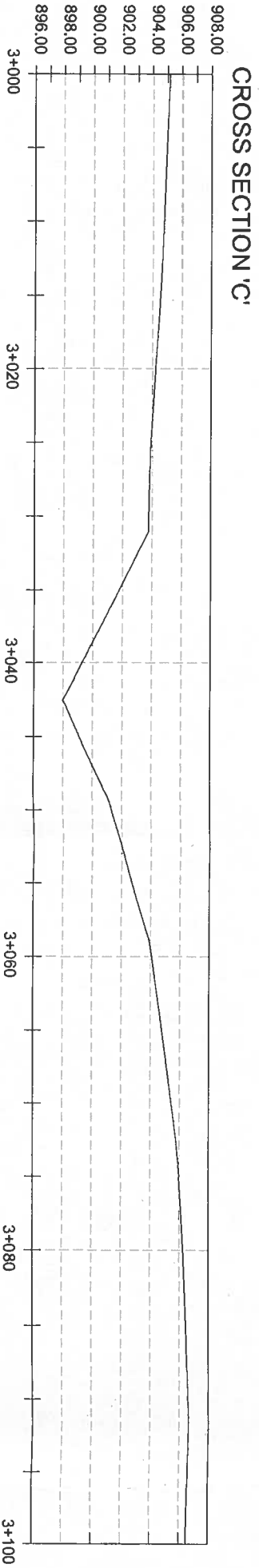
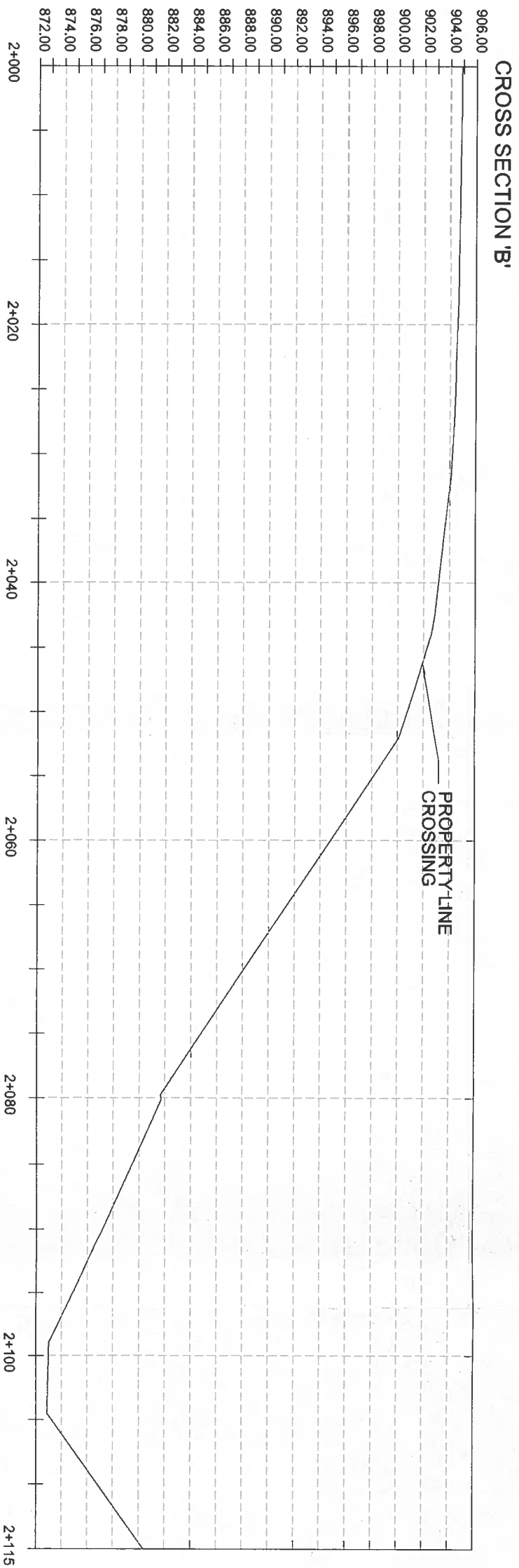
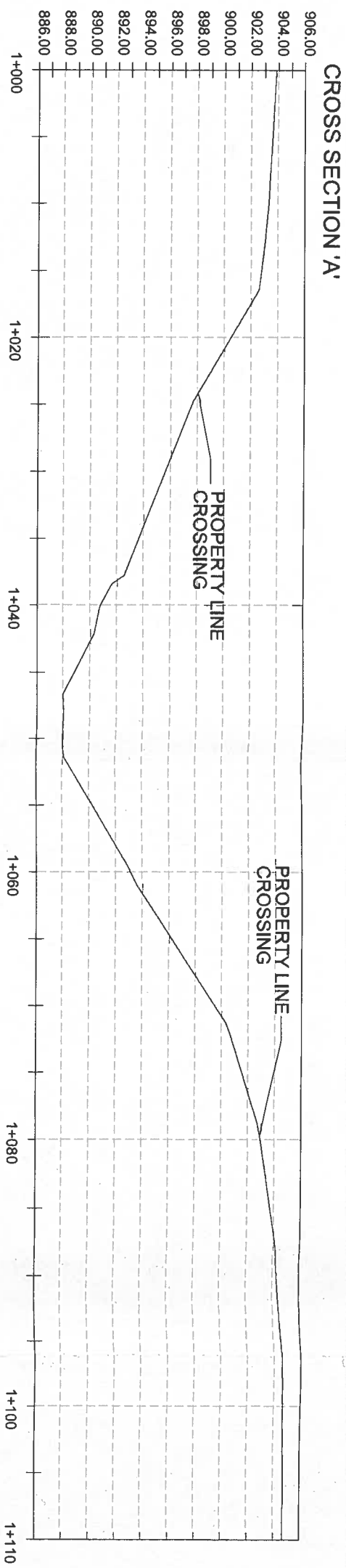
SITE PLAN

**EBA Engineering
Consultants Ltd.**



PROJECT NO.	L12101748	DWN	
OFFICE	Leithridge	LCH	
DATE	April 7, 2010	NA	
		REV	0

Figure 1



CLIENT

Stewart Weir

EGDEWOOD STABLES SUBDIVISION
SLOPE STABILITY ASSESSMENT

SLOPE PROFILES

EBA Engineering
Consultants Ltd.



PROJECT NO. L12101748	DWN LOH	C/O NA	REV 0
OFFICE Leithridge	DATE April 7, 2010		

Figure 2

ISSUED FOR USE

L12101748
April 2010



APPENDIX

APPENDIX A GEOTECHNICAL REPORT – GENERAL CONDITIONS

GEOTECHNICAL REPORT – GENERAL CONDITIONS

This report incorporates and is subject to these “General Conditions”.

1.0 USE OF REPORT AND OWNERSHIP

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This report is subject to copyright and shall not be reproduced either wholly or in part without the prior, written permission of EBA. Additional copies of the report, if required, may be obtained upon request.

2.0 ALTERNATE REPORT FORMAT

Where EBA submits both electronic file and hard copy versions of reports, drawings and other project-related documents and deliverables (collectively termed EBA’s instruments of professional service), only the signed and/or sealed versions shall be considered final and legally binding. The original signed and/or sealed version archived by EBA shall be deemed to be the original for the Project.

Both electronic file and hard copy versions of EBA’s instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except EBA. EBA’s instruments of professional service will be used only and exactly as submitted by EBA.

Electronic files submitted by EBA have been prepared and submitted using specific software and hardware systems. EBA makes no representation about the compatibility of these files with the Client’s current or future software and hardware systems.

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The stratigraphic and geological information indicated on drawings contained in this report are inferred from logs of test holes and/or soil/rock exposures. Stratigraphy is known only at the locations of the test hole or exposure. Actual geology and stratigraphy between test holes and/or exposures may vary from that shown on these drawings. Natural variations in geological conditions are inherent and are a function of the historic environment. EBA does not represent the conditions illustrated as exact but recognizes that variations will exist.

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Excavation and construction operations expose geological materials to climatic elements (freeze/thaw, wet/dry) and/or mechanical disturbance which can cause severe deterioration. Unless otherwise specifically indicated in this report, the walls and floors of excavations must be protected from the elements, particularly moisture, desiccation, frost action and construction traffic.

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Unless otherwise specifically advised, support of ground and structures adjacent to the anticipated construction and preservation of adjacent ground and structures from the adverse impact of construction activity is required.

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There is a direct correlation between construction activity and structural performance of adjacent buildings and other installations. The influence of all anticipated construction activities should be considered by the contractor, owner, architect and prime engineer in consultation with a geotechnical engineer when the final design and construction techniques are known.

11.0 OBSERVATIONS DURING CONSTRUCTION

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12.0 DRAINAGE SYSTEMS

Where temporary or permanent drainage systems are installed within or around a structure, the systems which will be installed must protect the structure from loss of ground due to internal erosion and must be designed so as to assure continued performance of the drains. Specific design detail of such systems should be developed or reviewed by the geotechnical engineer. Unless otherwise specified, it is a condition of this report that effective temporary and permanent drainage systems are required and that they must be considered in relation to project purpose and function.

13.0 BEARING CAPACITY

Design bearing capacities, loads and allowable stresses quoted in this report relate to a specific soil or rock type and condition. Construction activity and environmental circumstances can materially change the condition of soil or rock. The elevation at which a soil or rock type occurs is variable. It is a requirement of this report that structural elements be founded in and/or upon geological materials of the type and in the condition assumed. Sufficient observations should be made by qualified geotechnical personnel during construction to assure that the soil and/or rock conditions assumed in this report in fact exist at the site.

14.0 SAMPLES

EBA will retain all soil and rock samples for 30 days after this report is issued. Further storage or transfer of samples can be made at the Client's expense upon written request, otherwise samples will be discarded.



APPENDIX

APPENDIX B SITE PHOTOGRAPHS





Photo 1
Vegetation along North Perimeter Slopes (Looking South)



Photo 2
North Perimeter Slopes (Looking West)



Photo 3
North Perimeter Slopes (Looking East)



Photo 4
Skin Failures on North Perimeter Slopes (Looking South)

SW 29-9-21 W4M

APPENDIX 'B'
SEPTIC FIELD FEASIBILITY ASSESSMENT

Stewart Weir

ISSUED FOR USE

**SEPTIC FIELD FEASIBILITY ASSESSMENT
EDGEWOOD STABLES
LETHBRIDGE, ALBERTA**

L12101796

July 2010

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2.0 PROJECT DETAILS AND SCOPE OF WORK.....	1
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4.2 Groundwater Conditions	2
4.3 Septic Field Analysis	2
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FIGURES

Figure 1 Site Plan

APPENDICES

Appendix A Geotechnical Report – General Conditions

Appendix B Borehole Logs

Appendix C Laboratory Results

1.0 INTRODUCTION

This report presents the results of a septic field feasibility assessment conducted by EBA Engineering Consultants Ltd. (EBA) for a proposed residential subdivision development to be located in Lot 9, Block 1, Plan 9912364, in the SW $\frac{1}{4}$ of Section 29-009-21 W4M, north of Lethbridge, Alberta.

The scope of work for this evaluation was described in a proposal issued to Ms. Connie Petersen of Stewart Weir on June 22, 2010 (EBA File: PL12101796). The original proposal was modified and re-issued after discussions with Stewart Weir. The objective of this evaluation was to assess the feasibility of septic disposal fields for the proposed residential development.

Authorization to proceed with this evaluation was provided by Ms. Petersen on behalf of Mr. Daryl Dennis.

2.0 PROJECT DETAILS AND SCOPE OF WORK

Based on discussions with Stewart Weir, it is understood that the County of Lethbridge requires a septic field feasibility assessment be conducted to determine if the site soils are suitable for septic fields.

The requested work scope for this assessment comprised the sampling of soils from six (6) testpits, a laboratory program to assist in classifying the subsurface soils, and a report providing recommendations on soil suitability for septic fields.

3.0 GEOTECHNICAL FIELD WORK

The fieldwork for this evaluation was carried out on July 7, 2010. EBA's field representative was Mr. Jackson Meadows, C.E.T.

Six testpits were dug by Mr. Dennis within the estimated septic disposal field footprints in select locations to depths below ground surface of approximately 1 m (BH001 through BH004) and 3 m (BH005 and BH006). The approximate testpit locations (as selected on site by Mr. Dennis) are shown on Figure 1.

In all of the testpits, disturbed grab samples were obtained at a depth of 600 mm below ground surface. All soil samples were visually classified in the field and the individual soil strata and the interfaces between them were noted. The testpit logs are presented in Appendix B. An explanation of the terms and symbols used on the testpit logs is also included in Appendix B.

A slotted 25 mm diameter PVC standpipe was installed in each of the 3 m testpits in order to monitor groundwater levels.

Classification tests, including hydrometer analysis, were subsequently performed in the laboratory on samples collected from the testpits to aid in the determination of soil properties. The results of the laboratory tests are presented on the testpit logs in Appendix B and are discussed in this report.

4.0 SITE AND SUBSURFACE CONDITIONS

4.1 SITE CONDITIONS

The proposed development property is bounded to the north by tributary coulee valleys, comprising the Oldman River Valley, to the south by Township Road 94, to the east by Range Road 214A, and to the west by a gravel driveway.

The property was covered with prairie grasses, with an overall surface gradient towards the coulee valleys, generally to the north/northwest. The west portion of the site was noted to be in use as a horse ranch. There is a retention pond east of the horse ranch, as shown on Figure 1. EBA understands that both the ranch and retention pond are to remain post development. A gas pipeline right-of-way (ROW) bisects the property, running from southwest to northeast, as shown on Figure 1.

4.2 GROUNDWATER CONDITIONS

Groundwater levels were measured within the standpipes on July 14, 2010. The following table summarizes the groundwater monitoring data.

TABLE 1: GROUNDWATER LEVELS		
Borehole Number	Depth of Standpipe (m)	Groundwater Monitoring Data July 14, 2010
		Depth to Groundwater (m)
005	3.0	Dry
006	3.0	Dry

4.3 SEPTIC FIELD ANALYSIS

EBA performed soil texture analyses on soil samples obtained from the proposed septic disposal field sites. The hydrometer/grain size analyses results are included in Appendix C. The results are indicated in the following table.

TABLE 2: SOIL TEXTURE ANALYSIS

Borehole Number	% Sand	% Silt	% Clay	Soil Classification
001	30	45	25	Loam
002	35	39	26	Loam
003	6	62	32	Silty Clay Loam
004	4	61	35	Silty Clay Loam
005	17	55	28	Silty Loam
006	6	50	44	Silty Clay

The soil samples were classified as above (referenced from Figure 8.1.1.10. of the Alberta Private Sewage Systems Standard of Practice 2009 Handbook). Based on these classifications, the surficial soils at the BH001, BH002, and BH005 generally satisfy the requirements of the Safety Code Council (as required by the 2009 Handbook) for design and construction of a septic disposal field. However, the surficial soils at BH003, BH004, and BH006 do not satisfy the Safety Code's requirements for septic disposal fields due to unacceptably high clay content.

In all areas where surficial soils did not meet the Safety Code's requirements (BH003, BH004, and BH006), consideration should be given to relocating the septic disposal fields to acceptable areas or alternate means of establishing a disposal field, such as construction of a septic field mound or other such industry acceptable measures be considered.

The 2009 Handbook stipulates that when using the results of a soil texture classification (determined in Figure 8.1.1.10 of the Handbook) to size a system, the disposal field shall be sized so that the effluent loading rate per day shall not exceed the following rates:

- 40.7 L per square meter (0.83 Imperial gallons per square foot) in loam to clay textured soils (BH001, BH002, and BH005).

Furthermore, the soil infiltration surface loading rates should not exceed the amounts set out in Table 8.1.10 based on the soil characteristics identified in this evaluation. In addition, the natural separation between the point of effluent infiltration into the soil and the groundwater should be a minimum of 1.5 m. Given the groundwater levels (dry to 3 m depth), all six sites meet the natural separation requirements.

It is recommended that the specific site selection of the proposed septic fields be carefully considered by the septic field installer to satisfy these requirements and those of the Regulations Having Jurisdiction [Municipality, Alberta Environment (AENV), Alberta Labour]. This requirement is in accordance with the provincial regulations, which state that two percolation tests are required within the final footprint of the field by the installer. Following the site-specific testing, the septic disposal field should be designed and sized accordingly by the disposal field designer. It is further recommended that the design footprint of any building structures be determined once the final disposal field is selected, to ensure the appropriate gravity flow or pumping requirements are satisfied.

During installation of the weeping trenches, the installer should pay close attention to the soil conditions to define the extent of high plastic clay layers which generally indicate areas with percolation rates below the minimum guidelines. These should be reported to the disposal field designer for review prior to completion of the septic disposal field.

The information provided herein is intended to be a preliminary assessment of the feasibility of septic disposal fields for the proposed development as per the provincial regulations. Site specific municipal regulations or siting requirement guidelines with respect to the local health unit, if applicable, have not been addressed.

5.0 LIMITATIONS

This report and its contents are intended for the sole use of Stewart Weir and their agents. EBA does not accept any responsibility for the accuracy of any of the data, the analysis or the recommendations contained or referenced in the report when the report is used or relied upon by any Party other than Stewart Weir, or for any Project other than the proposed development at the subject site. Any such unauthorized use of this report is at the sole risk of the user. Use of this report is subject to the terms and conditions stated in EBA's Services Agreement and in the General Conditions provided in Appendix A of this report.

6.0 CLOSURE

We trust this report satisfies your present requirements. Should you require additional information or monitoring services, please do not hesitate to contact our office.

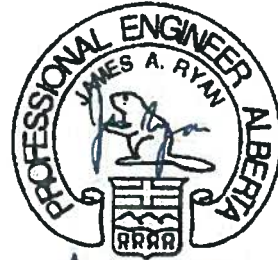
Respectfully submitted,
EBA Engineering Consultants Ltd.

Prepared by:

Reviewed by:




Nana K. Addo, M.Sc., E.I.T.
Project Engineer
Engineering Practice
Phone: 403.329.9009 Ext. 238
naddo@eba.ca



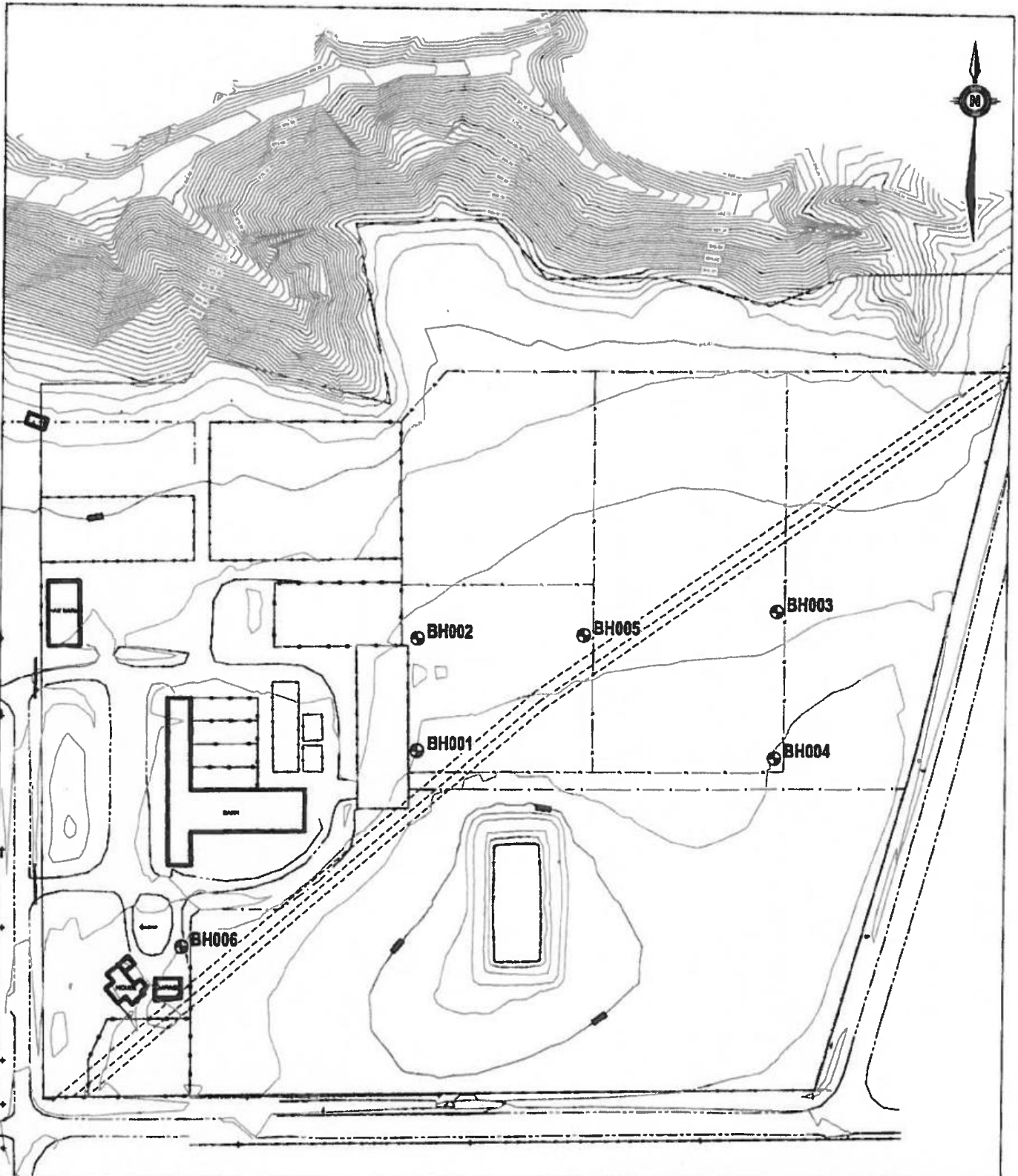
July 22, 2010

J.A. (Jim) Ryan, M.Eng., P. Eng.
Senior Project Engineer
Engineering Practice
Phone: 403.203.3305 Ext. 871
jryan@eba.ca

/hms

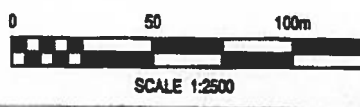
PERMIT TO PRACTICE EBA ENGINEERING CONSULTANTS LTD.	
Signature	
Date	<i>July 23, 2010</i>
PERMIT NUMBER: P245 The Association of Professional Engineers, Geologists and Geophysicists of Alberta	

FIGURE



Workbridge\engineering\121 Projects\L12101796\L12101796_FIG1_RD.dwg

LEGEND
● BH# BOREHOLE LOCATION



CLIENT
Stuart Weir & Co. Ltd.

PROPOSED SEPTIC FIELD FEASIBILITY STUDY
SITE PLAN AND BOREHOLE LOCATIONS

EBA Engineering Consultants Ltd.

PROJECT NO L12101796	OWN LCH	CRD JC	REV 0
OFFICE EBA-Lethbridge	DATE July 19, 2010		

Figure 1

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L12101796
July 2010

APPENDIX A

APPENDIX A GEOTECHNICAL REPORT – GENERAL CONDITIONS

GEOTECHNICAL REPORT - GENERAL CONDITIONS

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EBA will retain all soil and rock samples for 30 days after this report is issued. Further storage or transfer of samples can be made at the Client's expense upon written request, otherwise samples will be discarded.

15.0 INFORMATION PROVIDED TO EBA BY OTHERS

During the performance of the work and the preparation of the report, EBA may rely on information provided by persons other than the Client. While EBA endeavours to verify the accuracy of such information when instructed to do so by the Client, EBA accepts no responsibility for the accuracy or the reliability of such information which may affect the report.

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L12101796
July 2010

APPENDIX B

APPENDIX B BOREHOLE LOGS



TERMS USED ON BOREHOLE LOGS

TERMS DESCRIBING CONSISTENCY OR CONDITION

COARSE GRAINED SOILS (major portion retained on 0.075mm sieve): includes (1) clean gravels and sands, and (2) silty or clayey gravels and sands. Condition is rated according to relative density, as inferred from laboratory or in situ tests.

DESCRIPTIVE TERM	RELATIVE DENSITY	N (blows per 0.3m)
Very Loose	0 to 20%	0 to 4
Loose	20 to 40%	4 to 10
Compact	40 to 75%	10 to 30
Dense	75 to 90%	30 to 50
Very Dense	90 to 100%	greater than 50

The number of blows, N, on a 51mm O.D. split spoon sampler of a 63.5kg weight falling 0.76m, required to drive the sampler a distance of 0.3m from 0.15m to 0.45m.

FINE GRAINED SOILS (major portion passing 0.075mm sieve): Includes (1) inorganic and organic silts and clays, (2) gravelly, sandy, or silty clays, and (3) clayey silts. Consistency is rated according to shearing strength, as estimated from laboratory or in situ tests.

DESCRIPTIVE TERM	UNCONFINED COMPRESSIVE STRENGTH (kPa)
Very Soft	Less Than 25
Soft	25 to 50
Firm	50 to 100
Stiff	100 to 200
Very Stiff	200 to 400
Hard	Greater Than 400

NOTE: Slickensided and fissured clays may have lower unconfined compressive strengths than shown above, because of planes of weakness or cracks in the soil.

GENERAL DESCRIPTIVE TERMS

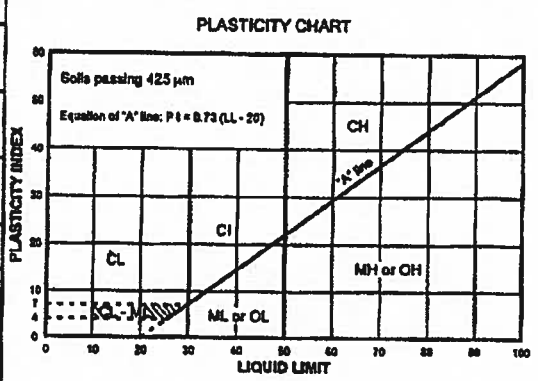
Slickensided	- having inclined planes of weakness that are slick and glossy in appearance.
Fissured	- containing shrinkage cracks, frequently filled with fine sand or silt; usually more or less vertical.
Laminated	- composed of thin layers of varying colour and texture.
Interbedded	- composed of alternate layers of different soil types.
Calcareous	- containing appreciable quantities of calcium carbonate.
Well Graded	- having wide range in grain sizes and substantial amounts of intermediate particle sizes.
Poorly graded	- predominantly of one grain size, or having a range of sizes with some intermediate size missing.



MODIFIED UNIFIED SOIL CLASSIFICATION

MAJOR DIVISION		GROUP SYMBOL	TYPICAL DESCRIPTION	LABORATORY CLASSIFICATION CRITERIA			
COARSE-GRAINED SOILS More than 50% retained on 75 µm sieve*	GRAVELS 50% or more of coarse fraction retained on 4.75 mm sieve	CLEAN GRAVELS	GW	Well-graded gravels and gravel-sand mixtures, little or no fines	Classification on basis of percentage of fines GW, GP, SW, SP, GM, GC, SM, SC Boundary Classification requiring use of dual symbols		
		GRAVELS WITH FINES	GP	Poorly graded gravels and gravel-sand mixtures, little or no fines			
		SANDS More than 50% of coarse fraction passes 4.75 mm sieve	CLEAN SANDS	GM		Silty gravels, gravel-sand-silt mixtures	
			SANDS WITH FINES	GC		Clayey gravels, gravel-sand-clay mixtures	
	FINE-GRAINED SOILS (by behavior) 50% or more passes 75 µm sieve*	SILTS Liquid limit	<50	ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands of slight plasticity	For classification of fine-grained soils and fine fraction of coarse-grained soils.	
			>50	MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts		
		CLAYS Above "A" line on plasticity chart negligible organic content	Liquid limit	<30	CL		Inorganic clays of low plasticity, gravelly clays, sandy clays, silty clays, lean clays
			30-50	CI	Inorganic clays of medium plasticity, silty clays		
			>50	CH	Inorganic clays of high plasticity, fat clays		
		ORGANIC SILTS AND CLAYS Liquid limit	<50	OL	Organic silts and organic silty clays of low plasticity		
>50	OH		Organic clays of medium to high plasticity				
HIGHLY ORGANIC SOILS		PT	Peat and other highly organic soils				

$C_u = D_{60}/D_{10}$	Greater than 4
$C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$	Between 1 and 3
Not meeting both criteria for GW	
Atterberg limits plot below "A" line or plasticity index less than 4	Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols
Atterberg limits plot above "A" line or plasticity index greater than 7	Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols



*Based on the material passing the 75 mm sieve
 Reference: ASTM Designation D2487, for identification procedure see D2488. USC as modified by PFRA

SOIL COMPONENTS					OVERSIZE MATERIAL	
FRACTION	SIEVE SIZE		DEFINING RANGES OF PERCENTAGE BY MASS OF MINOR COMPONENTS		Rounded or subrounded COBBLES 75 mm to 300 mm BOULDERS > 300 mm	
	PASSING	RETAINED	PERCENTAGE	DESCRIPTOR		
GRAVEL	coarse	75 mm	>35 %	"and"	Not rounded	
	fine	19 mm				
SAND	coarse	19 mm	21 to 35 %	"y-adjective"	ROCK FRAGMENTS >75 mm ROCKS > 0.76 cubic metre in volume	
	medium	4.75 mm	10 to 20 %	"some"		
	fine	2.00 mm	>0 to 10 %	"trace"		
SILT (non plastic) or CLAY (plastic)	75 µm		as above but by behavior		EBA Engineering Consultants Ltd.	

PROJECT: SEPTIC FIELD FEASIBILITY STUDY	CLIENT: STEWART, WEIR & CO. LTD.	PROJECT NO. - BOREHOLE NO.
LOCATION: SW 1/4 29-9-21-W4M	DRILL METHOD: 150mm SOLID STEM AUGER	L12101796 - 10BH001
CITY: LETHBRIDGE, AB	PROJECT ENGINEER: NANA ADDO	
SAMPLE TYPE <input checked="" type="checkbox"/> DISTURBED <input checked="" type="checkbox"/> NO RECOVERY <input checked="" type="checkbox"/> SPT	<input type="checkbox"/> A-CASING <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> CORE	
BACKFILL TYPE <input checked="" type="checkbox"/> BENTONITE <input checked="" type="checkbox"/> PEA GRAVEL <input type="checkbox"/> SLOUGH	<input type="checkbox"/> GROUT <input type="checkbox"/> DRILL CUTTINGS <input type="checkbox"/> SAND	

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	MOISTURE CONTENT	PLASTIC M.C. LIQUID		STANDARD PENETRATION (N)		Depth (ft)
					20	40	60	80	
0	TOPSOIL - clay, silty, sandy, moist, dark brown, roots, organics								0
	CLAY - silty, trace to some sand, very moist, firm, medium to high plastic, light brown to grey brown								
1	End of Borehole @ 1.0m		B1						
	No Seepage or Sloughing on Completion								
2									5
3									10
3.5									11



LOGGED BY: JKM	COMPLETION DEPTH: 1m
REVIEWED BY: NA	COMPLETE: 7/7/2010
DRAWING NO: B1	Page 1 of 1

PROJECT: SEPTIC FIELD FEASIBILITY STUDY	CLIENT: STEWART, WEIR & CO. LTD.	PROJECT NO. - BOREHOLE NO.
LOCATION: SW 1/4 29-9-21-W4M	DRILL METHOD: 150mm SOLID STEM AUGER	L12101796 - 10BH002
CITY: LETHBRIDGE, AB	PROJECT ENGINEER: NANA ADDO	
SAMPLE TYPE <input checked="" type="checkbox"/> DISTURBED <input checked="" type="checkbox"/> NO RECOVERY <input checked="" type="checkbox"/> SPT	<input type="checkbox"/> A-CASING <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> CORE	
BACKFILL TYPE <input checked="" type="checkbox"/> BENTONITE <input checked="" type="checkbox"/> PEA GRAVEL <input type="checkbox"/> SLOUGH	<input type="checkbox"/> GROUT <input type="checkbox"/> DRILL CUTTINGS <input type="checkbox"/> SAND	

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	MOISTURE CONTENT	PLASTIC M.C. LIQUID		STANDARD PENETRATION (N)				Depth (ft)	
					20	40	60	80	20	40		80
0	TOPSOIL - clay, silty, sandy, moist, dark brown, roots, organics											0
	CLAY - silty, some sand to sandy, damp to moist, stiff to very stiff, medium plastic, brown, roots and root hairs											
1	End of Borehole @ 1.0m		B1									
	No Seepage or Sloughing on Completion											
2												
3												
3.5												11

	LOGGED BY: JKM	COMPLETION DEPTH: 1m
	REVIEWED BY: NA	COMPLETE: 7/7/2010
	DRAWING NO: B2	Page 1 of 1

PROJECT: SEPTIC FIELD FEASIBILITY STUDY	CLIENT: STEWART, WEIR & CO. LTD.	PROJECT NO. - BOREHOLE NO.
LOCATION: SW 1/4 29-9-21-W4M	DRILL METHOD: 150mm SOLID STEM AUGER	L12101796 - 10BH003
CITY: LETHBRIDGE, AB	PROJECT ENGINEER: NANA ADDO	


SAMPLE TYPE	<input checked="" type="checkbox"/> DISTURBED	<input type="checkbox"/> NO RECOVERY	<input checked="" type="checkbox"/> SPT	<input type="checkbox"/> A-CASING	<input type="checkbox"/> SHELBY TUBE	<input type="checkbox"/> CORE
BACKFILL TYPE	<input checked="" type="checkbox"/> BENTONITE	<input type="checkbox"/> PEA GRAVEL	<input type="checkbox"/> SLOUGH	<input type="checkbox"/> GROUT	<input type="checkbox"/> DRILL CUTTINGS	<input type="checkbox"/> SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	MOISTURE CONTENT	PLASTIC M.C. LIQUID			STANDARD PENETRATION (mm)				Depth (ft)
					20	40	60	80	20	40	60	
0	TOPSOIL - clay, silty, sandy, moist, dark brown, roots, organics											0
	CLAY - silty, some sand to sandy, damp to moist, very stiff, medium plastic, light brown to brown, white precipitates											
1	End of Borehole @ 1.0m		B1									
	No Seepage or Sloughing on Completion											
2												
3												
3.5												11

	LOGGED BY: JKM	COMPLETION DEPTH: 1m
	REVIEWED BY: NA	COMPLETE: 7/7/2010
	DRAWING NO: B3	Page 1 of 1

PROJECT: SEPTIC FIELD FEASIBILITY STUDY	CLIENT: STEWART, WEIR & CO. LTD.	PROJECT NO. - BOREHOLE NO.
LOCATION: SW 1/4 29-9-21-W4M	DRILL METHOD: 150mm SOLID STEM AUGER	L12101796 - 10BH004
CITY: LETHBRIDGE, AB	PROJECT ENGINEER: NANA ADDO	
SAMPLE TYPE <input checked="" type="checkbox"/> DISTURBED <input checked="" type="checkbox"/> NO RECOVERY <input checked="" type="checkbox"/> SPT	<input type="checkbox"/> A-CASING <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> CORE	
BACKFILL TYPE <input checked="" type="checkbox"/> BENTONITE <input type="checkbox"/> PEA GRAVEL <input type="checkbox"/> SLOUGH	<input type="checkbox"/> GROUT <input type="checkbox"/> DRILL CUTTINGS <input type="checkbox"/> SAND	

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	MOISTURE CONTENT	STANDARD PENETRATION (mm)			Depth (ft)
					20	40	60	
0	TOPSOIL - clay, silty, sandy, moist, dark brown, roots, organics							0
	CLAY - silty, some sand to sandy, damp to moist, very stiff, medium plastic, light brown, white precipitates, occasional sand lenses							
1	End of Borehole @ 1.0m		B1					
	No Seepage or Sloughing on Completion							
2								
3								
3.5								

	LOGGED BY: JKM	COMPLETION DEPTH: 1m
	REVIEWED BY: NA	COMPLETE: 7/7/2010
	DRAWING NO: B4	Page 1 of 1


PROJECT: SEPTIC FIELD FEASIBILITY STUDY		CLIENT: STEWART, WEIR & CO. LTD.	PROJECT NO. - BOREHOLE NO.
LOCATION: SW 1/4 29-9-21-W4M		DRILL METHOD: 150mm SOLID STEM AUGER	L12101796 - 10BH005
CITY: LETHBRIDGE, AB		PROJECT ENGINEER: NANA ADDO	
SAMPLE TYPE	<input checked="" type="checkbox"/> DISTURBED	<input checked="" type="checkbox"/> NO RECOVERY	<input checked="" type="checkbox"/> SPT
BACKFILL TYPE	<input checked="" type="checkbox"/> BENTONITE	<input checked="" type="checkbox"/> PEA GRAVEL	<input checked="" type="checkbox"/> SLOUGH
		<input type="checkbox"/> A-CASING	<input type="checkbox"/> SHELBY TUBE
		<input type="checkbox"/> GROUT	<input type="checkbox"/> DRILL CUTTINGS
			<input type="checkbox"/> CORE
			<input type="checkbox"/> SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	MOISTURE CONTENT	PLASTIC M.C. LIQUID		STANDARD PENETRATION (N)		Depth (ft)
					20	40	60	80	
0	TOPSOIL - clay, silty, sandy, moist, dark brown, roots, organics								0
	CLAY - silty, some sand to sandy, damp, very stiff, medium plastic, light brown to brown, white precipitates		B1						
1									
2	CLAY (TILL) - silty, some sand, trace gravel, damp to moist, very stiff, medium plastic, brown, coal and oxide specks, occasional sand pockets to 20mm, white precipitates								
3	End of Borehole @ 1.0m								10
3.5	No Seepage or Sloughing on Completion Slotted PVC Standpipe Installed to 3.0m Borehole Measured Dry July 14, 2010								11

	LOGGED BY: JKM	COMPLETION DEPTH: 3m
	REVIEWED BY: NA	COMPLETE: 7/7/2010
	DRAWING NO: B5	Page 1 of 1

PROJECT: SEPTIC FIELD FEASIBILITY STUDY		CLIENT: STEWART, WEIR & CO. LTD.		PROJECT NO. - BOREHOLE NO.		
LOCATION: SW 1/4 29-9-21-W4M		DRILL METHOD: 150mm SOLID STEM AUGER		L12101796 - 10BH006		
CITY: LETHBRIDGE, AB		PROJECT ENGINEER: NANA ADDO				
SAMPLE TYPE	<input checked="" type="checkbox"/> DISTURBED	<input checked="" type="checkbox"/> NO RECOVERY	<input checked="" type="checkbox"/> SPT	<input type="checkbox"/> A-CASING	<input type="checkbox"/> SHELBY TUBE	<input type="checkbox"/> CORE
BACKFILL TYPE	<input checked="" type="checkbox"/> BENTONITE	<input type="checkbox"/> PEA GRAVEL	<input type="checkbox"/> SLOUGH	<input type="checkbox"/> GROUT	<input type="checkbox"/> DRILL CUTTINGS	<input type="checkbox"/> SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	MOISTURE CONTENT	PLASTIC M.C. LIQUID		STANDARD PENETRATION (N)		Depth (ft)
					20	40	60	80	
0	TOPSOIL - clay, silty, sandy, moist, dark brown, roots, organics								0
	CLAY (FILL) - silty, some sand, trace gravel, moist, stiff, medium plastic, brown to dark brown, coal and oxide specks, occasional sand lenses red shale specks								
	CLAY - silty, some sand, moist to very moist, firm to stiff, medium plastic, brown to dark brown		B1						
1									
2	CLAY (TILL) - silty, some sand, trace gravel, moist, stiff, medium plastic, brown to dark brown, coal and oxide specks, occasional sand lenses								
3	End of Borehole @ 1.0m								10
3.5	No Seepage or Sloughing on Completion Slotted PVC Standpipe Installed to 3.0m Borehole Measured Dry July 14, 2010								11

	LOGGED BY: JKM	COMPLETION DEPTH: 3m
	REVIEWED BY: NA	COMPLETE: 7/7/2010
	DRAWING NO: B6	Page 1 of 1

ISSUED FOR USE

L12101796
July 2010

APPENDIX C

APPENDIX C LABORATORY RESULTS

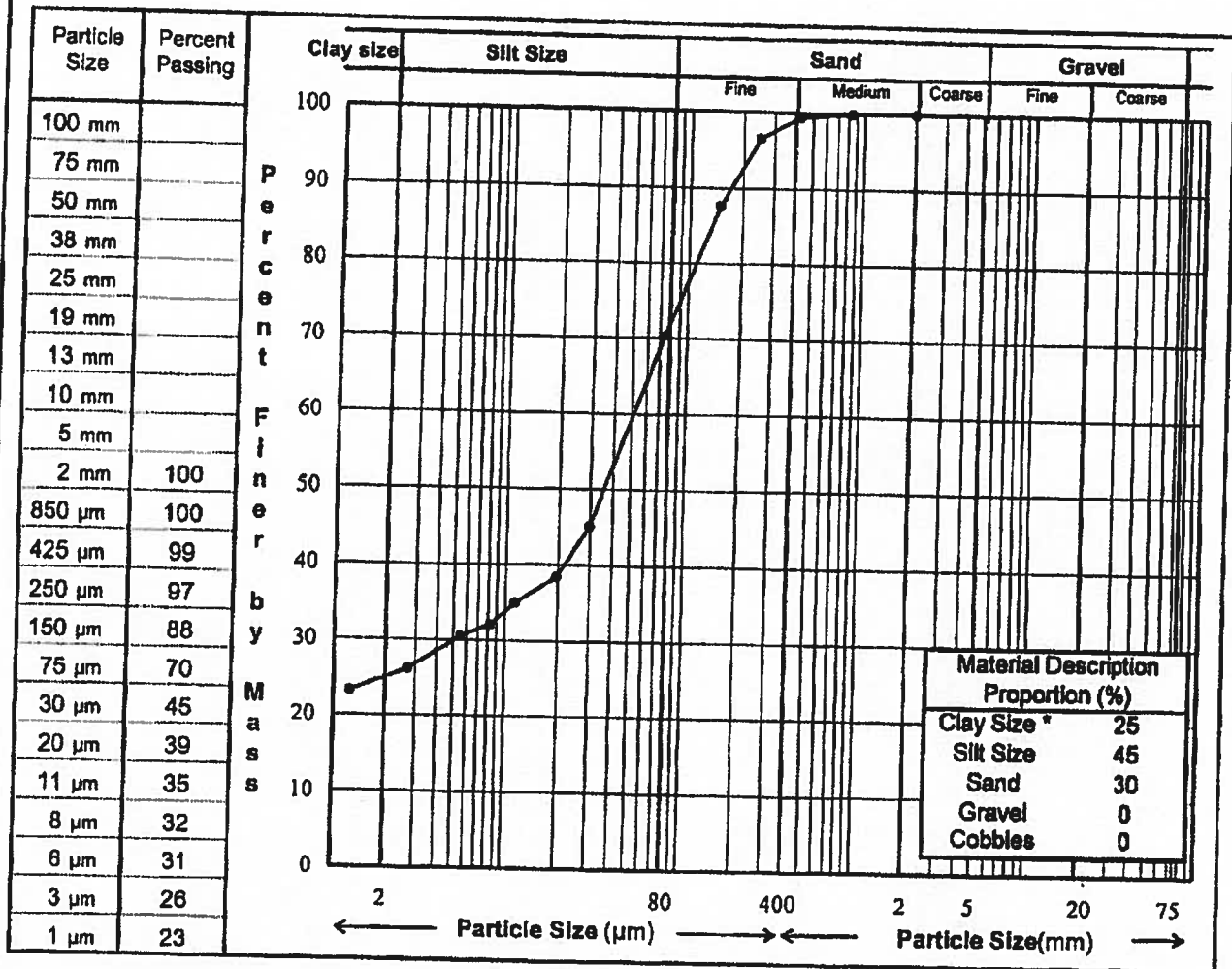


PARTICLE SIZE ANALYSIS (Hydrometer) TEST REPORT

ASTM D422

Project: Septic Field Feasibility Assmt.
 Client: Stewart Weir & Company
 Project No.: L12101796
 Location: N-5513320 E-0368913
 Description **: clay, silty, some sand

Sample No.:
 Borehole/ TP: 10BH001
 Depth: 0.6-0.9m
 Date Tested: July 12, 10 By: AF



Remarks: * The upper clay size of 2 µm is as per the Canadian Foundation Manual.
 ** The description is behaviour based & subject to EBA description protocols.

Reviewed By: _____ P.Eng.

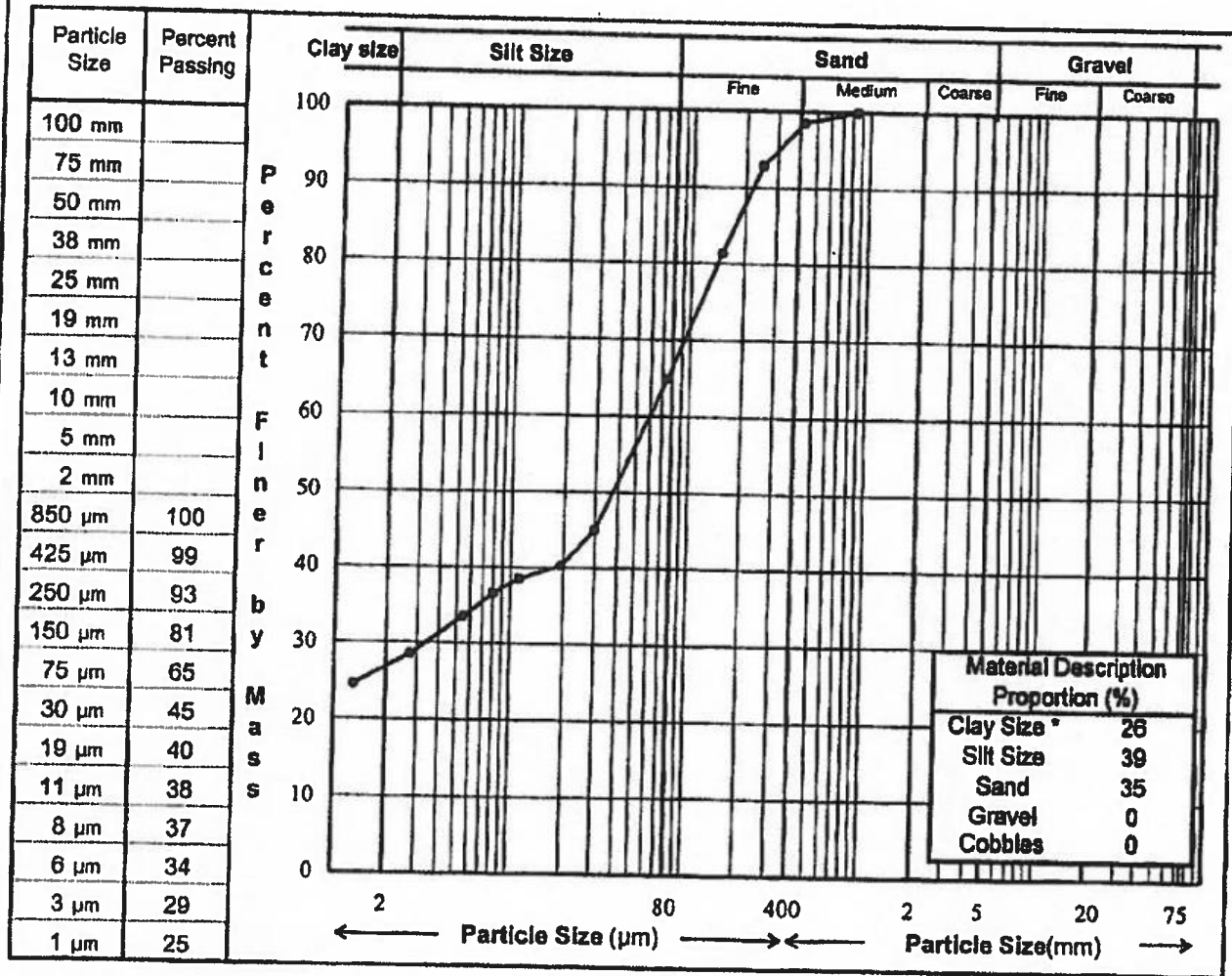
Data presented hereon is for the sole use of the stipulated client. EBA is not responsible, nor can be held liable, for use made of this report by any other party, with or without the knowledge of EBA. The testing services reported herein have been performed by an EBA technician to recognized industry standards, unless otherwise noted. No other warranty is made. These data do not include or represent any interpretation or opinion of specification compliance or material suitability. Should engineering interpretation be required, EBA will provide it upon written request.

PARTICLE SIZE ANALYSIS (Hydrometer) TEST REPORT

ASTM D422

Project: Septic Field Feasibility Assmt.
 Client: Stewart Weir & Company
 Project No.: L12101796
 Location: N-5513407 E-0368916
 Description **: clay, silty, some sand

Sample No.:
 Borehole/ TP: 10BH002
 Depth: 0.6-0.9m
 Date Tested: July 12, 10 By: AF



Remarks: * The upper clay size of 2 µm is as per the Canadian Foundation Manual.
 ** The description is behaviour based & subject to EBA description protocols.

Reviewed By: _____ P.Eng.

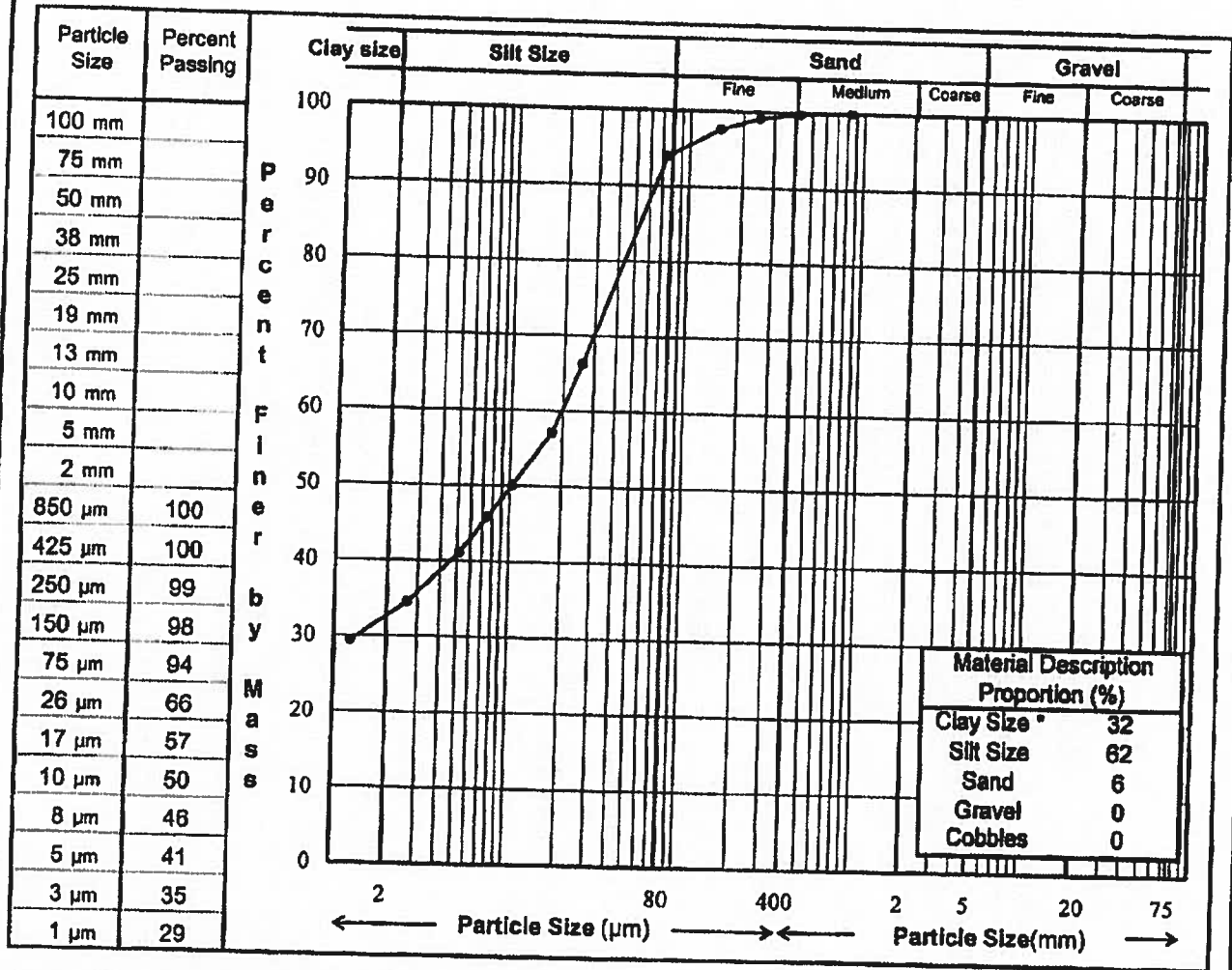
Data presented herein is for the sole use of the stipulated client. EBA is not responsible, nor can be held liable, for use made of this report by any other party, with or without the knowledge of EBA. The testing services reported herein have been performed by an EBA technician to recognized industry standards, unless otherwise noted. No other warranty is made. These data do not include or represent any interpretation or opinion of specification compliance or material suitability. Should engineering interpretation be required, EBA will provide it upon written request.

PARTICLE SIZE ANALYSIS (Hydrometer) TEST REPORT

ASTM D422

Project: Septic Field Feasibility Assmt. Edgewood
 Client: Stewart Weir & Company
 Project No.: L12101796
 Location: N-5513306 E-0369004
 Description **: clay, silty, face sand

Sample No.:
 Borehole/ TP: 10BH003
 Depth: 0.6-0.9m
 Date Tested: July 12, 10 By: AF



Remarks: * The upper clay size of 2 µm is as per the Canadian Foundation Manual.
 ** The description is behaviour based & subject to EBA description protocols.

Reviewed By: _____ P.Eng.

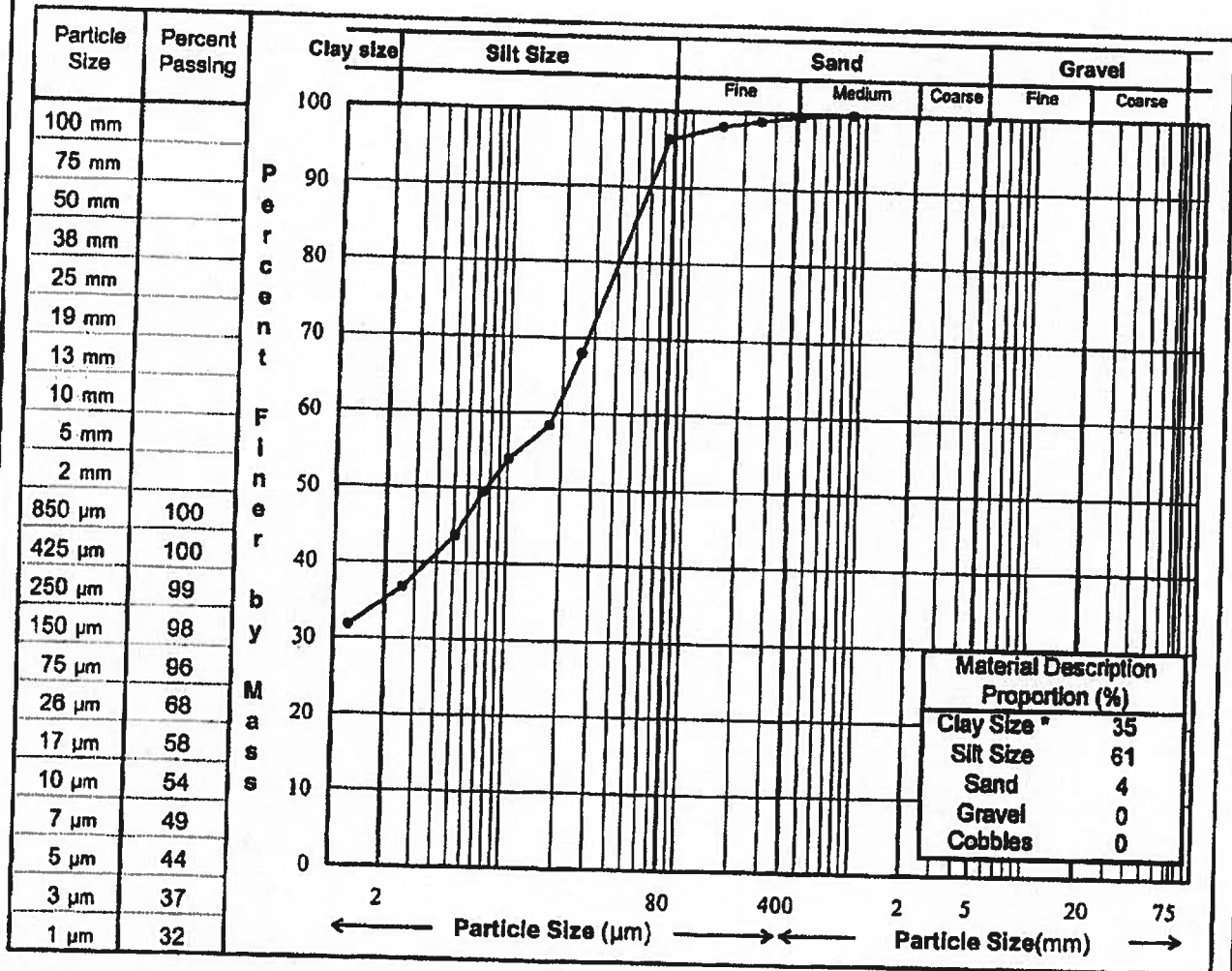
Data presented herein is for the sole use of the stipulated client. EBA is not responsible, nor can be held liable, for use made of this report by any other party, with or without the knowledge of EBA. The testing services reported herein have been performed by an EBA technician to recognized industry standards, unless otherwise noted. No other warranty is made. These data do not include or represent any interpretation or opinion of specification compliance or material suitability. Should engineering interpretation be required, EBA will provide it upon written request.

PARTICLE SIZE ANALYSIS (Hydrometer) TEST REPORT

ASTM D422

Project: Septic Field Feasibility Assmt. Edgewood
 Client: Stewart Weir & Company
 Project No.: L12101796
 Location: N5513296 E-0369040
 Description **: clay, silty, trace sand

Sample No.:
 Borehole/ TP: 10bh004
 Depth: 0.6-0.9m
 Date Tested July 12, 10 By: AF



Remarks: * The upper clay size of 2 µm is as per the Canadian Foundation Manual.
 ** The description is behaviour based & subject to EBA description protocols.

Reviewed By: _____ P.Eng.

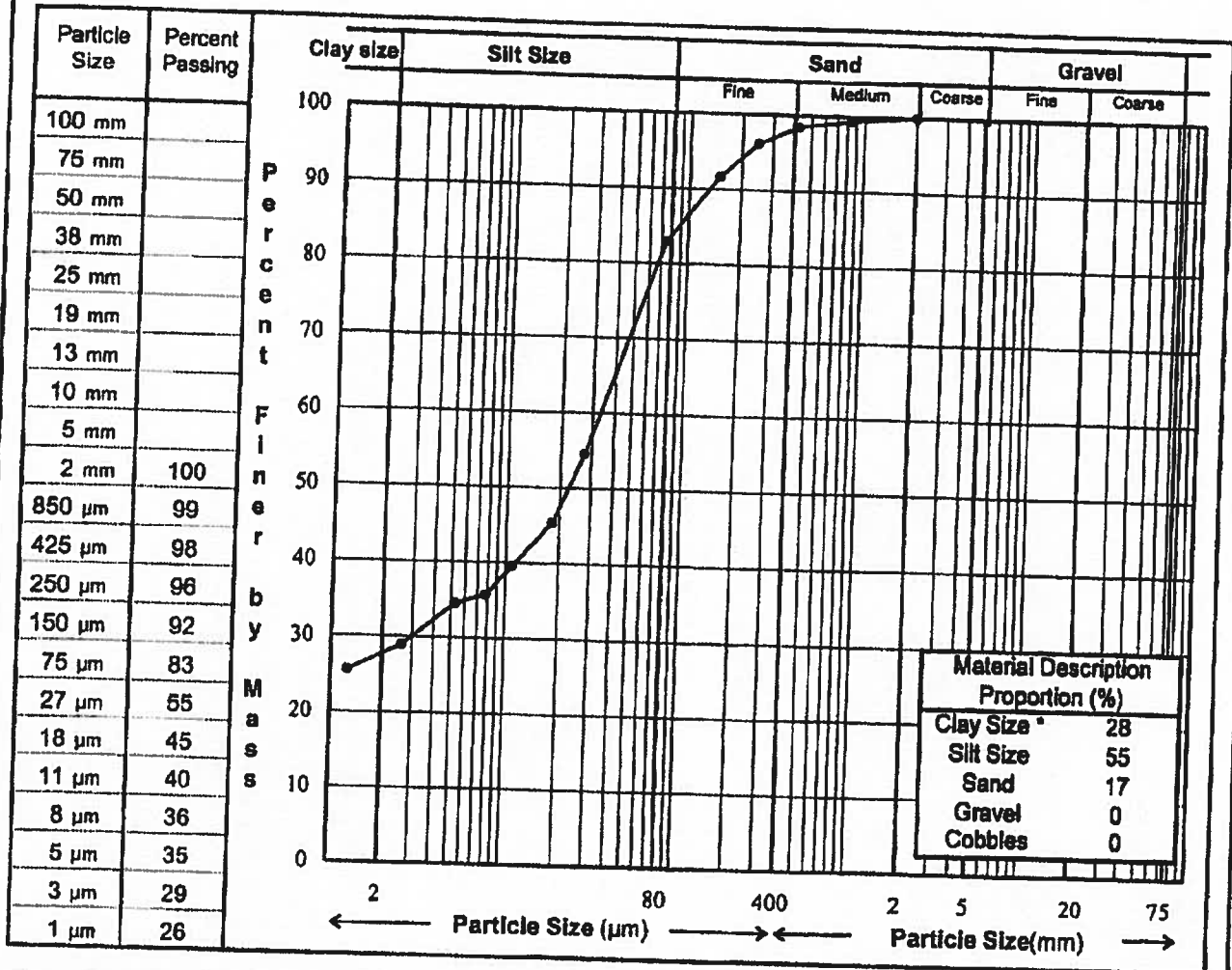
Data presented hereon is for the sole use of the stipulated client. EBA is not responsible, nor can be held liable, for use made of this report by any other party, with or without the knowledge of EBA. The testing services reported herein have been performed by an EBA technician to recognized industry standards, unless otherwise noted. No other warranty is made. These data do not include or represent any interpretation or opinion of specification compliance or material suitability. Should engineering interpretation be required, EBA will provide it upon written request.

PARTICLE SIZE ANALYSIS (Hydrometer) TEST REPORT

ASTM D422

Project: Septic Field Feasibility Assmt.
 Client: Stewart Weir & Company
 Project No.: L12101796
 Location: N-5513444 E-0369011
 Description **: clay, silty, some sand

Sample No.:
 Borehole/ TP: 10BH005
 Depth: 0.6-0.9m
 Date Tested: July 12, 10 By: AF



Remarks: * The upper clay size of 2 μm is as per the Canadian Foundation Manual.
 ** The description is behaviour based & subject to EBA description protocols.

Reviewed By: _____ P.Eng.

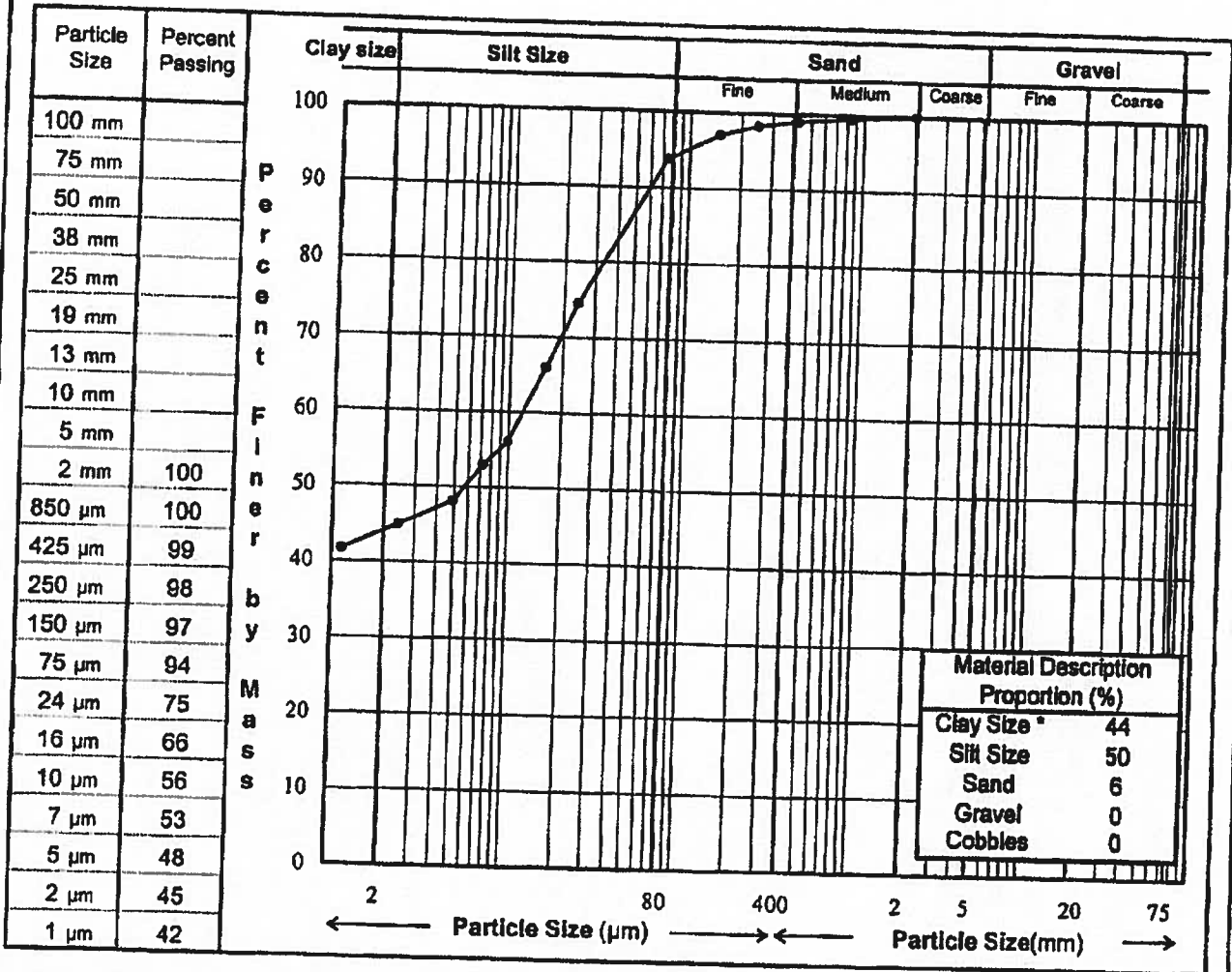
Data presented herein is for the sole use of the stipulated client. EBA is not responsible, nor can be held liable, for use made of this report by any other party, with or without the knowledge of EBA. The testing services reported herein have been performed by an EBA technician to recognized industry standards, unless otherwise noted. No other warranty is made. These data do not include or represent any interpretation or opinion of specification compliance or material suitability. Should engineering interpretation be required, EBA will provide it upon written request.

PARTICLE SIZE ANALYSIS (Hydrometer) TEST REPORT

ASTM D422

Project: Septic Field Feasibility Assmt.
 Client: Stewart Weir & Company
 Project No.: L12101796
 Location: N-5513231 E-0368713
 Description **: clay and silt, trace sand

Sample No.:
 Borehole/ TP: 10BH006
 Depth: 0.6-0.9m
 Date Tested: July 12, 10 By: AF



Remarks: * The upper clay size of 2 µm is as per the Canadian Foundation Manual.

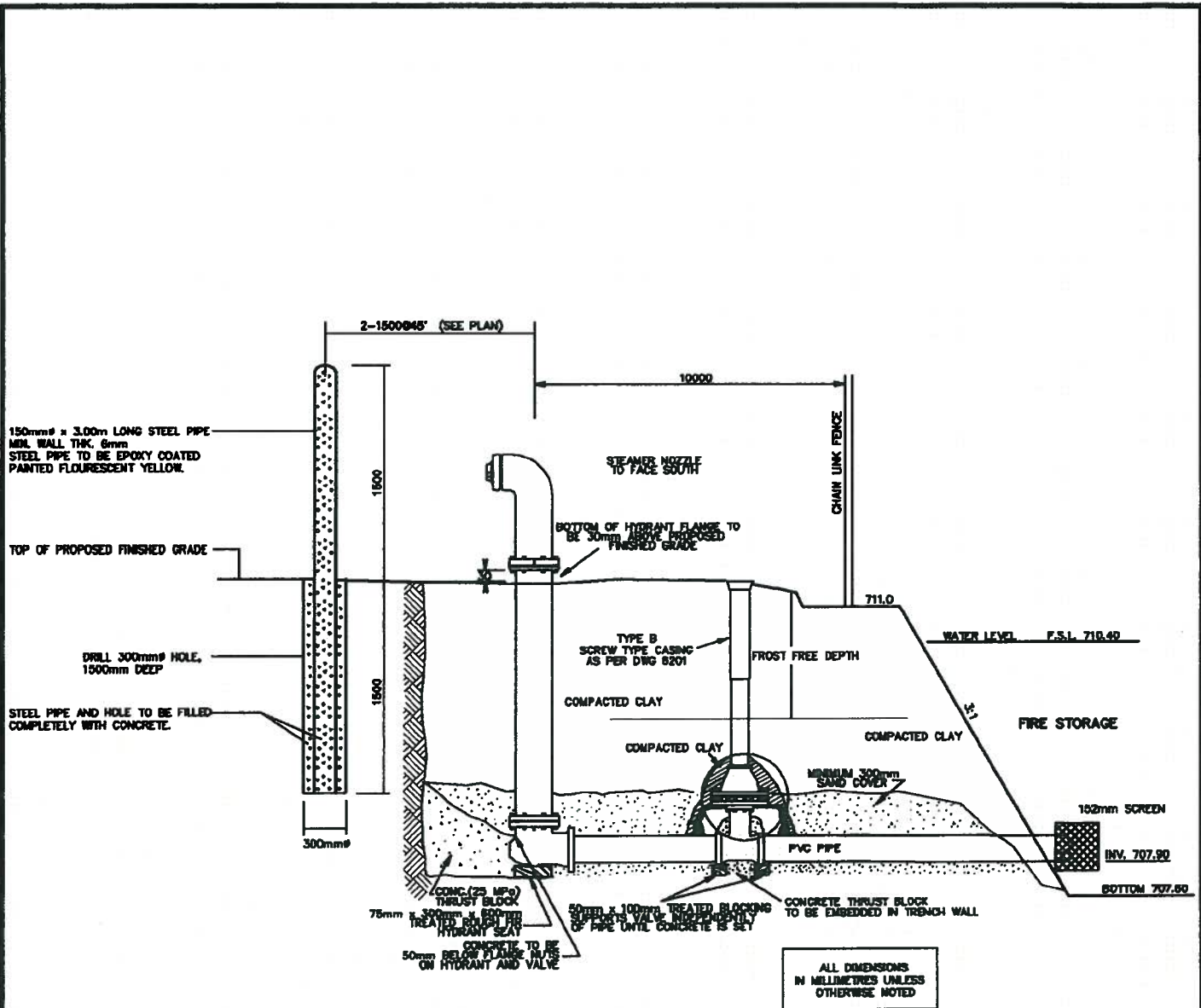
** The description is behaviour based & subject to EBA description protocols.

Reviewed By: _____ P.Eng.

Data presented hereon is for the sole use of the stipulated client. EBA is not responsible, nor can be held liable, for use made of this report by any other party, with or without the knowledge of EBA. The testing services reported herein have been performed by an EBA technician to recognized industry standards, unless otherwise noted. No other warranty is made. These data do not include or represent any interpretation or opinion of specification compliance or material suitability. Should engineering interpretation be required, EBA will provide it upon written request.

SW 29-9-21 W4M

APPENDIX 'C'
DRY HYDRANT DETAILS



- NOTES:
1. GRADE AT BOTTOM OF HYDRANT FLANGE IS 30mm PLUS 20mm PER METRE DISTANCE FROM FACE OF CURB ABOVE ESTABLISHED (EXISTING OR PROPOSED) CURB TOP ELEVATION.
 2. SEE DRAWING 6303 FOR CATHODIC PROTECTION REQUIREMENTS

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE NOTED

COUNTY OF LETHBRIDGE

General Municipal Servicing Standards



TYPICAL DRY HYDRANT CONNECTION

Figure 3053

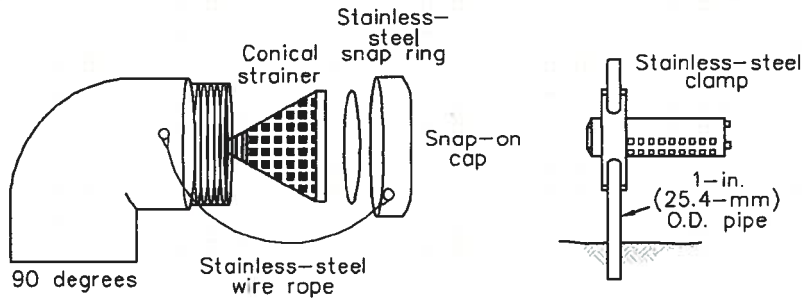
Rev.	
Rev.	
Rev.	
Rev.	
Date:	2008

File No.:
Drawn: JES

Design:
Scale NTS

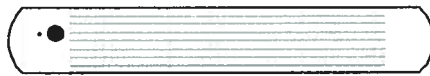
Approved:

\\smp.ca\Plan\Jobs\33000\33737 LB35 Edgewood Stables LiftCAU Hydrant Details\3053-Dry Hydrant Connection with Guard Post.dwg

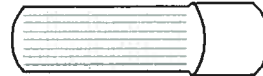


Dry hydrant head #227
 [Specify 90 degrees, 45 degrees, or straight and
 4½-in. (114-mm), 5-in. (127-mm), or 6-in. (152-mm)
 NH male thread]

Strainer support
 clamp #230



6-in. (152mm) PVC
 dry hydrant strainer #224
 (for horizontal installations)

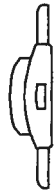


6-in. (152mm) barrel
 strainer #234
 (for vertical installations)

SUCTION HOSE ADOPTERS



Long-handle
 quick connect
 #225Q
 [specify size
 4-in.-6in.
 (101.5mm-
 152mm)]



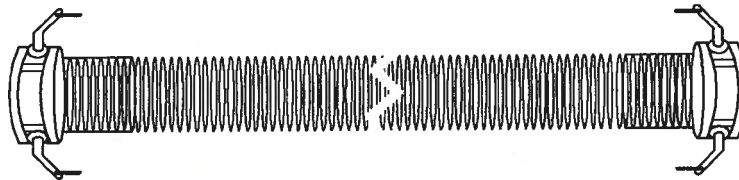
Long-handle
 female to male
 NST thread
 #225FM
 [specify size
 2½-in.-6in.
 (63.5mm-
 152mm)]



Long-handle
 double female
 swivel NST
 thread
 #225DF
 [specify size
 2½-in.-6in.
 (63.5mm-
 152mm)]



Reflective signs:
 6-in. x 12-in.
 (152-mm x 304.8-mm)
 self adhesive label
 #229L;
 12-in. x 16-in.
 (304.8-mm x 406-mm)
 aluminum sign
 (less post) #229S




10-ft (3.05-m) flex-suction hose (clear) #226
 [specify hose diameter 4 in. (102mm), 5 in. (127mm), or 6 in. (152mm)
 and NH threads or quick-locking couplings]

ALL DIMENSIONS
 IN MILLIMETRES UNLESS
 OTHERWISE NOTED

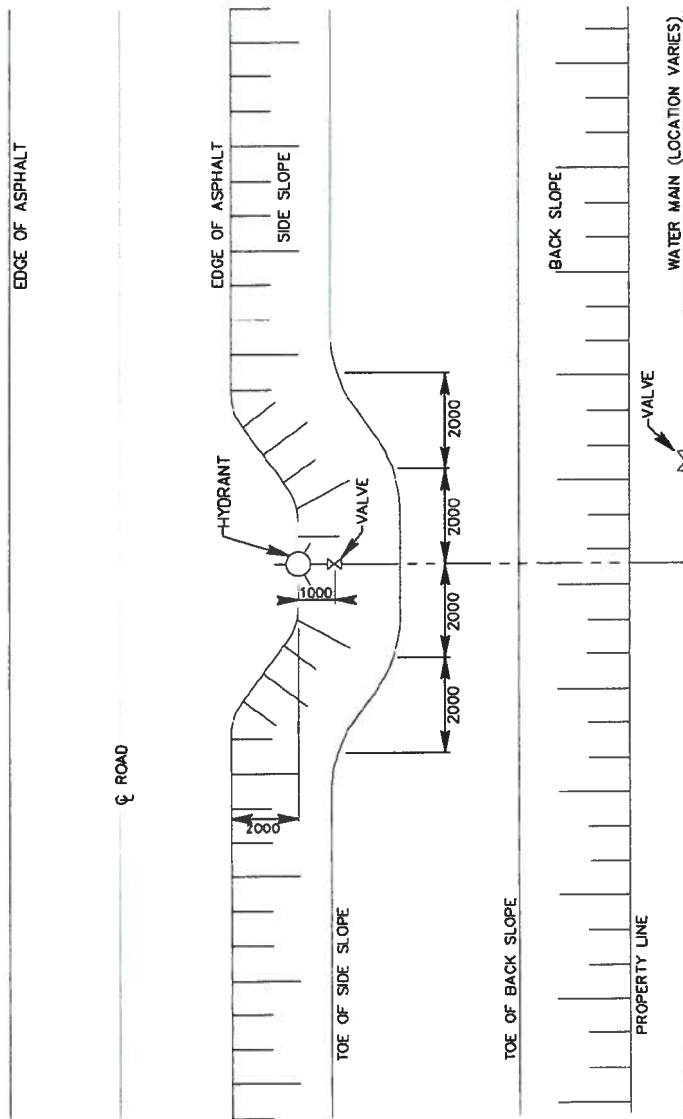
COUNTY OF LETHBRIDGE

General Municipal Servicing Standards

\\Seq.ca\Plan\Jobs\53000\33737 LB35 Edgewood Stables Ltd\CAU\Hydrant Details\3054-Dry Hydrant Connection Detail.dwg

Rev.		DRY HYDRANT CONNECTION DETAIL		Figure 3054
Rev.				
Rev.				
Rev.	File No.:	Design:	Approved:	
Date: 2008	Drawn: EPL	Scale: NTS		

\\Fs00\Files\Jobs\15000\33737\B35 Edgeroad Slabside Lethbridge\Hydrant Detail\3055-240 WID AT HYD-RURAL.dwg



NOTE:

1. WATER MAIN AND HYDRANTS MAY BE LOCATED EITHER SIDE OF ROAD
2. STREET LIGHTS TO BE OPPOSITE SIDE OF WATERMAIN.

ALL DIMENSIONS
IN MILLIMETRES UNLESS
OTHERWISE NOTED

COUNTY OF LETHBRIDGE

General Municipal Servicing Standards

Rev.		TYPICAL SHOULDER WIDENING FOR FIRE HYDRANT-RURAL STANDARD		Approved:	Figure 3055
Rev.					
Rev.					
Rev.	File No.:	Design:	Approved:		Figure 3055
Date: 2008	Drawn: T.L.B.	Scale: NTS			

SW 29-9-21 W4M

APPENDIX 'D'
ARCHITECTURAL CONTROLS

RESTRICTIVE COVENANT AND ARCHITECTURAL CONTROLS

EDGEWOOD ESTATES

THIS AGREEMENT made this ____ day of _____, 2011.

BETWEEN:

EDGEWOOD STABLES LTD.
(Grantor)

-and-

EDGEWOOD STABLES LTD.
(Grantee)

WHEREAS EDGEWOOD STABLES LTD. (at the time of the registration of these Restrictive Covenants and Architectural Controls) is the registered owner of the development known as **EDGEWOOD ESTATES** situated in the County of Lethbridge, in the Province of Alberta (hereinafter called the "Subdivision"), and is in the process of developing the Subdivision into a series of country residential lots;

AND WHEREAS the controls contained herein are intended to implement standards of appearance and quality in the Subdivision by attaching certain restrictions, covenants and conditions restrictive in nature in respect of the exterior design, use (to the extent that use is a function of design) and development, to each lot located within the Subdivision (hereinafter referred to as a "Lot", or referred to as the said "Lands" when referring collectively to all of the lots located within the Subdivision) and each and every part thereof and the buildings, structures, improvements and premises to be erected on each and every part of the Lands;

AND WHEREAS the restrictions, covenants and conditions herein are not meant to detract or derogate in any way from any applicable laws, regulations or by-laws (including but not limited to land use by-laws of the County of Lethbridge or the City of Lethbridge as may be enacted from time to time), but are in addition and supplementary to, the restrictions, covenants and conditions contained in any such laws, regulations and by-laws;

AND WHEREAS the Grantor covenants with the Grantee to observe and comply with the following restrictions and architectural controls, the burden of which shall run with each of the lots:

PLAN 111 _____, Block 2, Lots 1-10 INCLUSIVE

EXCEPTING THEREOUT ALL MINES AND MINERALS

(S.W. ¼ SEC. 29, TWP. 9, RGE. 21, W4M)

hereinafter called the "Lands".

This covenant shall be binding upon and inure to the benefit of the respective heirs, executors, administrators, successors and assigns of the parties.

BUILDING SPECIFICATIONS

1. No residence shall be constructed on the Lands which encroaches upon or straddles the property line with any lot adjacent to it on either side, regardless of ownership of the adjacent lot.
2. No residence shall be constructed on the Lands which shall have a floor area above grade of less than 2000 square feet. The measurements may include the outer walls of the residence but shall exclude any garage, patio, porch, or the like part of a building. Only one detached dwelling may be erected on a lot. All other County of Lethbridge Bylaws will apply.
3. No building shall be constructed on the Lands more than two stories above front-grade.
4. No mobile home, trailer, manufactured home, or previously built residence or building or structure shall be allowed to be placed upon or moved onto any of the aforescribed Lands (quality house packages which require substantial on-site construction and assembly may be permitted with the approval of the Development Manager).
5. A granny suite or legal suite may be constructed upon the said Lands, but must:
 - i Be approved under the County of Lethbridge Land Use Bylaw, accompanied by an approved development permit from the County.
 - ii Exist within the framework of the home itself, such as a suite above the garage or in the basement, indistinguishable to an onlooker from the street; or
 - iii Exist within the said Lands, but outside of the main residence and conform with the exterior finish and overall look of the main residence and fall within the proper permitted setbacks of the municipality and must be no more than 900 square feet (83.612 square meters) and must be included as part of the overall design concept of the house and yard development and must be approved in size and location by the Development Manager and must have sufficient parking on the said Lands.
6. Lot owners must consult the Development Manager for any building development that incorporates a walk-out basement, prior to proceeding with construction, to determine if the same is permitted, and if so, what requirements there may be with respect to the same.
7. No building shall be constructed upon the said Lands until the "Plot and Design Plan" has been approved by the Development Manager. The Plot and Design Plan must be approved in accordance with the overall plan and layout of the development as determined by the Development Manager. In particular, the orientation of the driveway and garage of each residence will be determined by the Development Manager to ensure maximum green space exists between adjacent Lands. The decision of the

Development Manager is final. It is strongly recommended that the owner seek direction from the Development Manager prior to making final decisions regarding a house plan.

8. Each residence constructed on the Lands is encouraged to be designed so as to explore the potential of each lot to arrive at a design which resolves the needs of the family intended to occupy the residence in terms of layout and finish. The design of the residence shall reflect the unique features of each lot in terms of view, orientation, climate, access and integration of indoors with outdoor space. Each home design must be conceived as a simple and honest expression of present day architectural forms and without the use of eclectic or regional styles.
9. Exterior finishes will be approved on case-by-case basis.

SETBACKS

10. All buildings or structures shall be within the parameters of the building envelope and must comply with the Land Use Bylaw of the County of Lethbridge in force at the time of the granting of the Development Permit.

ROOFING MATERIALS

11. No roof shall be constructed on any residence on said Lands with a roof pitch of less than 5:12. No metal cladding or metal sheeting on the roof area shall be permitted unless approved by the Development Manager. Tar and gravel roofing, and rolled roofing are not acceptable. Acceptable roofing materials include:
 - i architectural asphalt shingles;
 - ii laminate shingles;
 - iii concrete tiles;
 - iv shakes;
 - v slate tiles; or
 - vi metal roofing simulating slate, shakes, or shingles
12. The roof colour of any permanent structure (including but not limited to the residential dwelling and garage) located on a Lot shall be compatible with the colour of the exterior finish of the residential dwelling on such Lot.

GARAGE

13. No garage shall be constructed on the Lands unless it is a minimum of double attached or detached garage of the minimum dimensions of 6.7056 meters by 7.3152 meters (22 feet by 24 feet) and must be included as part of the overall design concept of the house and yard development and the exterior finish must be similar to that of the main residence and the roof line and pitch of the roof on the garage must be compatible with the design of the main residence.

14. Any detached garage or other outbuilding must be set back no less than 7.62 meters (25 feet) from the property line.
15. Any detached garage being built on the property must be approved in size and location by the Development Manager.
16. The Lands shall not be used for the storage of
 - Abandoned vehicles or equipment, non-functioning vehicles or equipment, auto or truck bodies, and other vehicles or equipment not currently in a functioning state; and
 - Gasoline, diesel fuel or similar fuel or volatile, explosive or dangerous substances other than those used for ordinary household or acreage purposes in quantities reasonably appropriate for ordinary household or acreage use.

CODE & BY-LAW COMPLIANCE

17. No building shall be constructed on the Lands unless it meets or exceeds the Alberta Building Code and complies with all By-laws of the County of Lethbridge, in the Province of Alberta. Prior to construction of a building (including accessory structures such as detached garages, shed, etc.) the lot owner must obtain all necessary local, provincial and federal permits including a development permit from the County of Lethbridge, regardless of obtaining approval for construction by the "Development Manager."

LANDSCAPING

18. A "Landscaping plan" for the front portion of each yard must be included with each Design Plan showing the driveways, sidewalks, fencing, ground cover and planting material. No ponds will be allowed on the lots.

FENCING & LIGHTING

19. No individual fence shall be constructed which does not comply with the Land Use By-Law of the County of Lethbridge and the location of which must be approved by the Development Manager. All fences must be maintained in a structurally sound and esthetically pleasing condition. No lot owner is required to construct a fence.
20. All fencing materials must be approved by the Development Manager. The approved materials are a 4 ft. in height, polyester powder coated black chain link fence for any back and side yards. Simulated wrought iron, stone or brick will be accepted for architectural feature fences. It is preferred that trees and shrubs be used wherever windbreak or privacy is desired.
21. If Lot owners choose to have a lighted gate post(s), the light(s) must coordinate with the chosen streetlights. The placement and height will be standard throughout the subdivision to provide a consistency of light. The developer will supply the details per request.

ANIMALS

22. Owners of any lot may keep domestic animals, but domestic animals are restricted to dogs and cats.

LOT GRADING AND RETAINING WALLS

23. No construction shall be carried out on the Lands until a "lot grading" plan is approved by the Development Manager. The plan must include the finished floor levels for all levels of the house including the bottom of footings and garage elevations. The finished sod grades at the house must be shown as well as arrows indicating drainage patterns, or swales. The grade at each corner of the lot shall be compatible with that of its neighboring land as to achieve efficient service water drainage away from that house and other developments and must not change existing drain patterns or block or interfere in any way with the drainage ditch along the boulevard. Any deviation from the recommended grade levels must be presented in writing to the Development Manager and a written decision must be required before any deviation from the recommended grade levels is carried out on the said Lands. The cost of retaining walls situated on a Lot shall be the responsibility of the Lot Owner. All retaining walls and their foundations are to be within Lot boundaries. Landowners are responsible for ensuring that drainage courses are protected and maintained. Landowners are responsible for adhering to final lot grade requirements.
24. Any Owner which has an easement for a drainage corridor on their Lot shall not suffer or permit dirt, fill, loam, gravel, paper, other debris, weeds, snow, ice, or slush (collectively referred to as "material") to fill or otherwise accumulate or remain upon the said lands and which would:
- Restrict, impair, impede, alter or otherwise interfere with the drainage across said lands including, without limiting the generality of the foregoing drainage a grass swale, concrete or asphalt gutter or other drainage gutter or other drainage control structure which may be erected on the said lands.
 - Alter, remove, damage or otherwise interfere with any drainage control fence, grass swale, concrete or asphalt drainage gutter or other drainage control structure which may be erected on the said lands.

PROCEDURE FOR DEVELOPMENT APPROVALS

25. All parties constructing any structure on the aforescribed Lands must submit the following to the Development Manager:
- Plot and design plan showing all building locations, setbacks, driveways, sidewalks, fences and Landscaping;
 - Lot grading plan, showing all grades and lot corner elevations;
 - Landscaping plan showing the Landscaping design of the front portion of the yard;
 - House plans showing the layout of each level including roof design and dimensions including:
 - i Building elevation of each side of the house showing window types and sizes, finishes, roof, elevations, chimneys, flues and vents; and

- ii Cross sections showing foundation and footing elevations and all dimensions, in particular the relationship between all levels including the garage;
- Completed development and permit application forms; and
- A sample or description of all exterior finishing material including colour schemes.

26. All requested and provided information will be processed by the Development Manager within one week of receipt if the information is deemed acceptable. If the application does not comply with the Architectural Controls or other by-laws and regulations, then the application will be returned to the applicant marked "unacceptable".
27. No Lot Owner shall submit an Application to the Development Manager that does not include the requirements contained in Paragraph 32 above.
28. The decision of the Development Manager is final and binding and, in order to avoid delays, it is recommended that a preliminary consultation be made with the Development Manager prior to the application submission.
29. There shall be no deviation from the plans contained in an approved Application unless the same is consented to in writing by the Development Manager.
30. In the event:
- a building on the property is not completed in its entirety in accordance with the Architectural Controls and the approved plans, or
 - the workmanship on the building is judged by the Development Manager at its sole discretion to be incompatible with the Architectural Control;

The Developer may, but is not obligated to;

- Complete the building in accordance with the Architectural Controls, or the approved plans, as the case may be; or
 - Replace the unacceptable workmanship, all at the purchaser's expense.
31. Any monies expended by the Developer to complete the building in accordance with the Architectural Controls, or the approved plans, as the case may be, or replace unacceptable workmanship shall become a charge on the building being built and a caveat or other charging document may be registered by the Developer against title to the property and the Developer may apply the Architectural Controls Security Deposit to any such monies expended; and, take all steps available to it at law to collect any other such monies so expended.

Prior to construction of a building (including accessory structures such as detached garages, shed, etc.) the lot owner must obtain all necessary local, provincial and federal permits including a development permit from the County of Lethbridge, regardless of obtaining approval for construction by the "Development Manager."

MAINTENANCE

32. Every lot owner shall keep his lot, including gardens and all improvements thereon, in good order and repair including but not limited to the seeding, watering and mowing of grass, the pruning and cutting of all trees and shrubbery, and the painting, or other appropriate external care, of all buildings and other structures in the manner and with the frequency that is consistent with good property management.
33. All lots/acreages must be cared for in a husbandly manner in order to maintain high quality land investments

GENERAL

34. The Developer and the Development Manager shall be responsible for the interpretation of the Architectural Controls and may modify any of the provisions stated therein at their sole discretion. Any dispute which may arise in connection with the Architectural Controls shall be determined by the Developer whose decision shall be final and binding.
35. Failure on the part of the Developer or the Development Manager to enforce promptly and fully the conditions, covenants, and restrictions of the Architectural Controls shall not be deemed to be a waiver of the right of the Developer to enforce the conditions, covenants and restrictions of the Architectural Controls.
36. All owners shall be expected to take normal precautions to prevent damage to installed improvements. In particular, they shall:
 - Protect all service lines including telephone, cable, electricity, gas, and water lines on the owner's property and extending to the adjoining Lands.
 - Protect driveway accesses, culverts, roads, ditches, etc., when it is necessary for vehicles to be driven across them.
 - Keep the road in front of the lot clean during construction, and keep the ditch and catch basin free of debris and in working order at all times.
 - Avoid placing excess soil or constructions debris on adjacent lots.
37. Any damage to installed improvements noticed prior to construction must be identified to the Development Manager at the time of discovery. The Manager will record the damage, and attempt to identify the party responsible for causing the damage. If this can be determined, the Development Manager will attempt to recover the cost to repair the damage from the party causing the damage. Any damage to improvements not identified prior to construction will be assumed to be caused by the owner, unless the owner can identify a third party who caused the damage. If the Development Manager is unable to recover the cost to repair the damage from the third party, the owner shall become responsible for the cost of the repair. Any damage caused by the owner must be repaired at the owner's cost.
38. The Lot Owner shall take all measures necessary to protect any and all survey pins located on each Lot. If it is required to replace a damaged or missing survey pin, the same must be done by an Alberta Land Surveyor, and the cost of the same shall be at the sole expense of the Lot Owner.

39. Any owner of any lot within the Development may enforce the Architectural Controls or other Controls of this Restrictive Covenant.
40. Each lot shall be deemed to form part of a Building Scheme, the land use and building restrictions and conditions contained in the Restrictive Covenants and Architectural Controls shall be deemed to be covenants running with each of the lots and shall be binding upon each individual owner of each lot and for the benefit of the owners of all the other lots set out herein and their successors in title or such subsequent plan of subdivision of the same area as may hereinafter be filed. The Developer, or any inspection agency contract by it, shall in its sole discretion determine the date when completion of construction has occurred.
41. Notice from the Development Manager as required in this document may be affected by personal service, regular mail to the last address provided by the Owner to the Development Manager, or by posting the Notice to the Door of the dwelling located upon the Owner's lands. Notice from the Owner to the Development Manager as required in this document shall be affected by personal service upon the Development Manager.
42. Should any one or more provisions of this Restrictive Covenant be determined to be illegal, unenforceable or otherwise invalid, the same will be severed, but all other provisions will remain in effect.
43. **IT IS NOT THE INTENTION OF THESE RESTRICTIVE COVENANTS OR ARCHITECTURAL CONTROLS TO IMPOSE ANY LIABILITIES ON THE DEVELOPER OR THE DEVELOPMENT MANAGER.**
44. Time shall be of the essence of these Restrictive Covenants and Architectural Controls.
45. The failure by the Developer, Development Manager or any consultant hired in connection with these Controls to require performance of any provision of these Controls shall not affect their right to require performance at any time thereafter, nor shall a waiver of any breach or default of these Controls constitute a waiver of any subsequent breach or default or a waiver of the provision itself unless the subsequent breach or default was waived in writing by the Development Manager.
46. If a lot has natural drainage, access must be granted for maintenance, if maintenance is required.

PROPOSED TIME LINE SCHEDULE FOR DEVELOPMENT UPON THE AFORESAID LAND

47. Purchase of Lands by Owner.
48. Initial consultation with the Development Manager.
49. Drawings (Plot and Design Plan, Driveway Placement, Grading Plan, House Plan, etc.) completed with a Stamp of Approval by Development Manager.
50. Upon title being made available, and upon receipt of the required permits, the builder can proceed with the construction phase that must be completed within four (4) years of the Closing Date.

51. Upon completion of the house and other structures in accordance with the approved plans and permits, the Owner of the Lands notifies the Development Manager that he can make an inspection.
52. After inspection and acceptable completion within the terms of the Restrictive Covenant and Architectural Controls set out herein, the Architectural Control deposit shall be refunded by the Development Manager to the owner.

IN WITNESS WHEREOF the Grantor and Grantee have set their hands and seals effective as of this ____ day of _____, 2011.

GRANTOR
Edgewood Stables Ltd.

Signature

Seal

GRANTEE
Edgewood Stables Ltd.

Signature

Seal

