PINNACLE RIDGE CONCEPT PLAN

A proposed country residential community on the northerly portion of NE 1/4 S19 T24 R2 W5M located in the Springbank area within the Municipal District of Rocky View No 44.

Prepared by

URBCO INC.

December 21, 1995

The view from lot 31

Pinnacle Ridge
Concept Plan

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1.0 Introduction

The planning and development of a unique 130 acre (53 hectare) parcel of land situated at the junction of Springbank Road and Westbluff Road presented Urbco Inc. ("Urbco") with an exciting challenge. *The challenge* .... to create a country residential community, that is in harmony with the natural landscape while offering dramatic homesite opportunities, that can be developed and maintained in a sustainable, economic fashion.

In an effort to create the preeminent country residential development in Springbank, Urbco set out to accomplish three goals for the Pinnacle Ridge neighbourhood:

1. To create a neighbourhood and series of homesites that respects the natural topography and terrain, and preserves, as much as possible, the natural landscape;

2. To create a neighbourhood that offers residents a sense and feeling of community; and,

3. To create a neighbourhood and architectural scheme that helps preserve and enhance the investment that residents will make in Pinnacle Ridge and the surrounding community.

In designing Pinnacle Ridge, Urbco spent considerable time talking with residents in surrounding country residential developments. Urbco has incorporated people's suggestions into Pinnacle Ridge and its planned architectural scheme. The experienced team of consultants that worked on researching and designing Pinnacle Ridge either live on acreages in the Springbank area or have worked extensively on country residential developments. The strategy of drawing upon people's experiences with country residential living allowed Urbco to incorporate many development features and subtle design nuances that may have been otherwise overlooked.

As one reads through the Concept Plan, the reports and studies that form the supporting information thereto, it becomes apparent that Pinnacle Ridge achieves our goals and the challenge we set forth. Our thoughtfully designed and engineered subdivision plan; our extensive naturalized landscaping plan; our comprehensive architectural scheme and guidelines, when brought to fruition, will be an asset to the Springbank community and a neighbourhood that residents can be proud of for generations to come.

The purpose of this Concept Plan is to inform the M.D. of Rocky View №44 council and staff with the particulars of this superb development that will become "Pinnacle Ridge".

2.0 List of Consultants & Participants

Development Proponent - Urbco Inc., (Mr. C. Donald Wilson, President & C.E.O.) (403) 531-0720
A respected development company who's four principal officers have over 120 years experience in land development.

Planners - Mr. George Gordon, M. Arch. (403) 242-2878
Loeppky Matthyssen & Associates (Mr. Syd Loeppky, A.L.S.) (403) 276-9078
Mr. Gordon has been a municipal planner for over 42 years and is actively involved in the TrailNet. Mr. Loeppky has been involved in residential planning and surveying for over 25 years.

Consulting Engineer - Jubilee Engineering Consultants Ltd.
(Mr. Hamid Mohammed, P. Eng.) (403) 276-1001
Mr. Mohammed has been practising land development engineering for over 21 years in Calgary and surrounding communities.

Landscape Consultant - Leonard H. Novak Landscape Architect Ltd.
(Mr. Leonard Novak, FCSLA) (403) 246-0073
Mr. Novak, a resident of Springbank, is renowned for his natural approach to landscape planning and has been practising for over 20 years.

Architectural Consultants - Nelson MacDonald Design (1986) Ltd. (Mr. Nelson MacDonald)
Abugov·Kaspar (Mr. Bruce Abugov, M. Arch.)
Mr. MacDonald is an internationally respected designer and has participated in designing homes, communities and architectural guidelines for over 30 years.
Mr. Abugov, a Springbank resident, is principal of the international architectural and design firm of Abugov·Kaspar and has provided technical assistance to the Architectural Guideline document.

Soils Consultant - Mr. Jim Shaner, P. Ag.
Mr. Shaner is a professional agrologist involved in soils and agricultural productivity analysis and research for over 20 years.

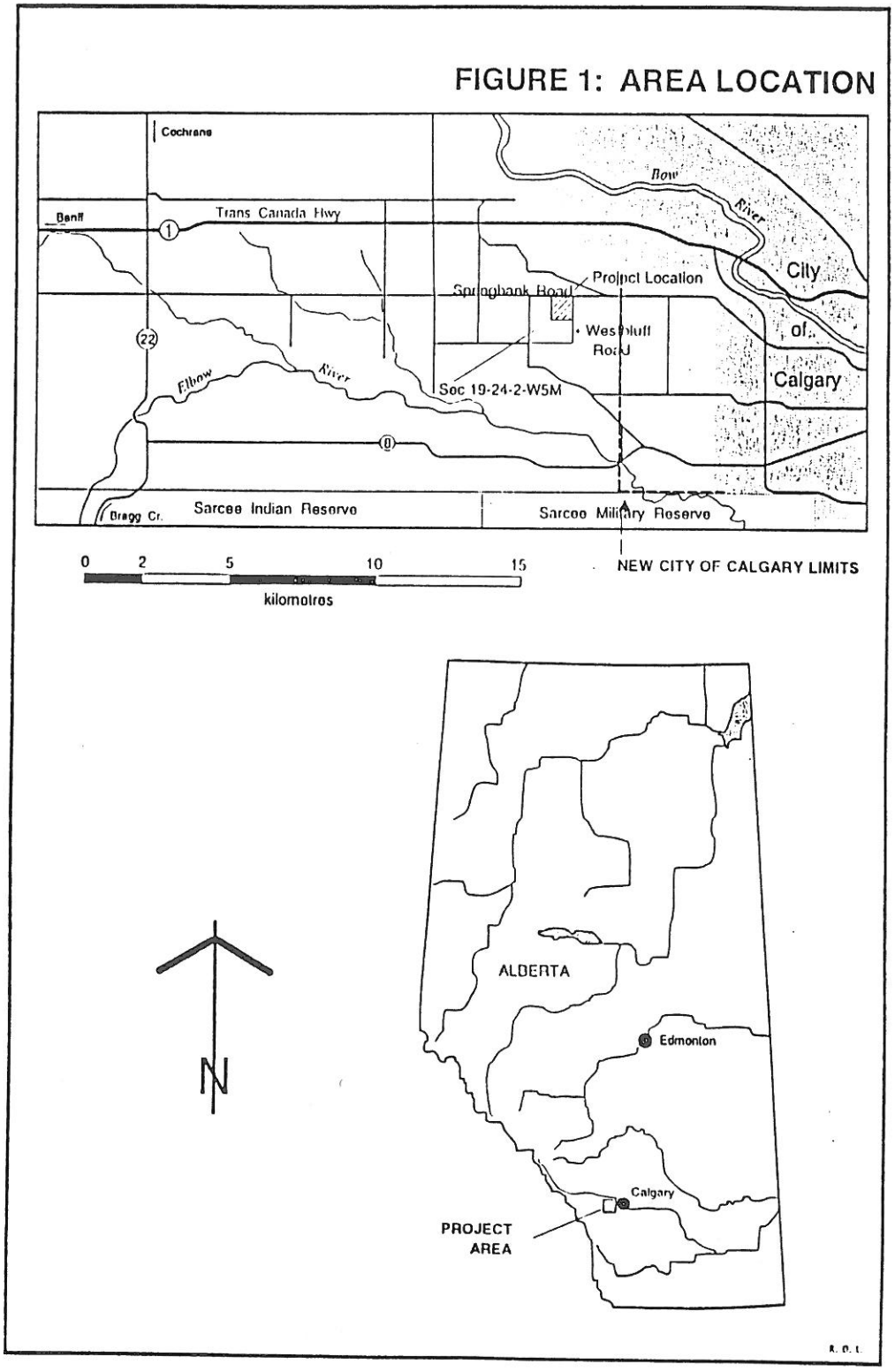
Geotechnical Consultant - EBA Engineering Consultants Ltd.
(Mr. Nazim Lalani, P. Eng.) (403) 236-9700
EBA Engineering is a large multidisciplinary firm offering services in the fields of geotechnical, civil, geological, and environmental engineering. The firm was founded 29 years ago.

Environmental Consultant - EBA Environmental Ltd.
(Mr. Nazim Lalani, P. Eng.) (403) 236-9700
A division of EBA Engineering Consultants Ltd. that practises in the field of environmental assessment and remediation consulting.

Historical Consultant - Historical Resources Management
(Mr. James A. Light, M., Arch) (403) 272-7524
Mr. Light, M. Archeologist, is a licensed permit holder with the Archeological Survey, a department of the Alberta Culture and Multiculturalism. Mr. Light has been consulting in the field of historical resources assessment and management for over 15 years.

3.0 Location Description & Maps

The subject parcel is situated 1.6 kilometres (one mile) west of the newly annexed Calgary City Limits; on the southwest corner of Springbank Road and Westbluff Road.



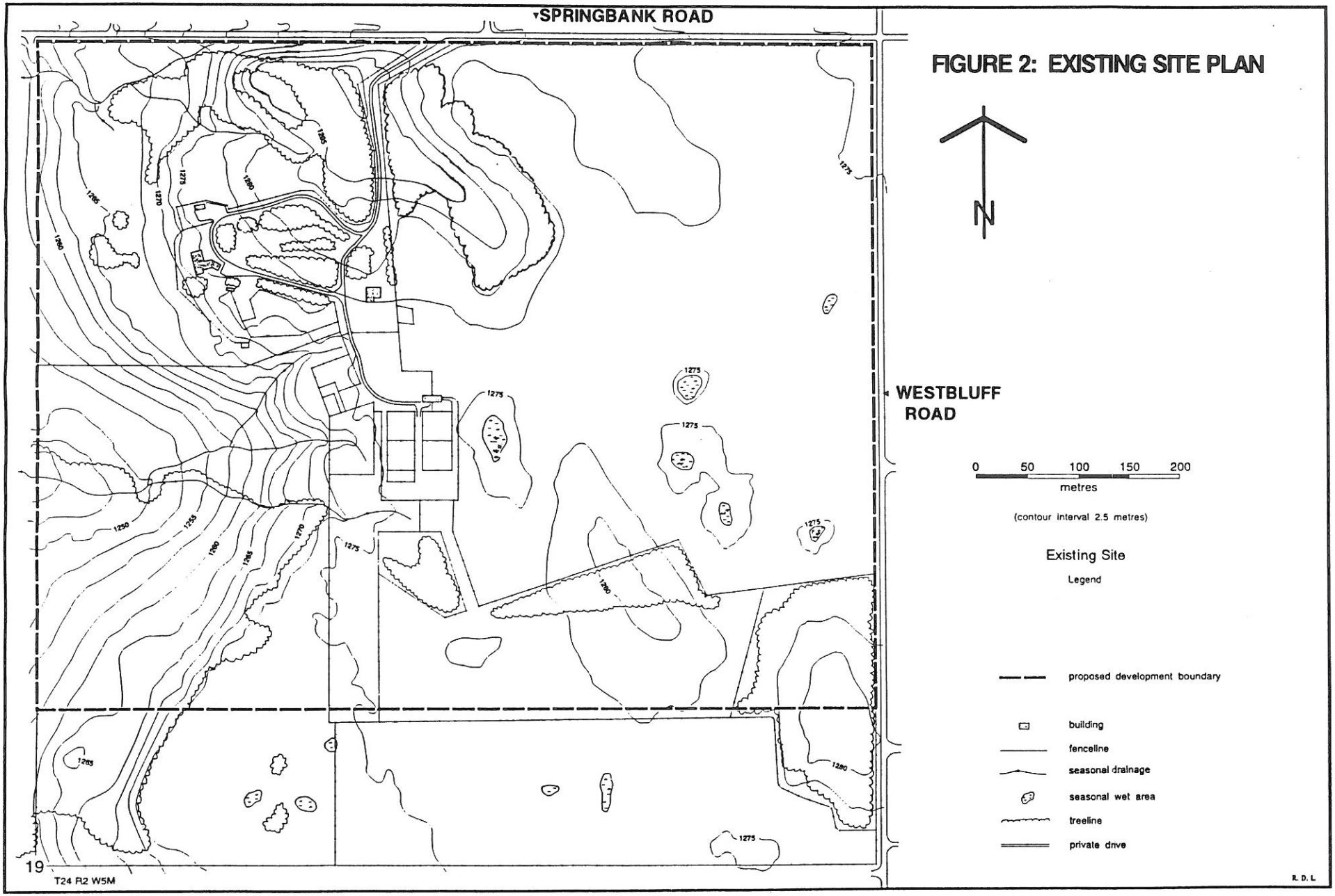
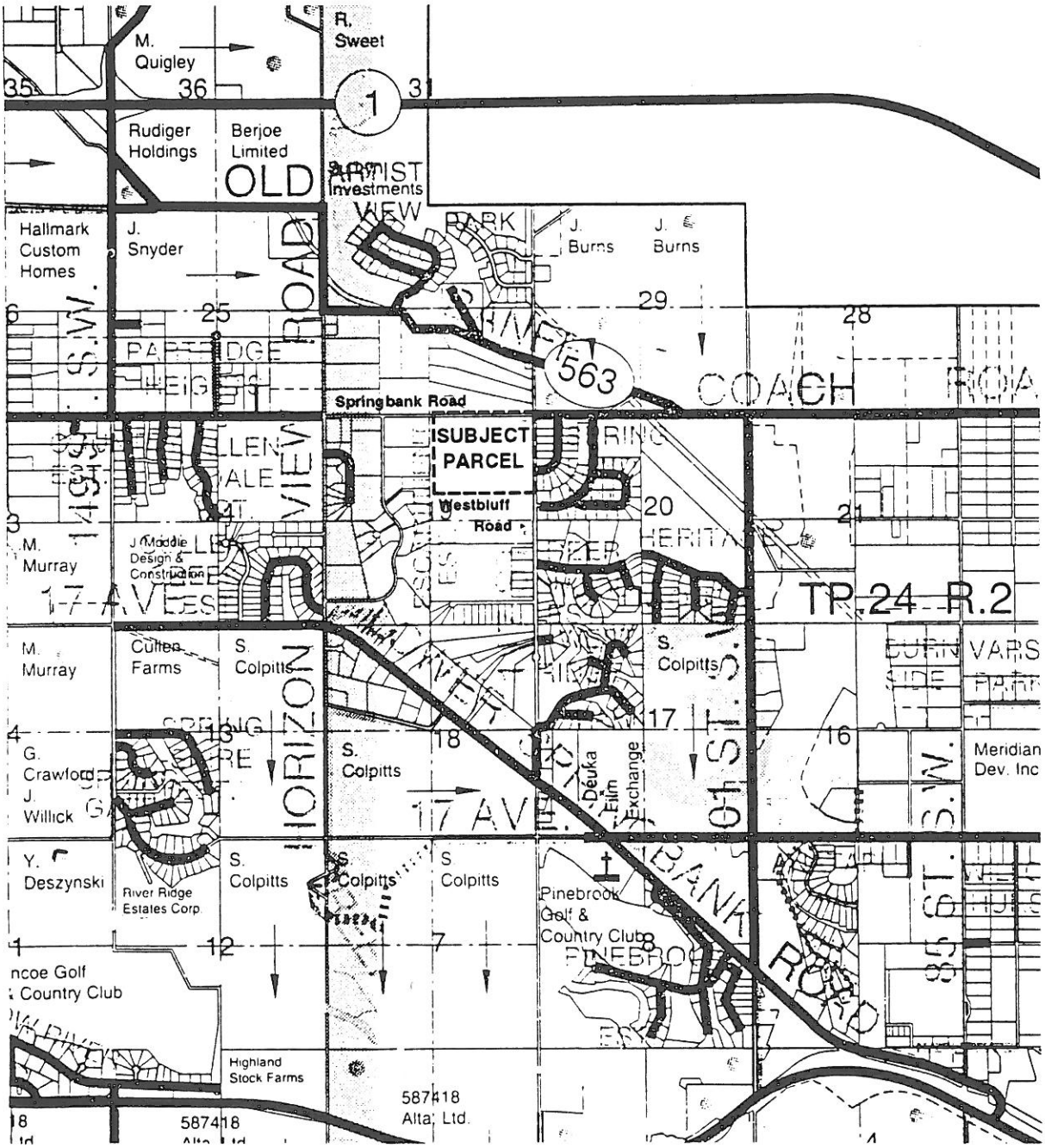

SPRINGBANK ROAD
WESTBLUFF ROAD
FIGURE 2: EXISTING SITE PLAN
N
0 50 100 150 200
metres
(contour interval 2.5 metres)
Existing Site
Legend
proposed development boundary
building
fenceline
seasonal drainage
seasonal wet area
treeline
private drive
19
T24 R2 W5M
R. D. L.

FIGURE 3: EXCERPT FROM M.D. OF ROCKY VIEW Nº44 MAP



4.0 History

The 130 acre parcel of land to be developed into Pinnacle Ridge has been owned by three generations of the Bilton family. Mr. Victor Bilton acquired this parcel and several surrounding parcels in 1928. The land was originally used by the Calgary based family for weekend retreats to the Springbank area. From the 1930's through the 1950's, the family attempted various forms of farming and in the 1970's initiated serious measures towards building a feed lot in order to make the land somewhat economically viable.

The 1960's witnessed the growth of country residential development in the surrounding areas. Construction of homes along Escarpment Drive began. As housing development became more popular in Springbank, the nearby communities of Deerwood Estates, Springland Manor (15 lots) and Springland Properties (34 lots) were established. Immediately north of the subject property, The Uplands (24 lots) and High Point Parke (11 lots) are currently being serviced and marketed. The area has a distinct country residential flavour.

Urbco Inc., the development proponent, has conditionally purchased the land from Mr. John Bilton. On August 30, 1995, Urbco Inc. paid the application fee and submitted its application for redesignation to the M.D. of Rocky View №44 offices. Further to a motion passed by the M.D. of Rocky View №44 Council on November 21, 1995 the proponent has prepared this Concept Plan. Effective December 22, 1995, Urbco Inc. paid the appropriate fees and submitted its Concept Plan and Application for Subdivision to the M.D. of Rocky View №44 offices.

5.0 Project Synopsis

Pinnacle Ridge will consist of 56 country residential lots, with a minimum parcel size of 2 acres. The subdivision plan attempts to work within the intent and focus of the land use policies established under the new *Municipal Government Act*. The outline plan design for Pinnacle Ridge is also sensitive to the existing terrain and landscape with road layouts and homesite locations tailored to follow the slope of the land and tree lines. One could have designed the subdivision to have three long narrow 19 lot cul-de-sacs, each fronting on to Westbluff Road. This might have been efficient from a servicing perspective but it would disregard the existing trees, the varying topography and would not accomplish the feeling of community the proponent is striving to create.

The layout of Pinnacle Ridge provides some very exciting homesite opportunities. Approximately 12 lots could be considered ridge type lots and will allow homeowners to take advantage of tremendous views of the Rocky Mountains and the valley preceding the Foothills. Another 15 lots will have excellent mountain views while another 10 or 12 lots will be fully or partially secluded by mature stands of aspen trees. The 35 acre field portion in the northeast corner of Pinnacle Ridge allows the proponent to introduce some creative landscaping treatment to the 20 lots contained within this land feature.

Lots in this development will be priced from $95,000 to $235,000. This represents one of the highest priced subdivisions in Springbank but given the unique location, diverse landscape and beautiful homesites, we believe the community of Pinnacle Ridge will receive excellent market acceptance. (See Figure 4: Outline Plan.)

FIGURE 4: OUTLINE PLAN

6.0 Concept Plan Study Area

This section of the Concept Plan provides information on the existing land uses and characteristics within 0.8 kilometres of the subject parcel, as required under the Subdivision and Development Regulations AR212/95. (See Figure 5 for the study area map)

Description of land use, land characteristics and development by quarter section:

❶ SW¼ S30 T24 R2 W5M -- This quarter section is northwest of the subject parcel. Current land use is approximately 60% CR designation and 40% AG-8 designation. Most recently the developments of Shantara Parke (9 lots on 21 acres) and High Point Parke (11 lots on 27 acres) have been serviced and are currently being marketed. The land is generally west sloping along what is commonly known as the Springbank escarpment. Some of the quarter section is open field while other portions are treed with aspen, willow, and other native plant materials.

❷ SE¼ S30 T24 R2 W5M -- This quarter section is adjacent to the subject parcel along the north boundary. Current land use is about 95% CR designation, 4% AG-8 designation and one small parcel is designated SH. The developments of The Uplands (25 lots on 57 acres) and Artists View Pointe (16 lots on 41 acres) have been serviced and are currently being marketed. The topography varies from treed knolls to sloping land on the escarpment to a flat field in the eastern half of the quarter section. Two communication towers exist on this quarter.

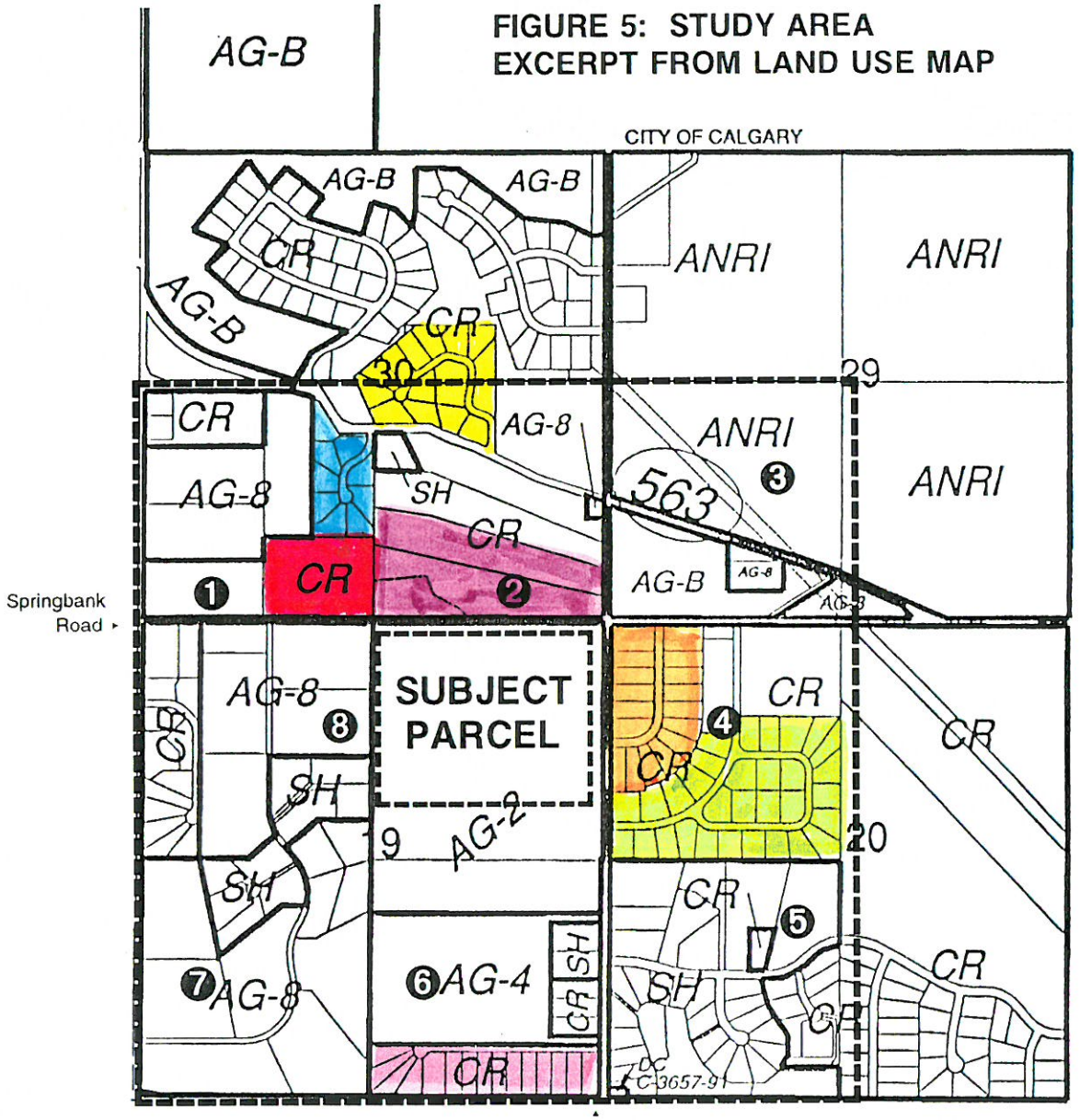
❸ SW¼ S29 T24 R2 W5M -- This quarter, which is northeast of the subject parcel is comprised of two small AG-8 parcels (approximately 20 acres), 50 or 60 acres of AG-B and the balance is designated ANRI. The largest portion of the quarter section is a portion of the Burnco Springbank Gravel Pit (off Old Banff Coach Road). This area is treed with aspen and native material. The AG-B lands are grassed, flat lands.

❹ NW¼ S20 T24 R2 W5M -- This quarter section is immediately east of the subject parcel and is all CR designation. The quarter section has been developed over the past 5 - 7 years into Springland Manor (17 lots) and Springland Properties (31 lots). The land is generally flat with some undulations. Residents have added groomed landscaping packages to their homesites.

❺ SW¼ S20 T24 R2 W5M -- This parcel is southeast of the subject parcel and is designated either CR or SH. Development varies from a series of 5 acre to 20 acre parcels and contains the Deerwood Estates subdivision. This area represents one of the area's earlier housing development locations. Topography is gently rolling with escarpment plateaus. Vegetation includes groves of aspen and willow, open areas, and groomed homesite landscaping.

❻ SE¼ S19 T24 R2 W5M -- This parcel is immediately adjacent to the subject parcel on the southerly boundary. The land use is about 30% AG-2 designation; about 45% AG-4; and, the balance is CR or SH designation. The land is generally open field with some treed areas and escarpment plateaus and slopes. Most recent developments include Westbluff Estates (15 lots on 36 acres). This project closed out final lot sales in the summer of 1995.

FIGURE 5: STUDY AREA
EXCERPT FROM LAND USE MAP



⑦ SW¼S19 T24 R2 W5M -- This parcel is southeast of the subject parcel. It consists of approximately 85% AG-8 designation and 15% SH designation. The topography is a combination of sloping escarpment, rolling land and open fields. Close to half the quarter is treed with aspen and other native materials. Existing housing is generally developed on 5 to 20 acre parcels with the most current example of development being a bare land condominium project of five 4 acre parcels located off Escarpment Drive.

⑧ NW¼ S19 T24 R2 W5M -- This quarter section is immediately west of the subject parcel. Land use consists of approximately 55% AG-8 designation, 15% is designated SH, and 30% is designated CR. The topography is generally sloping to the west along the Springbank escarpment and is partially treed with aspen, willow and other native materials.

With respect to potential future development as it relates to the subject parcel, the lands to the north and east are fully developed. The land to the south is owned by a family living in Monte Carlo and have stated that they have no intentions of developing their parcel; which they consider to be their Rocky Mountain retreat. The family has written the proponent and indicated they have no objection to the proposed development. If that party were to subdivide at a later date, water, road access, shallow utilities are all available from the Westbluff Road and the development parcel would be large enough (65± acres) to be fully autonomous. With respect to development that could occur on the subject parcel's western boundary, the proponent and the Planner have spoken to the two parties who own 20 acre contiguous parcels immediately adjacent to the subject parcel's west boundary (on Escarpment Drive immediately south of Springbank Road). Both parties expressed some interest in future subdivision and wanted to keep their options open. The planning respecting those two parcels should be done in conjunction with each other as a 40 acre parcel makes a logical planning cell. Servicing, access/egress, etc. would be available off of Escarpment Drive. Urbco however would provide a water utility easement from a suitable potable water line tie-off point within the subject parcel to each parcel owner in order to facilitate delivery of potable water in the future.

7.0 Pinnacle Ridge Landform Characteristics

The variations in topography and landscape that make the subject parcel uneconomic for agricultural pursuits are the very same characteristics that make for an attractive and pleasing environment for future residents at the Pinnacle Ridge country residential neighbourhood.

Mr. Leonard Novak, of Leonard Novak Landscape Architect Ltd., in his analysis of site conditions and landform characteristics, has identified eight separate land units within the 130 acre subject parcel. Those land units are described herein (moving from the southeast corner of the parcel and generally following the entry drive roadway and the branch cul-de-sacs; please reference Figure 6 herein) Note: Elevations are geodetic and expressed in metres above sea level:

Wooded Knoll - A 5 to 6 acre unit at the southeast corner of the proposed subdivision. An aspen grove reaching 8 to 10 metres in height, and lesser groves of willow, cover the knoll which climbs approximately 5 metres from the subdivision entrance of 1275 metres and the Westbluff Road elevation of 1275 metres.

South Edge Upland - A 10 to 12 acre unit which attains elevations of 1281 metres and is treed with a combination of 8 metre high aspen, willow, and spruce. The South Edge Upland travels about 500 metres west of Wooded Knoll. This unit also contains the south end of the Saddle Ridge which diagonally traverses the subject parcel.

Saddle Ridge - The saddle ridge that bi-sects the landform creates an interesting "window or frame" to the westerly half of the neighbourhood. The treed "horn" of the saddle is about 300 metres north of the centre of the South Edge Upland and rises to an elevation of 1285 metres or almost 10 metres above the Westbluff Road elevation while the "cantle" of the saddle (contained in the South Edge Upland unit) rises to an elevation of 1281 metres and is similarly treed with aspen groves. This area may encompass 5 to 8 acres.

Escarpment Plateau -- Immediately west of the South Edge Upland is another land unit of 16 to 20 acres which forms a plateau on the west edge of the subject parcel. The land is generally undulating with some aspen and willow. This land unit drops down from the Saddle Ridge elevation of 1281 metres. It is generally 1272 to 1275 metres in elevation. The plateau will offer some very interesting homesites.

Southwest Slope Forest -- This land unit is in the southwest corner of the subject parcel and consists of approximately 10 to 12 acres. The unit is heavily treed with stands of aspen. Elevation ranges from 1272 metres to 1245 metres in this unit. Based on the proposed development plan the majority of the trees remain as homesites are located beside the tree lines. (Where trees are displaced for homesites and the roads, every effort will be made to transplant those trees to the Field -- See Landscape Plan).

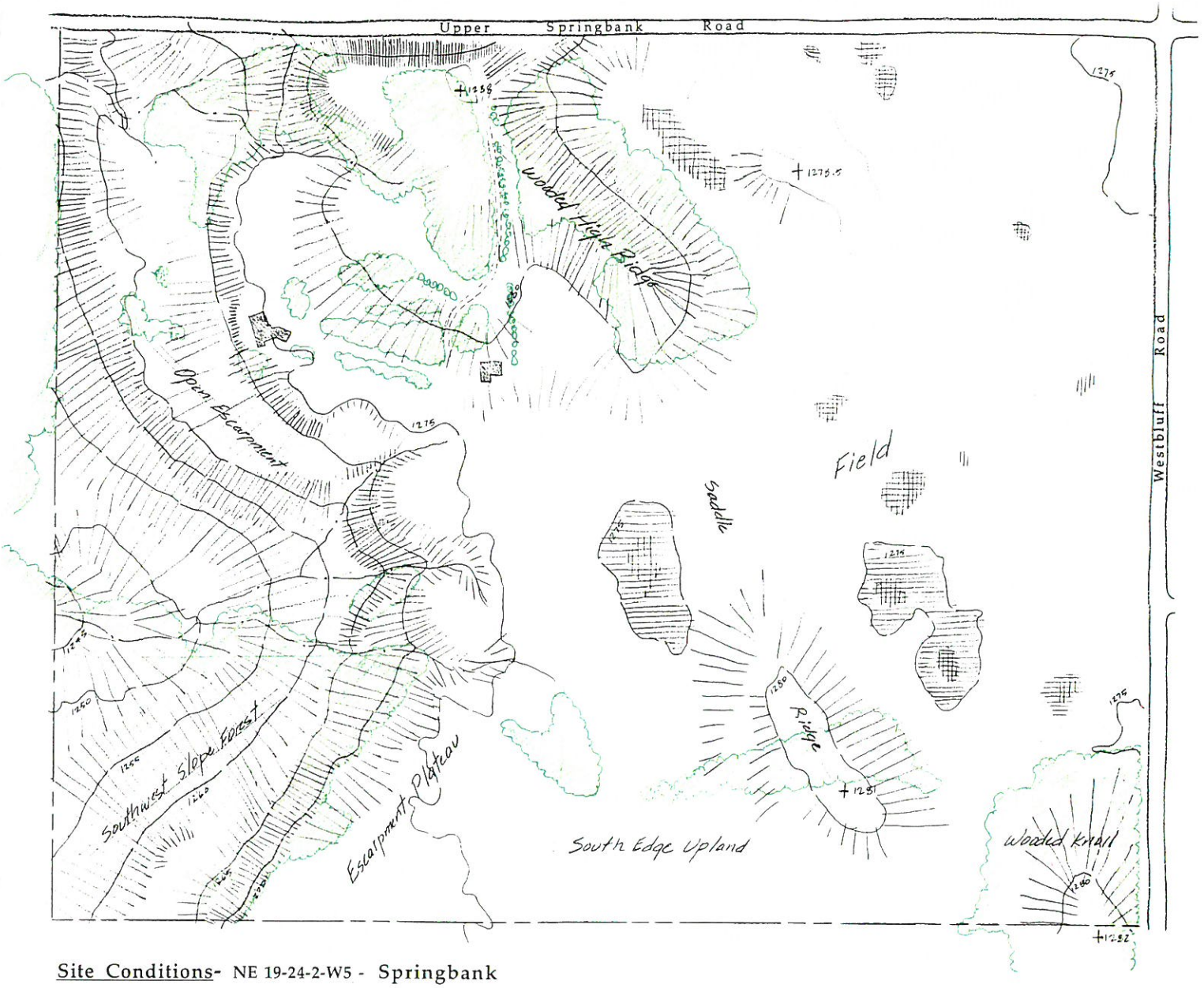
Open Escarpment -- Situated on the western boundary of the subject parcel, this gradually sloping land unit (of about 15 to 20 acres in size) is covered with native grasses and "knee high" stands of aspens. This uncultivated area will allow future residents the option of creating some interesting natural landscaping opportunities.

Wooded High Ridge -- This land unit is approximately 20 acres in size and is heavily treed with 10 to 15 metre high aspen and spruce. It represents one of the highest points in Springbank attaining a height of 1288 metres. This unit extends along Springbank Road and about 200 metres south into the subject parcel.

Field -- This land unit is approximately 35 acres in size. It is slightly undulating and varies in elevation from 1275 metres to 1278 metres. This land unit has been cultivated and hay cropped in the past. It is in this area that Urbco will undertake an extensive enhancement to the Pinnacle Ridge landscape. (See Landscape Plan).

Mr. Novak states the proposed outline plan of "Pinnacle Ridge is extremely well thought-out from the perspective of creating harmony with the Landscape. The roadways are aligned along the existing tree lines thereby helping to preserve the trees. The "spur" cul-de-sacs along the south and western land units are designed to follow natural draws and tree openings within the existing landscape".

FIGURE 6: LANDFORM CHARACTERISTICS



Site Conditions- NE 19-24-2-W5 - Springbank

- Index contours
- Wetlands
- Drainage courses/coulees
- Slopes
- Existing woods

NORTH

SCALE 1 : 2000

for URBCO

Leonard Novak Landscape Architect Ltd.

8.0 Historical Cabin

Although not considered a historical resource under interpretation of the *Historical Resources Act*, the quaint cabin built by John Bilton's grandfather in 1928 provides a unique "bit of history". Mr. Bilton's grandmother used to host bridge parties during the day, and his grandfather hosted card games during the evening. It became quite a meeting place for family and friends during the '30's. For sentimental reasons, the Bilton family have maintained the cabin over the years. Urbco intends to preserve this bit of history and move the cabin to a more central location within the neighbourhood (see the P.U.L. lot on Figure 4). The cabin will become a "meeting place" for residents. A small set of toddlers play equipment will be erected beside the cabin. The proponent will negotiate with Canada Post to have the mailboxes placed beside the cabin (several generations ago, the local post office was a rural community's meeting place). It may also be possible to identify this location as a school bus pick-up point and hence a shelter for the neighbourhood's children. We expect residents will pour themselves a cup of coffee and, with their 3 year old toddler "in tow", walk down the pathway to the "meeting place" to pick up their mail and newspaper; and, more likely than not, meet another neighbour doing the same. This small planning gesture when combined with the Pinnacle Ridge layout, architectural guidelines, pathway, and naturalized landscape contributes to the "feeling of community".

The cabin and P.U.L. lot upon which the cabin will be situated will be owned, insured and maintained by the Pinnacle Ridge Homeowners Association.

9.0 Development Characteristics and Assessment

The following sections describe the characteristics of the Pinnacle Ridge development and in most cases represent summaries of supporting documents and studies.

9.1 Historical

Mr. J. Light of Historical Resource Management was retained by Urbco to conduct a Historical Resources Impact Assessment. Mr. Light assessed the entire subdivision area and identified two potential sites that should undergo further assessment (Eg Pn 424 and Eg Pn 425, see Appendix #4). Mr. Light conducted the assessment and found a quartzite biface, a projectile point base, shattered flakes of quartzite and broken fire rock. This tends to indicate that early people formed tools such as arrowheads by chipping rocks while sitting at campfires. Pursuant to a letter from Dr. Byrne, Assistant Deputy Minister Cultural Facilities and Historical Resources and in compliance with the *Historical Resources Act*, Urbco will undertake to have Mr. Light complete the assessment of the two sites (Eg Pn 424 and Eg Pn 425) in the spring of 1996 when the frost is "out of the ground". It is not the intent of Historical Resources to set aside any sites at the subject parcel, but rather to collect any items found. Should any item of significance be found, it will be catalogued and sent to Historical Resources for storage. Mr. Light states that the final assessment to be conducted need not impact subdivision approvals but completion of the assessment is simply in compliance of the *Historical Resources Act*.

9.2 Soils Characteristics and Assessment

Mr. Jim Shaner, P. AG. writes in the agricultural feasibility assessment report that only 35 to 40 acres of the subject parcel are cultivatable or about 25% of the subject parcel. The majority of the lands are actually 3T, 4T or 5T soils classifications due to slopes, trees, terrain, or exposed gravel. The assessment report concludes "maintaining this particular parcel of land as an agricultural enterprise is not feasible nor an appropriate use of this land". Historical records indicate that Mr. Bilton's hay crop

generates about $1500 revenue per year before costs. Net income doesn't pay the annual property taxes of $5000± per year. Mr. Shaner evaluated the feasibility of rejuvenating the farmable 35 - 40 acres and boarding horses on the other usable land. The result was the operation barely covered the property taxes and showed no economic return on the land input cost.

Large percentages of the Springland Manor, Springland Properties and The Uplands subdivisions are contained within the same Canada Land Inventory Map classifications as the subject parcel. Given the surrounding subdivision activity and the conclusion of the feasibility assessment, the highest and best use for the land is country residential.

When Pinnacle Ridge is fully built-out, it is expected that the neighbourhood will generate $280,000± in property taxes for the M.D. of Rocky View №44.

9.3 Environmental

EBA Environmental Ltd., was retained by Urbco to conduct a Phase 1 Environmental site assessment. The EBA Environmental Ltd. environmental assessment concluded that "no adverse conditions exist on the site and no further investigation is required". There are two water wells on the subject parcel and an abandoned well.

9.4 Land Use and Designation

Urbco Inc. is requesting that the M.D. of Rocky View №44 approve a country residential land use designation for the subject parcel and allow for the subdivision into 56 country residential lots and one P.U.L. lot.

It is the opinion of the proponent the designation of the subject parcel is consistent with and satisfies land use policies contained in the Land Use Policies put forth by the Province pursuant to section 622 of *The Municipal Government Amendment Act*.

The development of Pinnacle Ridge, as described in the Concept Plan and its attendant redesignation and subdivision applications, is in compliance with the Province's stated desire to

> "encourage settlement patterns which make efficient use of land, infrastructure, public services and public facilities; which promote resource conservation and lead to minimal environmental impact; and which allow healthy, viable, and safe communities to be developed." (Alberta Municipal Affairs Land Use Discussion Paper)

Pinnacle Ridge will be set amongst an extensive array of country residential subdivisions (see Study Area) thereby following established settlement patterns. Water supply, shallow utilities and transportation arteries are adjacent to the parcel boundaries thereby facilitating efficient and economic use of existing infrastructure. As one can derive from other sections of this Concept Plan, the proponent is not only committed to preserving as much as possible the existing topography, treed areas, and landscape (as evidenced by examples such as terrain sensitive design, pre-set building locations, and pre-established tree removal program) but is committed to enhancing the landscape as evidenced by the Landscaping Plan for the Field land unit. Urbco will transplant existing trees, displaced by grading, building site and roads, to the Field land unit in order to help establish new groves. As indicated in the Landscape Plan, Urbco will also undertake an extensive new planting scheme along north and east boundaries of the Field land unit.

With respect to density the current M.D. of Rocky View №44 Country Residential (two acre minimum lot size) land use By-law allows for 0.3 lots per acre. However, the M.D. of Rocky View №44 has the discretion to allow higher density and they have consistently set precedents thereto . The five most recently approved development projects within the study area have the following density factors:

Project	# Lots	Parcel Size in acres	Density Factor Density/Acre
High Point Parke* (no MR/cash-in-lieu)	11	26.5	0.414
The Uplands* (no MR/cash-in-lieu)	25	57.1	0.438
Shantara Parke* (no MR/cash-in-lieu)	9	20.7	0.438
Artist View Pointe (0.18 acre MR/4.5 acre ER)	18	41.1	0.438
Westbluff Estates (no MR/cash-in-lieu)	15	35.8	0.420

* **Contiguous developments (separate developers) immediately north of the subject parcel. See Figure 5 for location of these projects.**

Pinnacle Ridge, with 56 lots on 130 acres, equates to a density of 0.431 lots per acre. This density is in line with the practice and approvals previously undertaken by the M.D. of Rocky View №44 and is consistent with the goals and spirit of the new *Municipal Government Act*. It is with this designation and density that Urbco will only be able to build a healthy, safe, and viable neighbourhood and incorporate the numerous development features that are outlined within this Concept Plan.

9.5 Geotechnical

EBA Engineering Consultants Ltd. prepared the geotechnical evaluation of the subject parcel. The report indicates the soils generally consist of a layer of topsoil overlying layers of clay till and sand/gravel. Bedrock was generally encountered at depths of 5 meters. Water soluble sulphate content was negligible. Soils conditions are suitable for the construction of residential houses. Analysis of slope conditions on the subject parcel indicate the slopes are suitable for development without any stability setbacks. The one exception is the north slope respecting the proposed lots 30 and 31. The north boundary of these lots has 2.3H:1V cut where Springbank Road runs perpendicular through the escarpment. The house locations for lots 30 and 31 should have a 6 metre slope stability setback from the top of the bank; however the 30 metre by-law setback from an M.D. roadway exceeds the 6 metre setback from the top of the bank and thus the slope setback on those two lots is addressed.

9.6 Engineering

The following information is a synopsis of the Engineering Feasibility Report prepared by Jubilee Engineering Consultants Ltd. Refer to Appendix 16.1 for greater detail.

9.6.1 Water Supply

Westridge Water Supply Ltd. ("Westridge") has existing capacity within their supply system and has agreed to supply potable water to the neighbourhood of Pinnacle Ridge. Westridge has a 6" feeder line at the southeast corner of the subject parcel and a pump house further south on Westbluff Road. Urbco has requested, and Westridge has agreed, to increase line pressure to the subdivision to 600 gallons per minute which will enhance the discharge pressure and enhance fire fighting capability. Seven hydrants will be appropriately located throughout the subdivision. For greater detail see Appendix 16.1.

Westridge also agreed to work with Urbco in customizing their line assignments and easements within the subdivision in order to minimize the displacement of major stands of trees along the western half of the subject parcel.

9.6.2 Waste Water Management

Private sewage disposal will consist of a septic tank and disposal field system for each individual lot. *The Plumbing and Drainage Act*, which is overseen by Alberta Labour, specifies the requirements respecting the design and installation thereto. For example, the *Act* requires that effluent disposal fields or evaporation mounds must be a minimum of 1 metre from any property line, 15 metres from any well or water source, and 10 metres from a basement and the minimum lot size shall be 20,000 sq. ft. or 0.46 acres. These requirements have been established over time and provide the parameters for the safe and efficient disposal of sewage waste. Alberta Environmental Protection in conducting their circulation review looks for a minimum of one acre of Suitable Development Area (defined as an area with neither high water table or land exceeding slopes of 15%) within the property lines of each lot in which a septic tank and field system are to be installed. The subdivision will meet these guidelines. Refer to Appendix 16.1 for the approximate location of disposal fields and Suitable Development Areas.

Soil permeability is another consideration in determining the suitability of septic tank and field systems. A series of percolation tests were conducted on the subject parcel and Jubilee Engineering Consultants Ltd. have prepared a percolation rate contour map based upon those tests (included in Appendix 16.1). Jubilee Engineering's analysis of percolation rates notes that all lots in the subdivision will have permeability characteristics that satisfy *The Plumbing and Drainage Act*.

Geotechnical reports indicate no slope stability or subsidence problems at the subject parcel and near surface ground water was only found at 5.6 metres which indicates an extremely low water table. The indicated water table is well below the maximum 24 inch depth recommended for the disposal field installation. Alberta Labour regulations state that disposal fields shall be 0.9 meters above the water table and tests indicate there is 4 meters between the water table and disposal fields.

Notwithstanding that the use of the septic tank and field system meets the necessary guidelines, the proponent will provide as part of the purchase agreement for each lot an individual lot percolation test at no charge. Prior to a lot purchaser receiving Architectural Guideline Approval, which is a condition of building one's house, the lot purchaser must have conducted the test and designed a septic system that is in compliance with necessary codes and the system must be designed to the satisfaction of the Consulting Engineer. All private sewage disposal systems built in the subdivision must comply with *The Plumbing and Drainage Act*.

9.6.3 Near Surface Ground Water

A series of boreholes were conducted at the subject parcel. The tests indicate the presence of sub-surface ground water in only one location and that was at a depth of 5.6 metres. Review of the available well information indicates that two wells have been drilled on the subject parcel. The active well that supplies water to the two houses on the property is about 50 metres in depth. Another well was drilled to a depth of 175 metres but was abandoned as dry.

A review of available well information of the properties adjacent to the subject parcel's west boundary indicate well depths of 70 feet to 160 feet. Jubilee Engineering Consultants Ltd. states that the subject parcel has low water tables and the well depths in the immediate vicinity are also very low. The vertical distance between disposal fields and the water table/water sources far exceeds Alberta Labour guidelines and are very favourable for private sewage disposal.

9.6.4 Storm Water Management

The subdivision plan will generally maintain the existing drainage patterns as much as possible. The road layout takes into account the existing terrain, natural vegetation and drainage patterns thereby minimizing the impact of development. Accounting for the impervious surfaces introduced by housing and roads, the run-off co-efficient as a result of development increases from 15% to 18%. This increase in run-off is minimal and the impact to the existing drainage conditions will not be noticeable.

9.6.5 Roadways

The roadway system will be designed consistent with M.D. of Rocky View №44's standards. Preliminary road profiles and cross-sections indicate a maximum longitudinal slope of 7% will be achieved within the subdivision.

However, the proponent is requesting that the road "right-of-way" of 25 metres on the two most westerly cul-de-sacs be designed to include easements for the shallow utilities. This technical modification will reduce the amount of trees displaced and the "denuding of the native grasses" that will occur with typical road right-of-way standards. In the proponent's discussions with local area residents, it became apparent that residents consider the "scale of roads" within subdivisions to not be "pedestrian friendly"; especially in "local traffic only" locations such as would be the case in the one southerly cul-de-sac and the two westerly cul-de-sacs. We therefore request that staff and council give due consideration to the design and layout as noted in Figure 7 herein and as described in Appendix 16.1. This pictorial representation illustrates the displacement of trees when comparing the standard right-of-way and easement versus the requested relaxation. We believe in this age of sustainability that sensitivity to enhancing one's living space should take precedence over inflexible engineering specifications. Jubilee Engineering Consultants Ltd. believes this approach can be implemented without any bearing on future maintenance concerns as road beds, surfacing, backsloping, grading, etc. are all to meet standard specifications.

The neighbourhood is serviced by one entryway in order to increase the security within the neighbourhood. One entrance facilitates greater community monitoring of "who comes and who goes" and this feature is well recognized by police services as a passive means of preventing criminal activity. The issue of security and crime was another concern of local area residents. The subdivision design provides for an emergency vehicle access easement at the northeast corner of the subdivision.

Existing Landscape

Looking north between proposed lots #24 & 49

FIGURE 7(A): TREE DISPLACEMENT COMPARISON

Typical MD Road Allowance Requirements

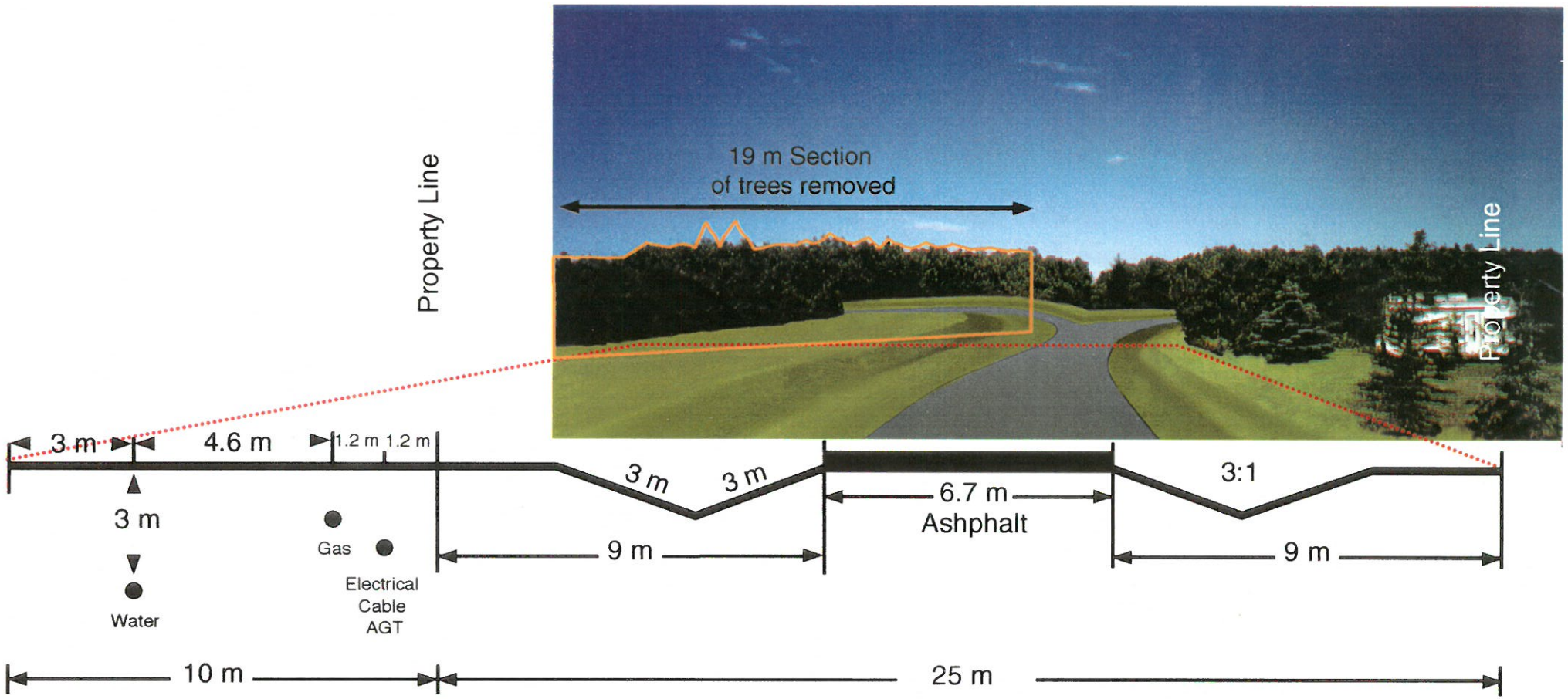


FIGURE 7(B): TREE DISPLACEMENT COMPARISON

Proposed Road Allowance & Line Assignments

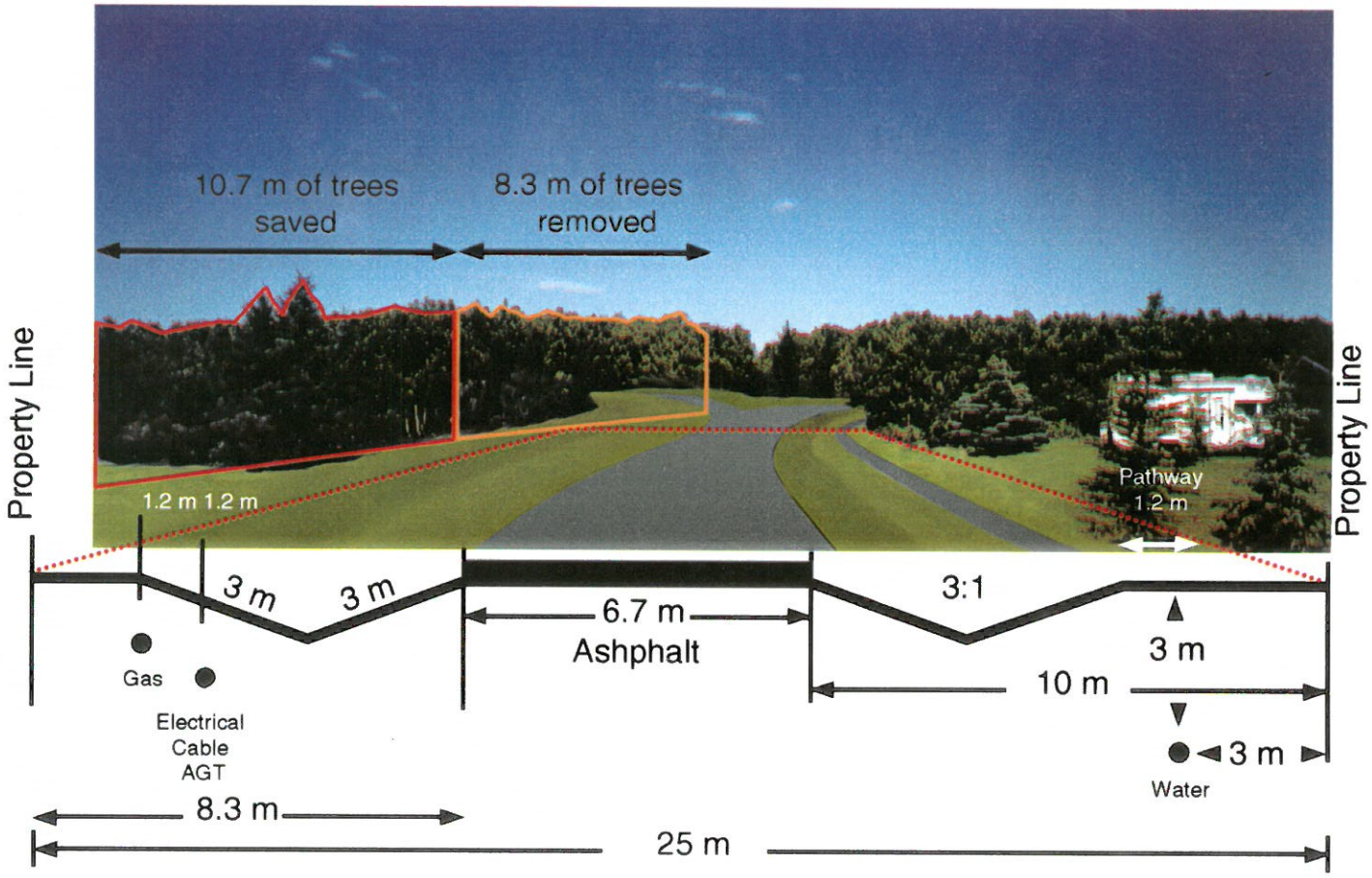


FIGURE 7(C): TREE DISPLACEMENT COMPARISON

9.6.6 Pathway

Pathways are not required within M.D. of Rocky View Nº44 subdivisions however it was universally mentioned in the proponent's discussions with local area residents that subdivisions should include a trail or pathway. People were not asking for anything "obtrusive or grand" like 3 metre wide asphalt "highways" -- only a narrow, environmentally friendly, unobtrusive walking trail. Pinnacle Ridge will include an internal trail consisting of a 1.2 metre wide gravel and clay pathway as located in Figure 8. This low maintenance path is modelled after a design used by the City of Calgary in areas that are environmentally sensitive or have lower use. This internal pathway will be installed in the road right of way, built by the proponent, and the Pinnacle Ridge Homeowners Association will provide maintenance such as weed removal and garbage pick up; much like the Adopt-A-Highway program or, in this case, Adopt-A-Trail.

Local area residents consider a trail or pathway system to be a more valuable asset than a series of disjointed municipal reserve parcels. The proponent has been working with the Rocky View Trails Association to also plan a 1.2 metre wide gravel and clay pathway on the north and east perimeters of the subject parcel. This trail, in combination with the Pinnacle Ridge internal pathway, will benefit not only the residents of Pinnacle Ridge, but surrounding neighbourhoods. The proponent is proposing to build, at its cost, this path (along Springbank Road and Westbluff Road) in order to become a key link in the Rocky View Trails Association's overall trail scheme.

The proponent proposes the following:

The proponent would build a 1.2 metre wide clay and gravel pathway, along the north and east property lines of the subject parcel within the road allowance. Given the M.D. of Rocky View Nº44's liability with respect to public work and places are greatly diminished under Part 13 of *The Municipal Government Act*, the establishment of a pathway in the road rights-of-way is considered to be of no greater liability than the potential liability from a pedestrian walking on the road or ditch. The Pinnacle Ridge Homeowners Association will provide "Adopt-A-Trail maintenance" and look after weed removal and garbage pick-up. In areas where it is more practical to build the path inside the property lines, the proponent proposes to dedicate the strip of land to the M.D. of Rocky View Nº44. This would result in some lots being 1.97± acres as opposed to 2.0 acres. We ask that consideration be given to such relaxation in order to facilitate the pathway construction as it does not materially affect one's lot. The design and location of the pathway would be set at detailed engineering drawing stage.

9.6.7 Shallow Utilities

The cost of extending all shallow utilities shall be borne by the proponent.

Natural Gas

The subdivision will be serviced from an existing line within Westbluff Road. Serviced by Canadian Western Natural Gas Ltd.

Electrical Service

The subdivision will be serviced off an existing line within Westbluff Road. Serviced by City of Calgary Electric.

Telephone/Cable T.V.

AGT has a remote station situated just north of the subject parcel off Westbluff Road. Standard telephone service will be provided from that remote station. However, the proponent is negotiating with AGT to

provide Micro-Link® service to Pinnacle Ridge. This would increase the speed of telephone and data transmission from 4K bits per second to 144K bits per second. In the age of the Internet, telecommuting, e-mail, and teleconferencing this feature will find great appeal to future Pinnacle Ridge residents who want to work from the home as opposed to driving to the office. This could be the first subdivision in the Calgary area to offer this service to its residents. Shaw Cable will supply cable T.V. and will be offering Internet service in the near future. These types of telecommunication services will greatly increase the incentive and ability of residents to telecommute, thereby reducing traffic.

9.7 Transportation

Jubilee Engineering Consultants have prepared a traffic study respecting the effect of the proposed development on the traffic corridors. The traffic flow pattern emanating from this subdivision will generally flow from Westbluff Road to Springbank Road. Trips will generally be east along Springbank Road into Calgary. The report states that both Westbluff Road and Springbank Road have the carrying capacity to accommodate the forecasted traffic volumes from this subdivision. The ITE Trip Generation model forecasts 275 enter and exit trips per day from the subdivision. However, the report notes that forecast models do not factor in the unique characteristics of a project's resident profile. Pinnacle Ridge, given its "upper-end" nature, will more often than not appeal to a large percentage of families with a single, high income, wage earner and a large percentage of empty-nesters (both young and old). The demographics of this home buying market segment will translate into less daily commute trips. As well the trends towards telecommuting and home-based business consulting and the changes to the "way" people will be working in the future will also reduce traffic generation. Actual traffic flow could be reduced by up to 20% as a result of these factors.

The capability of Springbank Road is about 5000 vehicle trips per day and thus the effect of the new subdivision is marginal. The capacity of Westbluff Road is 1000 vehicle trips per day.

10.0 Landscape Plan

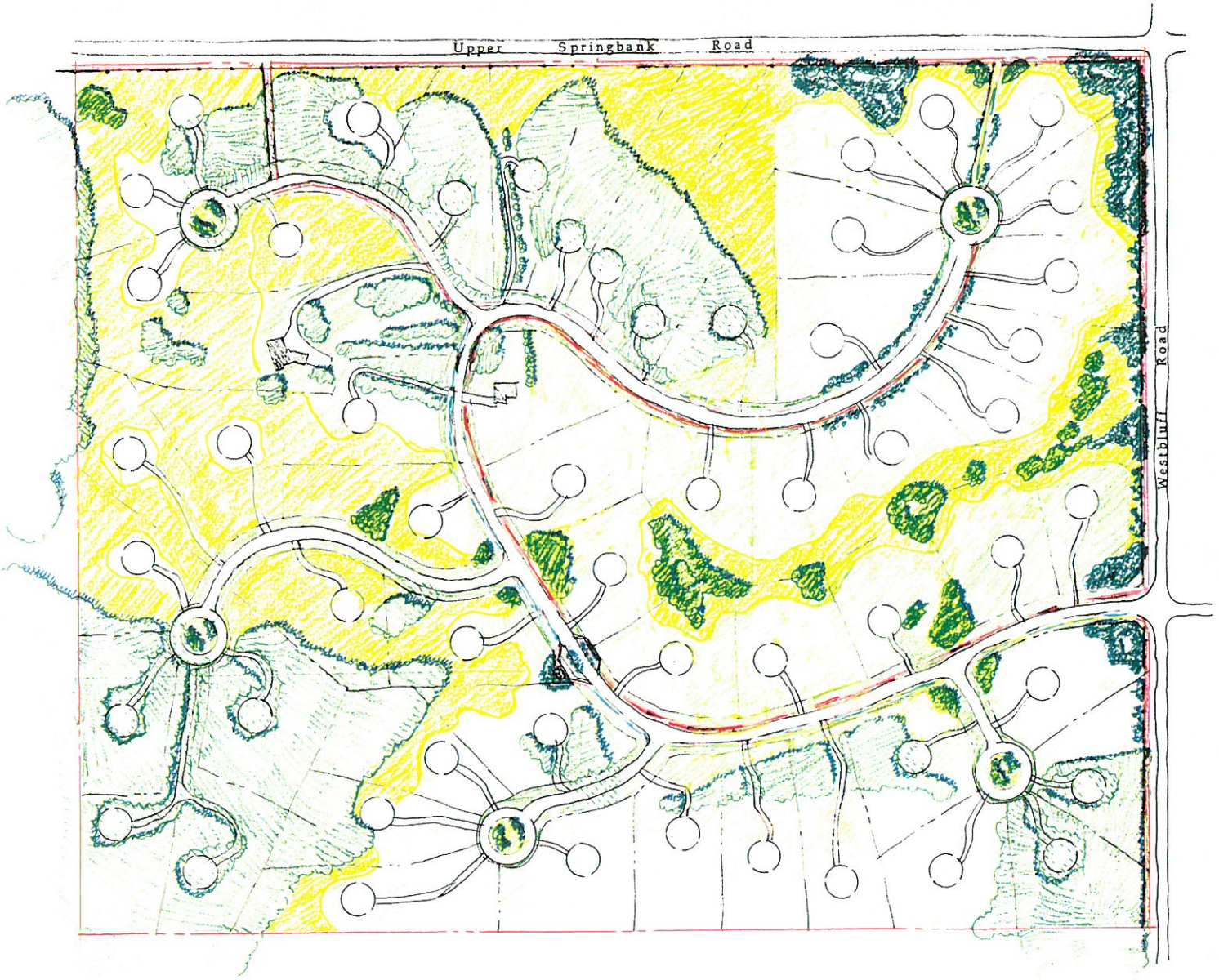
Mr. Novak, the project's landscape architect, has identified 8 separate land units at Pinnacle Ridge (See Figure 6 and Section 7. Landform Description.) While the approach to the overall landscaping theme takes on a naturalist approach, each land unit will have customized treatment. See Figure 8 for Plan.

For example, lots created in the Wooded Knoll land unit are generally treed and will receive little in the way of "developer provided" landscaping. The proponent will pre-clear the building sites in this area and thereafter private landscaping will be within the fencing area limitations set forth in the Architectural Guidelines. The Field land unit is the area that will receive the most extensive "developer provided" landscaping. The proponent will transplant many of the trees displaced by roads to areas located at the rear yards of lots 44 through 48 and lots 52 through 56, in an effort to create natural aspen grove areas. These native cluster plantings will include aspen, choke cherry, saskatoon, poplar, and spruce. These plantings should quickly re-establish and provide a natural privacy screen to these lots that back on to each other. Lots in the Field land unit that back onto Springbank Road or Westbluff Road will receive new plantings of spruce, poplar and aspen.

Fencing along property lines is not allowed in order to create a better flow to the landscape. In order to reduce the scale of the cul-de-sac "turnarounds", the proponent is proposing to landscape a centre island, which would be maintained by the Pinnacle Ridge Homeowners Association.

In order to enhance the continuity between the "developer provided" landscaping and privately initiated landscaping, each lot purchaser will receive two hours of landscape design consulting from the Landscape Consultant as part of their lot purchase.

FIGURE 8: PROPOSED LANDSCAPE PLAN



Proposed Landscape for a New Rural Residential Neighborhood - NE 19-24-2-W 5 - Springbank

- Existing Aspen woods to be conserved
- Area of woods to be displaced
- Transplanted existing trees and shrubs
- New trees to be planted
- Areas of naturalized groundcover or existing native grassland
- Areas likely to be groomed by individual Homeowners
- Naturally extending woods
- Developed path
- Naturalized groves in loop roads
- Landscape "places" for houses

NORTH

SCALE 1:2000

for URBCO

Leonard Novak Landscape Architect Ltd.

11.0 Architectural Guidelines

The proponent, with the input from local area residents and its team of project consultants, have assembled a very comprehensive set of architectural guidelines. These guidelines were crafted to provide inspiration to future residents in designing their homes to fit into the natural scenery and landscape that is Pinnacle Ridge. For example, with respect to exterior colour schemes, the guidelines encourage residents to draw a palette of the natural colours that one sees from standing on the ridge in Pinnacle Ridge -- as opposed to choosing a lime or pink coloured stucco. Many other design criteria are also set forth.

The Architectural Guidelines also specify the landscaping plan, building locations, house types, fencing options, etc. and include all the relevant purchase documentation including restrictive covenants. (See Appendix 16.8 Architectural Guidelines) A two hour consultation with the Architectural Guideline Consultant will be included in the purchase price of each lot.

12.0 Homeowners' Association

The Pinnacle Ridge Homeowner Association will be formed as an association under the Societies' Act *RSA 1980. S-18* of Alberta for the purpose of:

a) helping to preserve and enhance the value of homes in Pinnacle Ridge;

b) promoting and fostering a community spirit within Pinnacle Ridge;

c) operating and maintaining facilities of Pinnacle Ridge such as the Entry Sign, pathway, the historical cabin and play area equipment; and,

d) advancing any other interests and plans for the advantage of the residents of Pinnacle Ridge may decide are beneficial to the residents.

Each home owner and subsequent assigns shall become a member of the Association and each lot shall have an encumbrance against the title of the lot registering the by-laws and requiring the payment of $100 per annum. A copy of the by-laws is part of the lot purchase contract.

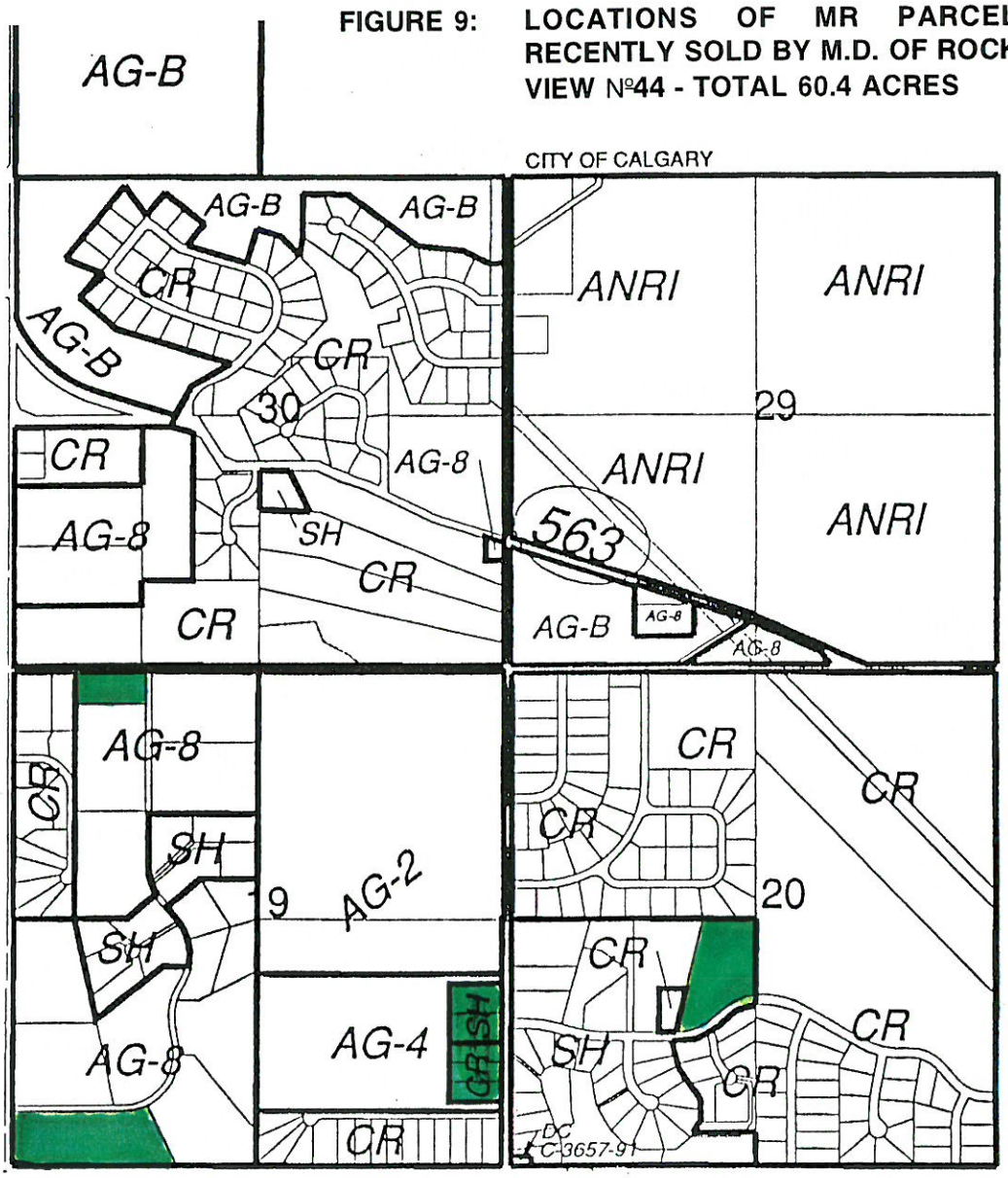
Control of administering Architectural Guidelines will revert to the association once 90% of the lots at Pinnacle Ridge have been sold. Upon this reversion, the association will also have the ability to update, by vote, the Architectural Guidelines in order to keep abreast of new exterior products and changing styles whilst retaining the theme and spirit of the guidelines. This feature was suggested by several acreage dwellers and will help ensure consistency in the application of the guidelines.

13.0 Municipal Reserve

It became apparent from discussions with local area residents that dedicating 10% of the subject parcel to Municipal Reserve was not a desired course of action. Residents are aware that the M.D. of Rocky View N°44 has sold about 60 acres of MR land within the study area over the past several years, with very little review (See Figure 9). Those parcels, which will eventually be subdivided are not subject to any integrated planning. Residents also understand the M.D. of Rocky View N°44 does not have the funds to properly maintain and develop the MR parcels into useful park amenities. In order that Pinnacle Ridge achieves the goals set forth in the Introduction and in line with the M.D. of Rocky View N°44's previous practice, the proponent requires the cash-in-lieu alternative as opposed to land dedication respecting Municipal Reserve.

The proponent has been working closely with the local area residents and the Rocky View Trails Association, a registered society, to help establish a series of pathways. The concept behind MR dedication was historically meant to benefit local residents. But in the 1990's, faced with the realities of budgetary constraints, and shrinking provincial funding, the municipal districts have been selling the MR parcels in order to fund operations and existing services. The proponent believes that investment into pathways through the Rocky View Trails Association is a "grass roots" means of benefitting local area residents. The proponent suggests the M.D. of Rocky View N°44 consider a policy of funding the Rocky View Trails Association through allocating 5% of the Recreation Board's share of all future cash-in-lieu monies in order to fund the building of future links of the trail network. Pathways are considered to be a much cheaper and more sustainable recreational amenity than developed facilities. "Walking" is becoming one of the fastest growing forms of recreation as the population ages. The establishment of a network of trails is deemed by local area residents to be a more desirable and sustainable form of recreation. The proponent is pleased to work with the M.D. and the Rocky View Trails Association in designing a sustainable policy for trails. We understand the M.D. of Rocky View N°44 and the Rocky View Trails Association are currently meeting to establish policy respecting this.

FIGURE 9: LOCATIONS OF MR PARCELS RECENTLY SOLD BY M.D. OF ROCKY VIEW №44 - TOTAL 60.4 ACRES



14.0 Community Services

14.1 Schools

Mr. Ken Purdy of the M. D. of Rocky View School District has indicated that the upgrading to the high school at the nearby Park For All Seasons and the ongoing initiatives for the new Bragg Creek school, will leave the School District with excess capacity. Recent changes to Provincial funding for school districts are based on a per student formula and given that the infrastructure and capital assets are in place, it is essential to have an increased student base to operate effectively. Children of residents living in Pinnacle Ridge would be a welcome addition to the schools system.

14.2 Recreation

Springbank's primary recreational (developed) focus is at the Park For All Seasons. Facilities include playing fields, arenas, ice rinks, playground equipment and lounge and banquet facilities. The park is located adjacent to the elementary, middle and high schools. The centralization of these community facilities introduce efficiencies into the provision of organized recreational opportunities. Springbank is also ideally located near one of nature's largest recreation amenities -- the Rocky Mountains.

14.3 Other Services

With Pinnacle Ridge being situated one mile from the Calgary City Limits, a number of Calgary based services are readily available:

Police Service

The plan area is serviced via the M.D. of Rocky View special constables, the RCMP and the City of Calgary Police.

Fire Protection

The M. D. of Rocky View №44, through a fire protection agreement with the City of Calgary has limited response fire protection. The closest fire station to the subject parcel is Fire Station #29, located at 7027 Coach Hill Road SW and is only about 5 minutes from the subject parcel.

Library Service

The closest Calgary Public Library Board is located in the Shaganappi Multi-Service Centre at 3415 - 8 Avenue SW.

Social Services

Municipal social services are provided from Shaganappi Multi-Services Centre at 3415 - 8 Avenue SW. The closest Provincial social services office is at 1240 Kensington Road NW.

Public Health Services

The Shaganappi Multi-Service Centre provides public health service. The nearest hospital is the Foothills Hospital, approximately seven kilometres away.

15.0 Development Sequence

Assuming Pinnacle Ridge receives satisfactory approvals in a timely fashion the proponent proposes to begin the landscaping/transplanting program and construction of the entry sign in late April 1996 when the frost has "lifted". Several weeks later construction of the subdivision infrastructure would begin. The proponent currently intends to complete the shallow utility and surface works for all 56 lots in the spring/summer of 1996. The proponent may register title to the individual lots in phases. The first phase would consist of approximately 25 to 30 lots and the subsequent phases would consist of 5 to 10 lot increments.

16.0 Project Name

The proponent understands that both the M.D. of Rocky View №44 and the City of Calgary require the opportunity to review the project name. The proponent requests that if the project name is deemed not suitable that early indication is provided in order to submit suitable alternatives.

URBCO INC.

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Calgary, Alberta T2H 1L9

Phone: (403) 531-0720 Fax: (403) 531-0727

Contact:
President & C.E.O.: Don Wilson
Vice-President: Barry Poffenroth

17.0 Appendices

17.1 Jubilee Engineering Consultants Ltd.: Engineering Feasibility Report

17.2 Historical Resource Management: Historical Resources Impact Assessment

17.3 EBA Environmental Ltd.: Phase 1 Environmental Site Assessment

17.4 EBA Geotechnical Ltd.: Geotechnical Evaluation

17.5 Leonard H. Novak Landscape Architects Ltd.: Proposed Landscape and Landform Analysis

17.6 Jubilee Engineering Consultants Ltd.: Traffic Study

17.7 Jim A. Shaner: Soils Assessments

17.8 Westridge Water Supply Ltd.: Water Supply Letter

17.9 Urbco Inc./Nelson A. MacDonald Design Ltd.: Draft Architectural Guidelines

17.10 Urbco Inc. Profile and Financial Statements

Appendix 17.1

Jubilee Engineering Consultants Ltd.

Engineering Feasibility

ENGINEERING FEASIBILITY REPORT

SPRINGBANK RURAL RESIDENTIAL DEVELOPMENT

PREPARED FOR
URBCO INC..

JUBILEE
ENGINEERING
CONSULTANTS LTD

CONSULTING ENGINEERS • SURVEYORS • PLANNERS

December 14, 1995

URBCO Inc.
110, 6131-6th Street S. E.
Calgary, Alberta T2H 1L9

Attention: Mr. Barry Poffenroth, Vice President

Dear Sir:

Re: Springbank Residential Development
NE 1/4 Sec 19 Twp 24 Rge 2 W5M

Jubilee Engineering Consultants Ltd. is pleased to submit the Engineering Feasibility study for the Springbank Residential Development. The report presents the feasibility of development of the above subdivision with the necessary services like water, sanitary sewerage, storm drainage, roads and shallow utilities.

If you require any additional information, please do not hesitate to contact us.

Yours truly,

Shiraz Remtulla, P. Eng.
Jubilee Engineering Consultants Ltd.

sr/cls
enc.

911 - 32nd Avenue N.E., Calgary, Alberta T2E 6X6 Bus: (403) 276-1001 Fax: (403) 230-2667

ENGINEERING FEASIBILITY REPORT

SPRINGBANK RURAL
RESIDENTIAL DEVELOPMENT
NE ¼ S 19 TWP 24 - R2 -W5M

PREPARED FOR

URBCO INC.

BY JUBILEE ENGINEERING CONSULTANTS LTD.

NOVEMBER 1995

SPRINGBANK RURAL RESIDENTIAL DEVELOPMENT
NE ¼ S 19 TWP 24 - R2 -W5M
ENGINEERING FEASIBILITY REPORT

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SPRINGBANK RURAL RESIDENTIAL DEVELOPMENT

NE ¼ S 19 TWP 24 - R2 -W5M

ENGINEERING FEASIBILITY REPORT

LIST OF DRAWINGS

LIST OF FIGURES

LIST OF TABLES

EXECUTIVE SUMMARY

URBCO INC. is currently planning residential development in the NE ¼ Section 19, Township 24, Range 2, W5M in the Municipal District of Rocky View.

This report provides a predesign concept of the engineering requirements to satisfy the servicing of the development area.

The following is a summary of the principal conclusions regarding the feasibility of servicing the subdivision.

- There are no engineering constraints to the development of the area into 56 residential 2 acre lots.
- Access to the site is available from Westbluff Road (117th. Street).
- Westridge Water Supply Ltd. will provide the subdivision with a potable water supply at necessary pressure.
- Wastewater disposal will be via septic tanks and tile disposal fields. The percolation tests and, the review of soils conditions and near surface ground water, indicate that the soils are suitable for the private sewage disposal systems.
- There is very little impact on the existing drainage conditions due to this development. The existing drainage pattern will be maintained.
- There are no slope or subsidence conditions that effect the site.
- The proposed road configuration has been developed with a view to ensure that the longitudinal grade of the road does not exceed 7%, based on optimizing the earthworks and meeting the M.D. guidelines.
- The traffic generated by the development is not significant and will have little impact on the adjacent traffic corridors.
- Power, Gas, Telephone and Cable services are readily available to the subdivision.
- The Geotechnical investigation and the slope stability analysis show no constraints to the development of the area. Factor of safety for stability will be greater than 1.5.
- Suitable Development Area is available for the development of an access road, residence, well and sewage disposal system.
- Environmental Site Assessment Study shows no evidence of adverse environmental conditions.
- Historical Resources Impact Assessment reveal two small prehistoric archaeological sites that needs further assessment. This will be completed in Spring of 1996 to comply with the Historical Resources Act and will not affect subdivision approvals.

This predesign report addresses the requirements of engineered works for the proposed rural residential development in the NE ¼ Section 19, Township 24, Range 2, W5M shown in Fig. 1 being developed by Urbco Inc.

The proposed development is located in the M. D. of Rocky View, west of the City of Calgary and covers a total area of approximately 52 Hectares.

1.1 OBJECTIVE

The objective of this report is to provide the basis of servicing of the proposed development and provide recommendations with respect to the development of the site.

1.2 SCOPE OF WORK

The scope of work for the engineering analysis is limited to an assessment of the municipal servicing of the rural residential development. Many of the geotechnical, environmental and historical aspects of the development have been addressed in details by other consultants.

1.3 PROPOSED DEVELOPMENT LAYOUT

The proposed layout of the subdivision is shown on Drawing A. A total of 56 rural residential lots are envisaged in the development with a minimum lot area of 0.80 ha. The subdivision is bounded by Springbank Road to the north, Westbluff Road to east, and country residential areas to the west and south.

Water supply for the subdivision will be provided by Westridge Water Supply Ltd. under a Memorandum of Agreement to be ratified between Westridge Water and Urbco Inc. The water will be supplied in accordance with the Alberta Environment Standards and will meet the water supply demands of the proposed subdivision at the required pressures.

The following water consumption criteria based on similar development has been used for analyzing the requirement for this development.

- ◊ Average Daily Demand = 450 litres/person/day.
- ◊ Maximum Daily Demand = 2 x ADD
- ◊ Peak Hourly = 4 x ADD

Assuming an average of 3 persons/unit, the following water requirements are identified for the subdivision.

- ◊ Average Daily Demand = 75,600 l/d
- ◊ Maximum Daily Demand = 151,200 l/d (1.75 l/s)
- ◊ Peak Hourly = 3.5 l/s

The minimum firewater required for this development as per recommendation of FIRE UNDERWRITER SURVEY (FUS) is approximately 45 l/s for 1.25 hours which requires a minimum firewater storage of 200 m^3. FUS recognizes fire suppression capability of a water system as long as fire flows of 35 l/s for 1 hour are available.

The following information regarding the water supply system has been provided by Westridge Water Supply Ltd.

The existing system consists of an intake and water treatment plant located at Elbow River. The Water Treatment Plant has a capacity of 4500 m^3/day. Treated water is pumped to a 550 m^3 storage reservoir located approximately 1.6 km south of the proposed development on Westbluff Road. A pumpstation located at the reservoir distributes the water to the area through a 150mm. supply line at a rate of 22.7 l/s (300 gpm) and discharges pressure of 450 kPa. The capacity of the 150 mm. line is listed as 45 l/s. Westridge Water Supply Ltd. are intending to upgrade the supply to 45 l/s (600 gpm) to enhance the fire fighting capability of the system. At the same time, the pressure settings would be adjusted at the Westbluff reservoir pumping station if necessary, to ensure that a minimum pressure of 350 kPa is available at the water main in the Springbank rural residential development during peak hour flows and 150 kPa during fire flow.

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Based on the above information, the existing system has the capability of providing the peak hour demands to the area. The system will be able to provide fire water supply at a rate of 35 l/s and a reserve of 10 l/s for domestic consumption when the upgrading is completed. The fireflow can be increased to 45 l/s if the total supply is dedicated to fighting the fire during this period.

The proposed internal water distribution system is shown in Drawing C. 150mm. distribution lines have been provided with provision of future ties to the system. The hydrant spacing is such that the maximum distance from the back of the houses to the hydrant will not exceed 150m. and 300m. to a backup hydrant.

This placement of hydrants will provide better fire fighting facilities than available to most of the surrounding areas. Pumper trucks would be able to hook up directly to the hydrants for firefighting and protection of adjacent properties. This reduces the response time and time to control the fire. Currently the City of Calgary Emergency Response Team provides the Fire Protection services to the area. A Fire Pumper Truck complete with a tanker would respond to any emergency situation.

The volume of wastewater generated from a subdivision is typically a percentage of daily water consumption. The average sewage flow for this subdivision would be approximately 80% of the average consumption.

In absence of a municipal sewage and treatment system, a private sewage disposal system consisting of a septic tank and tile disposal field located on individual lots is considered to be a safe and efficient disposal method. The septic tanks provide the water tight solids removal facility utilizing anaerobic bacterial action to breakdown the solid matter to liquids and gases. After this initial digestion of waste material occurs, the effluent from the septic tanks is discharged into a tile disposal field where further purification occurs. The surface and near surface soil acts as a treatment medium by providing filtration through removal of suspended solids, biological aerobic degradation through breakdown of organic materials into simple and stable compounds and adsorption through removal of dissolved chemical constituents consumed by plants. The resulting effluent is purified so as not to contaminate the ground or surface water supplies.

To ensure protection of surface water and wells, Alberta Environment and Alberta Labour Regulations require the following setbacks for septic disposal fields.

1. Building	9 m
2. Building w/basement	3 m
3. Wells	15 m
4. Septic Tank	3 m
5. Surface Water	15 m
6. Ground Water	1.2 m
7. Property Line	1.5 m

Similarly, Alberta Labour has set forth that disposal field lines must not be located within a vertical distance of 0.9 m of a water table and 1.5 m from an impervious layer of rock.

Tables 1 and 2 provide the basis of sizing the septic tanks and septic field for residences as recommended by Alberta Labour. The septic field sizing is a function of soil permeability commonly referred to as the percolation rate. The general practice is to use septic fields in locations where the percolation rates are faster than 24 min/cm. (Refer Bibliography #2 and #3).

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TABLE 1

SEPTIC TANKS FOR HOUSES AND DUPLEXES

Number of Bedrooms	Minimum Working Capacity of Septic Tanks	
	litres	(gallons)
3	1800	(400)
4	2700	(600)
5	3400	(750)

TABLE 2

LENGTH OF WEEPING LATERALS FOR HOUSES AND DUPLEXES

Percolation rate in mins/25mm mins/in)	Not less than 3 but does not exceed 5	over 5 but does not exceed 10	over 10 but does not exceed 20	over 20 but does not exceed 30	over 30 but does not exceed 45	over 45 but does not exceed 60
Minimum length per bedroom metres (ft)	30(100)	30(100)	50(150)	60(200)	100(300)	200(600)

Drawing E shows the locations of the percolation test pits drilled and the corresponding test results have been tabulated. Percolation rate contours were developed using these test results.

It is proposed that septic fields be located in percolation rate regime faster than 24 min/cm. for this subdivision. It is clear from the percolation rate contours that these will be easily achieved on all lots.

Table 3 shows the septic tank and tile field required for 3, 4 and 5 bedroom houses for percolation rates upto 24 min/cm..

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TABLE 3

SEPTIC TANK AND TILE FIELD REQUIRED FOR 3, 4, & 5 BEDROOM HOUSES

Number of Bedrooms	Working Capacity of Septic Tank	Minimum Length of weeping tile drain (m)			
	litres	Percolation Rates min/cm			
		0-5	5-10	10-20	20-24
3	1800	90	90	150	180
4	2700	120	120	200	240
5	3400	150	150	250	300

Note: Septic Field can also be sized using the Formula $L = (G \times P) \div 133$

where L= Length in metres

P= Percolation time in minutes/25mm.

G= Sewage flow litres/day

Drawing H shows the proposed disposal field locations in accordance with the above established criteria. The minimum setback requirements by Alberta Environment and Alberta Labour to protect adjacent property wells and on-site wells will be met with this layout. In order to ensure that disposal fields are designed and situated correctly, a percolation test certificate will be required for each lot where this field is developed. This certificate will be monitored and issued by Jubilee Engineering Consultants Ltd. prior to Architectural Guideline Approval

Review of near groundwater tests indicate that the water table is very low with only one of nine tests indicating water and that was at a depth of 5.6 meters. Review of well information for the subject parcel revealed that a well that services the two households is at a depth of 160 feet while another well was drilled to a depth of 560 feet and abandoned as dry. Well information on two of the three properties immediately adjacent to the subject parcel are to depths of 160 and 70 feet respectively. Based on low water table, existing deep wells and the distance of these wells from the building site, the conditions are very favorable for safe private sewage disposal systems.

The predevelopment drainage conditions for the subject area are shown on Drawing D. The existing topography shows a rolling terrain, steep in certain areas, with a ridge that divides the subdivision into two drainage areas. The west drainage area which makes up slightly greater than one half of the development area flows into the natural drainage path provided by the existing coulee. The rest of the area drains to the east as a sheet flow, uniformly dispersing the flow to the road ditch.

The proposed subdivision development is intended to maintain as much as possible the existing drainage patterns. The proposed lot and road layout is shown on Drawing A. A preliminary Architectural Plan has been developed as shown on Drawing B. This layout has been developed taking into consideration the existing terrain and ensures the existing drainage patterns are maintained. Based on a predevelopment run off coefficient of 0.15, the post-development coefficient is expected to be approximately 0.18. The effect of this increase will not become apparent because of the dispersed drainage pattern of the site which will distribute this increase in flow in different directions (see Drawing D). As such the impact to the existing drainage conditions will not be noticeable.

5.1 ROADWAYS

Drawing C illustrates the proposed internal road network to service the subdivision. A road right of way of 25 metres is incorporated in the design. This right of way will accommodate a carriageway of 6.7m and drainage ditches on either side to collect road drainage as per the M. D. of Rocky View requirements. A minimum 450mm diameter culvert will be provided across road and driveway crossings. The road layout would require some of the natural vegetation and tree cover to be removed. (See Fig 2 & Fig 3). However to reduce the environmental impact and preserve as many trees as possible, it is proposed that the line assignments as shown in Fig 4 be adopted for the affected areas of this development; these being the two westerly cul-de-sacs and lots 1-5. This will be subject to the approval of the M D. of Rocky View.

Pavement structure shall comprise of 250mm. pitrun gravel and 25mm. crushed gravel topped with 50mm of asphalt surfacing. The final pavement design will be determined by a Geotechnical Engineer.

Preliminary road profiles and cross-sections indicate that a maximum longitudinal slope of 7% will be achievable in the subdivision.

5.2 PATHWAYS

The Developer intends to develop an internal pathway system consisting of 1.2 metres low profile enviropath. This will consist of a clay gravel mix to a depth of 100mm., (see Fig 5 & Fig 6) and will be placed in an internal network within the road allowance. The exact location will be determined at the detailed engineering stage.

The traffic impact assessment of this development is addressed in the report entitled Traffic Study and Road Classification for Springbank Rural Residential Development prepared by Jubilee Engineering Consultants Ltd. The traffic impact study results are summarized below.

◊ 550 trips/day (275 trips each way) will be generated by the subdivision, majority during normal commuting period.

◊ A total of 37 trips are expected during the peak PM time. The number of trips at AM peak time will be 31 trips/hr.

◊ Road classification for the subdivision internal road is Rural Local Undivided (RLU).

◊ Westbluff Road under an RLU classification can accommodate the additional traffic flow to and from this subdivision.

◊ Springbank Road can carry up to 5000 vpd and the Design Hour Volume has been calculated at 1800 vph (capacity) and 1000 vph (service volume).

◊ Based on the existing traffic flow on Springbank Road the subdivision traffic generated is too small to have any significant impact on the traffic flow along Springbank Road.

◊ Given the probable buyer profile for this proposed "upper-end" development (eg. large percentage of "empty nesters"; large percentage of single, high-income, wage earners, etc.) the forecasted traffic flow volumes could be reduced by up to 20% as those future residents would display different commuting behaviour than the typical "average working couple with two children". Potential resident profiles have not been factored into the forecast model.

A 10m easement is required on either side of the road right of way for utility servicing of the subdivision as per M. D. of Rocky View requirements. However in order to reduce the environmental impact and retain the natural tree cover, it is proposed that the M. D. of Rocky View accept the revised line assignment as shown on Fig 4 for the two westerly cul de sacs and lots 1-5..

6.1 POWER

City of Calgary Electric System will provide power to the subdivision. Three phase power is available with adequate capacity to service the subdivision. Single phase power is normally required to be supplied to individual residences. .

6.2 GAS

The Canadian Western Natural Gas Company supplies natural gas to the area. Service is available for the subdivision.

6.3 TELEPHONE

AGT Limited provides telephone service to the area.

SECTION 8.0 GEOTECHNICAL

The geotechnical aspects of the site are addressed in detail in the report " Geotechnical Evaluation Springbank Rural Residential Development NE ¼ -S19-TWP 24-R2-W5M " of September 1995 by EBA Engineering Consultants Ltd. The conclusions can be summarized as follows:

1. Site grading with on site material will provide the minimum compaction of 95% of Standard Proctor at moisture content of optimum to 3% above optimum.

2. Allowable bearing pressure for strip or spread foundation is 100 kPa.

3. Subsurface drainage will not be required for the subdivision. In areas of shallow bedrock, the footing elevations should be set a minimum of 1m above the bedrock to prevent collection of surficial water or ground water above the bedrock.

4. Frost cover shall be as follows:

Heated Structure	1.4 m
Unheated Structure	2.1 m
Pipes	2.0 m

5. Septic Field requirements have been addressed in detail in Section 3.0 of this Report.

6. Type 10 Portland Cement may be used for concrete in contact with the soil.

7. Slope Stability analysis performed over the site shows that except for the minimum setbacks as required by the M. D. of Rocky View guidelines, **no additional stability setback** is required. The Factor of safety for stability will be greater than 1.5 for the development area.

SECTION 9.0 BUILDING ENVELOP AND SUITABLE DEVELOPMENT AREA

9.1 BUILDING ENVELOPE

Drawing H shows the building envelope area developed on the basis of minimum setbacks established by the M. D. of Rocky View. The approximate location of the buildings and the treatment facilities are also shown.

9.2 SUITABLE DEVELOPMENT AREA

Drawing G depicts the Suitable Development Area. The plan has been prepared to comply with the Alberta Environment Protection Land Use Branch requirements. This is in regards to establishing an environmentally suitable area for the development of an access road, residence, well and sewage disposal system.

SECTION 10.0 ENVIRONMENTAL SITE ASSESSMENT

The Environmental Site Assessment was conducted by EBA Environmental Ltd. Based on the study the following conclusions and recommendations were made:

1. No evidence of adverse environmental conditions were found.

2. Inactive domestic/livestock water wells be decomissioned as per Alberta Environment Protection Water Well Regulation AR 123/93, Section 36.

3. Existing Septic Tanks and associated fields not included in the planned site development shall be decomissioned and removed.

SECTION 11.0 HISTORICAL RESOURCES IMPACT ASSESSMENT

The Historical Resource Impact Assessment was prepared by James A. Light of Historical Resources Management and reviewed by Alberta Community Development, Cultural Facilities and Historical Resources Division (Letter Oct 24, 1995 - File 95-058). Two potential prehistoric archaeological sites EgPn-424 and EgPn-425 shown on Drawing G were recorded. Final investigation will be conducted in the spring pursuant to Historical Resource Act and will not affect subdivision approvals.

BIBLIOGRAPHY

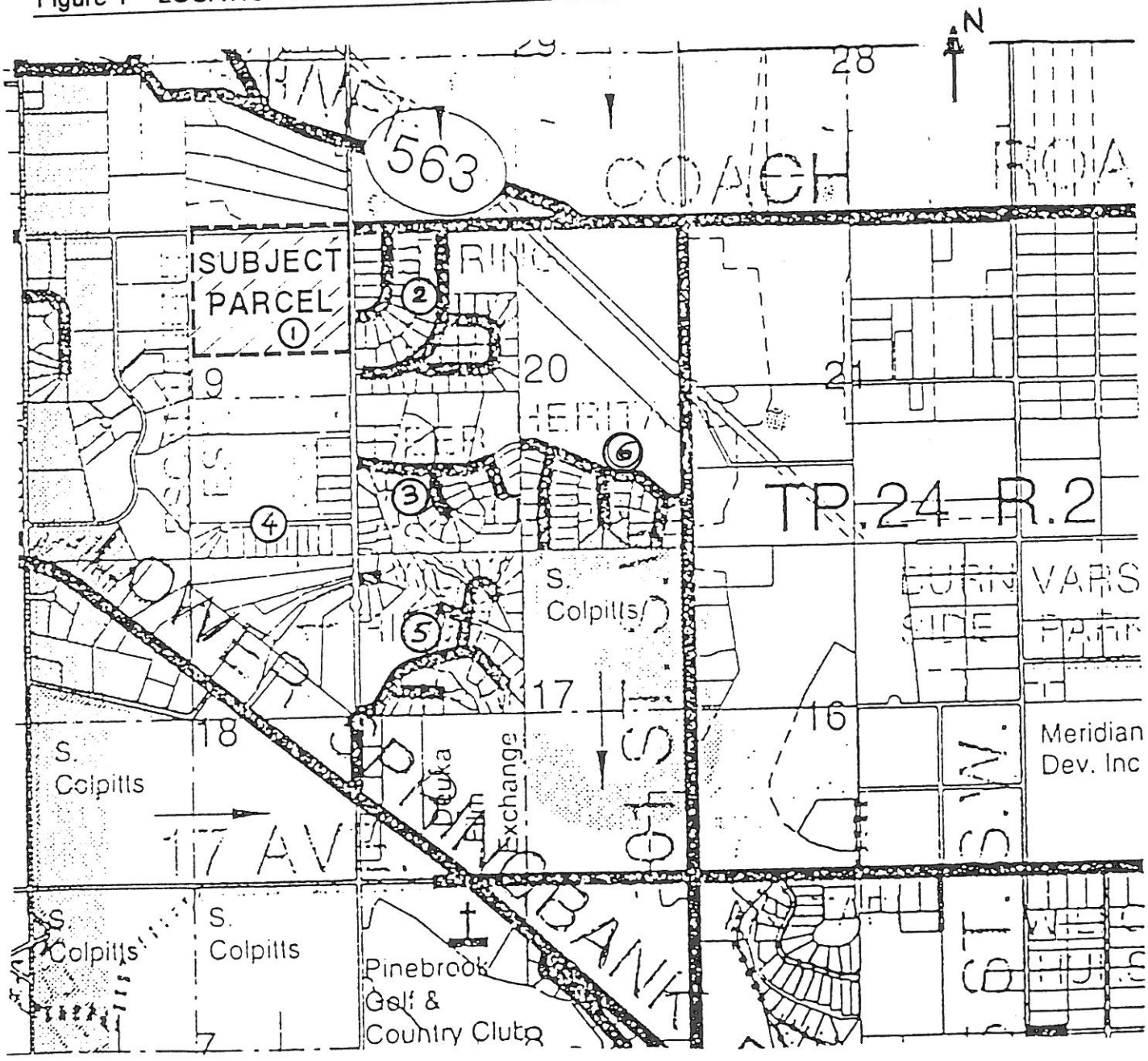
1. The Plumbing and Drainage Act Regulations - Alberta Regulation 340177
2. Alberta Private Sewage Treatment and Disposal Regulations - Alberta Labour
3. State of the Art Review Septic Tank Disposal Field Systems - Alberta Environment
4. Soil Testing and Groundwater Supply Evaluation - Guidelines for Residential Subdivision 1990
5. Geotechnical Evaluation

   Springbank Rural Residential Development -Sept.1995-by EBA Engineering Consultants Ltd.
6. Environmental Site Assessment

   NE ¼ - S19 - TWP 24 - RGE 02 - W5M July 1995 - by EBA Environmental Ltd.
7. Historical Resources Impact Assessment

   NE ¼ - S19 - TWP 24 - RGE 02 - W5M August 1995 - by Historical Resources Management.
8. Evaluation of Public Fire Protection - Fire Underwriters Survey
9. Water Supply for Public Fire Protection - Fire Underwriters Survey
10. Institute of Transportation Engineers Manual ITE
11. RTAC Manual of Geometric Design Standards for Canadian Roads.

Figure 1 LOCATION MAP



1. Springbank Rural Residential Development
2. Springland Manor & Springland Properties
3. Deerwood Estates
4. Westbluff Estates
5. Westridge Estates
6. Heritage Estates

Existing Landscape

Looking north between proposed lots #24 & 49

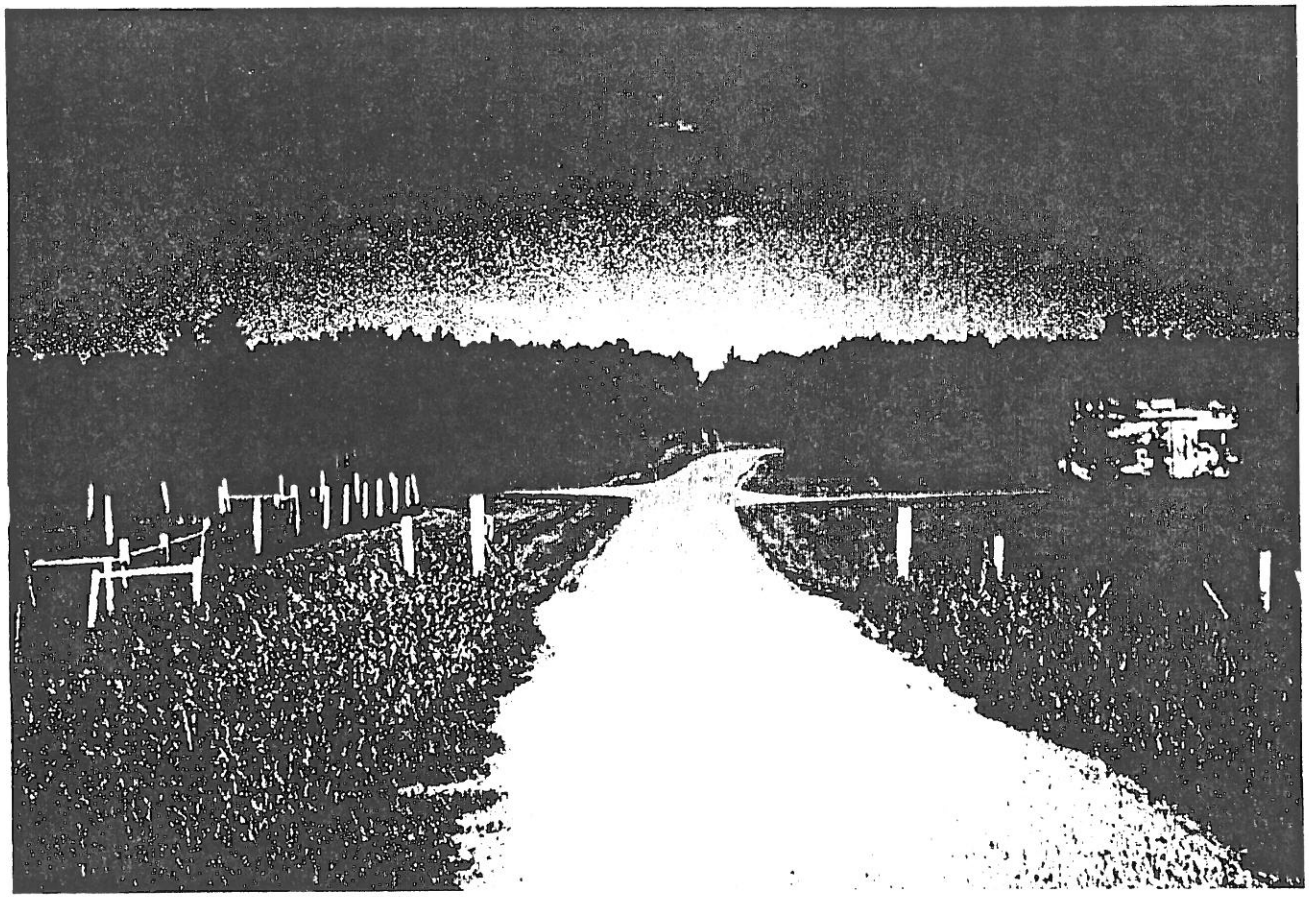


FIGURE 2 TREE DISPLACEMENT COMPARISON

Typical MD Road Allowance Requirements

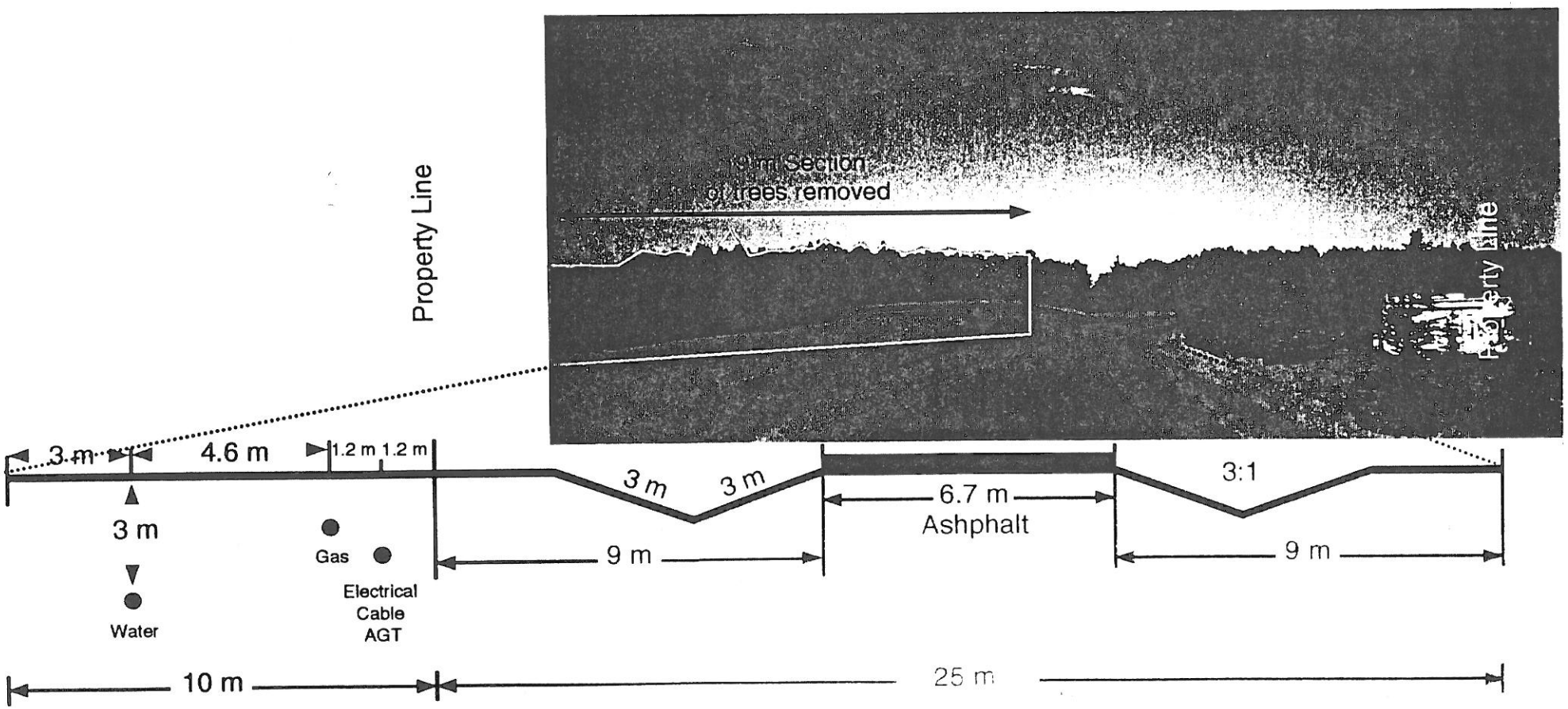


FIGURE 3 TREE DISPLACEMENT COMPARISON

Proposed Road Allowance & Line Assignments

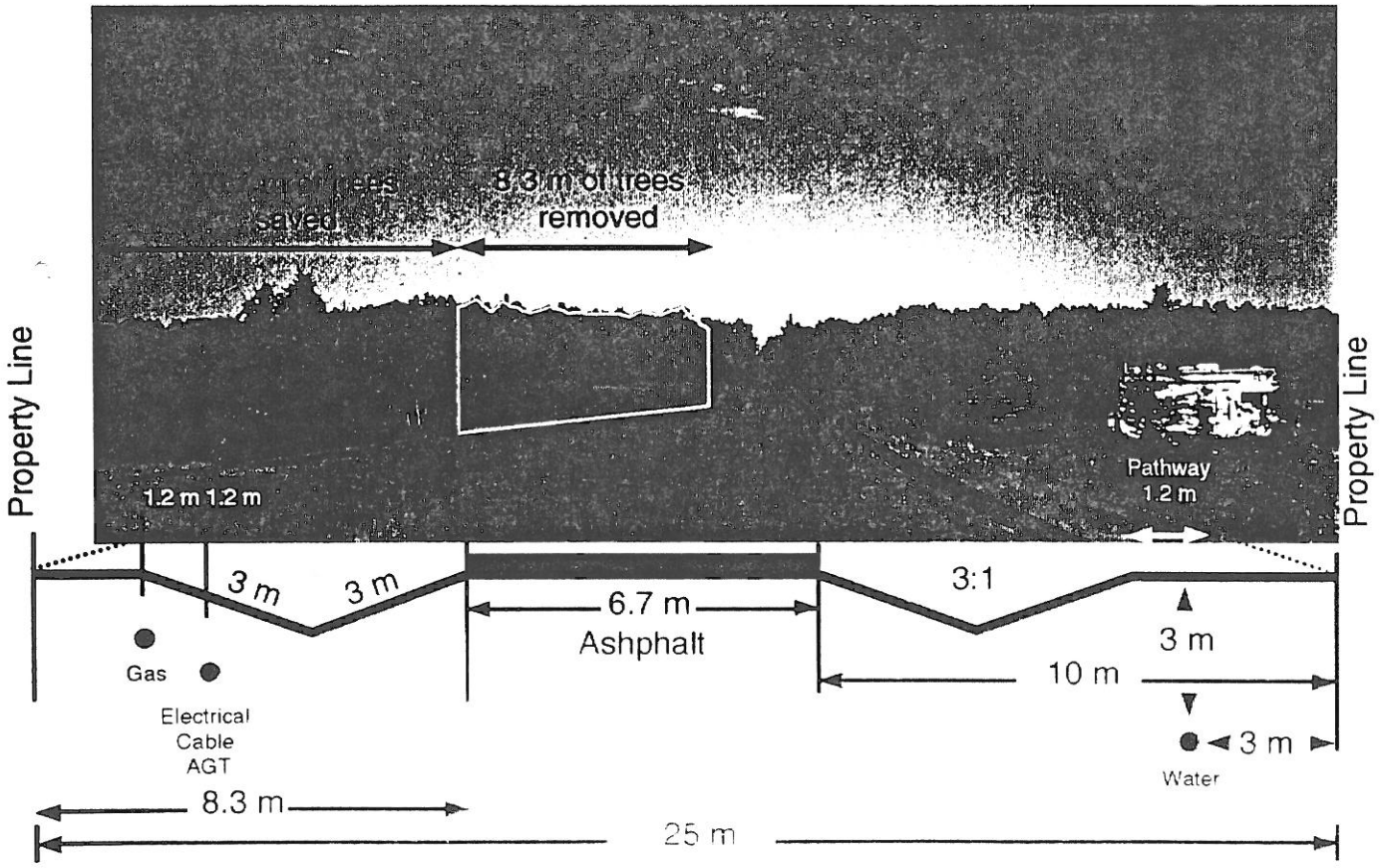


FIGURE 4 TREE DISPLACEMENT COMPARISON

FIGURE 5 : GRAVEL TRAIL - SLOPES 0-5%

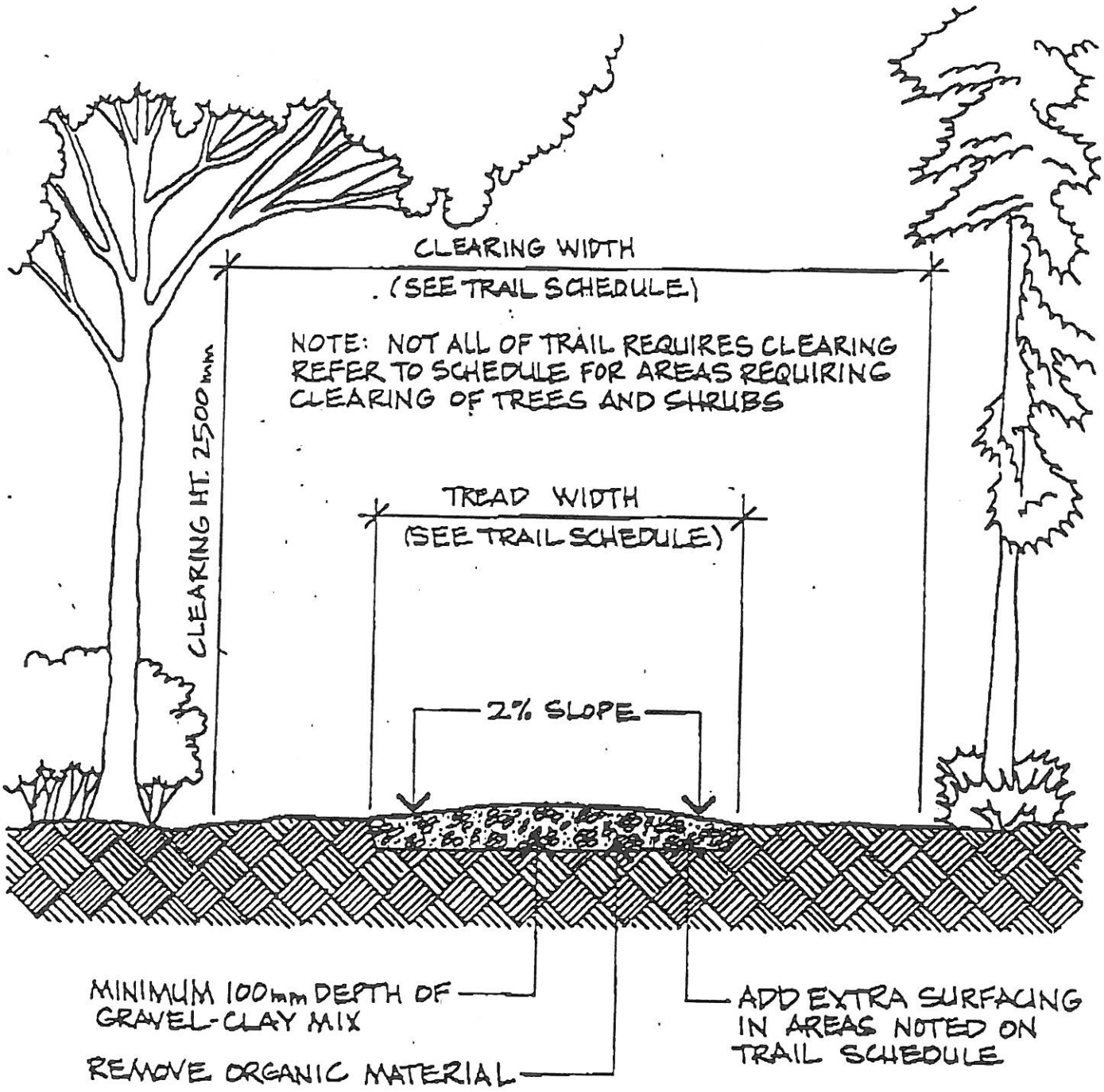
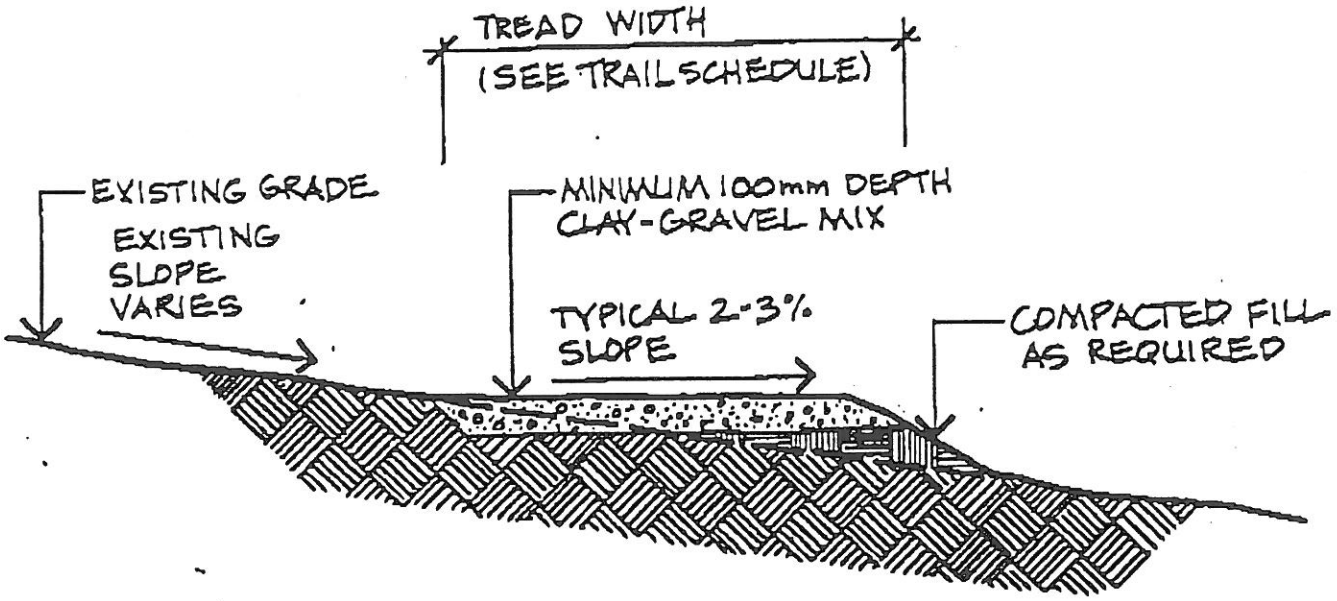
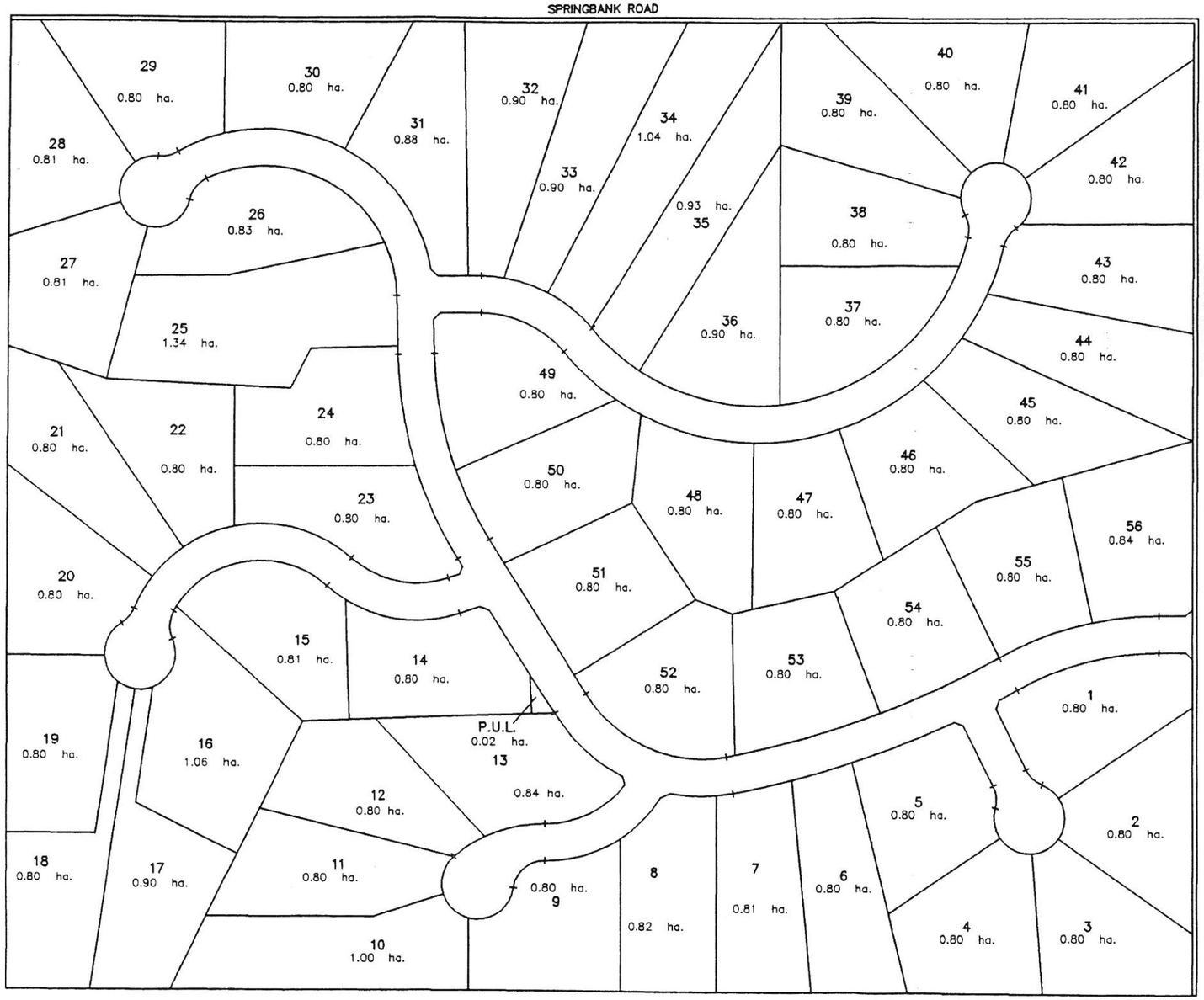


FIGURE 6 : GRAVEL TRAIL - SLOPES GREATER THAN 5%





NOTES

LEGEND

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No.	DRAWING STATUS	DATE	APP.
4	AS-BUILT		
3	FOR TENDER		
2	FINAL APPROVAL		
1	PRELIMINARY APPROVAL		

PERMIT

STAMP

DEVELOPER

URBCO INC,

TITLE

SPRINGBANK RURAL RESIDENTIAL
M.D. Of ROCKY VIEW No. 44
SUBDIVISION
LOT LAYOUT

CONSULTING ENGINEERS
SURVEYORS
PLANNERS

JUBILEE ENGINEERING CONSULTANTS LTD.
911 32nd AVENUE N.E.
Calgary, Alberta
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Phone: 276-1001
Fax: 230-2687

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DRAWN BY:	WBC
CHECKED BY:	H.M.
DATE:	96 - 06
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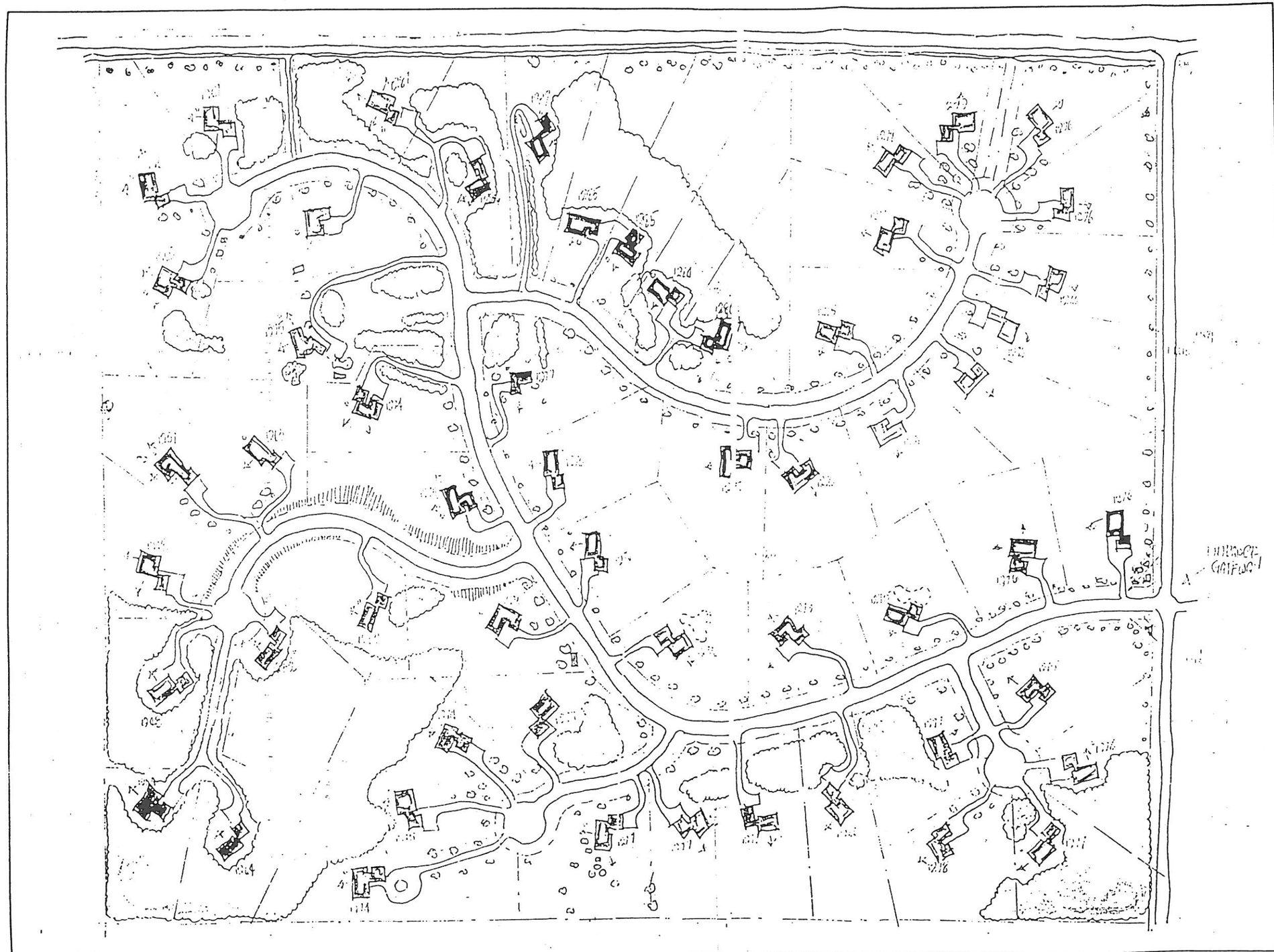
JOB NUMBER:	96 - 033
DRAWING NUMBER:	A



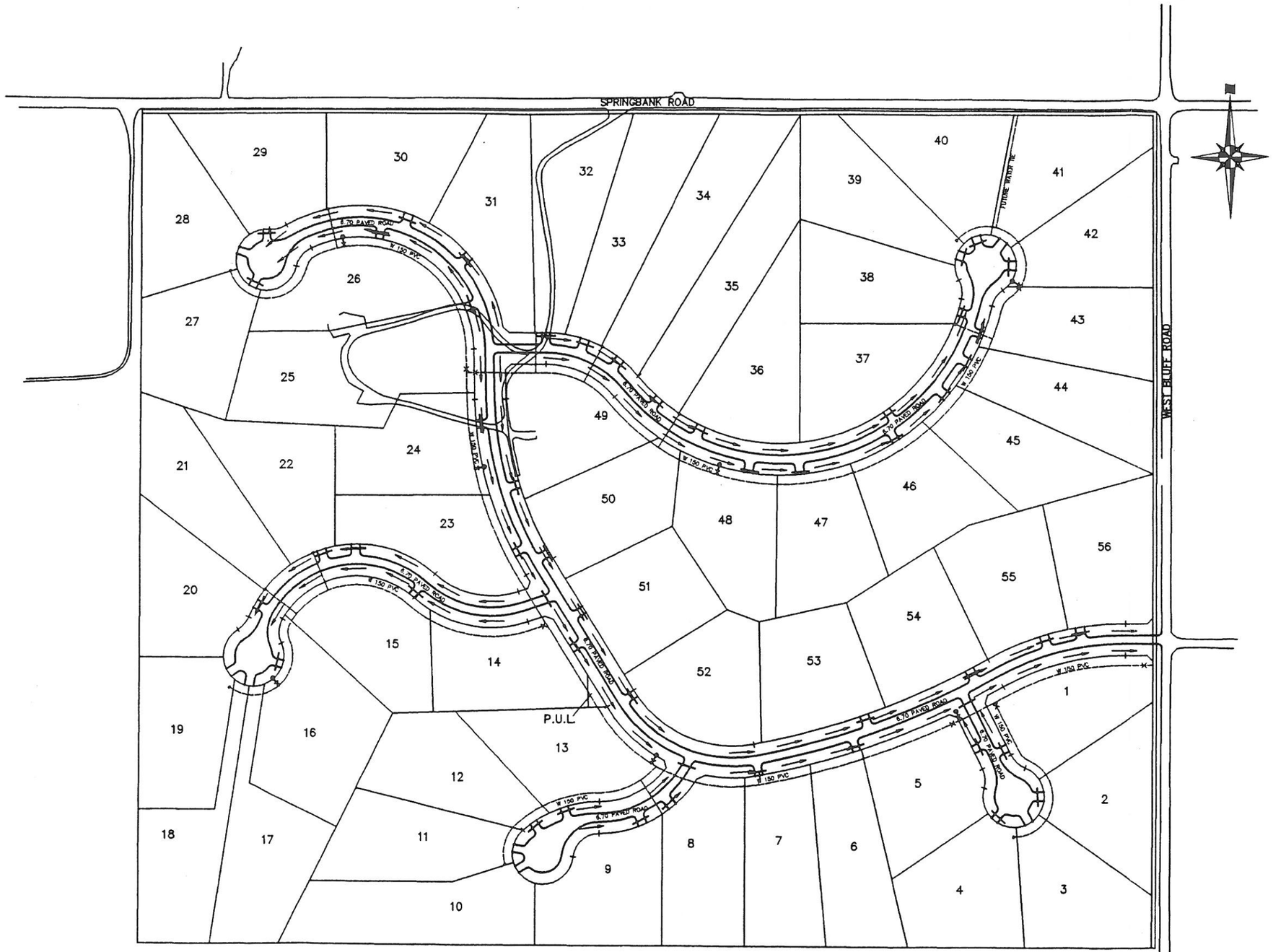
NOTES

URBCO INC.

SPRINGBANK RURAL RESIDENTIAL
M.D. Of ROCKY VIEW No. 44
SUBDIVISION
ARCHITECTURAL PLAN

CONSULTING ENGINEERS
SURVEYORS
PLANNERS

B



NOTES

1. Plans are subject to the terms of the development agreement.
2. All PVC water pipe to be AWWA–900–DR18.
3. All valves on PVC pipe require a 2.3Kg Zinc anode.
4. All cast iron fittings on PVC pipe require a 1.4Kg Zinc anode.
5. All hydrants on PVC pipe require a 5.4Kg anode to protect the hydrant, hydrant valve ties.
6. All hydrants to be sandblasted & epoxy coated.
7. Minimum depth of 2.7m required on water service unless specified by the engineer.
8. Water services to be 40mm DIA.
9. All hydrant leads to be 150mm PVC C900 DR18.

LEGEND

WATERMAIN

HYDRANT

VALVE

DITCH DRAINAGE DIRECTION

CULVERT

No.	DATE	DESCRIPTION	BY
		REVISIONS	

No.	DRAWING STATUS	DATE	APP.
4	AS-BUILT		
3	FOR TENDER		
2	FINAL APPROVAL		
1	PRELIMINARY APPROVAL		

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DEVELOPER

URBCO INC.

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SPRINGBANK RURAL RESIDENTIAL
M.D. Of ROCKYVIEW No. 44
SERVICING PLAN
& ROAD DRAINAGE

CONSULTING ENGINEERS
SURVEYORS
PLANNERS

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CHECKED BY:	H.M.
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SCALE:	NTS
JOB NUMBER:	96 - 033
DRAWING NUMBER:	C

NOTES

LEGEND

EXISTING DRAINAGE DIRECTION

EXISTING DRAINAGE BREAK

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3	FOR TENDER		
2	FINAL APPROVAL		
1	PRELIMINARY APPROVAL		

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DEVELOPER

URBCO INC,

TITLE

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M.D. Of ROCKY VIEW No. 44

EXISTING DRAINAGE PATTERNS

CONSULTING ENGINEERS
SURVEYORS
PLANNERS

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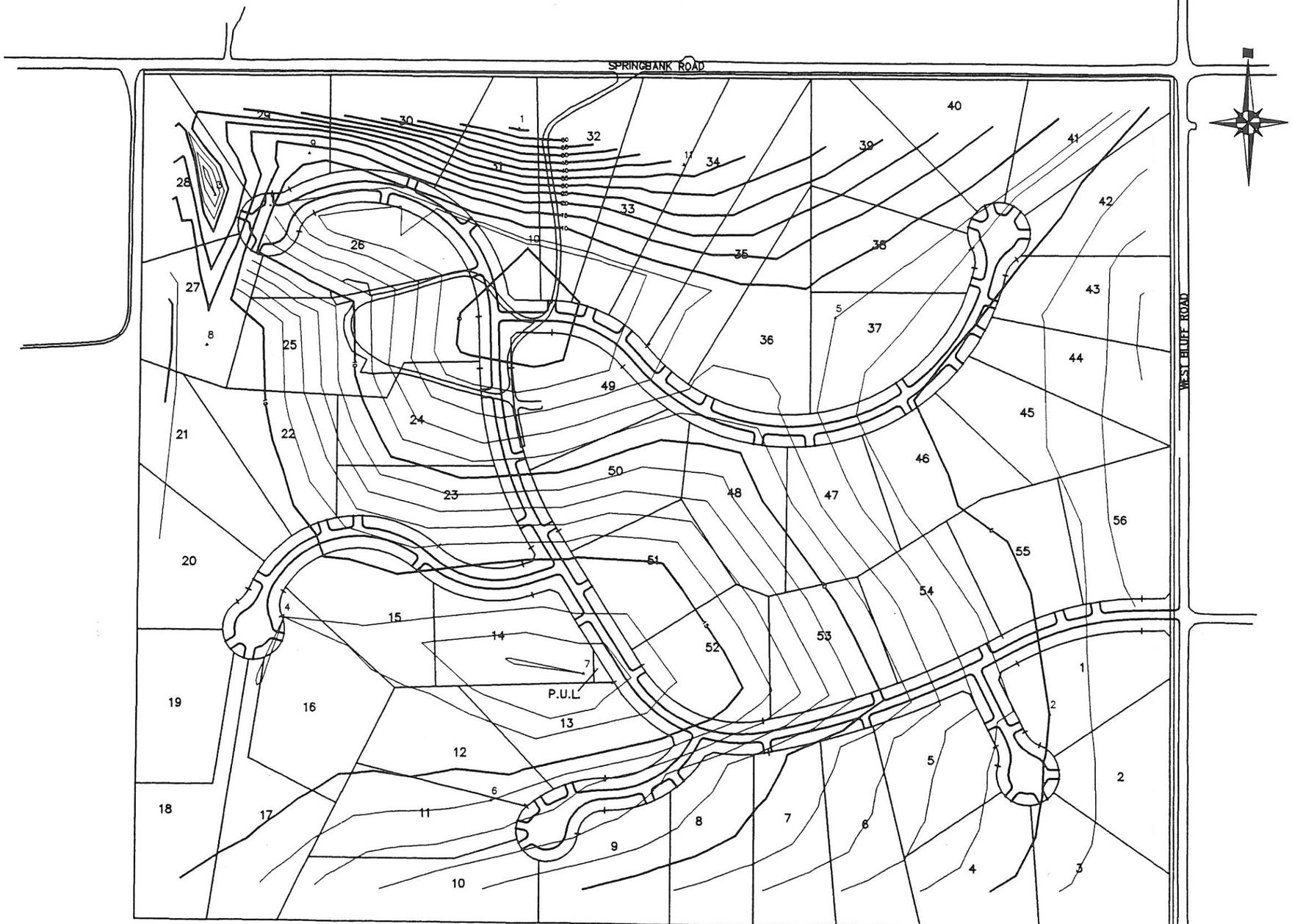

NOTES

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50 PERCOLACTION RATE COUNTOURS min/cm

6 TEST HOLE LOCATION

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1	PRELIMINARY APPROVAL		

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TITLE

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PERCOLATION RATE
CONTOURS

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SURVEYORS
PLANNERS

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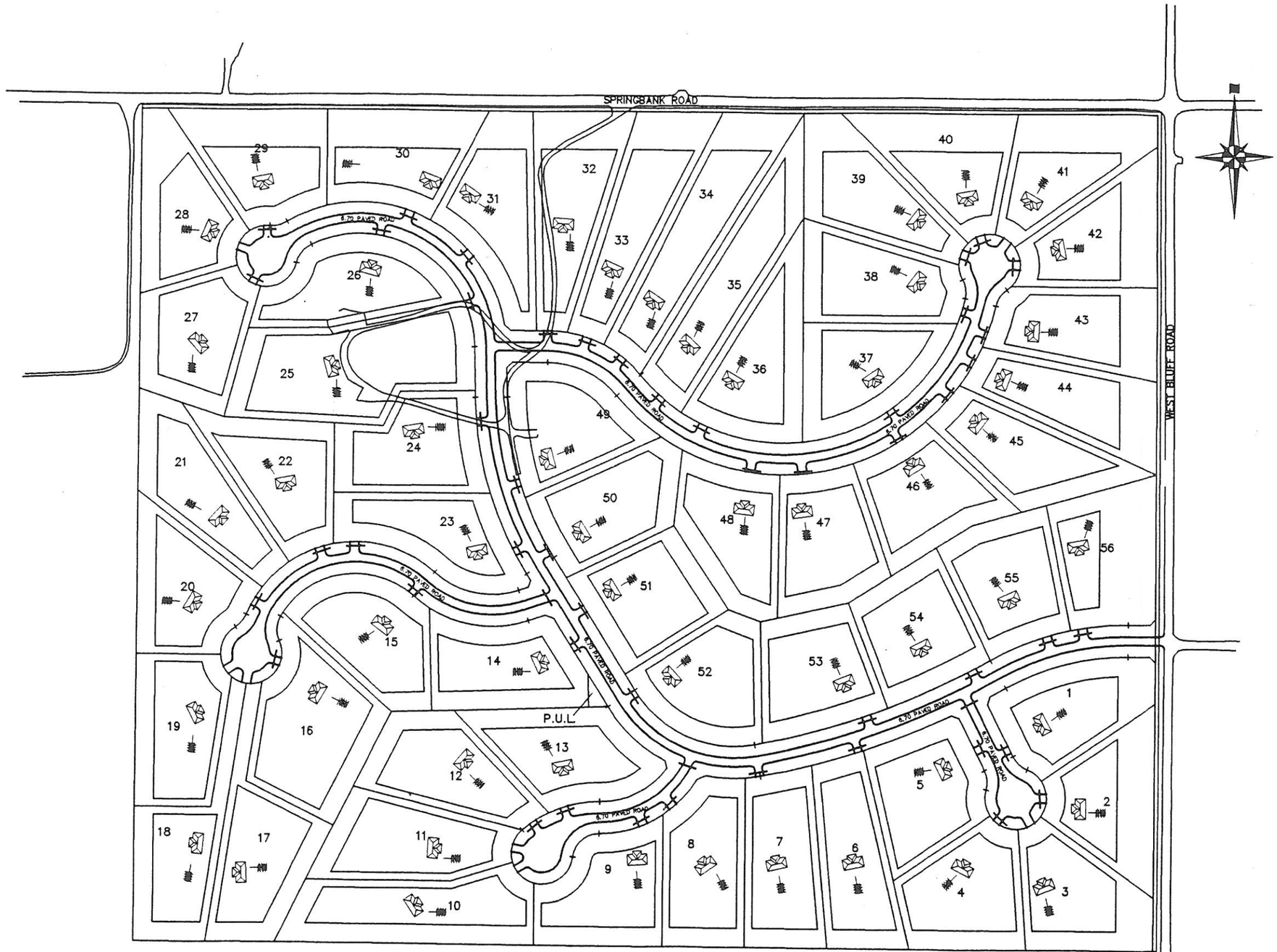

NOTES

LEGEND

APPROXIMATE LOCATION OF SEPTIC FIELD

APPROXIMATE HOUSE LOCATION

BUILDING SETBACKS AS PER M.D. OF ROCKYVIEW No. 44 BYLAWS.

No.	DATE	DESCRIPTION	BY
REVISIONS			
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3		FOR TENDER	
2		FINAL APPROVAL	
1		PRELIMINARY APPROVAL	
No.		DRAWING STATUS	DATE APP.

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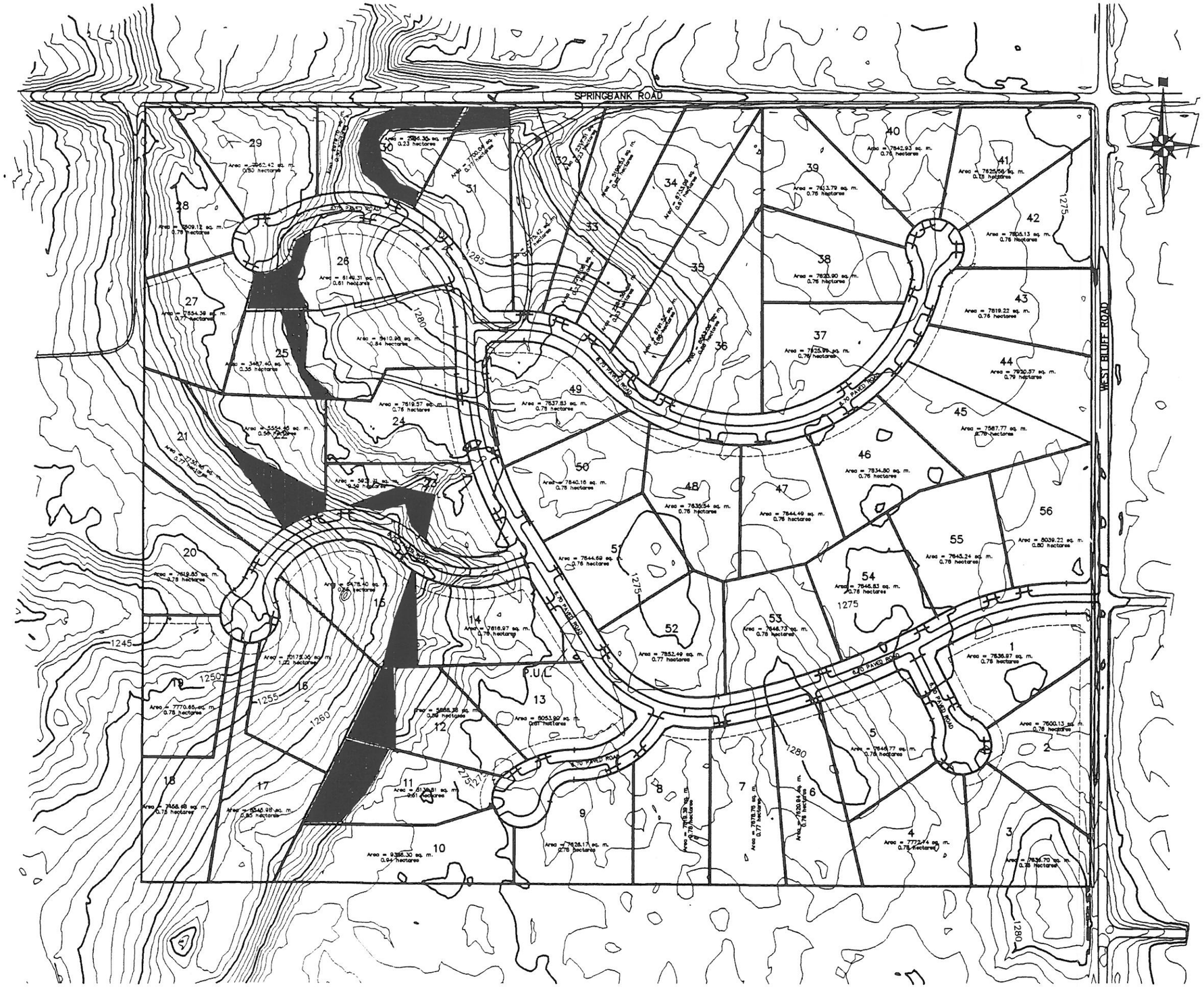

NOTES

LEGEND

SUITABLE DEVELOPMENT AREAS AS DEFINED BY ALBERTA ENVIRONMENT. (MINIMUM 0.4Ohs SLOPES LESS THAN 15% AND LOW GROUND WATER TABLE). ALL LOTS MEET THESE REQUIREMENTS. DARK AREAS INDICATE AREAS OF GREATER THAN 15% SLOPE.

22

No.	DATE	DESCRIPTION	BY
		REVISIONS	

No.	DRAWING STATUS	DATE	APP.
4	AS-BUILT		
3	FOR TENDER		
2	FINAL APPROVAL		
1	PRELIMINARY APPROVAL		

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DEVELOPER

URBCO INC.

TITLE

SPRINGBANK RURAL RESIDENTIAL
M.D. Of ROCKYVIEW No. 44
SUITABLE DEVELOPMENT AREAS

CONSULTING ENGINEERS
SURVEYORS
PLANNERS

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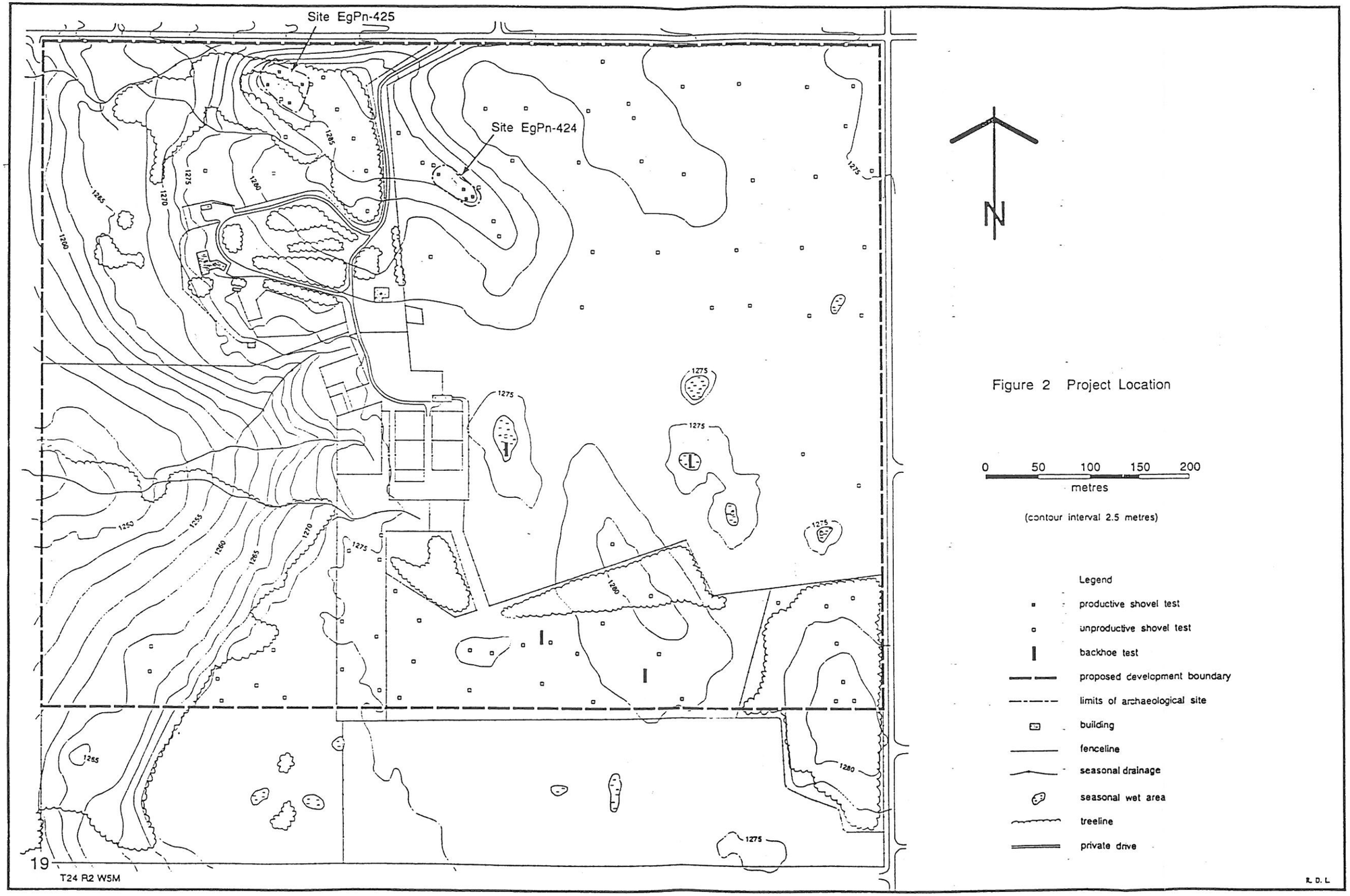

Figure 2 Project Location

SOURCE: HISTORICAL RESOURCES IMPACT ASSESSMENT
BY HISTORICAL RESOURCES MANAGEMENT

DRAWING H

Appendix 17.2

Historical Resource Management

Historical Resources Impact Assessment

Historical Resource Management
3112-41st Street S.E., Calgary, AB T2B 1E5 • Ph: (403) 272-7524

December 5, 1995

Mr. Ken Kelly,
Director of Planning and Development,
Municipal District of Rocky View #44,
911 - 32 Avenue N.E.,
P.O. Box 3009, Station B,
Calgary, AB
T2M 4L6

Dear Mr. Kelly:

Re: Archaeological Mitigation of sites on the proposed Urbco Inc. Springbank subdivision in NE19 - T24 - R2 - W5M.

I am writing on behalf of Urbco Inc. to clarify the status of the archaeological investigations on the above captioned property. As you may know I have already conducted an archaeological survey and assessment on that piece of land to ascertain if any historical resources might be affected by the proposed development. During that assessment two historical resource sites were identified and tested.

The results of the assessment program and the testing of the two sites recorded were presented to the Archaeological Survey in a report detailing the methods used along with recommendations for mitigation of potential impacts to the historical resources. The Archaeological Survey accepted this report and, based on the recommendations, determined the necessary mitigation required if development of the property were to proceed.

The Archaeological Survey has required that portions of each archaeological site, EgPn-424 and EgPn-425, be excavated. These requirements are based on the recommendations in the report that each site contains information and artifacts that can add to our understanding of the prehistory of the province. However, neither site is significant enough to warrant protection under the Historical Resources Act.

At the direction of Urbco Inc. I have prepared an excavation plan that will be implemented at each of the above sites in the spring as soon as weather permits. Urbco Inc. had expressed the desire to complete this work as soon as possible. However, I have recommended that the work be delayed until spring

so that the work can be done under optimum conditions for recording the archaeological excavations. These excavations will conform to the requirements of the Archaeological Survey at which point they will have no further concerns for historical resources in the development area. If you have any questions concerning the requirements of the Archaeological Survey please contact Mr. Mark Woodhouse at (403) 431-2329.

Should you have any questions concerning the conduct or timing of the proposed excavations, please contact me at 272-7524. Thank you.

Yours truly,

James A. Light
Historical Resource Management

cc. Mr. Barry Poffenroth

HISTORICAL RESOURCES IMPACT ASSESSMENT
NE19 - T24 - R2 - W5M,
FINAL REPORT, PERMIT 95-58

A report prepared for
Urbco Inc.,
#110, 6131 - 6th Street S.E.,
Calgary, AB, T2H 1L9

Prepared by
James A. Light
Historical Resources Management
3112 - 41 Street S.E.,
Calgary, Alberta
T2B 1E5

August 24, 1995

ABSTRACT

Urbco Inc. contracted Historical Resource Management to conduct an historical resources impact assessment on a portion of NE19-T24-R2-W5M. The work was done prior to Urbco's acquisition of the property to provide them information on the risk of potential historical resource requirements if they proceeded with developing a residential subdivision.

The area assessed is approximately 52 ha in size. It is located on the west edge of Coach Hill, a broad upland on the west edge of the City of Calgary. The study area contains a portion of the escarpment slope along its west edge but is mainly composed of the gently rolling topography of the uplands. The maximum elevation in the study area is approximately 1290 m while the base of the escarpment is 1160 m. The edge of the escarpment provides perhaps the best view to be had of the region west of Calgary.

The entire subdivision area was assessed by a crew of two over a two day period in late June 1995. Only two potentially significant sites were discovered during that assessment: EgPn-424 and 425. Both sites appeared to be in undisturbed portions of the study area and both had the potential to contain significant historical resource deposits. After discussions with Urbco Inc. the decision was taken to further assess these sites to determine more precisely what recommendations for mitigation would be put forward to the Archaeological Survey. This work was done over two days by a crew of two.

The assessment of EgPn-424 entailed placement of nine 50 cm square test units in two lines along the ridge on which the site is located. Artifact recoveries were minimal and the assessment was discontinued. The assessment of EgPn-425 consisted of the excavation of thirty 50 cm square excavation units in a 5 m grid covering the site area. Artifact recoveries from these units were significant. In all, 152 lithic artifacts were recovered from EgPn-425. This included one quartzite biface, one projectile point base

(tentatively identified as Besant), and worked and utilized flakes. In addition, five unidentifiable bone fragments were recovered. Fire broken rock was recovered from all but four of the test excavations, indicating that the site was fairly extensively used.

The recommendation is made in this report that no further work should be required at EgPn-424. Although fire broken rock was found over much of the site, the lithic artifact recovery was minimal. Further excavations would not likely result in any significant information.

Further excavations at EgPn-425 are recommended. The testing program has identified at least two areas that should contain significant archaeological material. Each of these areas should be excavated with 20 m^2. A further 10 m^2 should be placed as needed. The total area to be excavated would be 50 m^2. This is approximately 1.3 percent of the area of EgPn-425.

Excavations at EgPn-425 would be carried out according to the standards in the Guidlines for Archaeological Permit Holders in Alberta. All excavated material, notes, maps, photographs, and a final report would be submitted to the Archaeological Survey for review upon completion of the excavation. After review and acceptance of the final report on the excavation by the Archaeological Survey, development on EgPn-425 would be allowed without further concern for historical resources.

ACKNOWLEDGMENTS

Permit Holder/Report Author
James A. Light

Archaeological Assistants
Richard Garvin
Richard Callaghan

Draftsman
Richard Lalonde

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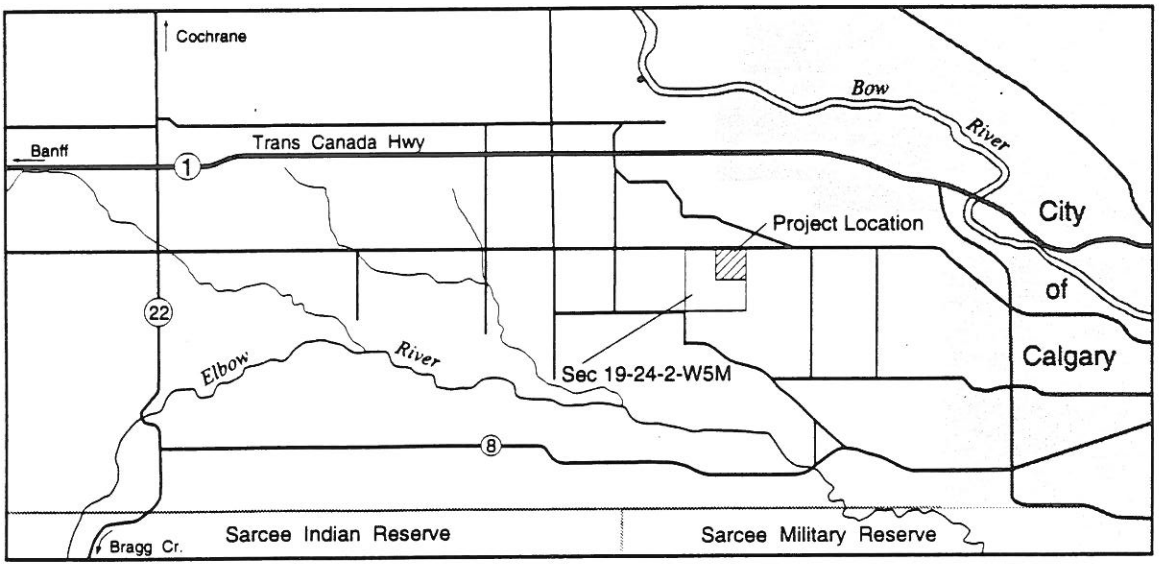
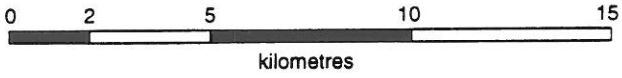
FINAL REPORT, PERMIT 95-58

INTRODUCTION

Historical Resource Management conducted an historical resources impact assessment on a potential subdivision location on behalf of Urbco Inc. The study area is located at the west edge of Coach Hill on the west edge of the City of Calgary in NE-S19-T24-R2-W5M. Figure 1, page 2 shows the study area location. The proposed development is about 52 ha in size. The assessment was conducted in late June, and further testing was done shortly thereafter.

Only two archaeological sites, EgPn-424 and 425, were recorded during the assessment. Both sites are buried campsites located on the highest part of the study area. These sites were further assessed with the excavation of 50 cm square units. Site EgPn-424 did not yield significant numbers of artifacts although fire broken rock was widely distributed. No further work is recommended for this site. Site EgPn-425 contained significant quantities of lithic debitage and tools. One ovoid biface tip, a possible Besant projectile point base, and retouched or utilized flakes were recovered as part of the 152 piece lithic assemblage. Further excavation amounting to 50 m^2 is recommended for EgPn-425.





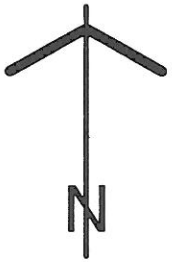


Figure 1 Location of Study Area

R. D. L.

PROJECT DESCRIPTION

The study area is a portion of the NE-S19-T24-R2-W5M. The area is bounded on the east by Westbluff Road (117 Street S.W.) and on the north by Upper Springbank Road. The study area is approximately 52 ha in size. The proposed subdivision will require excavation of trenches for utilities as well as the road construction. Housing construction will entail excavation for building foundations as well as landscaping of the individual lots. These activities would likely result in the destruction of any historical resources present.

A portion along the south boundary of the NE quarter consisting of about 12 ha will not be part of the subdivision under consideration and was not assessed. The study area is shown in Figure 2, page 4.

The goals and objectives of this historical resource assessment were to clarify the potential cost of potential historical resource mitigation as a precursor to a purchase of the land for subdivision. This was done at this stage for two main reasons. First, to allow for planning to either avoid or mitigate any possible impacts to historical resources. Second, information on the possible costs of mitigation could have had an impact on the negotiations for purchase.

STUDY AREA DESCRIPTION

The study area is located in the Groveland Subregion of the Aspen Parkland Ecoregion as defined by Strong and Leggat (1981). The modal vegetations in this area are aspen groves intermixed with fescue grasslands. Soils are predominantly dark grey and black chernozems. The climatic regime is Prairie-Boreal with a mean May to September temperature of 13.0^0 C with 95 freeze free days. Mean December to February temperature is -12.5^0 C with an average of 10 Chinook days per year. Mean precipitation is 460 mm with the maximum occurring in July (Strong and Leggat 1981: 15-16).

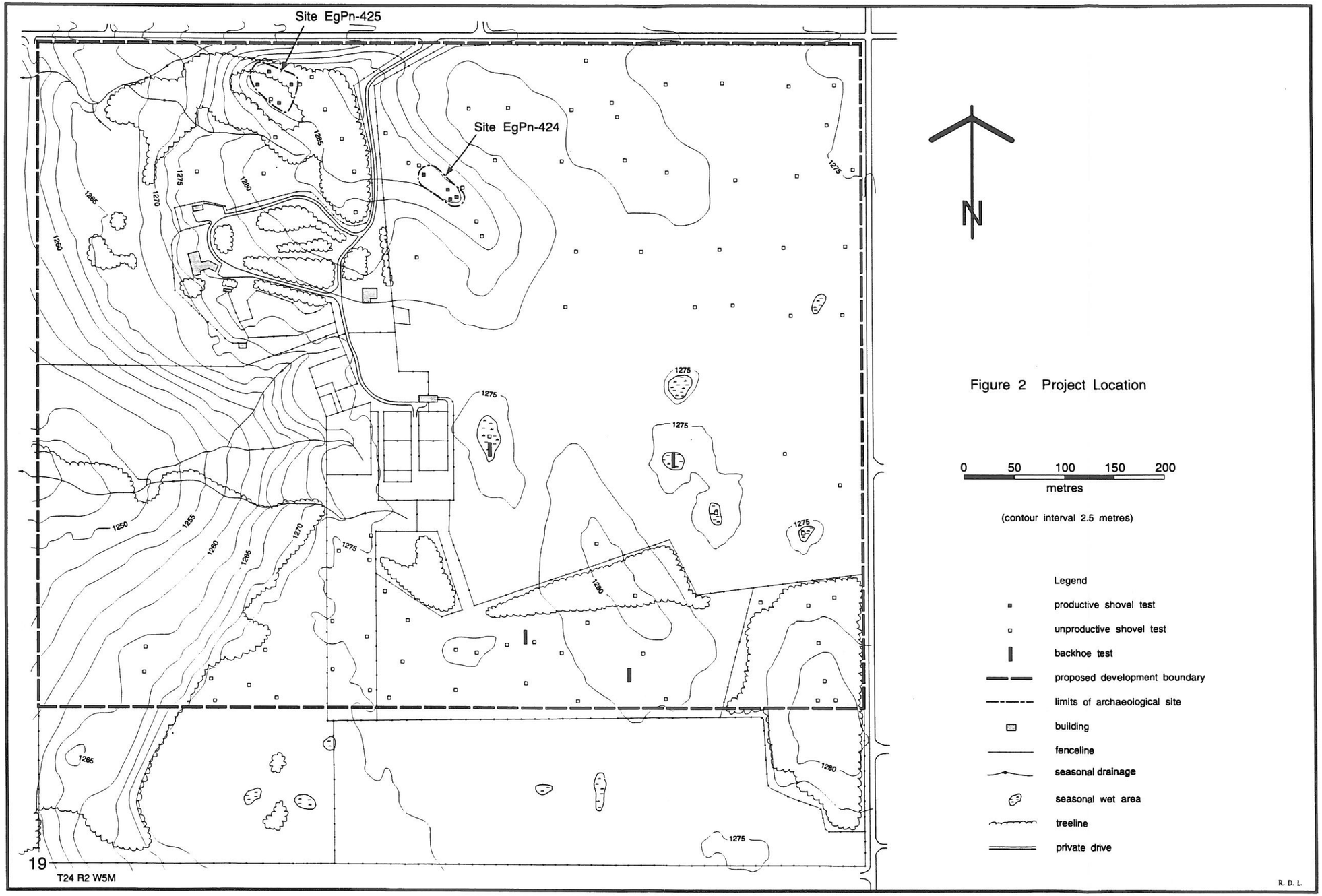


Figure 2 Project Location

The Groveland Subregion is dominated by fescue grassland with aspen clones covering about 15 percent of the area. Shrub communities consisting of saskatoon, wild rose, buckbrush, snowberry, and silverberry occur in areas with greater moisture content such as ravines, north facing slopes, and depressed areas. As well, the area west of Calgary contains a subarea with stands of willow in poorly drained areas. Grassland species include rough fescue, Idaho fescue, june grass, spear grass, prairie smoke, sticky geranium, and bedstraw (Strong and Leggat 1981: 15-16).

PREVIOUS RESEARCH

The study area is one of the last undeveloped sections of land along the western boundary of these uplands. Many historical resource investigations have been done in the surrounding area because of the continued subdivision developments along the periphery of Calgary. However, no sites have as yet been recorded in S19-T24-R2-W4M even though 423 sites have already been recorded in Borden Block EgPn.

PROCEDURES

AREA SURVEY

Much of the study area has suffered surface impacts prior to this assessment. These impacts have resulted from farming, ranching, and logging. Approximately 27 ha has been cultivated and is now a seeded pasture. This area is the large fenced field in the northeastern part of the section. Approximately 5 ha in the south of the study area is what appears to be native pasture at present but the area has been heavily utilized by cattle and other unknown farming activities. Last, the northeastern part of the study area has

had residential developments that affect about 3 ha. In total, about 35 ha or about 67 percent of the study area has been affected to greater or lesser extent.

The level of effort used in assessing the area for historical resources was based in part on the level of prior impacts that could be ascertained for each area. The cultivated pasture in the northeast for example, was not assessed as intensively as the uncultivated pasture in the south. Forested areas were shovel tested more intensively than areas with good visibility. Also, some areas, based on subjective criteria, were felt to possess a higher potential for historical resources and were tested and surveyed more intensively.

Figure 2, page 4, shows the locations of all shovel tests and backhoe tests excavated in the study area. Shovel tests that did not contain any cultural material are shown as open squares. Shovel tests that contained cultural material are solid squares. Backhoe tests are solid although all were negative.

Shovel tests were placed at irregular intervals based on the surveyors judgment. Shovel tests were placed in locations that were felt to have some potential for historical resources. Criteria that were deemed to reduce site potential included low areas with a potential for seasonal wetness, moderate to steep slope, uneven ground surface, and poor site aspect (such as a lack of shelter from prevailing winds).

A total of ninety-eight shovel tests were excavated during the assessment of the study area. This includes shovel tests located within what were later defined as site boundaries. These shovel tests were dug until what appeared to be glacial deposits were encountered. Soil matrix was not screened but was troweled. Shovel tests were approximately 40 cm square. Backhoe tests were excavated until compacted bedrock clay and sandstone were encountered.

SITE ASSESSMENT

Two archaeological sites were recorded during the survey of the proposed development survey. After consultations with Urbco Inc. the decision

was taken to further assess these sites to determine if mitigation excavations would be needed and if so what level of effort would be required.

The site assessments carried out at EgPn-424 and 425 were similar in plan. The method used was to excavated 50 cm square excavation units placed in a 5 m grid. Excavations were done by shovel. All material was removed in one level because the shovel tests had shown that the cultural material at each site was contained in a single confined zone. All excavated soil matrix was screened using a powered screen with a 6 mm mesh. All artifact material was collected and bagged except for fire broken rock. FBR was divided into three size categories and was then counted and discarded.

At both sites, the area of the archaeological site was circumscribed by topography. The testing program therefore was used to determine whether either of the sites contained specific areas with more significant historical resources rather than to delineate the boundaries of the sites.

RESULTS

The potential for historical resources in the study area is largely defined by the steep escarpment that divides the section north to south. The topography of the hill top is gently rolling and many areas appear suitable for habitation. The escarpment itself however is quite steep and only small local topographical situations provide any area with a potential for archaeological material. Therefore, the majority of shovel testing was done on the upland. Soils encountered on the upland varied in depth but mainly consisted of approximately 15 cm of dark black topsoil over glacial deposits. Some areas, particularly in the cultivated pasture, exhibited very little soil, presumably due to agriculturally derived erosion.

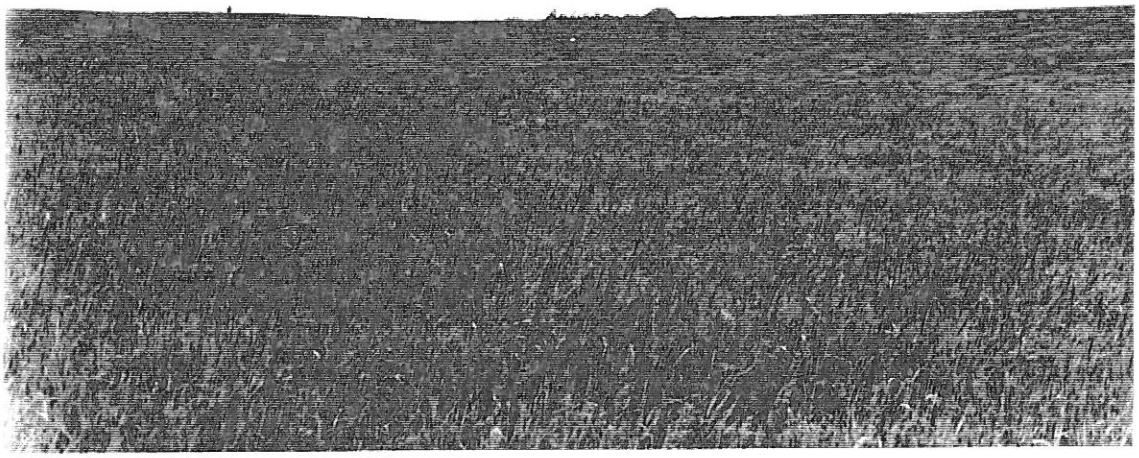


Plate 1. Study area, facing northeast .

Plate 1, page 8, is a view of the northeast pasture, showing the poor surface visibility at the time of the assessment. Although the hay crop was thick, areas of poor hay growth were common allowing a sample of the surface to be viewed. Plate 2, page 9, shows a view of the south pasture, facing east along the south boundary of the study area. This photograph also shows one of the locations of the backhoe tests.

Soils in the low areas tested by backhoe were deeper. Glacial clay was encountered at depths of 60 cm, 80 cm, and 110 cm. However, none of the backhoe tests exhibited any buried soil horizons. Nor were any historical resources found in the backhoe tests. Plate 3, page 9, shows the profile of a typical backhoe test.

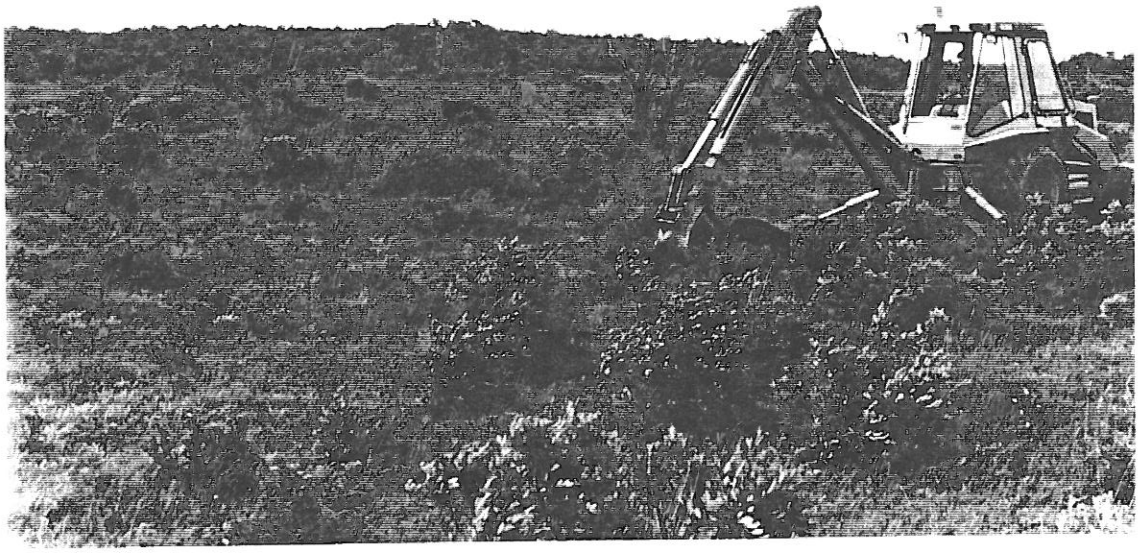


Plate 2. The south pasture, facing east.

Plate 3. Backhoe test showing typical soil profile.

Of the ninety-eight shovel tests excavated in the study area, eight contained cultural material. Four positive shovel tests were dug in each of the sites found. Both sites appeared to be undisturbed and shovel testing was stopped when the broad outlines of each site had been determined. This was done because a more rigorous testing program would provide better data on which to base a recommendation for mitigation.

SITE EGPN-424

EgPn-424 is located on a ridge that runs generally southeast from the highest point in the study area - a spot that is also the highest point of land on the whole escarpment. Plate 4, page 10, shows a view of the site from the south. The ridge is fairly narrow at the northwest and broadens to a habitable area of about 20 m width in the southeast. Cultural material was identified in four shovel tests along the ridge. The site area is approximately 50 m by 20 m.

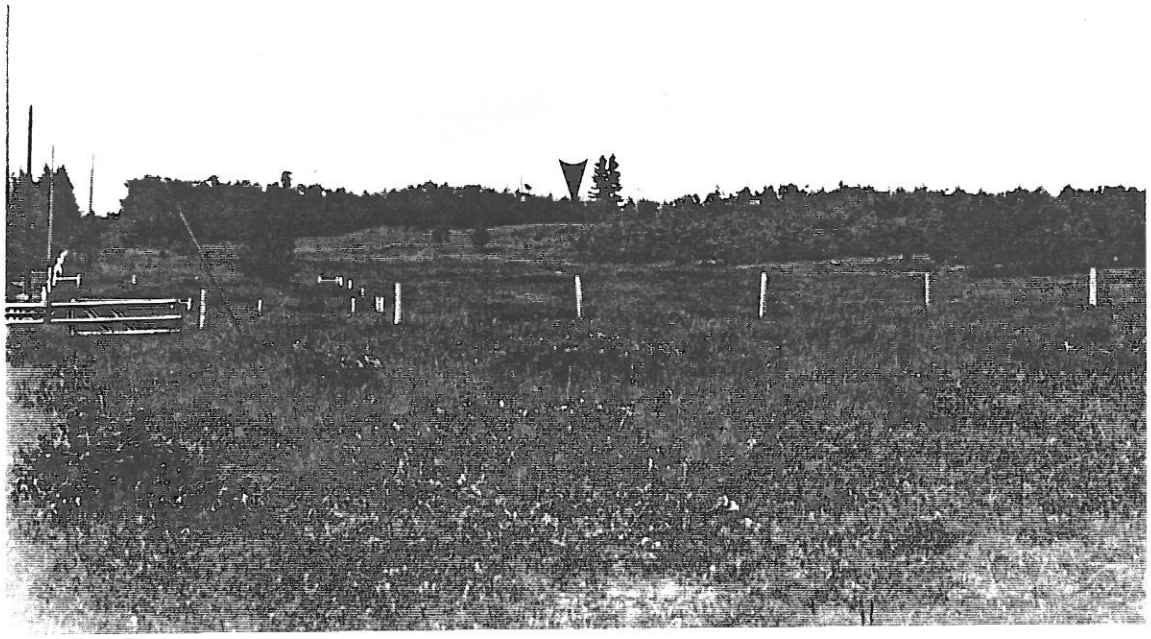


Plate 4. Site EgPn-424 indicated by the arrow, facing north.

Figure 3, page 12, shows a plan of EgPn-424. The map shows shovel tests as small circles and the later 50 cm square excavation units as squares. Negative tests are open, positive tests are solid. The presence of fire broken rock alone is considered to be a positive test.

All four shovel tests contained fire broken rock in varying amounts from 1 to 6 fragments, all medium and small in size. However, only five pieces of lithic debitage were recovered. These are one small obsidian retouch flake, 1 small chert retouch flake, two quartzite thinning flakes, and a small piece of quartzite shatter. All cultural material was found at approximately 10 cm, just below the sod and humus. Glacial deposits were encountered just below the cultural material, at about 15 cm BS.

Locations for the 50 cm square test units are also shown in Figure 3. These tests were placed in two rows, five metres apart along the central line of the ridge. Test units were dug five metres apart along the two lines, beginning at the southeast end of the ridge at its broadest point. One additional unit was placed in a third row at the broadest point of the ridge for a total of nine test units. After the excavation of nine units the artifact recovery was too sparse to continue. The ridge becomes steeper and narrower to the northwest and it was unlikely that significant historical resources were present.

Table 1, page 13, shows the artifact types and material types recovered from the shovel tests and excavation units at EgPn-424. The majority of the material recovered appears to be locally available chert and quartzite. The single obsidian retouching flake was found in the first shovel test at the site and was the main reason for the expanded site testing. However, no other exotic materials, no worked flakes, and no formed tools were recovered.

One final note on the excavated units at EgPn-424 concerns the nature of the soils encountered. The cultural material was all recovered from just beneath

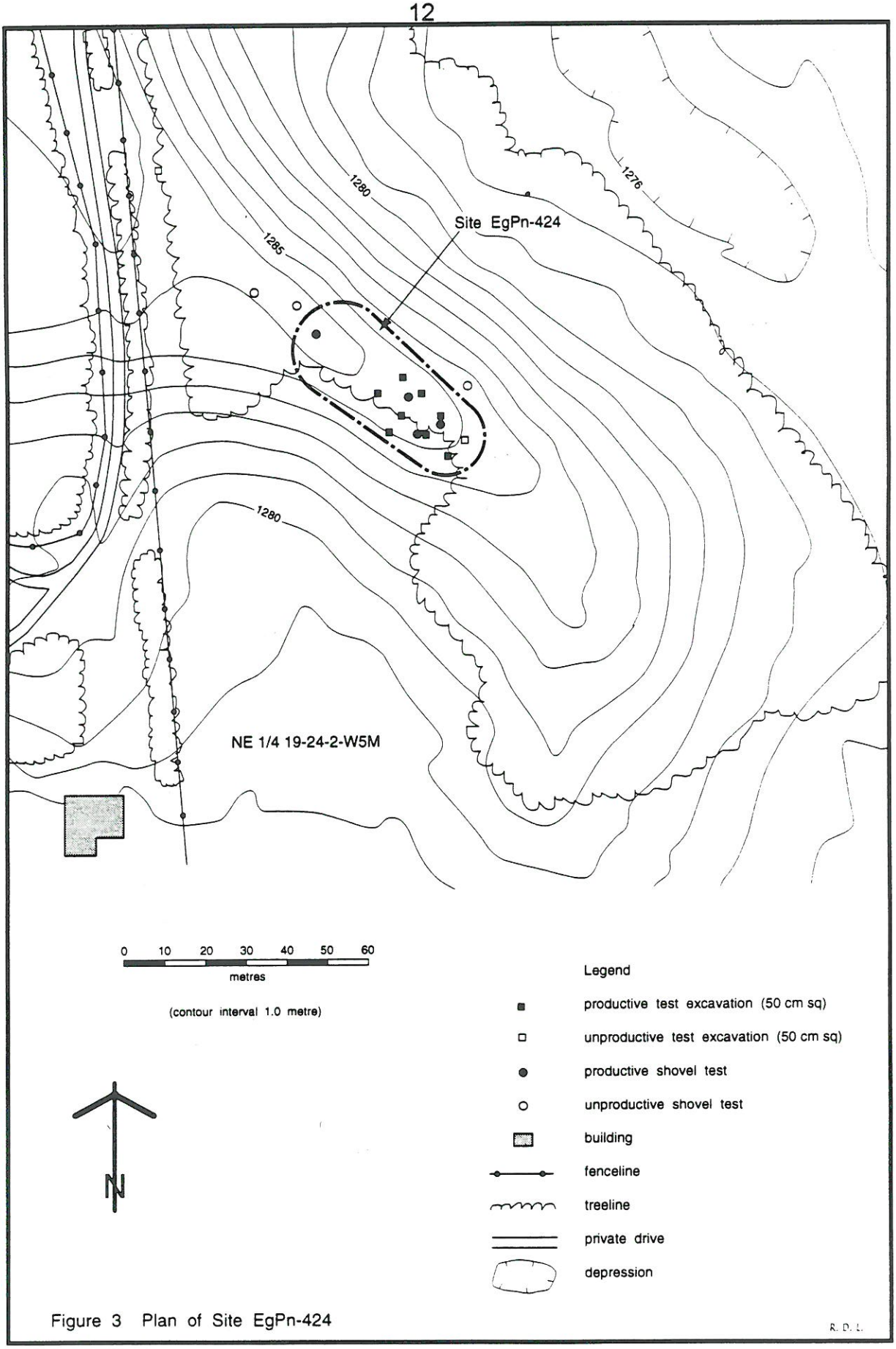


Figure 3 Plan of Site EgPn-424

R. D. L.

Table 1. Artifact and Material types from EgPn-424

Count of Description		Material			
Description	chert	obsidian	quartzite	siltstone	Total
Primary decortication flake			1	1	2
Retouching flake	1	1			2
Secondary decortication flake			1		1
Secondary flake			1	1	2
Shatter, large			1	1	2
Shatter, small			4	2	6
Thinning flake			2	2	4
Total	1	1	10	7	19

the sod and humus layer, at about 10 to 12 cm BS. However, the soil profile was not normal. Although no firm conclusion could be reached as to whether the area had been disturbed, it is possible that the area had been cultivated at some point in the past or that forest clearing or logging has disturbed the soil.

Recommendation for EgPn-424

No further work is recommended at EgPn-424. The site contains a sparse lithic and fire broken rock scatter but no evidence of activity areas. Considering as well the possible disturbed nature of the soil and cultural deposits, EgPn-424 does not warrant any further testing.

SITE EGPN-425

EgPn-425 is located on the highest point of land in the study area. This point was known locally as Artists View Point because of the panoramic view spanning from south to west to north. Undoubtedly this was a consideration in the eyes of its prehistoric inhabitants.

EgPn is a buried campsite that covers approximately 1500 m^2 on a fairly level hill at the edge of the escarpment. The north edge of the site is defined by a steep cut bank that was excavated for the Springbank road (16 Avenue N.). On the south and west the site is defined by the steep escarpment. Figure 4, page 15, shows the site area, topography, shovel test and test unit locations at EgPn-425. Plate 5, page 16, shows the site location as seen from the west. The site area is indicated by an arrow.

The north half of the site area is treed with small scrub poplar, the south half is meadow. The poplar forest does not appear to be long standing and may have grown since the area was homesteaded. The site area does not appear to have been disturbed except for a trail coming up to the eastern edge of the site, and possibly by small scale recreational activities such as picnicking and sight seeing.

During the original assessment, four shovel tests encountered cultural material. Only small quantities of lithic material were recovered but large quantities of fire broken rock were recorded. Three lithic artifacts were recovered from the tests: a quartzite biface tip, and two pieces of quartzite debitage. Again, the decision was taken to assess the site with the excavation of a grid of test units.

A test grid was set up using a baseline that was arbitrarily set along the long axis of the site. Test units were excavated at 5 m intervals along this line to a point where the topography changed. Additional lines were then excavated

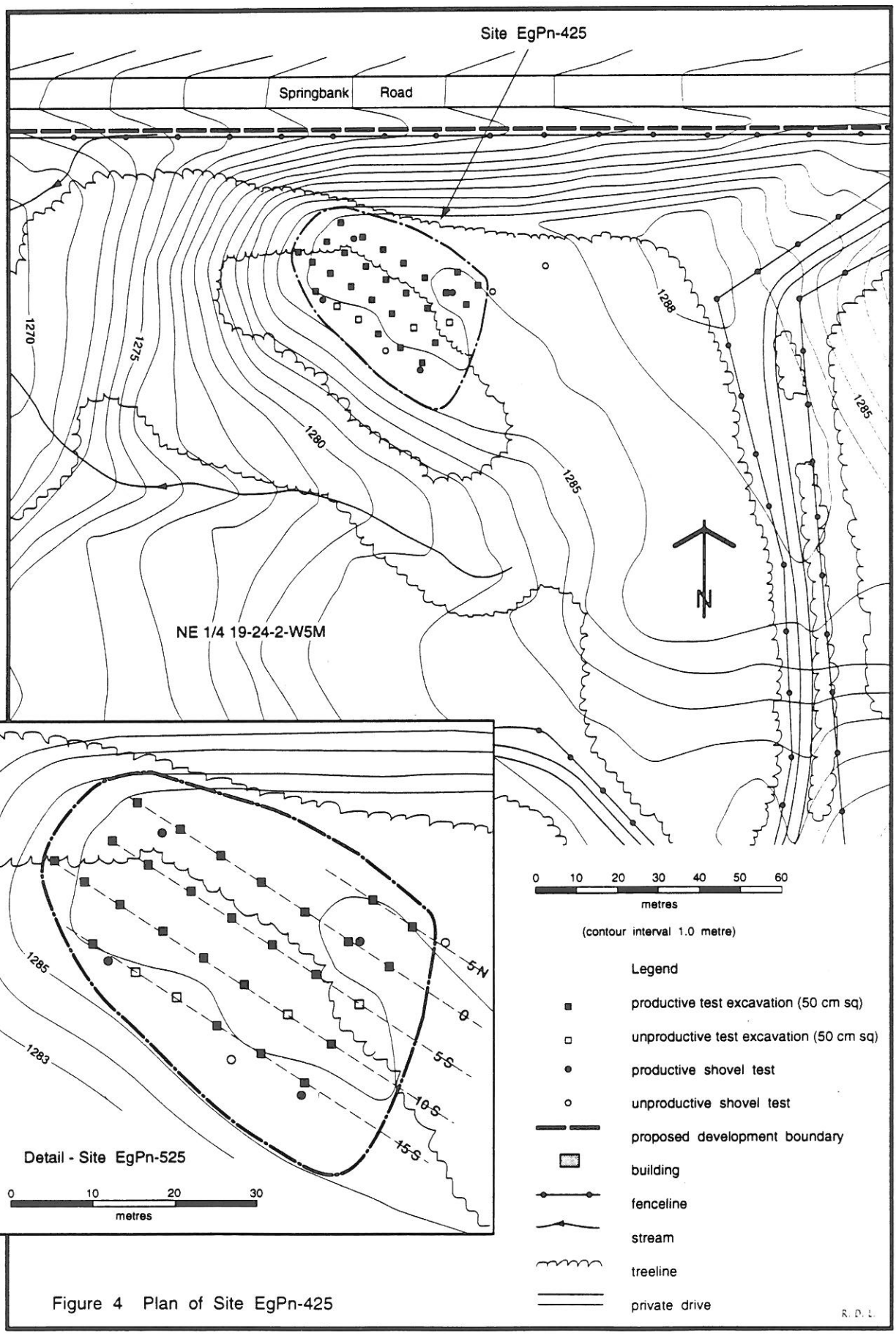


Figure 4 Plan of Site EgPn-425

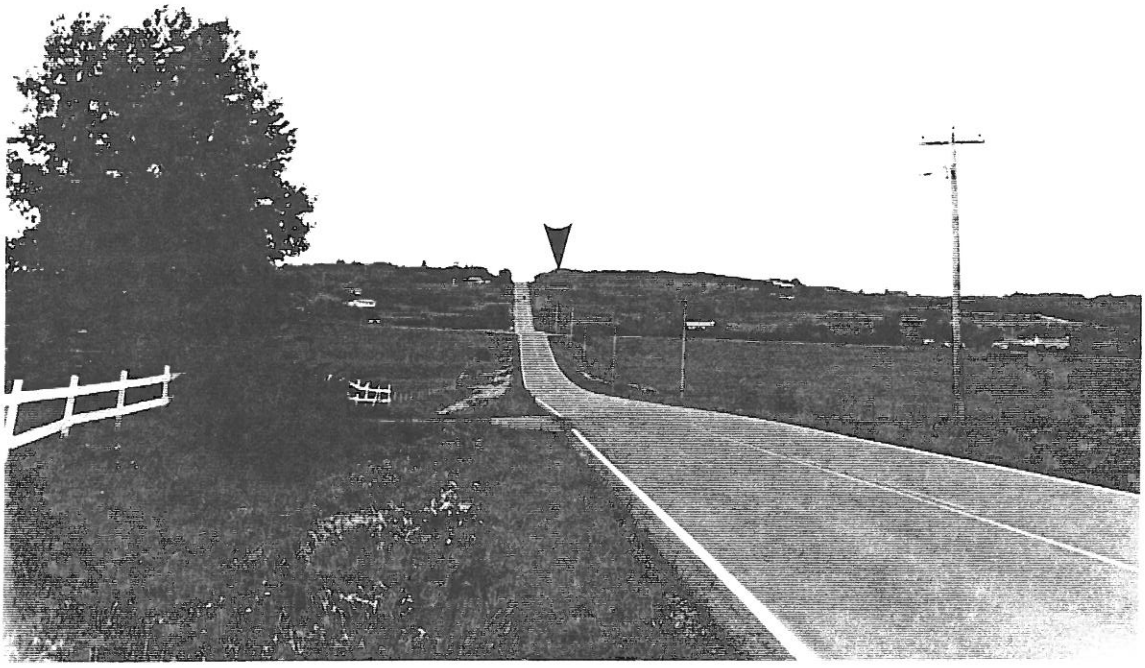


Plate 5. Site EgPn-425 indicated by the arrow, facing east.

Plate 6. Biface tip (EgPn-425-1).

south of the base line until the edge of the escarpment was reached. Two additional test units were placed north of the base line at the east end to further test a location that proved to contain significant material. In total, 30 test units were excavated in the site area. The locations of all test units is shown in the inset in Figure 4.

Table 2, page 17, summarizes the artifact and material types found in both the shovel tests and test excavations at EgPn-425. Quartzite makes up the largest material component of the assemblage (83.5%) with all others being a distant second. Most of the quartzite recovered does not appear to be the common cobble quartzite available in glacial till. Rather, it is a fine grained quartzite more reminiscent of some of the bedded quartzites such as Gog quartzite, found at various locations in the Rocky Mountains.

Table 2. Artifact and Material types from EgPn-425

	Material					
Description	chalcedony	chert	quartzite	siltstone	bone	Total
Biface tip, ovoid			1			1
Blade		1				1
Edge rejuvenation flake			1			1
Primary decortication flake		2	1	3		6
Projectile point base			1			1
Retouching flake	1	4	7	1		13
Secondary decortication flake			8			8
Secondary flake		3	13	1		17
Shatter, large		1	2			3
Shatter, medium		1	6			7
Shatter, small			33	2		35
Shatter, small, thinning			34			34
Thinning flake		4	20	1		25
Unidentified faunal fragment					5	5
Total	1	16	127	8	5	157

The assemblage contains two formed artifacts, both of which were recovered in one area. A quartzite biface tip was recovered from a shovel test located adjacent to Test Unit E35S0. The biface is shown in Plate 6, page 16. It is 42 mm long, 36 mm wide, 10 mm thick and weighs 16.3 g. It is made of a fairly coarse granular quartzite and does not exhibit any use wear.

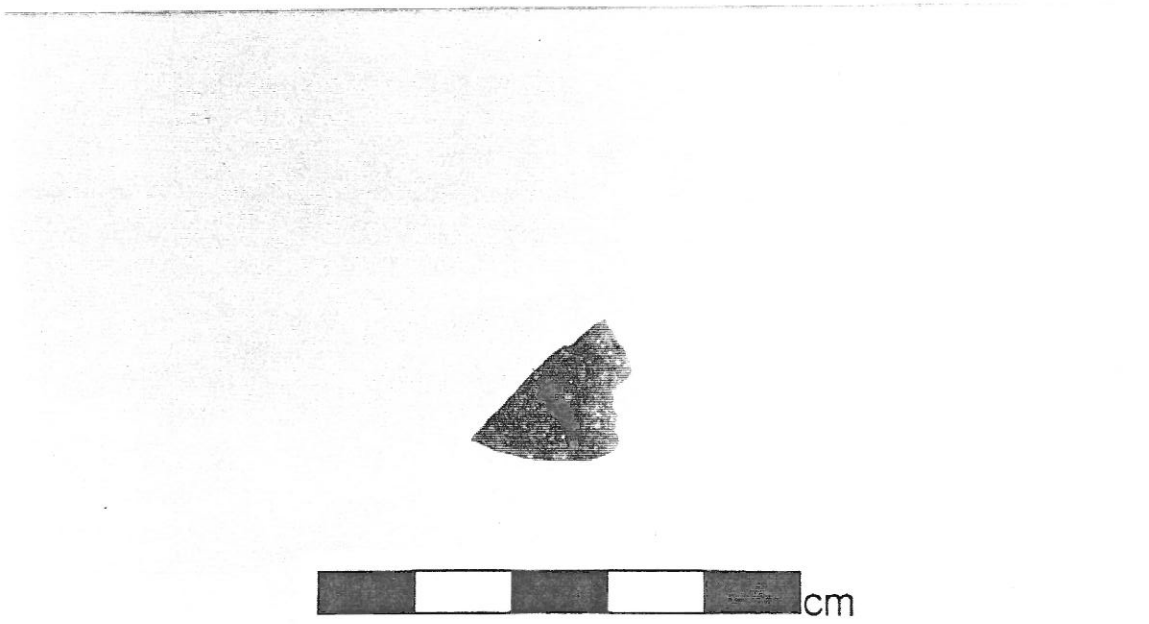


Plate 7. Projectile point base (EgPn-425-23).

The second formed tool is the projectile point base shown above. The base fragment has no complete dimensions so no meaningful metric data can be presented. However, its longest dimension is 18.5 mm. It is made of a medium grained grey quartzite. The photograph presents the point with the tip up, base down, with one remaining corner notch to the right. The base is convex and shows significant grinding. Although the artifact is fragmentary, making identification difficult, it has been tentatively identified as a Besant Point.

The total area excavated at EgPn-425 was 7.5 m^2, not including the shovel tests. This gives an average artifact density per square metre of 20.5. However, two areas have shown greater artifact density. One area is in the vicinity of S10E15 which itself contained 57 artifacts, mainly small retouching flakes. The surrounding area also exhibited a wider range of lithic material including Avon Chert and brown chalcedony. A second area of interest is surrounding S0E35. It was near this unit that the biface tip was found in a shovel test. The projectile point was found just 5 m southwest, while 5 m north

the unit contained 11 lithics including chert, siltstone and quartzite. A large Avon chert flake was also found in the area. Even though these two areas have been identified as possibly containing significant amounts of lithic material it should be remembered that a 5 m grid can easily miss features and activity areas. Other areas with high artifact densities may be present but undiscovered.

Faunal material recovered from EgPn-425 is limited to five small and unidentifiable bone fragments. The thickness of the bone makes it likely that the bones are from an animal at least the size of a large ungulate. The fragmentary nature of the faunal material is quite in keeping with the extensive scatter of fire broken rock. It is likely that bone boiling was done at the site and recovery of a meaningful faunal sample is unlikely. However, this activity does make it more likely that a hearth may be discovered that will provide dateable samples.

Recommendation for EgPn-425

EgPn-425 has been systematically tested to determine the nature and extent of the historical resources present. The results of this testing show that there are at least two activity areas that contain fairly large amounts of lithic debitage and tools. The recovery of two formed tools in the small sample taken would tend to indicate that more are present. Increased recovery of such tools should allow more accurate identification of the cultural group that occupied the site. It should also provide information on the nature of the activities that were performed at EgPn-425. This site is also significant because it appears from the results of the testing that it contains a single component. The range of lithic material recovered is constant across the site and the excavations revealed only a single strata containing cultural material.

EgPn-425 should be excavated prior to any further impacts. I recommend that the site be the subject of mitigation excavations to approximately 50 m^2. These excavations should initially be concentrated on the two areas defined in the results section. Each area should be tested with about 20 m^2 with an

additional 10 m^2 to be used as needed either to complete excavations in the two areas or in another area.

SUMMARY

Historical Resource Management conducted an historical resources impact assessment on a proposed subdivision development west of the City of Calgary. Urbco Inc. required the assessment as part of their analysis of the land prior to purchasing it for development. The study area consists of approximately 52 ha located at the west end of the uplands known as Coach Hill. Between one half and two thirds of the study area have suffered impacts from farming and ranching activities over the last 70 years. However significant portions of the study area, particularly along the edge of the escarpment have not suffered any impacts.

The assessment of the study area was conducted in two visits. The first visit of the two man crew was for two days in late June, 1995. Shortly thereafter, the crew returned for a further two day testing program of the sites recorded earlier.

The study area was walked in transects and shovel tested to locate buried historical resources. Two archaeological sites were discovered: EgPn-424 and 425. Each of these sites was shovel tested initially and was further tested with the excavation of 50 cm square test holes. The testing at EgPn-424 did not encounter any significant historical resources. Testing at EgPn-425 recovered a possible Besant Point, a biface, 150 lithic artifacts including retouched and utilized flakes, and five unidentifiable faunal fragments. Based on the results of these tests, no further work is recommended at EgPn-424 and further excavations in the amount 50 m^2 are recommended for EgPn-425.

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APPENDIX A. ARTIFACT DISTRIBUTION AT EgPn-425

Table 3. Artifacts per test unit, EgPn-425

	Unit																				
Description	S0 E15	S0 E20	S0 E25	S0 E30	S0 E35	S0 E40	S5 E5	S5 E15	S5 E25	S5 E30	S10 E5	S10 E15	S10 E35	S15 E10	S15 E25	S15 E30	S15 E35	N5 E35	N5 E40	ST39	ST47	Total
Biface tip, ovoid																				1		1
Blade									1													1
Edge rejuvenation flake																			1			1
Primary decortication flake					1		1								2	1		1				6
Projectile point base										1												1
Retouching flake											3	7			1		1		1			13
Secondary decortication flake					1	1			1			3				1		1				8
Secondary flake			1	1	2						3	3		2				3	2			17
Shatter, large				1	1											1						3
Shatter, medium					1			1				2	1	1	1							7
Shatter, small					1			3			1	19	1			2	1	4	2		1	35
Shatter, small, thinning												34										34
Thinning flake	1										2	17		2			1	2				25
Unidentified faunal fragment		1	3		1																	5
Grand Total	1	1	4	2	8	1	1	4	2	1	9	85	2	5	4	5	3	11	6	1	1	157

APPENDIX B. SITE FORMS

Alberta Archaeological Survey
Provincial Museum of Alberta

CULTURE AND MULTICULTURALISM

ARCHAEOLOGICAL SITE INVENTORY DATA

Borden No. **EgPn-424**

Permit No. **95-58**

Update/Revisit Date:

Return to: **Archaeological Inventory and Permit Coordinator**
Archaeological Survey, 8820 - 112 St.
Edmonton, AB T6G 2P8

Official Use
Previous Borden No.

1. Site Name:
2. N.T.S. 1:50,000 Map No.: **82 O/1** Name: **Calgary** Air Photo Reference:
3. Elevation: **1280** m
4. U.T.M. Location Grid **11U** Zone: **PG** Easting: **917** Northing: **606**
5. Legal Description LSD: **14** Section: **19** T: **24** R: **2** W of: **5** M
6. Land Owner
   - [ ] Government of Canada
   - [ ] Government of Alberta
   - [ ] Municipal Government
   - [X] Freehold
7. Land Owner Name, Address, and Telephone No.:

8. Access (refer to highway, road number, trail, cardinal directions, landmarks, nearest settlement, distances)

The site can be approached by driving west from Calgary on Upper Springbank road. The site can be seen from the highway, approximately 150 m south. The property on which the site is located is bounded on the north by Upper Springbank road and on the east by 117 Avenue N.W.

9. Site Setting (describe in terms of drainage, slope, aspect, vegetation, land forms)

The site is located on the west edge of the uplands known as Coach Hill, on the west edge of southwest Calgary. The site is located on a fairly narrow ridge approximately 100 m east of the western escarpment of the hills. At present the site is forested with small scrub poplar, saskatoon, and willow. The surrounding area is gently rolling pasture. The ridge travels generally from north west to southeast and is approximately 20 m wide in the site area. The site has a good southern exposure and is protected from the prevailing west winds by the hill and forest to the west.

10. Site Class
   - [X] prehistoric
   - [ ] protohistoric
   - [ ] historic
   - [ ] unknown
   - [ ] other

11. Context
   - [ ] surface
   - [X] buried
   - [ ] stratified
   - [ ] unknown

12. Components (or Cultural Strata)
   - [ ] single
   - [ ] multi - No.:_____
   - [X] unknown

13. Site Type
   - [ ] isolated find
   - [ ] scatter
   - [X] campsite
   - [ ] stone feature
   - [ ] kill site
   - [ ] workshop
   - [ ] quarry
   - [ ] rock art
   - [ ] burial
   - [ ] ceremonial
   - [ ] homestead
   - [ ] trade post
   - [ ] industrial
   - [ ] other

Borden No.:**EgPn-424**

14. Features (Frequencies)					
	stone circles	drive lane	pictograph	foundation	historic dump
	cairn	effigy	petroglyph	cabin	other structure
	medicine	hearth	mound	house	
	stone line	pit	depression	other	

15. Material (Frequencies)	observed	collected		observed	collected		observed	collected	
			projectile points			skeletal elements			human remains
			lithic tools			-identifiable			historic ceramics
		19	lithic debitage			-unidentifiable			metal
			bone tools			tephra			glass
			prehistoric ceramics			sediment			Other:
	X		fire cracked rock			macrofossils			

16. Additional remarks regarding materials observed and/or collected:

Fire broken rock was noted in several of the shovel tests and in the 50 cm square test units. Artifact recoveries were sparse; few units contained more than 3 or 4 items. One small retouching flake of obsidian was recovered from a shovel test.

17. Estimated Dimensions N-S: **10** m E-W: **25** m Depth: **10** cm

18. Means of estimation: [ ] surface inspection [X] shovel tests [ ] erosion exposure [ ] back hoe tests [X] other: **9- 50 cm square test units.**

19. Estimated Site Portion Intact: **100** %

20. Disturbance Factors (natural, human, current, potential)

The site will be completely destroyed by a proposed subdivision development under consideration by the RM of Rocky View.

21. Estimated Age [ ] Early Prehistoric [ ] Middle Prehistoric [ ] Late Prehistoric [ ] Historic [ ] Unknown

22. Temporal Control

Calendar Date A.D./B.C.	Radiocarbon Dates	+/-	Lab. No.	13 C Corrected

[ ] diagnostics:
[ ] stratigraphy:
[ ] archival:
[ ] informant:
[ ] other:

Borden No. **EgPn-424**

23. Collection Repository [X] Provincial Museum
[ ] Private collection, Dispositions file:
[ ] other Repository:

24. Photographs: [X] yes [ ] no

25. Principal Investigator/Permit Holder: **James A. Light**

26. Project Name: **Springbank subdivision**

27. Project Type: [X] H.R.I.A [ ] research survey [ ] other:
[ ] mitigation [ ] research excavation

28. Development [ ] road/highway [ ] well site [ ] transmission line [ ] recreation area
[ ] gravel/sand pit [ ] coal mine [ ] reservoir [ ] industrial area
[ ] pipeline [ ] oil sands [X] residential area [ ] other:

29. Observed by: **James A. Light** Date (Y/M/D) **June 27, 1995**

30. Surface collected by: Date (Y/M/D)

31. Tested/assessed by: **James A. Light** Date (Y/M/D) **July 25, 1995**

32. Excavated/mitigated by: Date (Y/M/D)

33. Form completed by: **James A. Light** Date (Y/M/D) **August 4, 1995**

34. Recommendations: [X] no further work

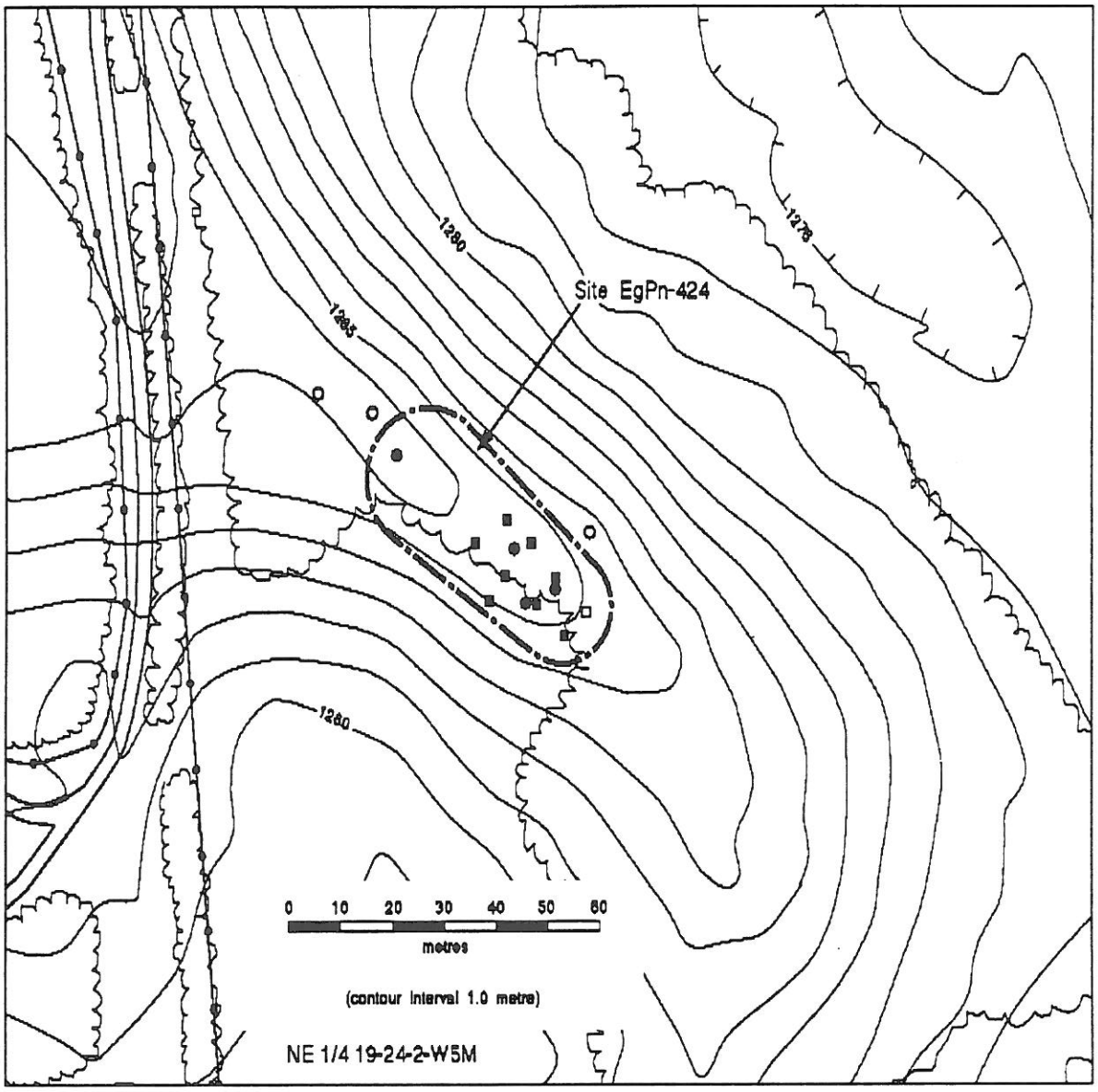
[ ] additional investigation required (specify):

No further work is recommended at site EgPn-424. Initial shovel testing and nine 50 cm square test excavations where dug in the site area. These did not encounter significant cultural deposits. The site consists of a scatter of fire broken rock and a very sparse lithic scatter.

35. Additional Remarks (previous work, additional references, etc.)

36. Site Map

Borden No. EgPn-424
Permit No. 95-58



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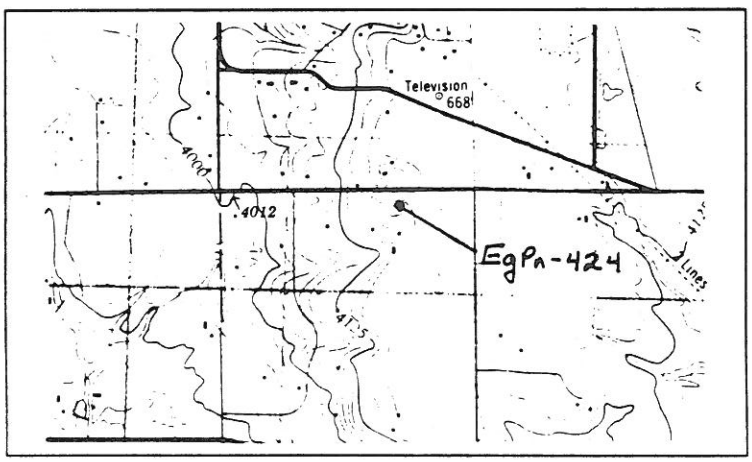

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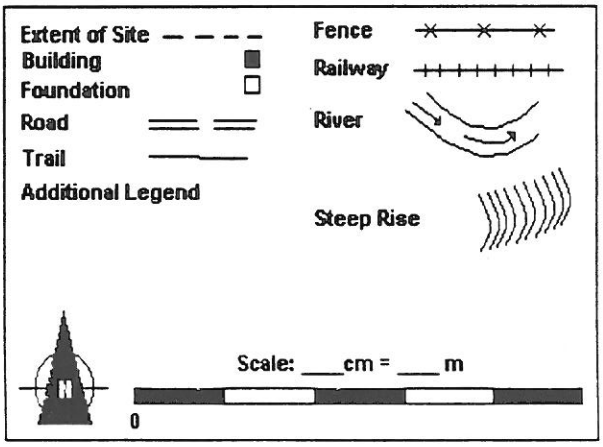


Alberta Archaeological Survey
Provincial Museum of Alberta

CULTURE AND MULTICULTURALISM

ARCHAEOLOGICAL SITE INVENTORY DATA

Borden No. **EgPn-425**

Permit No. **95-58**

Update/Revisit Date:

Official Use
Previous Borden No.

Return to: **Archaeological Inventory and Permit Coordinator**
Archaeological Survey, 8820 - 112 St.
Edmonton, AB T6G 2P8

1. Site Name: Artists View site
2. N.T.S. 1:50,000 Map No.: **82 O/1** Name: **Calgary** Air Photo Reference:
3. Elevation: **1280** m
4. U.T.M. Location Grid **11U** Zone: **PG** Easting: **916** Northing: **606**
5. Legal Description LSD: **14** Section: **19** T: **24** R: **2** W of: **5** M
6. Land Owner
   - [ ] Government of Canada
   - [ ] Government of Alberta
   - [ ] Municipal Government
   - [X] Freehold
7. Land Owner Name, Address, and Telephone No.:

8. Access (refer to highway, road number, trail, cardinal directions, landmarks, nearest settlement, distances)

The site can be approached by driving west from Calgary on the Upper Springbank road. The property on which the sit e is located is bounded on the north by Upper Springbank Road and 117 Street N.W. on the east. The site can be seen from the highway, approximately 50 m south.. It is located on the highest point in the township, on the spot known colloquially as Artists View Point.

9. Site Setting (describe in terms of drainage, slope, aspect, vegetation, land forms)

The site is located on the west edge of the uplands known as Coach Hill, on the west edge of Calgary. The site is located at the western edge escarpment of the hills, overlooking the Bow and Elbow rivers. At present the site is forested with small scrub poplar, saskatoon, and willow. The surrounding area is gently rolling pasture. The site is bounded on the north by the deep cut bank of Springbank Road (SR 563) as it drops off the escarpment. The site has a southern and western exposure.

10. Site Class
   - [X] prehistoric
   - [ ] protohistoric
   - [ ] historic
   - [ ] unknown
   - [ ] other

11. Context
   - [ ] surface
   - [X] buried
   - [ ] stratified
   - [ ] unknown

12. Components (or Cultural Strata)
   - [X] single
   - [ ] multi - No.:_____
   - [ ] unknown

13. Site Type
   - [ ] isolated find
   - [ ] scatter
   - [X] campsite
   - [ ] stone feature
   - [ ] kill site
   - [ ] workshop
   - [ ] quarry
   - [ ] rock art
   - [ ] burial
   - [ ] ceremonial
   - [ ] homestead
   - [ ] trade post
   - [ ] industrial
   - [ ] other

Borden No.:**EgPn-425**

14. Features (Frequencies)					
	stone circles	drive lane	pictograph	foundation	historic dump
	cairn	effigy	petroglyph	cabin	other structure
	medicine	hearth	mound	house	
	stone line	pit	depression	other	

15. Material (Frequencies)	observed/collected		observed/collected		observed/collected	
		1 projectile points		skeletal elements		human remains
		1 lithic tools		-identifiable		historic ceramics
		150 lithic debitage		5 -unidentifiable		metal
		bone tools		tephra		glass
		prehistoric ceramics		sediment		Other:
		fire cracked rock		macrofossils		

16. Additional remarks regarding materials observed and/or collected:

Four shovel tests and 30 test units (50 cm square) were excavated to test the cultural deposits. In all , 157 artifacts wre recovered. One projectile point base has been tentatively identified as a Besant Point. Several retouched flakes and a biface tip were also recovered. FBR was recovered in all but 8 ot the test units.

17. Estimated Dimensions N-S: **20** m E-W: **50** m Depth: **15** cm

18. Means of estimation
- [ ] surface inspection
- [ ] erosion exposure
- [X] other: **30- 50 cm square test units.**
- [X] shovel tests
- [ ] back hoe tests

19. Estimated Site Portion Intact: **90** %

20. Disturbance Factors (natural, human, current, potential)

The site will be completely destroyed by a proposed subdivision development under consideration by the RM of Rocky View.

21. Estimated Age [ ] Early Prehistoric [ ] Middle Prehistoric [X] Late Prehistoric [ ] Historic [ ] Unknown

22. Temporal Control

Calendar Date A.D./B.C.	Radiocarbon Dates	+/-	Lab. No.	13 C Corrected

- [X] diagnostics: **Besant projectile fragment**
- [ ] stratigraphy:
- [ ] archival:
- [ ] informant:
- [ ] other:

Borden No. **EgPn-425**

23. Collection Repository [X] Provincial Museum
[ ] Private collection, Dispositions file:
[ ] other Repository:

24. Photographs: [X] yes [ ] no

25. Principal Investigator/Permit Holder: **James A. Light**

26. Project Name: **Springbank subdivision**

27. Project Type: [X] H.R.I.A [ ] research survey [ ] other:
[ ] mitigation [ ] research excavation

28. Development [ ] road/highway [ ] well site [ ] transmission line [ ] recreation area
[ ] gravel/sand pit [ ] coal mine [ ] reservoir [ ] industrial area
[ ] pipeline [ ] oil sands [X] residential area [ ] other:

29. Observed by:	**James A. Light**	Date (Y/M/D)	**June 27, 1995**
30. Surface collected by:		Date (Y/M/D)	
31. Tested/assessed by:	**James A. Light**	Date (Y/M/D)	**July 25, 1995**
32. Excavated/mitigated by:		Date (Y/M/D)	
33. Form completed by:	**James A. Light**	Date (Y/M/D)	**August 4, 1995**

34. Recommendations: [ ] no further work

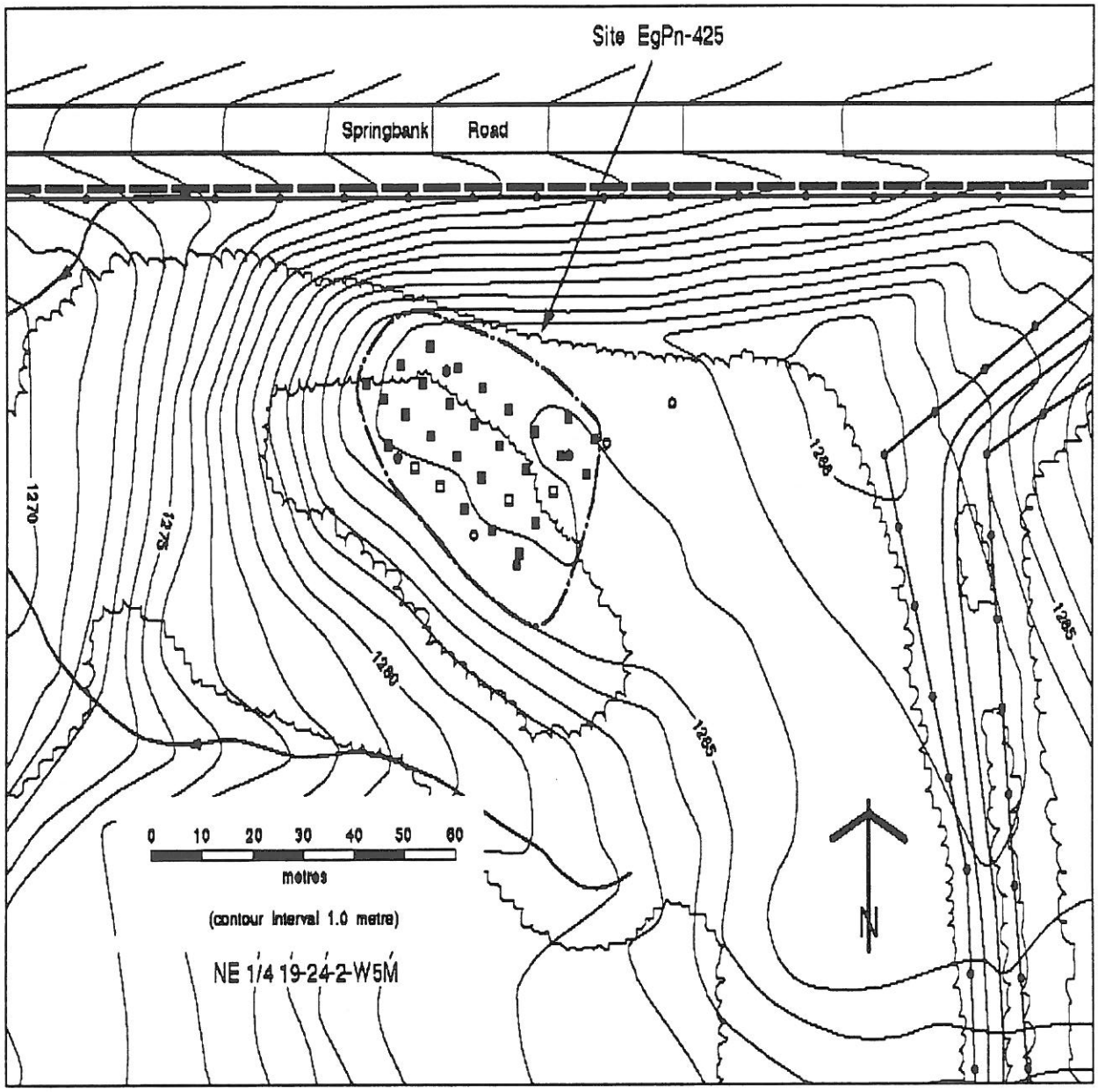
[X] additional investigation required (specify):

Fire broken rock was found in 23 of the 31 test units excavated. The artifacts recovered indicate both by frequency and type that at least two activity areas are intact. One area contained a biface and a projectile fragment. The second activity area contain a dense concentration of fine lithic debitage including several material types. Excavation of these two areas is recommended. Twenty metres square at each of these areas and an additional 10 metres square placed as needed should be excavated at EgPn-425 to mitigate site impacts. Some badly broken faunal material was also recovered and the high incidence of FBR indicates that bone boiling took place. This presents the real possibility that hearths and datable remains

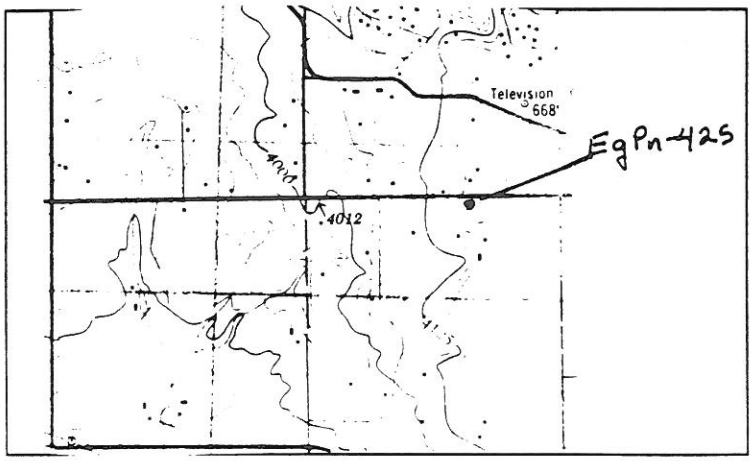
35. Additional Remarks (previous work, additional references, etc.)

36. Site Map

Borden No. EgPn-425
Permit No. 95-58



N.T.S. 1:50,000 MAP INSET



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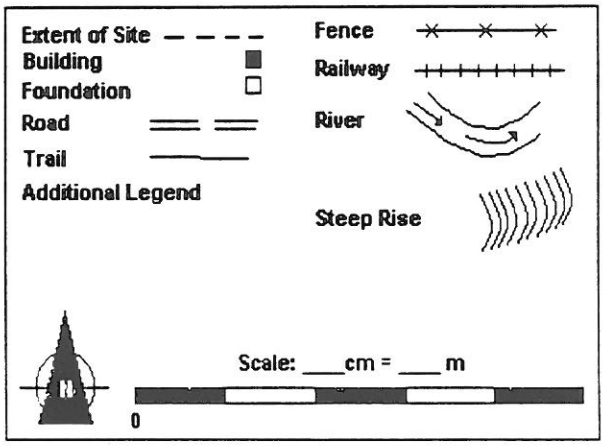

Appendix 17.3

EBA Environmental Ltd.

Phase 1 Environmental Site Assessment

PHASE I
ENVIRONMENTAL SITE ASSESSMENT
NE ¼ SEC 19, TWP 024, RGE 02 W5M
CALGARY, ALBERTA

JULY 1995

0305-38215

6111 - 36th Street S.E. Calgary, Alberta T2C 3W2
• Telephone (403) 236-9700 • FAX (403) 236-7033 •

PHASE I
ENVIRONMENTAL SITE ASSESSMENT
NE ¼ SEC 19, TWP 024, RGE 02 W5M
CALGARY, ALBERTA

SUBMITTED TO:

Urbco Inc.
Calgary, Alberta

PREPARED BY:

EBA Environmental Ltd.
A Division of EBA Engineering Consultants Ltd.
Calgary, Alberta

0305-38215

JULY 1995

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EXECUTIVE SUMMARY

EBA Environmental Ltd. (EBA), A Division of EBA Engineering Consultants Ltd., was retained by Urbco Inc. (Urbco) to conduct a Phase I environmental site assessment (ESA) for a property located northwest of Calgary, Alberta. The objective of the ESA was to evaluate the site to assess the potential presence of contaminants, hazardous materials or waste products on the site. The historical and present uses of the site and adjacent lands were also reviewed to investigate the potential for adverse impacts on the environmental status of the site.

The historical review, dating back to 1929, indicated that the site and adjacent properties have been used primarily for agricultural and livestock grazing purposes. The current site development occurred prior to 1972 and includes two houses, a barn and several smaller storage structures. The site ownership has been limited to one family since 1929. Rural residential development of the surrounding area has been ongoing since approximately 1972.

A site visit revealed that water for both the houses is provided by domestic water well. Household effluent is managed by septic tanks and septic fields. A livestock watering well also exists on the property. An additional apparently abandoned well was also observed.

EBA has obtained and reviewed available historical information pertaining to the site and adjacent surrounding lands back to 1929. Based on the information collected to date and the site reconnaissance, it is EBA's opinion that there is no evidence that suggests adverse environmental conditions exist on the site and no further investigation is required at this time. However, EBA recommends all inactive domestic/livestock water wells be properly decommissioned as per the Alberta Environmental Protection Water Well Regulation AR 123/93, Section 36. Also, if the existing septic tanks and associated fields are not included in the planned site development, EBA recommends effluent removal from any on-site septic tanks and dismantling and removal of the septic tanks and fields prior to site development.

1.0 INTRODUCTION

EBA Environmental Ltd. (EBA), A Division of EBA Engineering Consultants Ltd., was retained by Urbco Inc. (Urbco) to conduct a Phase I environmental site assessment (ESA) for a property located northwest of Calgary, Alberta. It is understood that the ESA is required for a property transaction.

The objective of the Phase I ESA was to evaluate the site to assess the potential presence of contaminants, hazardous materials or waste products on the site. The historical and present uses of the site and adjacent lands were also reviewed to investigate the potential for adverse impacts on the environmental status of the site. Where the environmental Phase I ESA identifies the need for further site investigation (Phase II ESA), beyond the historical and information review, site reconnaissance and regulatory compliance issues, specific recommendations are provided.

EBA's scope of work included the following.

- Conduct a historical review of the site and adjacent properties including a search of previous registered land owners and aerial photographs. Other information to be compiled relates to characterizing the site's soil, topographic, geologic and hydrogeologic conditions based on published regional information.

- Conduct a site reconnaissance with specific focus on the physical features of the site, including a check for the presence of hazardous material and wastes, on-site use of PCBs, sumps, underground storage tanks, site drainage and related environmental concerns.

- Review the findings and prepare a final report. The report will present the information collected from the historical review and fieldwork. The report will also state an opinion as to the present environmental condition of the site with respect to the presence of hazardous contaminants or environmental liabilities and provide recommendations for additional investigation.

Authorization to proceed with the Phase I ESA was received from Mr. Craig Johnson of Urbco June 12, 1995. This project was completed under EBA's Standard Terms and Conditions for Environmental Services provided in Appendix A.

2.0 BACKGROUND INFORMATION

This section provides details of the site including a brief description of the location and surrounding land use. An information source checklist is provided in Appendix C.

2.1 Site Description and Surrounding Land Use

The site is located northwest of Calgary, Alberta on Upper Springbank Road. The legal description of the site is NE ¼ of Section 19, Township 24, Range 02 W5M. The site occupies approximately 65 Hectares (160 Acres). Urbco has indicated that the southerly 12 Ha (30 Ac) will be purchased by the adjacent property owner to the south to provide a "buffer zone" to Urbco's planned development of the site. The site is bounded on the north by Upper Springbank Road, on the east by Westbluff Road (117 Street NW). Primary uses to the north, west and east of the site consist of country residential subdivisions. The majority of the site is relatively flat with a treed hillside existing near the western property boundary. Currently, the site accommodates two houses (constructed prior to 1972), a barn (constructed prior to 1959) and several smaller storage structures. A site plan is presented as Figure 1. Historical site and surrounding land use is discussed in Section 3.0.

2.2 Regional Geology and Hydrogeology

Geologic information was obtained from a report titled "Surficial Geology of the Calgary Urban Area" (S.R. Moran, 1986, Alberta Research Council). The site is located on the Broadcast Hill upland. The soils underlying any surface fill are primarily comprised of glacial till of the Spy Hill Formation overlying Tertiary gravels and bedrock at depth. The glacial tills are silt and clay dominant with varying amounts of sand and gravel. Bedrock consists of crossbedded sandstone, mudstone and bentonitic shale of the Porcupine Hills Formation. The upper bedrock surface is likely highly weathered, weak and soft.

Based on a topographic map of the area, it is expected that the regional groundwater flow direction would be to the south southwest towards the Elbow River located approximately 3.5 km south of the site. However, it is possible that localized variances in the groundwater movement may result from changes in local topography, geological materials and development resulting in soil disturbances due to construction. It should also be noted that shallow groundwater levels will fluctuate seasonally and in response to climatic conditions.

3.0 HISTORICAL REVIEW

The history of the site and the surrounding area was interpreted from two primary sources, aerial photographs (AP) between 1959 and 1993 and land titles (LT) from 1929 to present. Table 1 presents the observations and findings of the historical review. In summary, the reviewed information indicates that the site and adjacent properties have been used primarily for agricultural and/or livestock grazing purposes. The current site development occurred prior to 1972. Rural residential development of the surrounding area has been ongoing since approximately 1972. The site ownership has been limited to one family since 1929.

3.1 Historical Ownership

Information was obtained from the Alberta Attorney General Land Title Office regarding the historical ownership of the site back to January 28, 1929. The land titles were reviewed and did not indicate any concerns associated with the previous historical owners of the site. Copies of the land titles are not included with the report and will be retained in EBA's files for approximately one year and provided on request. However, they will be provided on request. The site is presently owned by John Cameron Bilton of Calgary, Alberta. A copy of the present Land Title is provided in Appendix B.

3.2 Regulatory Inquiries

An inquiry was made to Alberta Environmental Protection - Pollution Control Division (AEP) in Calgary for control orders, enforcement responses and fines issued for the site. The inquiry did not indicate any activity recorded for the site from 1991 to 1995 inclusive.

An informal inquiry was also made to AEP for information regarding existing water wells on site. AEP had record of one water well on-site registered to Dr. John Bilton. AEP indicated the well was listed as a "stock" well and drilled in 1976. The total well depth was listed as 160.6 m (527 feet).

3.3 Supplemental Information

As a separate project, EBA conducted a geotechnical investigation of the site. The geotechnical investigation included advancing eight boreholes on the site. The approximate location of the boreholes are presented on Figure 1. The soils recovered from the boreholes were in general agreement with published soils information for this area of Calgary as discussed in Section 2.2. No unusual subsurface conditions were noted in the subsoils to a maximum depth of approximately 6.1 m (20 ft).

4.0 SITE RECONNAISSANCE

On June 16, 1995, an EBA representative was on-site to observe the physical features of the site. Urbco representatives, Mr. Barry Poffenroth and Mr. Craig Johnson, were present for the site reconnaissance. General observations are discussed below.

The site is approximately 53 Ha (130 Ac) in plan area and currently accommodates two households. The main household occupies approximately 230 m^2 (2,500 ft^2). Urbco has indicated that the planned development does not include the demolition of this house. The guest house occupies approximately 93 m^2 (1000 ft^2). Water for both houses is provided by a domestic water well adjacent to the guest house. Household effluent is managed by septic tanks and septic fields.

In addition to the domestic water well, a livestock water well also exists on the property. According to the property owner, water from this well is pumped to several livestock watering troughs on the site. The location of this well is shown on Figure 1. The property owner also indicated that the "stock" well identified through AEP has since been abandoned due to poor recovery. This well was located during the site reconnaissance as evidenced by the surficial culvert casing and is also shown on Figure 1.

Other structures on site include a barn and a number of smaller buildings used for equipment storage. An above ground storage tank (AST) was observed adjacent to the barn. The AST was empty and no surficial staining was observed on the surrounding surficial soils. Additional site facilities include a livestock corral area that has automatic water troughs. The locations of the observed structures are shown on Figure 1.

Currently, the site is used for agricultural and livestock grazing purposes. Surface vegetation includes Aspen grove and pasture grass. The surrounding adjacent land is primarily used for rural residential, agricultural or livestock grazing purposes.

5.0 SUMMARY OF FINDINGS

EBA has conducted a Phase I ESA of the site. The results of the Phase I ESA are summarized as follows.

- The site and surrounding area has primarily been used for agricultural or livestock grazing purposes.

- The existing two houses on the site were constructed prior to 1972. The existing barn was constructed prior to 1959. Household effluent is managed by septic tanks and septic fields.

- EBA conducted a geotechnical evaluation of the site which included drilling eight boreholes. No unusual subsurface conditions were noted during the borehole drilling program.

- Based on a local topographic map for this area, the regional groundwater flow direction is expected to be south southwest towards the Elbow River.

- Two water wells (used for domestic and livestock watering purposes) were observed on the site during the site reconnaissance. An additional apparently abandoned well was also observed.

- Information obtained from Alberta Environmental Protection - Pollution Control Division indicated no environmental concerns with respect to the site.

6.0 CONCLUSION AND RECOMMENDATIONS

EBA has obtained and reviewed available historical information pertaining to the site and adjacent surrounding lands back to 1929. Based on the information collected to date and the site reconnaissance, it is EBA's opinion that there is no evidence suggesting adverse environmental conditions exist on the site and no further investigation is required at this time. However, EBA recommends all inactive domestic/livestock water wells be properly decommissioned as per Alberta Environmental Protection Water Well Regulation AR 123/93, Section 36. Also, if the existing septic tanks and associated fields are not included in the planned site development, EBA recommends effluent removal from any on-site septic tanks and dismantling and removal of the septic tanks and fields prior to site development.

7.0 LIMITATIONS OF LIABILITY

Conclusions and recommendations presented in this report are based on a Phase I ESA as described in Section 1.0. This report has been prepared for the use of Urbco Inc. and their approved agents for the specific application described above. It has been prepared in accordance with generally accepted environmental engineering practices. No other warranty is made, either expressed or implied.

Reference should be made to EBA's Terms and Conditions for Environmental Services attached in Appendix A.

8.0 CLOSURE

We trust the information presented here satisfies your present requirements. Should you have any questions, please contact our office at (403) 236-9700.

Respectfully submitted,

EBA Environmental Ltd.
A Division of EBA Engineering Consultants Ltd.

PROFESSIONAL ENGINEER ALBERTA
RICARDO E. VALDARCHI

Rick E. Valdarchi, P.Eng.
Environmental Engineer

Ross D. Huddleston, M.E.Des.
Manager, Environmental Services

REV:RDH:kdb

PERMIT TO PRACTICE
EBA ENGINEERING CONSULTANTS LTD.
Signature
Date 95/7/21
PERMIT NUMBER: P 245
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

TABLES

Table 1 - Summary of Historical Findings

TABLE 1

SUMMARY OF HISTORICAL FINDINGS
NE ¼ SEC 19, TWP 024, RGE 02 W5M, CALGARY, ALBERTA

Site Description:	-	Primarily undeveloped land used for agricultural and livestock grazing purposes. Major features include two households and a barn. Property areal extent is approximately 53 Ha (130 Acres).
Site Geology:	-	Surficial soils consist of glacial clay till overlying Tertiary gravels.
	-	Bedrock consists of crossbedded sandstone, mudstone and bentonitic shale of the Porcupine Hills Formation.
Surface Water:	-	Elbow River - 3.5 km south.
	-	Bow River - 3.5 km north.
Groundwater Flow:	-	The direction of regional groundwater flow is expected to be south southwest towards the Elbow River.
Present Surrounding Land Use:	-	Rural residential, agricultural or livestock grazing.

Aerial Photographs Reviewed:				
	Date	1959	1972	1978
	Scale	1:18,000	1:12,000	1:12,000
	Date	1982	1988	1993
	Scale	1:10,000	1:20,000	1:25,000

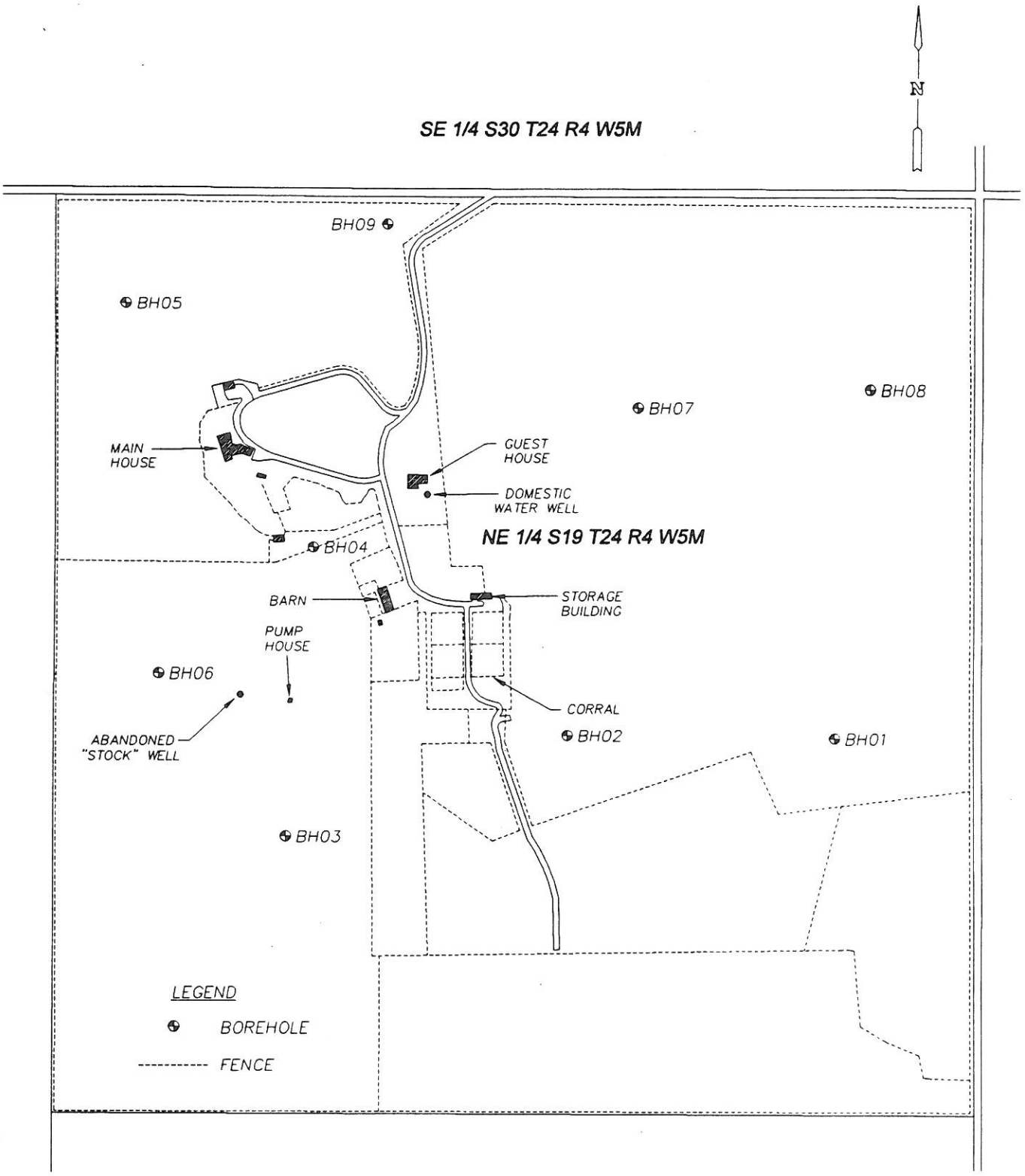
Date		Key Observations	References
1959	-	The site and surrounding adjacent lands are used for agricultural purposes.	AP
	-	Site development includes a barn with several smaller adjacent structures, including a house, located near the centre of the property. The owner of the property is the Bilton family.	AP,LT
1972	-	The present day buildings exist on the site including two new houses. The larger of the two houses is located near the northwest corner of the property along the escarpment. The smaller house is located approximately 100 m east of the first house.	AP
	-	A large corralled area exists immediately east of the barn.	
	-	Rural residential development has occurred on several of the surrounding properties.	AP
			AP
1978 1982 1988 1993	-	The site remains relatively unchanged.	AP
	-	Increased rural residential development is observed on adjacent properties.	AP
Potential Impacts to Site	-	None	

Notes:

AP-Aerial Photograph LT-Land Titles
PC-Personal Communication SR-Site Reconnaissance

FIGURES

Figure 1 - Site Plan



CLIENT: URBCO INC.	EBA Environmental Ltd. A Division of EBA Engineering Consultants Ltd.			
PROJECT: PHASE I ENVIRONMENTAL SITE ASSESSMENT	DATE: 95/07/04	DRAWN BY: LCH	CHECKED BY: REV	DRAWING NO.: FIGURE 1
TITLE: SITE PLAN	SCALE: 1 : 5 000	PROJECT NO.: 0305-95-38215	CAD FILE NO.: 38215SIT	

APPENDIX A

TERMS AND CONDITIONS

TERMS AND CONDITIONS
ENVIRONMENTAL SERVICES

1) EBA shall provide and exercise the degree of skill, care and diligence required by customarily accepted professional practices and procedures normally provided in the performance of the services contemplated at the time and the location in which the services are performed.

2) EBA shall use reasonable efforts to perform the services within prescribed time schedules. EBA shall not, however, be responsible for any delays caused by circumstances beyond its control.

3) EBA may engage as subconsultants any person, firm or corporation with appropriate recognized professional status or with special skills or knowledge to assist in performing the services at the expense of the Client.

4) EBA can not give any warranties, express or implied, about the existence or absence of any contaminants or hazardous materials on the site. If specifically included within the scope of EBA's engagement by the Client, EBA shall provide an opinion respecting the presence of contamination or environmental impairment based upon evidence available within the scope of the investigations authorized by the Client. Any such opinion may be relied upon by the Client and such other persons to whom such opinion is provided and no others unless expressly permitted by EBA.

5) The Client shall obtain all the permits, authorizations or consents and give any required notices necessary to enable EBA to perform the services including, but not limited to, any consents necessary to allow EBA, its agents, employees and equipment the necessary access to, and use of, the site.

6) Any documents provided by the Client to EBA shall be deemed to be the property of the Client and, on the written demand of the Client, EBA shall, as soon as practicable, return all the Client's documents to him. Any information collected and documents prepared by EBA while performing the services shall be deemed to be the property of EBA.

7) Both EBA and the Client shall take reasonable care to prevent disclosure of any reports or documents prepared by EBA, or information obtained for or contained in any reports or documents, to any person except those persons who require access to such information to discharge their responsibilities in relation to the services performed by EBA or as required by law.

8) If EBA becomes aware of any contamination or hazardous materials on the site which could damage property or endanger health or lives, EBA shall notify the Client as soon as possible and appropriate authorities as required.

9) The Client shall provide EBA with accurate and complete delineations of the location of all subsurface structures and utilities at, on or near the site, except as otherwise may be agreed.

10) Where the services to be performed require taking samples from the site, the Client shall be responsible for payment of appropriate storage and disposal for any contaminated samples taken from the site. The Client shall be responsible for all costs incurred to decontaminate any equipment (used by EBA or his agents in the performance of the services) which are contaminated by conditions encountered at the site.

11) EBA shall not be responsible for any costs, damages or loss suffered by any person, including the Client, its employees, agents or related companies, as a result of:

(a) any decisions taken by the Client without the advise of EBA, or contrary to the advice of EBA, pertaining to activities during, or subsequent to, the services being performed by EBA;

(b) any subsurface exploration or sample-taking on the site by EBA including cross-contamination;

(c) the disclosure, as permitted or required by law of any opinion, information or report prepared by EBA;

(d) the failure of the Client, or other agencies, to accurately identify the location of all subsurface structures or utilities.

nor shall EBA be responsible or liable for any indirect or consequential losses, damages, costs or expenses incurred by any person including the Client, relating to or as a result of services provided by EBA.

12) The Client shall assume the defence of, and indemnify and save harmless, EBA, its agents and employees, from all claims or liability by any third parties relating to or arising out of performance of the services, except where the claim or liability arises out of negligence or wilful misconduct of EBA. The Client, whenever it is bound to indemnify EBA, shall reimburse EBA at current chargeout rates and expenses incurred by EBA in defence of any such claim, such indemnity to include, without limitations, legal expenses incurred by EBA.

APPENDIX B

LAND TITLES

South Alberta Land Registration District

HISTORICAL SEARCH - CURRENT TITLE

SEARCH DATE: 15/06/1995

S

LINC	*SHORT LEGAL*	*TITLE NUMBER*
0019 086 743	5;2;24;19;NE	931 320 390 +2

LEGAL DESCRIPTION
MERIDIAN 5 RANGE 2 TOWNSHIP 24
SECTION 19
QUARTER NORTH EAST
EXCEPTING THEREOUT ALL MINES AND MINERALS
AREA: 64.7 HECTARES (160 ACRES) MORE OR LESS

ESTATE: FEE SIMPLE

MUNICIPALITY: MUNICIPAL DISTRICT OF ROCKY VIEW NO. 44

D.C.T. ISSUED: YES

REFERENCE NUMBER: 931 320 389 +2

REGISTERED OWNER(S)

REGISTRATION	DATE(DMY)	DOCUMENT TYPE	VALUE	CONSIDERATION
931 320 390	21/12/1993	TRANSFER OF LAND		ESTATE

OWNERS

JOHN CAMERON BILTON
OF 203-37 ST NW
CALGARY
ALBERTA

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
931 320 391	21/12/1993	REQUEST FOR RELEASE OF D.C.T.

TOTAL INSTRUMENTS: 001 *END OF SEARCH 15/06/1995* SR# - S1791640 /JBRUNET

APPENDIX C

INFORMATION SOURCE CHECKLIST

Phase I Information Source Checklist

Resource Materials

- ☐ Quaternary Geology Map
- ✓ Surficial Geology Map
- ☐ Geological Highway Map of Alberta (Bedrock Map)
- ✓ Maps and Air Photo Library - University of Calgary
- ☐ Maps Alberta (Government of Alberta - Air Photos)
- ☐ Glenbow Museum Archives
- ☐ Fire Underwriters Survey Maps

Provincial Records

- ✓ Alberta Attorney General Land Title Office
- ✓ Pollution Control Division - Alberta Environmental Protection, Calgary
- ☐ Pollution Control Division - Compliance Branch - Alberta Environmental Protection, Edmonton
- ☐ Alberta Energy and Utilities Board (AEUB)
- ☐ Canadian Mortgage and Housing Corporation (CMHC)

Municipal Records

- ☐ City of Calgary - Municipal Archives
- ☐ City of Calgary - Planning and Development Department
- ☐ City of Calgary - Fire Department
- ☐ City of Calgary - By-Law Enforcement
- ☐ City of Calgary - Electric Department

EBA Records

- ☐ Maps and Air Photo Library
- ✓ Geotechnical Files
- ☐ Borehole Database - Southern Alberta
- ☐ Materials Testing Files

Other

- ✓ Site Photographs
- ✓ Interviews

Appendix 17.4

EBA Geotechnical Ltd.

Geotechnical Evaluation

GEOTECHNICAL EVALUATION
SPRINGBANK RURAL
RESIDENTIAL DEVELOPMENT
NE¼-S19-TWP24-R2-W5M

SEPTEMBER 1995

0306-35166

6111 - 36th Street S.E. Calgary, Alberta T2C 3W2
• Telephone (403) 236-9700 • FAX (403) 236-7033 •

GEOTECHNICAL EVALUATION
SPRINGBANK RURAL RESIDENTIAL DEVELOPMENT
NE¼-S19-TWP24-R2-W5M

SUBMITTED TO:

Urbco Inc.
Calgary, Alberta

PREPARED BY:

EBA Engineering Consultants Ltd.
Calgary, Alberta

0306-35166

SEPTEMBER 1995

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1.0 INTRODUCTION

This report presents the results of a geotechnical evaluation conducted by EBA Engineering Consultants Ltd. (EBA) for the proposed Springbank rural residential development on the Northeast ¼ of Section 19, Township 24, Range 2, West of the 5th Meridian. This evaluation was undertaken at the request of Mr. Barry Poffenroth of Urbco Inc. (Urbco). The objective of this evaluation was to assess the general subsurface and slope stability conditions at the site for the design and construction of the proposed development. The scope of work was as follows:

- drill eight boreholes to determine subsurface conditions and install PVC standpipes to allow future of monitoring groundwater conditions.
- monitor groundwater conditions approximately one week after completion of drilling.
- provide laboratory testing as necessary to aid in determining the engineering properties of the soils.
- perform percolation tests to aid in preliminary assessment of septic field viability
- assess the stability of slopes greater than 15% (6.7 horizontal to 1 vertical) on or adjacent to the site.
- prepare a geotechnical evaluation report providing the findings from our site investigation, analyses and geotechnical recommendations for development.

2.0 PROJECT DETAILS

The project is understood to comprise the design and construction of a 56 lot rural residential subdivision. The site comprises of the north portion of the Northeast ¼ of Section 19, Township 24, Range 2, West of the 5th Meridian. The site is bordered on the north by Upper Springbank Road to the east by Westbluff Road (117 Street SW) and to the west and south by undeveloped land that appears to be presently used as a residence and/or farmland. Currently the site accommodated two households, a barn and several smaller buildings. The present uses of the land include livestock grazing and crop cultivation. Figure 1 presents a site location plan for reference.

3.0 SITE DESCRIPTION AND TOPOGRAPHY

The east approximate 2/3 of the site is flat to undulating, with a range of elevations from 1288 m to 1273 m geodetic. In the west 1/3, the land slopes down with gradients generally less than 4.0 horizontal to 1 vertical (4.0H:1V) to form an escarpment known locally as the Springbank Escarpment. Approximately two small localized slopes are up to 3.4H:1V. The Upper Springbank Road runs nearly perpendicular through the escarpment in a 2.3H:1V, 8 m

high, cut slope. The cut slope created by the Upper Springbank Road occurs in the area of Lots 30 and 31 of the proposed development plan. The minimum elevation on site is 1244 m.

4.0 REGIONAL GEOLOGY

According to Alberta Research Council Bulletin No. 53, "Surficial Geology of the Calgary Urban Area" by S.R. Moran (1986), the east 2/3 of the site is located on the Broadcast Hill upland with soils comprising of glacial till of the Spy Hill Formation overlying Tertiary gravels. At the top of the Springbank Escarpment the Tertiary gravels are exposed. Further down the escarpment at the west edge of the site, glacial till overlies bedrock. The glacial tills are silt and clay dominant with varying amounts of sand and gravel. The Tertiary gravels are preglacial in origin and may be partially cemented by calcium carbonate or filled in with silt. Bedrock consists of crossbedded sandstone, mudstone and bentonitic shale of the Porcupine Hills Formation.

5.0 FIELD AND LABORATORY WORK

The field work consisted of drilling subsurface investigation boreholes and conducting percolation tests. Eight boreholes were drilled on June 22, 1995 using a truck-mounted Becker Hammer rig. The depths of the holes ranged from 3.8 to 6.1 m below existing ground surface. The soil was classified as cuttings came up the centre of a casing being driven into the ground by a Link Belt 180 diesel hammer. The number of blows per unit penetration of the casing were recorded to help provide an indication of the soil density. On June 28, 1995 one borehole and five percolation test holes were drilled using a truck-mounted auger rig. The borehole was advanced to a depth of 10.7 m. The soil was classified from drill cuttings taken from the auger flights. A further six percolation test holes were drilled using a Bobcat auger system. The percolation test holes were advanced to a depths of 0.8 m to 0.9 m and were filled with clear water to pre-soak the soils prior to conducting the test itself. The percolation tests were conducted the day following drilling according to the recommended test procedure outlined in the Alberta Environment "Soil Testing and Groundwater Supply Evaluation Guidelines for Residential Subdivisions" dated September 1990. Slotted PVC standpipes were installed in the boreholes to allow monitoring of the depth to groundwater.

The borehole and percolation test locations were selected by EBA in consultation with our client. The approximate locations of the holes are shown in Figure 2. The borehole logs are presented in Appendix B. The elevations of the boreholes are approximate based on a topographic map supplied to EBA.

Laboratory tests, including natural moisture content, Atterberg limits and soluble sulphate concentrations, were subsequently performed on samples collected from the boreholes. These tests aid in the selection of engineering properties. The laboratory test results are presented on the borehole logs in Appendix B and elsewhere in the text of this report.

6.0 SUBSURFACE CONDITIONS

6.1 Soils

The soils encountered are generally consistent with those anticipated from Moran's geological mapping. In the east portion of the site the soils encountered consisted of clay till overlying a sandy gravel. Closer to the escarpment no clay till was encountered, but instead, sandy gravel overlying bedrock. In the western most boreholes, partially down the escarpment, clay till over bedrock was encountered. In all boreholes was a surficial layer of organic topsoil ranging from 75 to 300 mm thick. The soil stratigraphy at each borehole location is shown on the borehole logs in Appendix B and the approximate borehole locations are shown in Figure 2.

The till generally consists of a stiff to very stiff, silty clay with some sand and gravel. The till is low to medium plastic with moisture contents close to the plastic limit. In the eastern boreholes, 1, 2, 7 and 8, the till thickness ranged from 0.9 m to 2.5 m below which was gravel. In Borehole 9, at the northern most portion of the site, clay till was encountered to the bottom of the borehole at a 10.7 m depth. In the western portion of the site, Boreholes 5 and 6, the till thickness ranged from 2.1 m to 5.6 m, below which was bedrock.

The gravel is sandy with a trace of silt and cobbles and boulders. Its consistency is dense to very dense and its moisture content is dry to damp. The gravel was encountered in Boreholes 1, 2, 3, 4, 7 and 8. In Boreholes 3 and 4 the gravel was encountered immediately below the organic topsoil and ranged in thickness from 4.7 m to 4.9 m below which was bedrock. In Boreholes 1, 2, 7 and 8 the thickness of the gravel was undetermined.

The bedrock comprises very weak to very strong layers of siltstone, sandstone or mudstone. It is highly to slightly weathered. Bedrock was encountered in Boreholes 3 and 4 below the gravel and in Boreholes 5 and 6 below the clay till. The depth to bedrock varied from 2.5 m to 5.8 m below the existing ground surface. The boreholes indicate the bedrock surface dips to the southwest down the escarpment.

At the time this report was prepared, information on subsurface stratigraphy was available only at discrete borehole locations. Conditions were extrapolated and interpolated from the

borehole locations to develop recommendations. Adequate monitoring should be provided during construction to check that these assumptions are reasonable.

6.2 Groundwater

No groundwater seepage was encountered during drilling. On June 29, 1995, the boreholes were dry, excluding Borehole 3, at which the groundwater was at 5.66 m below the ground surface.

6.3 Soil Permeability

Two soil types exist at or near the ground surface, clay till and gravel. Based on classification of the soils in the field the gravel is very permeable. Percolation tests performed at eleven locations produced percolation rates ranging from 5 to 66 minutes/cm. Table 1 shows the percolation rates for each location.

7.0 DISCUSSION AND RECOMMENDATIONS

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

- For shallow house foundations on fill, observation of bearing surfaces prior to concrete placement.
- For earthworks, full-time monitoring and compaction testing.

Inspection should be carried out by suitably qualified persons, independent of the contractor. Failure to provide an adequate level of foundation inspection may be in contravention of Building Code requirements. One of the purposes of providing an adequate level of inspection is to check that recommendations, based on data obtained at discrete borehole locations, are relevant to other areas of the site.

7.1 Site Grading

Some cuts and fills for internal roadways will be required to adequately develop the site. Organic topsoil and vegetation should be removed from areas proposed in building envelopes, right-of-ways or where backfill is required to bring the site to desired subgrade levels. Backfill should be general engineered fill compacted to a minimum of 95% of

Standard Proctor Maximum dry density at a moisture content of optimum to 3% above optimum. The inorganic site soils, excluding bedrock which does not readily break down, are considered suitable for use as general engineered fill materials. Further guidelines on backfill and compaction can be found in Appendix C.

7.2 Building Foundations

Conventional spread and/or strip footings are considered suitable to support residential houses. The allowable static bearing pressure for the design of footings may be taken as 100 kPa on native undisturbed soils and general engineered fill. Design and construction guidelines for shallow foundations are included in Appendix C.

7.3 Subsurface Drainage

In areas where building foundations are anticipated to be within 1 m of bedrock, weeping tile around house foundations may be required to collect and discharge surficial water or groundwater perched above the bedrock. A qualified geotechnical engineer should be consulted at the time of house construction to evaluate weeping tile requirements.

7.4 Frost Protection

For protection against frost action, perimeter footings in heated structures should be extended to such depths as to provide a minimum soil cover of 1.4 m. Footings for unheated structures should have an equivalent of 2.1 m of soil cover for frost protection. Pipes buried with less than 2 m soil cover should be protected with insulation to avoid frost effects that might cause damage to or breakage of the pipes. The clay tills at the site should be considered slightly frost susceptible. They should not be used as backfill where they may become frozen and where frost heaving would be unacceptable.

7.5 Septic Fields

The use of septic tank and field disposal systems is an accepted method of sewage disposal in the M.D. of Rocky View,. Based upon the results of the percolation tests conducted on the property it appears the site will generally meet septic field requirements. All private sewage disposal systems should comply with The Plumbing and Drainage Act.

7.6 Concrete Type

Tests were conducted to determine the water soluble sulphate content on one soil sample recovered from each borehole drilled at the site. The test results are shown in Table 2. The results indicated that the samples have a soluble sulphate concentration ranging from 0.01% to 0.03%. The potential degree of sulphate attack on concrete may be considered negligible. Type 10 Portland cement may be used for concrete in contact with the site soils. Should imported fill be placed in contact with concrete, that fill should be tested for water soluble sulphate content and the above recommendations re-evaluated.

7.7 Slope Stability

The steepest slope on-site is a 2.3H:1V cut on the north side of Lots 30 and 31 where the Upper Springbank Road runs perpendicular through the escarpment. Over the remainder of the site slopes are a maximum of 3.4H:1V. EBA has conducted a stability analysis of the 2.3H:1V and 3.4H:1V slopes using the computer program "Slope/w" and the Bishop Method of circular failure. Figure 3 shows the cross sections and soil conditions assumed. The soil properties are based on the field soil classification, laboratory test results and EBA's experience with similar soils. The following are the assumed properties.

Soil	Bulk Unit Weight (kN/m^3)	Cohesion (kPa)	Angle of Shearing Resistance (degrees)
Weathered Clay Till	21	0	30
Clay Till	21	50	15
Gravel	23	0	37
Weathered Bedrock	22	500	0

Groundwater was assumed to only exist 1.0 m above the bedrock surface. The weathered till layer was assumed to have a pore pressure coefficient of 0.3.

Based on the analyses performed, slopes more gradual than 3.4H:1V will have a factor of safety for stability greater than 1.5. Such slopes are suitable for development without a stability setback. For Lots 30 and 31 the 30 m setback required from the adjacent major roadway will provide a factor of safety for stability for the dwelling well in excess of 1.5 and thus the development of these lots would be acceptable with regard to slope stability. If grading of the site included loading of the top of the slope or removal of material from the toe of the slope EBA should be notified to determine the impact of the grading operations on slope stability.

8.0 DESIGN AND CONSTRUCTION GUIDELINES

Recommended general design and construction guidelines are provided in Appendix C, under the following headings:

- Backfill Materials and Compaction
- Shallow Foundations

These guidelines are intended to present standards of good practice. Although supplemental to the main text of this report, they should be interpreted as part of the report. Design recommendations presented herein are based on the premise that these guidelines will be followed. The design and construction guidelines are not intended to represent detailed specifications for the works, although they may prove useful in the preparation of such specifications. In the event of any discrepancy between the main text of this report and Appendix C, the main text should govern.

9.0 LIMITATIONS

Recommendations presented herein are based on a geotechnical evaluation of the findings in nine boreholes and eleven percolation tests. The conditions encountered during the fieldwork 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.

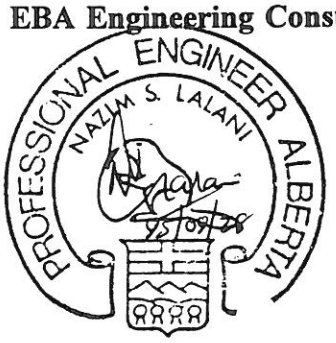
This report has been prepared for the exclusive use of Urbco Inc. and its agents for specific application to the development described in this report. It has been prepared in accordance with generally accepted soil and foundation engineering practices. No warranty is either expressed or implied. For further limitations, refer to the General Conditions in Appendix A of this report.

10.0 CLOSURE

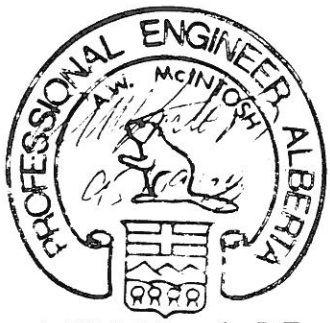
We trust the information presented herein meets your present requirements. If you have questions or require additional geotechnical services, please contact our office.

Respectfully submitted,

EBA Engineering Consultants Ltd.



Nazim S. Lalani, P.Eng.
Senior Project Engineer



A.W. McIntosh, P.Eng.
Senior Project Engineer

NSL:AWM:mvd

PERMIT TO PRACTICE
EBA ENGINEERING CONSULTANTS LTD.
Signature
Date
PERMIT NUMBER: P 245
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

TABLES

TABLE 1

SPRINGBANK RURAL RESIDENTIAL

PERCOLATION TEST RESULTS

Percolation Test No.	Date Tested	Percolation Rate (min./cm)
01	June 29, 1995	66
02	June 29, 1995	5
03	June 29, 1995	33
04	June 29, 1995	17
05	June 29, 1995	7
06	August 15, 1995	14
07	August 15, 1995	19
08	August 15, 1995	18
09	August 15, 1995	11
10	August 15, 1995	5
11	August 15, 1995	38

N:\0306\0WATER\35166PER.XLS

TABLE 2

SPRINGBANK RURAL RESIDENTIAL

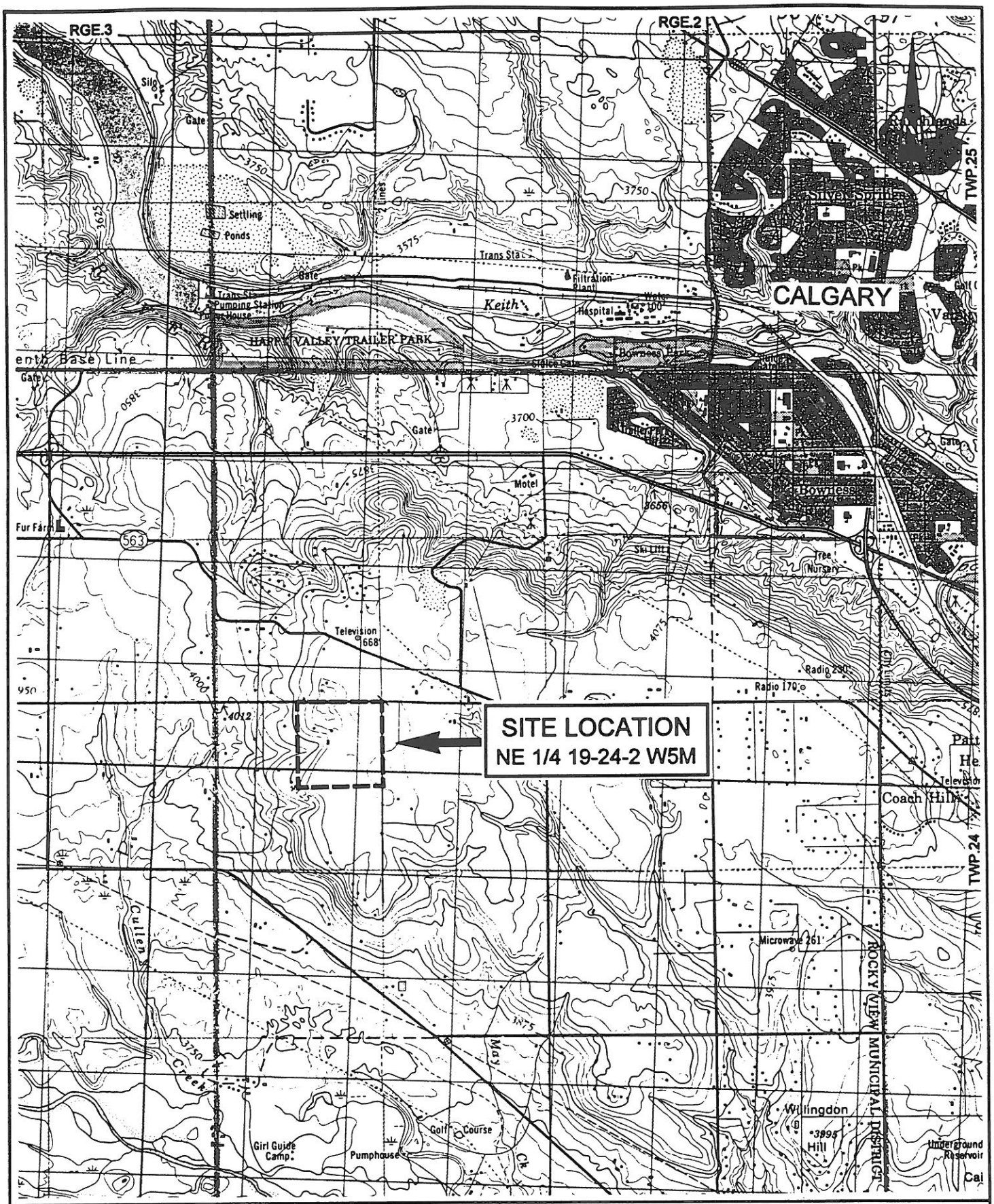
SOLUBLE SULPHATE RESULTS

Borehole No.	Sample No.	Depth (m)	Soluble Sulphate SO4 (%)
01	B1	0.9-1.5	0.03
02	B1	0.6 - 1.2	0.03
05	B2	1.5-2.1	0.01
06	B1	0.9-1.5	0.01
07	B2	1.5-2.1	0.02
08	B1	0.3-0.9	0.01
09	B1	0.6-1.2	0.03

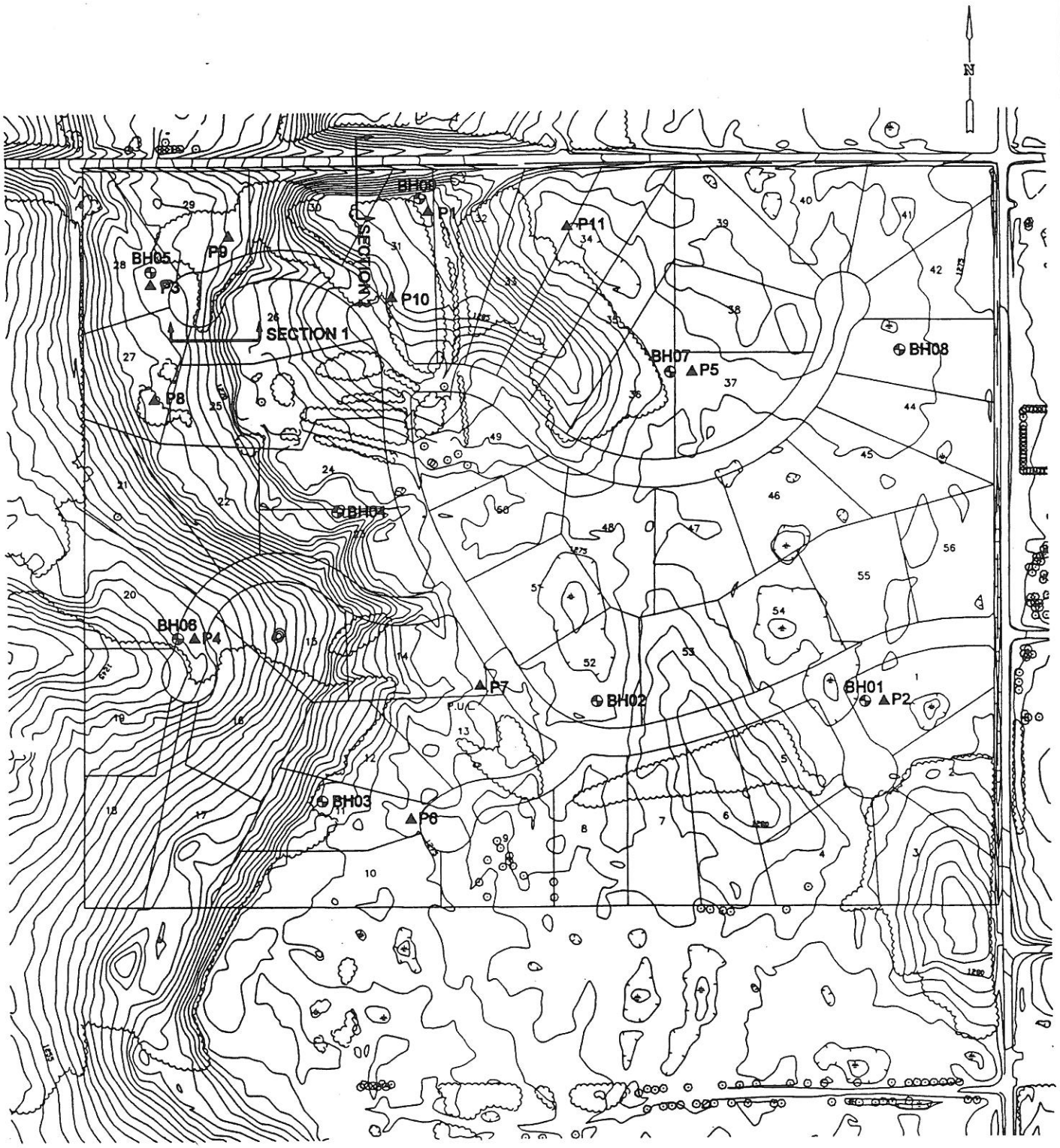
N:\0306\OWATER\35166LAB.XLS

FIGURES

Figure 1 - Site Location Plan
Figure 2 - Site Plan
Figure 3 - Cross Sections



CLIENT: URBCO INC.			
PROJECT: SPRINGBANK RURAL RESIDENTIAL SUBDIVISION			
TITLE: SITE LOCATION PLAN			
EBA Engineering Consultants Ltd.			
DATE: 95/07/04	DRAWN BY: LCH	CHECKED BY: SMK	DRAWING NO.: FIGURE 1
SCALE: 1 : 50 000	PROJECT NO.: 0306-95-35166	CAD FILE NO.: 35166TBK	



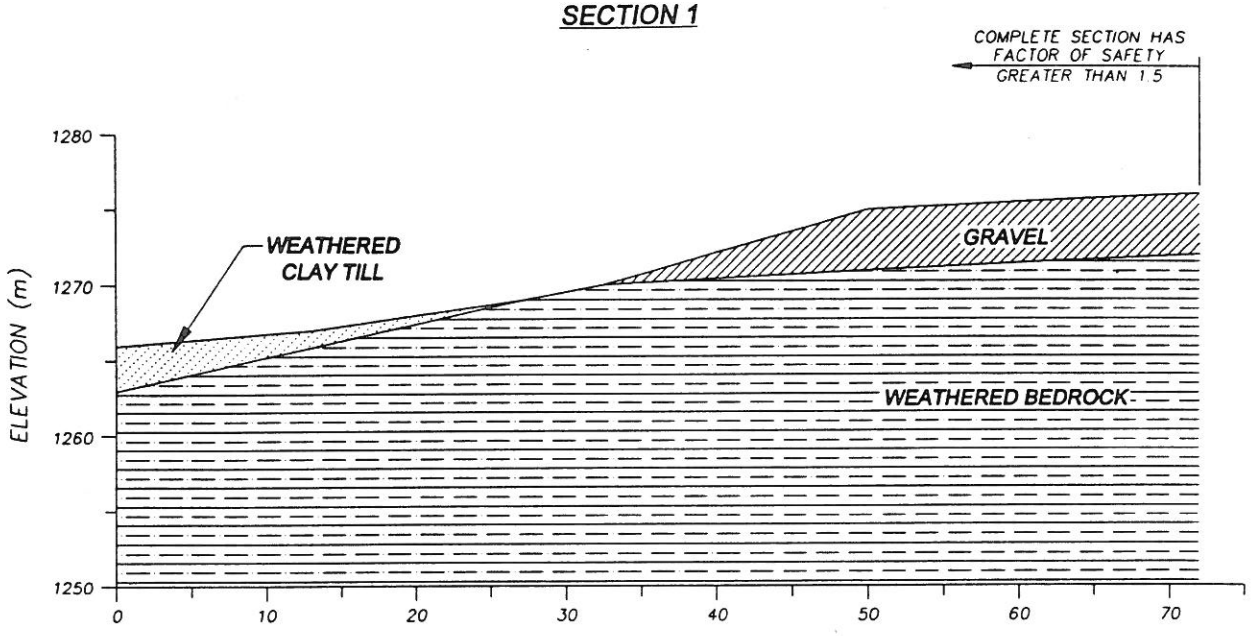
LEGEND

⊕ BH01 **BOREHOLE LOCATION**

▲P1 **PERCOLATION TEST LOCATION**

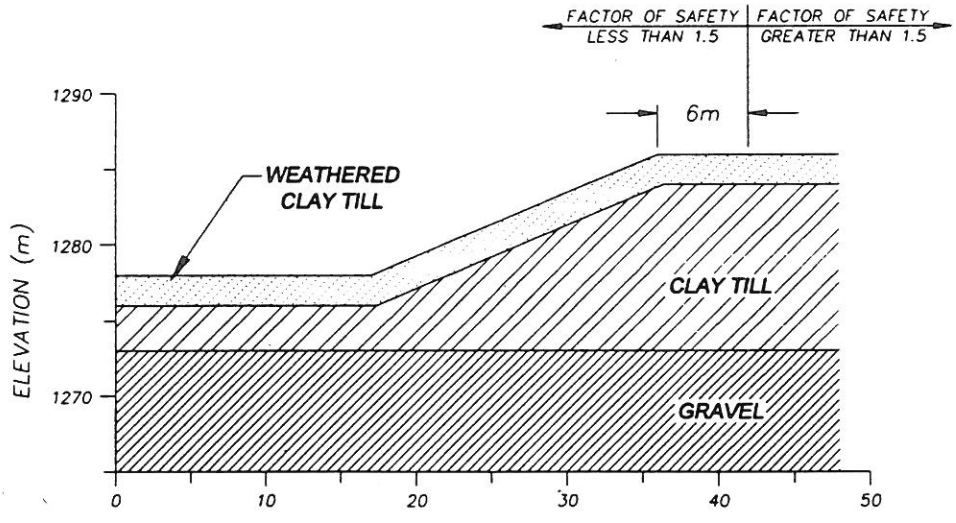
CLIENT: URBCO INC.			
PROJECT: SPRINGBANK RURAL RESIDENTIAL SUBDIVISION			
TITLE: SITE PLAN			
EBA Engineering Consultants Ltd.			
DATE: 95/09/20	DRAWN BY: LCH	CHECKED BY: SMK	DRAWING NO.: FIGURE 2
SCALE: 1 : 5 000	PROJECT NO.: 0306-95-35166	CAD FILE NO.: 35166SIT	

SECTION 1



SCALE 1 : 500

SECTION 2



SCALE 1 : 500

CLIENT: URBCO INC.	EBA Engineering Consultants Ltd.			
PROJECT: SPRINGBANK RURAL RESIDENTIAL SUBDIVISION	DATE: 95/07/05	DRAWN BY: LCH	CHECKED BY: SMK	DRAWING NO: FIGURE 3
TITLE: CROSS SECTIONS	SCALE: AS SHOWN	PROJECT NO.: 0306-95-35166	CAD FILE NO.: 35166XSC	

APPENDIX A

GENERAL CONDITIONS

EBA ENGINEERING CONSULTANTS LTD.

GEOTECHNICAL REPORT
GENERAL CONDITIONS

A.1 USE OF REPORT AND OWNERSHIP

This geotechnical report pertains to a specific site and development. It is not applicable to adjacent sites nor is it valid for types of development other than that to which it refers. Any variation from the site, or development, necessitates a geotechnical review in order to determine the validity of the design concepts evolved herein.

This report is not to be reproduced in part or in whole without consent in writing from EBA Engineering Consultants Ltd. (EBA). Additional copies of the report, if required, may be obtained upon request. Isolated information, logs of borings, or profiles are not to be reproduced, copied or transferred.

A.2 NATURE AND EXACTNESS OF SOIL DESCRIPTION

Classification and identification of soils are based upon commonly accepted methods employed in professional geotechnical practice. This report contains descriptions of the systems and methods used. Where deviations from the system prevail, they are specifically mentioned.

Classification and identification of soil and geologic units are judgmental in nature as to both type and condition. EBA does not warrant conditions represented herein as exact, but infers accuracy only to the extent that is common in practice.

A.3 LOGS OF BORINGS

The boring logs are a compilation of conditions and classification of soils as obtained from field observations and laboratory testing of selected samples. Soil zones have been interpreted. Change from one geologic zone to the other, indicated on the logs as a distinct line, is in fact, transitional. The extent of transition is interpretive. Any circumstance which requires precise definition of soil zone transition elevations may require special evaluation.

A.4 STRATIGRAPHIC AND GEOLOGIC SECTIONS

The stratigraphic and geologic sections indicated on drawings contained in this report are evolved from logs of borings. Stratigraphy is known precisely only at the locations of the borings. Actual geology and stratigraphy between borings may vary from that shown on these drawings. Natural variations in geologic conditions are inherent and a function of historic environment. EBA does not represent the conditions illustrated as exact but recognizes that variations will exist. Where knowledge of exact locations of geologic units is necessary, it is cautioned that such determination requires special attention.

A.5 GROUNDWATER CONDITIONS

Groundwater conditions represented in this report refer only to those observed at the times recorded on logs of borings, and/or within the text of this report. These conditions vary with geologic detail between borings; annual, seasonal and special meteorologic conditions; and with construction activity. Where instruments have been established to record groundwater variations on an ongoing basis, the records will be specifically referred to. Interpretation of groundwater conditions from observations and records is judgmental and constitutes an evaluation of circumstances as influenced by geology, meteorology and construction activity. Deviations from these observations, may occur. No other warranty, express, or implied, is made by EBA.

A.6 PROTECTION OF EXPOSED GROUND

Excavation and construction operations expose geologic materials to meteorological elements. Many geologic materials deteriorate rapidly upon exposure to climatic elements. Severe deterioration of materials may be caused by precipitation and/or the action of frost on exposures. Unless otherwise specifically indicated in this report, walls and floors of excavations must be protected from elements, particularly all forms of moisture, desiccation from arid conditions and frost action.

A.7 SUPPORT OF ADJACENT GROUND AND STRUCTURES

Unless otherwise advised, support of excavation walls, ground adjacent to anticipated construction activity and of structures adjacent to the construction, must be provided. The support of ground and structures adjacent to the anticipated construction, with preservation of adjacent ground and structures from the adverse impact of construction activity, is therefore required.

A.8 INFLUENCE OF CONSTRUCTION ACTIVITY

There is a direct correlation between construction activity and adjacent structural performance. The influence of all anticipated construction activities should by considered by the contractor, owner, architect and prime engineer in consultation with a geotechnical engineer when the final design and construction techniques are known. EBA provides no warranty in respect to adverse circumstances resulting from construction activity.

A.9 OBSERVATIONS DURING CONSTRUCTION

Because of the nature of geologic deposits, the judgmental character of the art of soil and foundation engineering, as well the potential of adverse circumstances arising from construction activity, observations during site preparation, excavation and construction should be carried out by a geotechnical engineer. These observations then may serve as the basis for confirmation and/or alteration of geotechnical recommendations or design guidelines presented herein to the benefit of the project.

A.10 DRAINAGE SYSTEMS

Where 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 otherwised specified, it is a condition of this report that effective drainage systems are required and that they must be considered in relation to project purpose and function.

A.11 BEARING CAPACITY

Design bearing capacities, loads and allowable stresses quoted in this report relate to a specific soil type and soil condition. Construction activity and environmental circumstances can materially change a soil condition. The elevation at which a soil type occurs is variable. It is a requirement of this report that structural elements be founded in and/or upon geologic 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 conditions assumed in this report exist in fact.

A.12 SAMPLES

EBA will retain all soil and rock samples for 30 days. Further storage or transfer of samples can be made at owner expense upon written request.

A.13 STANDARD OF CARE

Services performed by EBA for this report are conducted in a manner consistent with that level and skill ordinarily exercised by members of the profession currently practicing under similar conditions. No other warranty, express or implied, is made.

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

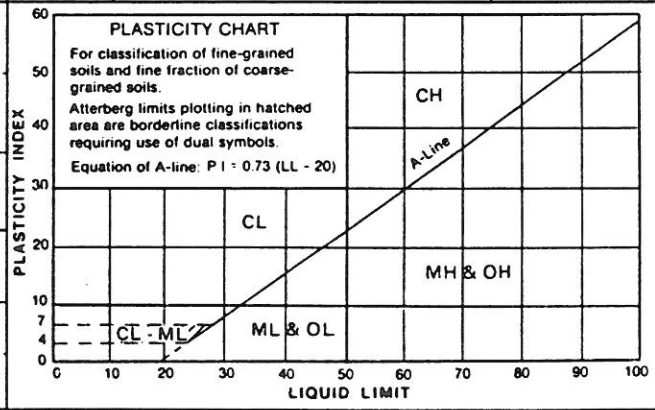
Slickensided	- having inclined planes of weakness that are slick and glossy in appearance.
Fissured	- containing shrinkage cracks, frequently filled with fine sand or silt; usually more or less vertical.
Laminated	- composed of thin layers of varying colour and texture.
Interbedded	- composed of alternate 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.

eba

UNIFIED SOIL CLASSIFICATION †

MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES	CLASSIFICATION CRITERIA	
COARSE-GRAINED SOILS More than 50% retained on No. 200 sieve *	GRAVELS 50% or more of coarse fraction retained on No. 4 sieve	CLEAN GRAVELS	GW	Well-graded gravels and gravel-sand mixtures, little or no fines	$C_u = D_{60}/D_{10}$ Greater than 4 $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3	
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines	Not meeting both criteria for GW	
		GRAVELS WITH FINES	GM	Silty gravels, gravel-sand-silt mixtures	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
			GC	Clayey gravels, gravel-sand-clay mixtures	Atterberg limits plot above "A" line and plasticity index greater than 7	
	SANDS More than 50% of coarse fraction passes No. 4 sieve	CLEAN SANDS	SW	Well-graded sands and gravelly sands, little or no fines.	$C_u = D_{60}/D_{10}$ Greater than 6 $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3	
			SP	Poorly graded sands and gravelly sands, little or no fines	Not meeting both criteria for SW	
		SANDS WITH FINES	SM	Silty sands, sand-silt mixtures	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
			SC	Clayey sands, sand-clay mixtures	Atterberg limits plot above "A" line and plasticity index greater than 7	
FINE-GRAINED SOILS 50% or more passes No. 200 sieve *	SILTS AND CLAYS Liquid limit 50% or less		ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands		
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays		
			OL	Organic silts and organic silty clays of low plasticity		
	SILTS AND CLAYS Liquid limit greater than 50%		MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts		
			CH	Inorganic clays of high plasticity, fat clays		
			OH	Organic clays of medium to high plasticity		
HIGHLY ORGANIC SOILS			Pt	Peat, muck and other highly organic soils		

Classification on basis of percentage of fines
Less than 5% Pass No. 200 sieve: GW, GP, SW, SP
More than 12% Pass No. 200 sieve: GM, GC, SM, SC
5% to 12% Pass No. 200 sieve: Borderline Classification requiring use of dual symbols.

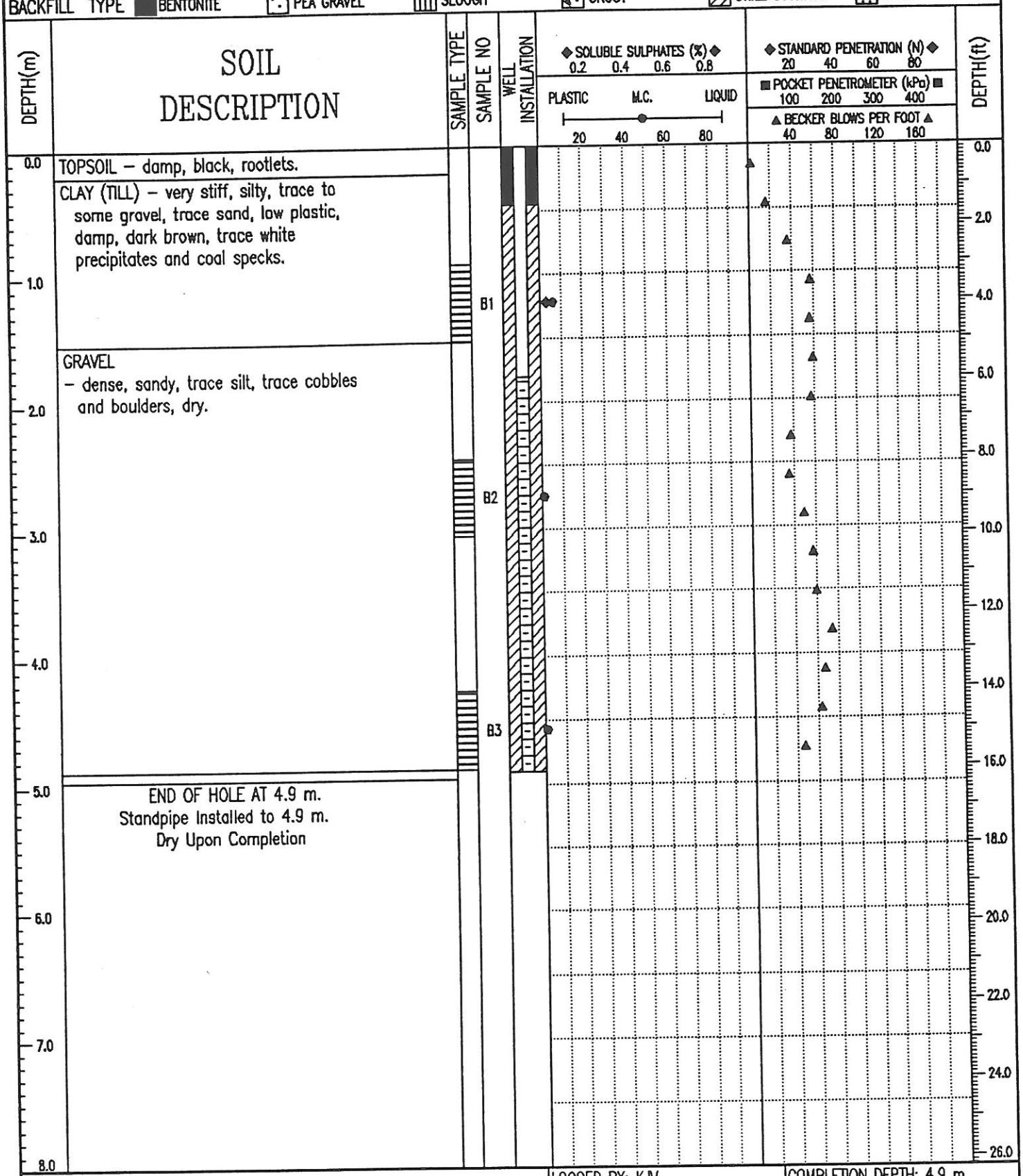


* Based on the material passing the 3-in. (75-mm) sieve
† ASTM Designation D 2487

SPRINGBANK RURAL RESIDENTIAL DEVELOPMENT	NE 1/4, SEC.19, TWP.24, RGE.02, W5M	BOREHOLE NO: 35166-01
CLIENT: URBCO INC.	WEST OF CALGARY, ALBERTA	PROJECT NO: 0306-35166
DRILL TYPE: BECKER HAMMER		ELEVATION: 1275.00 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | SPLIT SPOON | DISTURBED | DYNAMIC CONE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND



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LOGGED BY: KJV	COMPLETION DEPTH: 4.9 m
REVIEWED BY: SMK	COMPLETE: 95/06/22
Fig. No: 35166-B-01	Page 1 of 1

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SPRINGBANK RURAL RESIDENTIAL DEVELOPMENT	NE 1/4, SEC.19, TWP.24, RGE.02, W5M	BOREHOLE NO: 35166-02
CLIENT: URBCO INC.	WEST OF CALGARY, ALBERTA	PROJECT NO: 0306-35166
DRILL TYPE: BECKER HAMMER		ELEVATION: 1275.00 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | SPLIT SPOON | DISTURBED | DYNAMIC CONE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

DEPTH(m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	WELL INSTALLATION
0.0	TOPSOIL – damp, black, rootlets, grasses			
	CLAY (TILL) – very stiff, silty, trace to some gravel, trace sand, low plastic, damp, dark brown, trace white precipitates and coal specks.		B1	
1.0				
	GRAVEL – very dense, sandy, trace silt, trace cobbles and boulders, dry, sand is fine grained.		B2	
2.0				
3.0	– some sand.			
4.0			B3	
5.0	END OF HOLE AT 4.9 m. Standpipe Installed to 4.6 m. Dry Upon Completion			
6.0				
7.0				
8.0				

◆ SOLUBLE SULPHATES (%) ◆ 0.2 0.4 0.6 0.8

PLASTIC M.C. LIQUID 20 40 60 80

◆ STANDARD PENETRATION (N) ◆ 20 40 60 80

■ POCKET PENETROMETER (kPa) ■ 100 200 300 400

▲ BECKER BLOWS PER FOOT ▲ 40 80 120 160

DEPTH(ft): 0.0, 2.0, 4.0, 6.0, 8.0, 10.0, 12.0, 14.0, 16.0, 18.0, 20.0, 22.0, 24.0, 26.0

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REVIEWED BY: SMK	COMPLETE: 95/06/22
Fig. No: 35166-B-02	Page 1 of 1

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SPRINGBANK RURAL RESIDENTIAL DEVELOPMENT	NE 1/4, SEC.19, TWP.24, RGE.02, W5M	BOREHOLE NO: 35166-03
CLIENT: URBCO INC.	WEST OF CALGARY, ALBERTA	PROJECT NO: 0306-35166
DRILL TYPE: BECKER HAMMER		ELEVATION: 1272.00 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | SPLIT SPOON | DISTURBED | DYNAMIC CONE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

SOIL DESCRIPTION

DEPTH(m) | SAMPLE TYPE | SAMPLE NO | SOLUBLE SULPHATES (%) 0.2 0.4 0.6 0.8 | PLASTIC M.C. LIQUID 20 40 60 80 | STANDARD PENETRATION (N) 20 40 60 80 | POCKET PENETROMETER (kPa) 100 200 300 400 | BECKER BLOWS PER FOOT 40 80 120 160 | DEPTH(ft)

0.0 TOPSOIL – damp, black.

GRAVEL
dense, trace to some sand, trace cobbles and boulders, dry. — B1

1.0

2.0 – sandy, trace silt, brown. — B2

3.0 – grey silt seam, damp. — B3

4.0 – sand seams, trace silt, damp.

5.0 – dry.

BEDROCK (SILTSTONE) – medium strength, slightly weathered, grey brown, damp. — B4

6.0

END OF HOLE AT 6.1 m.
Standpipe Installed to 6.1 m.
Dry Upon Completion

7.0

8.0

DEPTH(ft): 0.0, 2.0, 4.0, 6.0, 8.0, 10.0, 12.0, 14.0, 16.0, 18.0, 20.0, 22.0, 24.0, 26.0

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LOGGED BY: KJV	COMPLETION DEPTH: 6.1 m
REVIEWED BY: SMK	COMPLETE: 95/06/22
Fig. No: 35166-B-03	Page 1 of 1

95/07/04 01:12PM (35166)

SPRINGBANK RURAL RESIDENTIAL DEVELOPMENT	NE 1/4, SEC.19, TWP.24, RGE.02, W5M	BOREHOLE NO: 35166-04
CLIENT: URBCO INC.	WEST OF CALGARY, ALBERTA	PROJECT NO: 0306-35166
DRILL TYPE: BECKER HAMMER		ELEVATION: 1273.00 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | SPLIT SPOON | DISTURBED | DYNAMIC CONE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

SOIL DESCRIPTION

DEPTH(m) | SAMPLE TYPE | SAMPLE NO | SOLUBLE SULPHATES (%) 0.2 0.4 0.6 0.8 | PLASTIC M.C. LIQUID 20 40 60 80 | STANDARD PENETRATION (N) 20 40 60 80 | POCKET PENETROMETER (kPa) 100 200 300 400 | BECKER BLOWS PER FOOT 40 80 120 160 | DEPTH(ft)

0.0 TOPSOIL – damp, black.

GRAVEL
– dense, some sand, trace cobbles and boulders, dry to damp.

B2

1.0

2.0

3.0 – sandy, damp, fine grained.

4.0 BEDROCK (SILTSTONE) – very low strength, weathered, grey brown, damp.

B1

– medium strength shale.

B3

5.0 END OF HOLE AT 4.9 m.
Standpipe Installed to 4.9 m.
Dry Upon Completion

6.0

7.0

8.0

DEPTH(ft): 0.0, 2.0, 4.0, 6.0, 8.0, 10.0, 12.0, 14.0, 16.0, 18.0, 20.0, 22.0, 24.0, 26.0

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REVIEWED BY: SMK	COMPLETE: 95/06/22
Fig. No: 35166-B-04	Page 1 of 1

95/07/04 01:12PM (35166)

SPRINGBANK RURAL RESIDENTIAL DEVELOPMENT	NE 1/4, SEC.19, TWP.24, RGE.02, W5M	BOREHOLE NO: 35166-05
CLIENT: URBCO INC.	WEST OF CALGARY, ALBERTA	PROJECT NO: 0306-35166
DRILL TYPE: BECKER HAMMER		ELEVATION: 1266.00 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | SPLIT SPOON | DISTURBED | DYNAMIC CONE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

DEPTH(m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	WELL INSTALLATION
0.0	TOPSOIL – damp, black, rootlets.			
	CLAY (TILL) – stiff, silty, low plastic, moist, mottled grey and brown.		B1	
1.0	– very stiff.		B2	
2.0				
	BEDROCK (SILTSTONE/MUDSTONE) – very low strength, weathered, damp, grey brown.			
3.0	– medium strength.		B3	
	– high strength sandstone, refusal.			
4.0	END OF HOLE AT 3.8 m. – Refusal Standpipe Installed to 3.7 m. Dry Upon Completion			
5.0				
6.0				
7.0				
8.0				

SOLUBLE SULPHATES (%) 0.2 0.4 0.6 0.8

PLASTIC M.C. LIQUID 20 40 60 80

STANDARD PENETRATION (N) 20 40 60 80

POCKET PENETROMETER (kPa) 100 200 300 400

BECKER BLOWS PER FOOT 40 80 120 160

DEPTH(ft): 0.0, 2.0, 4.0, 6.0, 8.0, 10.0, 12.0, 14.0, 16.0, 18.0, 20.0, 22.0, 24.0, 26.0

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LOGGED BY: KJV	COMPLETION DEPTH: 3.8 m
REVIEWED BY: SMK	COMPLETE: 95/06/22
Fig. No: 35166-B-05	Page 1 of 1

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SPRINGBANK RURAL RESIDENTIAL DEVELOPMENT	NE 1/4, SEC.19, TWP.24, RGE.02, W5M	BOREHOLE NO: 35166-06
CLIENT: URBCO INC.	WEST OF CALGARY, ALBERTA	PROJECT NO: 0306-35166
DRILL TYPE: BECKER HAMMER		ELEVATION: 1251.00 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | SPLIT SPOON | DISTURBED | DYNAMIC CONE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

SOIL DESCRIPTION

DEPTH(m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO
0.0	TOPSOIL – damp, black, rootlets.		
	CLAY (TILL) – very stiff, silty, trace to some sand, low plastic, damp to moist, brown, mottled with white precipitates, occasional coal specks.		
1.0			B1
	– trace to some gravel, occasional cobble.		
2.0			
	– stiff, less gravel, moist, olive brown.		
3.0			B2
4.0	– trace bedrock fragments.		
	– very stiff, some small gravel, occasional coal chip.		
5.0			B3
6.0	BEDROCK (SILTSTONE) – medium strength, slightly weathered, damp, grey brown.		B4
	END OF HOLE AT 6.1 m. Standpipe Installed to 6.1 m. Dry Upon Completion		
7.0			
8.0			

WELL INSTALLATION

◆ SOLUBLE SULPHATES (%) ◆ 0.2 0.4 0.6 0.8

PLASTIC M.C. LIQUID 20 40 60 80

◆ STANDARD PENETRATION (N) ◆ 20 40 60 80

■ POCKET PENETROMETER (kPa) ■ 100 200 300 400

▲ BECKER BLOWS PER FOOT ▲ 40 80 120 160

DEPTH(ft): 0.0 2.0 4.0 6.0 8.0 10.0 12.0 14.0 16.0 18.0 20.0 22.0 24.0 26.0

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LOGGED BY: KJV	COMPLETION DEPTH: 6.1 m
REVIEWED BY: SMK	COMPLETE: 95/06/22
Fig. No: 35166-B-06	Page 1 of 1

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SPRINGBANK RURAL RESIDENTIAL DEVELOPMENT	NE 1/4, SEC.19, TWP.24, RGE.02, W5M	BOREHOLE NO: 35166-07
CLIENT: URBCO INC.	WEST OF CALGARY, ALBERTA	PROJECT NO: 0306-35166
DRILL TYPE: BECKER HAMMER		ELEVATION: 1277.00 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | SPLIT SPOON | DISTURBED | DYNAMIC CONE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

DEPTH(m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	WELL INSTALLATION	SOLUBLE SULPHATES (%) 0.2 0.4 0.6 0.8 / PLASTIC M.C. LIQUID 20 40 60 80	STANDARD PENETRATION (N) 20 40 60 80 / POCKET PENETROMETER (kPa) 100 200 300 400 / BECKER BLOWS PER FOOT 40 80 120 160	DEPTH(ft)
0.0	TOPSOIL – damp, black, rootlets, grasses.						0.0
	CLAY (TILL) – stiff, silty, trace sand, trace gravel, low plastic, damp, dark dark brown, trace white precipitates.		B1				2.0
1.0							4.0
			B2				6.0
2.0							8.0
	GRAVEL – dense, sandy, trace silt, trace cobbles and boulders, dry, brown.		B3				10.0
3.0							12.0
4.0							14.0
							16.0
5.0	END OF HOLE AT 4.9 m. Standpipe Installed to 4.9 m. Dry Upon Completion						18.0
6.0							20.0
							22.0
7.0							24.0
8.0							26.0

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LOGGED BY: KJV	COMPLETION DEPTH: 4.9 m
REVIEWED BY: SMK	COMPLETE: 95/06/22
Fig. No: 35166-B-07	Page 1 of 1

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SPRINGBANK RURAL RESIDENTIAL DEVELOPMENT	NE 1/4, SEC.19, TWP.24, RGE.02, W5M	BOREHOLE NO: 35166-08
CLIENT: URBCO INC.	WEST OF CALGARY, ALBERTA	PROJECT NO: 0306-35166
DRILL TYPE: BECKER HAMMER		ELEVATION: 1276.00 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | SPLIT SPOON | DISTURBED | DYNAMIC CONE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

SOIL DESCRIPTION

DEPTH(m) | SAMPLE TYPE | SAMPLE NO | WELL INSTALLATION | SOLUBLE SULPHATES (%) 0.2 0.4 0.6 0.8 | PLASTIC M.C. LIQUID 20 40 60 80 | STANDARD PENETRATION (N) 20 40 60 80 | POCKET PENETROMETER (kPa) 100 200 300 400 | BECKER BLOWS PER FOOT 40 80 120 160 | DEPTH(ft)

0.0 TOPSOIL – damp, black, rootlets, grasses.

CLAY (TILL) – stiff, silty, trace sand, trace gravel, low plastic, damp, dark dark brown, trace white precipitates. — B1

1.0

GRAVEL
– dense, sandy, trace silt, trace cobbles and boulders, dry, brown. — B2

2.0

– medium grained sand, no silt, rounded gravel. — B3

3.0

4.0

5.0 END OF HOLE AT 4.9 m.
Standpipe Installed to 4.9 m.
Dry Upon Completion

6.0

7.0

8.0

DEPTH(ft): 0.0, 2.0, 4.0, 6.0, 8.0, 10.0, 12.0, 14.0, 16.0, 18.0, 20.0, 22.0, 24.0, 26.0

EBA Engineering Consultants Ltd. Calgary, Alberta	LOGGED BY: KJV
	REVIEWED BY: SMK
	Fig. No: 35166-B-08
	COMPLETION DEPTH: 4.9 m
	COMPLETE: 95/06/22
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SPRINGBANK RURAL RESIDENTIAL DEVELOPMENT	NE 1/4, SEC.19, TWP.24, RGE.02, W5M	BOREHOLE NO: 35166-09
CLIENT: URBCO INC.	WEST OF CALGARY, ALBERTA	PROJECT NO: 0306-35166
DRILL TYPE: SOLID STEM AUGER		ELEVATION: 1288.00 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | SPLIT SPOON | DISTURBED | DYNAMIC CONE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

SOIL DESCRIPTION

DEPTH(m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO
0.0	TOPSOIL – black, damp.		
	CLAY (TILL) – stiff, silty, some gravel, low plastic, moist, light brown, trace white precipitates.		
1.0	– trace to isolated gravel.		B1
			S1
2.0	– very stiff, mottled light & medium brown		
	– some fine sand, trace gravel, damp.		B2
3.0			S2
	– sandy, trace gravel, light brown.		B3
4.0			
			S3
5.0	– isolated gravel, occasional coal speck.		
	– trace sand, low to medium plastic, olive brown.		B4
6.0			
	– mottled with tan colored silt, trace coal specks, occasional rust staining.		S4
7.0			B5
	– thin fine grained sand seams, some sand.		S5
8.0			

◆ SOLUBLE SULPHATES (%) ◆ 0.2 0.4 0.6 0.8

PLASTIC M.C. LIQUID 20 40 60 80

◆ STANDARD PENETRATION (N) ◆ 20 40 60 80

■ POCKET PENETROMETER (kPa) ■ 100 200 300 400

▲ BECKER BLOWS PER FOOT ▲ 40 80 120 160

DEPTH(ft): 0.0, 2.0, 4.0, 6.0, 8.0, 10.0, 12.0, 14.0, 16.0, 18.0, 20.0, 22.0, 24.0, 26.0

EBA Engineering Consultants Ltd. Calgary, Alberta	LOGGED BY: KJV	COMPLETION DEPTH: 10.7 m
	REVIEWED BY: SMK	COMPLETE: 95/06/28
	Fig. No: 35166-B-09	Page 1 of 2

95/07/04 01:15PM (35166)

SPRINGBANK RURAL RESIDENTIAL DEVELOPMENT	NE 1/4, SEC.19, TWP.24, RGE.02, W5M	BOREHOLE NO: 35166-09
CLIENT: URBCO INC.	WEST OF CALGARY, ALBERTA	PROJECT NO: 0306-35166
DRILL TYPE: SOLID STEM AUGER		ELEVATION: 1288.00 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | SPLIT SPOON | DISTURBED | DYNAMIC CONE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

DEPTH(m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	WELL INSTALLATION	SOLUBLE SULPHATES (%) 0.2 0.4 0.6 0.8 / PLASTIC M.C. LIQUID 20 40 60 80	STANDARD PENETRATION (N) 20 40 60 80 / POCKET PENETROMETER (kPa) 100 200 300 400 / BECKER BLOWS PER FOOT 40 80 120 160	DEPTH(ft)
8.0			B5				28.0
			B6				
9.0							30.0
							32.0
	– trace gravel, moist.						
10.0			B7				34.0
	END OF HOLE AT 10.7 m.						
	Standpipe Installed to 10.7 m.						
11.0	Dry Upon Completion						36.0
							38.0
12.0							40.0
							42.0
13.0							44.0
							46.0
14.0							48.0
							50.0
15.0							52.0
16.0							

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LOGGED BY: KJV | COMPLETION DEPTH: 10.7 m
REVIEWED BY: SMK | COMPLETE: 95/06/28
Fig. No: 35166-B-09

95/07/04 01:15PM (35166)

APPENDIX C

DESIGN AND CONSTRUCTION GUIDELINES

BACKFILL MATERIALS AND COMPACTION

Maximum density, as used in this section, means Standard Proctor Maximum Dry Density (ASTM Test D698) unless specifically noted otherwise. Optimum moisture content is as defined in this text.

"General engineered fill" materials should comprise clean, well-graded granular soils or inorganic, low-plastic cohesive soils. Such material should be placed in compacted lifts not exceeding 200 mm and compacted to not less than 95% of maximum density, at a moisture content at or slightly above optimum.

"Structural fill" materials should comprise clean, well-graded inorganic granular soils. Such fill should be placed in compacted lifts not exceeding 150 mm and compacted to not less than 100% of maximum density, at a moisture content at or slightly (0 to 3%) above optimum.

"Landscape fill" material may comprise soils without regard to engineering quality. Such soils should be placed in compacted lifts not exceeding 300 mm and compacted to a density of not less than 90% of maximum density.

Backfill adjacent to and above footings, abutment walls, basement walls, grade beams and pile caps or below highway, street or parking lot pavement sections should comprise general engineered fill materials as defined above.

Backfill supporting structural loads should comprise structural fill materials as defined above.

Backfill adjacent to exterior footings, foundation walls, grade beams and pile caps and within 300 mm of final grade should comprise low-plastic cohesive general engineered fill as defined above. Such backfill should provide a relatively impervious surface layer to reduce seepage into the sub-soil.

Backfill should not be placed against a foundation structure until the structure has sufficient strength to withstand the earth pressures resulting from placement and compaction. During compaction, careful observation of the foundation wall for deflection should be carried out continuously. Where deflection is apparent, the compactive effort should be reduced accordingly. In order to reduce potential compaction induced stresses, only hand held compaction equipment should be used in the compaction of fill within 500 mm of retaining walls or basement walls.

Backfill materials should not be placed in a frozen state or placed on a frozen subgrade. All lumps of materials should be broken down during placement.

Where the maximum-sized particles in any backfill material exceed 50% of the lift thickness or minimum dimension of the cross-section to be backfilled, such particles should be removed and placed at the other more suitable locations on site or screened-off prior to delivery to site.

Bonding should be provided between backfill lifts, if the previous lift has become desiccated. For the fine-grained materials, the previous lift should be scarified to 75 mm in depth followed by proper moisture conditioning and recompaction.

Recommendations for the specifications for various backfill types are presented below.

"Pit-run gravel" should conform to the following grading:

Sieve Sizes (Square Openings)	Percent Passing By Weight
200 mm	100 of Total Sample
150 mm	96 - 100 of Total Sample
75 mm	60 - 80 of Total Sample
25 mm	70 - 100 of Material Passing 75 mm Sieve
4.75 mm	25 - 63 of Material Passing 75 mm Sieve
1.18 mm	14 - 41 of Material Passing 75 mm Sieve
0.60 mm	7 - 30 of Material Passing 75 mm Sieve
0.15 mm	3 - 18 of Material Passing 75 mm Sieve
0.075 mm	2 - 9 of Material Passing 75 mm Sieve

Any grading variation from the above should be at the discretion of the Engineer; however, the percent of material passing the 0.075 mm sieve should not exceed 2/3 of the material passing the 0.6 mm sieve. The pit-run gravel should be free of any form of coating and any gravel containing clay, loam or other deleterious materials should be rejected. No oversized material should be tolerated.

"Crushed gravel" should conform to the following grading:

Sieve Sizes (Square Openings)	Percent Passing by Weight		
	Nominal Gravel Size		
	100 mm	50 mm	25 mm
100 mm	100	—	—
75 mm	90 - 100	—	—
50 mm	—	100	—
40 mm	60 - 80	90 - 100	—
25 mm	—	—	100
20 mm	40 - 66	50 - 75	95 - 100
10 mm	25 - 54	25 - 52	60 - 80
4.75 mm	15 - 43	15 - 40	40 - 60
2.36 mm	10 - 35	10 - 33	28 - 48
0.60 mm	5 - 23	5 - 23	13 - 29
0.30 mm	—	—	9 - 21
0.15 mm	3 - 12	2 - 14	6 - 15
0.075 mm	2 - 10	1 - 10	4 - 10

Gravel:

100 mm Crushed Gravel: At least 13% by weight of the material retained on the 4.75 mm sieve should have two more fractured faces.

50 mm Crushed Gravel: At least 13% by weight of the material retained on the 4.75 mm sieve should have two more fractured faces.

25 mm Crushed Gravel: At least 50% by weight of the material retained on the 4.75 mm sieve should have two more fractured faces.

Any gravel containing deleterious material should be rejected.

"Coarse gravel" for bedding and drainage should conform to the following grading:

Sieve Sizes (Square Openings)	Percent Passing By Weight (Nominal Gravel Size)	
	50 mm	40 mm
50 mm	100	—
40 mm	90 - 100	100
25 mm	—	95 - 100
20 mm	35 - 70	—
15 mm	—	25 - 60
10 mm	10 - 30	—
4.75 mm	0 - 5	0 - 10
2.36 mm	—	0 - 5

"Coarse sand" for bedding and drainage should conform to the following grading:

Sieve Sizes (Square Openings)	Percent Passing By Weight
10 mm	100
4.75 mm	95 - 100
2.36 mm	80 - 100
1.18 mm	50 - 85
0.60 mm	25 - 60
0.30 mm	10 - 30
0.15 mm	2 - 10

"Lean-mix concrete" should be low strength concrete having a minimum 28-day compressive strength of 3.5 MPa.

SHALLOW FOUNDATIONS

Design and construction of shallow foundations should comply with relevant Building Code requirements.

The term "shallow foundations" includes strip and spread footings, mat slab and raft foundations.

Minimum footing dimensions in plan should be 0.45 m and 0.9 m for strip and square footings, respectively.

No loose, disturbed or sloughed material should be allowed to remain in open foundation excavations. Hand cleaning should be undertaken to prepare an acceptable bearing surface. Recompaction of disturbed or loosened bearing surface may be required.

Foundation excavation and bearing surfaces should be protected from rain, snow, freezing temperatures, drying and the ingress of free water, during and after footing construction.

Footing excavations should be carried down into the designated bearing stratum.

After the bearing surface is approved, a mud slab should be poured to protect the soil and provide a working surface for construction, should immediate foundation construction not be intended.

All constructed foundations should be placed on unfrozen soils, which should be at all times protected from frost penetration.

All foundation excavations and bearing surfaces should be observed by a qualified geotechnical engineer to confirm that the recommendations contained in this report have been followed and that soil conditions are consistent with those assumed in the design.

Where over-excavation has been carried out through a weak or unsuitable stratum to reach into a suitable bearing stratum or where a foundation pad is to be placed above stripped natural ground surface, such over-excavation may be backfilled to subgrade elevation utilizing either structural fill or lean-mix concrete. These materials are defined under the separate heading "Backfill Materials and Compaction."

Appendix 17.5

Leonard H. Novak Landscape Architects Ltd.

Proposed Landscape and Landform Analysis

Proposed Landscape

for a

New Rural Residential Neighborhood

on the

NE of Section 19 - Twp. 24 - Rge. 2 W 5th m.

Springbank

URBCO Inc.

by

Leonard Novak Landscape Architect Ltd.

Proposed Landscape for a New Rural Residential Neighborhood

NE 19-24-2-5 - Springbank

Concepts

General

The objectives in the making of the landscape for the new residential neighborhood are to:

1. create an attractive and pleasing living environment for the new residents.

2. harmonize the new development with the rural setting.

3. conserve the features of the existing landscape of the site as they form the basis for and contribute to the quality of the new landscape.

4. create a landscape that is as naturally sustainable as possible and, as well, efficiently maintainable by the residents.

The suggested development and management of particular components of this proposed landscape are as follows.

1. Landform

- The planned pattern of subdivision generally fits with the existing topographic features of the site and with one exception, no massive alteration of the terrain is necessary.

- The access road from the main internal road to the southwest group of houses will require relatively deep cuts and fills to achieve a functional gradient for vehicles as it traverses the escarpment. To have this road conform more readily to the terrain, reduce the elevation of the upper intersection. A "bowl" would be created at the intersection which could be planted with a grove of trees.

- The accompanying "Site Conditions" plan shows that the existing landscape of the site has distinct land units based on landform and other surface features. The characteristics of these land units lend distinctive quality to the proposed landscape and living areas of the development.

- The land units are: the Open Escarpment, the Wooded High Ridge, the Field, the Escarpment Plateau, the Southwest Wooded Knoll, the South Edge Upland and the Southwest Slope Forest.

The specific ways in which the proposed new landscape features respond to these is discussed in the following respective areas of landscape development.

2. Roadways

We recommend that the size of the roadways be reduced to be in scale with the private lots. We also suggest that:

- the existing vegetation remain in the right-of-way;
- the branch roads be private roads at a reduced standard;
- the end cul-de-sacs be looped (two-way) roads with planting in the centre;

- the intersection of the main road and the northwest branch road be adjusted to conform to existing lanes and trees.
- the depth of ditches be reduced to allow easier establishment and maintenance of grass cover.

3. Trees

Refer to the accompanying Landscape Plan for proposed tree planting.

3.1 Existing, native trees

- Transplant existing trees to be displaced by grading, buildings and roads to form a naturalistic separation in the Field area between the lines of houses. Select lowland sites where moisture conditions will assist establishment. The locations proposed are somewhat removed from principal, outer views and thus less critical in the event of poor survival and establishment.
- Dig/transplant in clumps, maintaining as much root mass as possible. Retain shrub understory with clumps.
- Plant in groves.
- Expect minimum losses of 25% of transplanted native trees.
- Expect die-back in remaining trees where clearing or transplanting occurs on the southwest edges of the forest exposed to the most sun and the chinook wind desiccating effect.
- Saturate the root zones of the new plants immediately after planting and water bi-weekly in the first season and monthly in the second season after transplanting.
- Plant shrub understory for protection and habitat.

3.2 New, nursery-grown trees

- Plant in naturalistic groves. Large groves have open centres. See plan.
  - In the linear plantings proposed along the northwest leg of the main road in the field area, extend the groves and stagger the lines.
- Select nursery-grown native and chinook-adaptive plants; mix evergreens with deciduous - about 10% evergreen.
- Mix sizes in naturalistic patterns.
- Maintain by watering as in 3.1.

4. Landmarks

In addition to the special definition achieved by the retention of existing trees and other features and new plantings, distinct landmarks will add interest to the landscape of the neighborhood.

These are:

- Deep entry groves.
- A "shelterbelt" along the northeast curving leg of the road in the Field area.
- A crossroads grove to "mark" the lowland surrounding the intersection of the first branch road.
- A small, focal shelterbelt/allee at the Cabin/Mailbox meeting place.
- Reforestation of the coulees created by the grading of the branch road down the escarpment.
- Groves of trees with naturalized shrubs and groundcover in the cul-de-sac loop roads.
- Retention of existing, exotic plantings at the Bilton house.
- Alignment of the main road paralleling the linear edge of the existing trees as it rises over the ridge in the field (as planned).

5. Neighborhood Amenities and Features

5.1 Path System

- Most people will follow and walk on the roads through the neighborhood. The proposed path along the north and east perimeter will provide walking loops in varying configurations with connections to the internal road system via the rights-of-way off the cul-de-sacs at the northwest and northeast corners.
- Place an outer path along Westbluff Road and Upper Springbank Road.
- Provide a fence to separate the outer path from adjoining private properties.
- Construct a 1200 mm crushed rock surface for the internal paths.

5.2 Neighborhood Mailboxes/Newspaper Site

- Space for this neighborhood meeting place in conjunction with the relocated Bilton Cabin has already been allocated in the subdivision plan.

- Provide a lay-by and turn-around on the roadway right-of-way. This device will also serve to slow traffic on the main road.

6. Groundcover

The existing surface cover on the site, and that which will substantially remain after the development of roads consists of:

- native grassland on the uncultivated escarpment;
- mixed shrubs and grasses in the wooded areas;
- cultivated hay grasses above the escarpment.

Based on observations of existing small-lot rural subdivisions, some homeowners will retain part of the existing natural grass areas on their lots, while most will re-establish lawn grasses. Many homeowners appear to be content to carry out frequent mowing of their nearly two acres of lawn, while others would prefer an alternative. Many are simply not aware of what the alternatives are. Unmaintained hay grass is not an acceptable option, in any case.

The general view is that neatly groomed lots and in certain cases, well-defined areas of natural grasses is the preferred appearance of the ground in residential areas. The issue of the time and cost in maintaining this image remains unresolved. Some options may be provided as follows.

- Protect the stable, native grass/shrub/wildflower groundcover wherever it exists. Homeowners on lots with native groundcover can establish groomed outdoor spaces on a portion of the lots, and leave the rest natural.
- Conserve the groundcover and understory in the wooded areas.
- Establish fine-textured, low-growing, drought-tolerant grass cover in continuous "belts" containing the naturalized tree plantings, in the more remote parts of the lots at the ridges and in the field, and to accentuate the ridges and the lowlands. Homeowners will establish edges on their lots between these naturalized groundcover areas, and the areas they prefer to groom as lawn.

7. Site Development by Homeowners

Landscape development by individual homeowners on their lots will vary in abundance but will likely tend toward the exotic. The proposed structure of conserved wooded areas and new, major plantings by the developer will assure harmony in the overall landscape, even as the landscaping by individual homeowners will vary. Some guidance in landscaping will be welcomed by the new homeowners and will enhance the overall quality of the community landscape.

- Provide a "kit" listing suitable plants with suggestions of simple planting principles and maintenance techniques. The overall community landscape plan should be given to the homeowners for information and to convey the developer's intentions.
- Establish restrictions on the removal of trees and other community landscape modifications by homeowners.

8. Development Theme and Standards

Besides the planning and the development of features, the developer can further improve the quality of the new neighborhood by coordinating and setting requirements for the development that will be done by individual homeowners.

8.1 House Locations

Each house location is chosen to have a distinctive landscape "place" within the land unit in which it belongs. Such "places" may be a slight terrace on the slope, a clearing in the woods, the edge of the plateau, the "crown" of a knoll, etc.

The form of each house should correspond to the circumstances and qualities of the land unit in which it is set:

- slope-adaptive houses, with stepped floors.
- woodland houses, vertical in form.
- stepped, and walk-out floors on the edges of escarpments.
- low-profile, spread houses in the field.

Leonard Novak
Landscape Architect
November 1995

Appendix 17.6

Jubilee Engineering Consultants Ltd.

Traffic Study

TRAFFIC STUDY &
ROAD CLASSIFICATION

SPRINGBANK RURAL
RESIDENTIAL DEVELOPMENT

PREPARED FOR
URBCO INC..

JUBILEE
ENGINEERING
CONSULTANTS LTD

CONSULTING ENGINEERS • SURVEYORS • PLANNERS

1st. Dec. 1995

URBCO Inc.
Suite 110, 6131 6 Street S.E.
Calgary, Alberta
T2H 1L9

ATTENTION: MR. BARRY POFFENROTH, VICE PRESIDENT

RE: TRAFFIC STUDY AND ROAD CLASSIFICATION FOR
SPRINGBANK RURAL RESIDENTIAL DEVELOPMENT
NE ¼ S 19 TWP 24 - R2 -W5M

Dear Sir:

We are pleased to submit our report on the Traffic Study and Road Classification for the Springbank Rural Residential Development.

Traffic flows generated by this subdivision are not significant to impact the adjacent road corridors.

Should you require further information or clarification, please do not hesitate to contact us.

Yours truly,

Shiraz Remtulla, P. Eng.
Project Engineer

Hamid Mohamed, P. Eng.
Project Manager

SR,HM/sm

911 - 32nd Avenue N.E., Calgary, Alberta T2E 6X6 Bus: (403) 276-1001 Fax: (403) 230-2667

TRAFFIC STUDY AND ROAD CLASSIFICATION
FOR

SPRINGBANK RURAL
RESIDENTIAL DEVELOPMENT
NE ¼ S 19 TWP 24 - R2 -W5M

PREPARED FOR

URBCO INC.

BY JUBILEE ENGINEERING CONSULTANTS LTD.

NOVEMBER 1995

TRAFFIC STUDY AND ROAD CLASSIFICATION FOR

SPRINGBANK RURAL RESIDENTIAL DEVELOPMENT

NE ¼ S 19 TWP 24 - R2 -W5M

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INTRODUCTION

The proposed Springbank Rural Residential Development is located in the NE ¼ Section 19, Township 24, Range 2, W5M in the Municipal District of Rocky View. The subdivision is bounded by Springbank Road to the north, Westbluff Road to east and country residential areas to the west and south. A total of 56 rural residential lots with a minimum lot area of 0.80 ha are planned.

STUDY OBJECTIVE

The intent of the study is to determine the traffic flow pattern and the volume of traffic generated by this development and to assess its impact on the traffic corridors in the immediate area.

TRANSPORTATION ROUTES

The subdivision road layout is shown on Drawing A and Figure 1 depicts the Location Plan showing traffic corridors in the vicinity of the site. The subdivision road network connects to Westbluff Road which in turn connects to Springbank Road.

TRAFFIC FLOW AND TRIP ASSIGNMENT

The traffic flow pattern emanating from this subdivision development will primarily be to and from Calgary. Peak A.M. traffic will travel from the internal road system, northbound on Westbluff Road enroute to eastbound Springbank Road, destined for Calgary. Conversely the peak P.M. traffic will travel westbound on Springbank Road, then Southbound on Westbluff Road and back to the Subdivision.

TRIP GENERATION

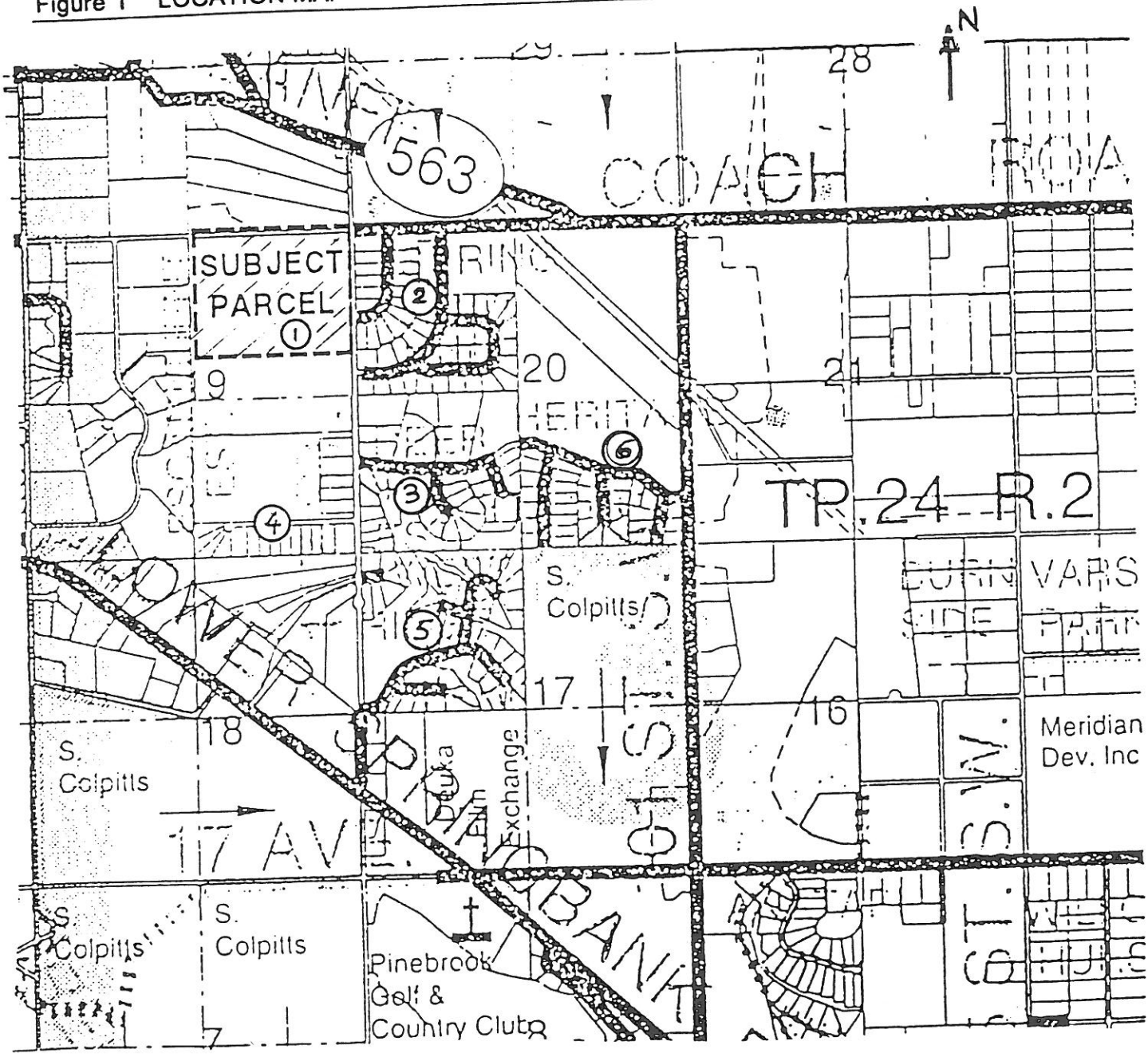
The Institute of Transportation Engineers (ITE) has developed Traffic Generation numbers which are universally used in predicting traffic volumes from various types of developments.

Table 1 depicts the Trip Generation Rates obtained from the ITE Trip Generation which are used to forecast the traffic volumes from residential developments.

TRAFFIC GENERATED FROM SPRINGBANK RURAL RESIDENTIAL DEVELOPMENT

The forecasted traffic generated from the site is shown in Table 2. These figures have been developed using Table 1 Generation Rates.

Figure 1 LOCATION MAP



1. Springbank Rural Residential Development
2. Springland Manor & Springland Properties
3. Deerwood Estates
4. Westbluff Estates
5. Westridge Estates
6. Heritage Estates

Table 1 Trip Generation Rates

PERIOD	SINGLE FAMILY DETACHED UNITS		
	VEHICLE TRIP ENDS PER UNIT		
	ENTER	EXIT	TOTAL
WEEKDAY	4.9	4.9	9.8
A.M. PEAK	0.2	0.55	0.76
P.M. PEAK	0.66	0.39	1.05

Source for Table 1: Institute of Transportation Engineers (ITE) Trip Generation.

Table 2 Forecast Traffic Flow From Springbank Rural Residential Subdivision

PERIOD	TRAFFIC FLOW (VEHICLE TRIP ENDS)		
WEEKDAY (56 Units)	ENTER	275	vehicles/day
	EXIT	275	vehicles/day
A.M. PEAK	ENTER	11	trips/hr
	EXIT	31	trips/hr
P.M. PEAK	ENTER	37	trips/hr
	EXIT	22	trips/hr

CLASSIFICATION OF ROADS IN SPRINGBANK RURAL RESIDENTIAL SUBDIVISION

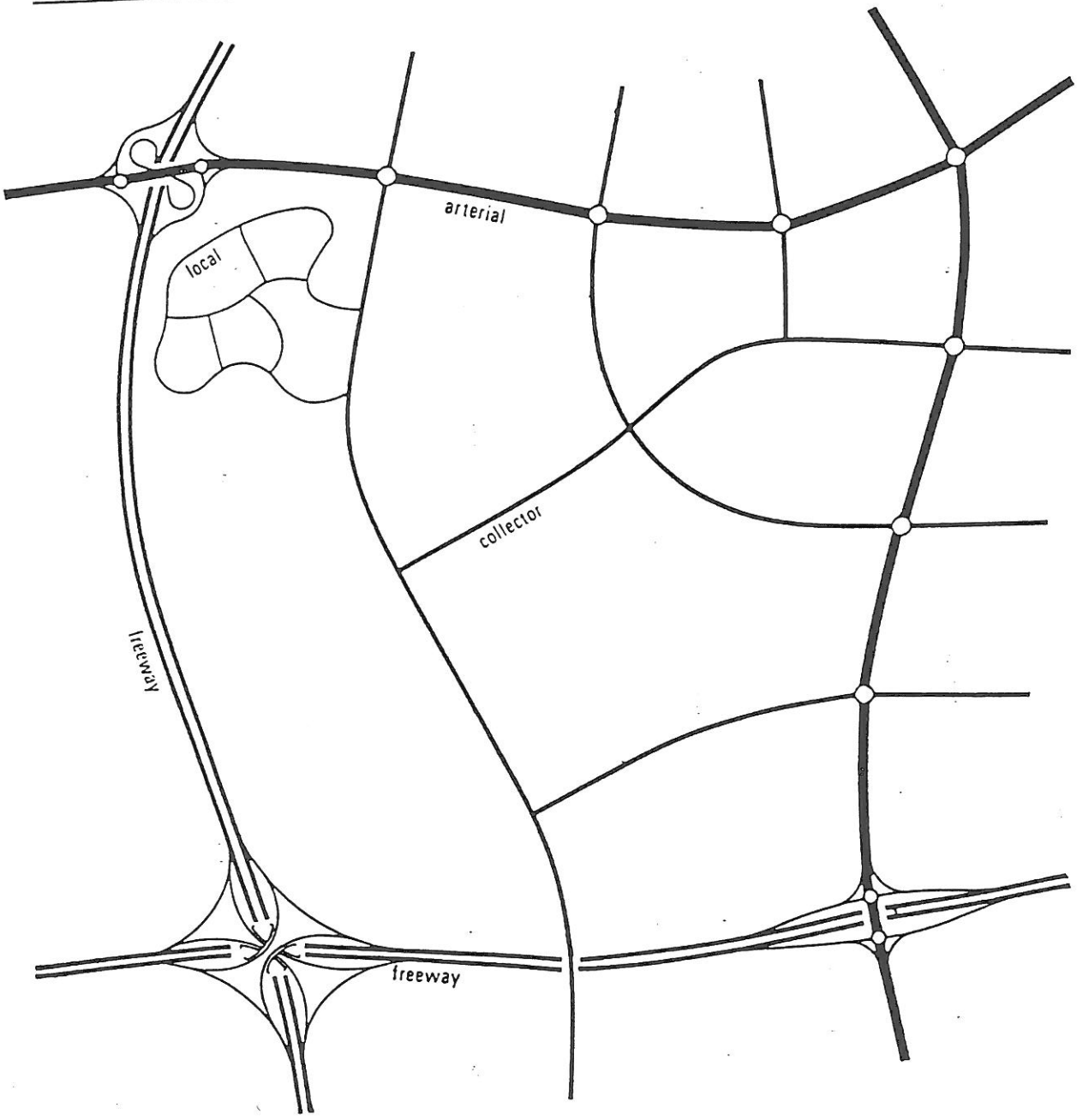
The Roads and Transportation Association of Canada (RTAC) provides a road classification system to assist in the planning and design for new roads. This classification system has been divided into four primary divisions for rural roads as follows:

- Local
- Collector
- Arterial
- Freeway

Figure 2 illustrates the relationship between the road classification and Table 3 provides the characteristics of the rural roads.

Based on the service function and traffic volumes of 550 trips/day, all roads within the Springbank rural residential subdivision are classified as Rural Local Undivided (RLU).

Figure 2 Relationship of Road Classifications



Source - RTAC Manual

Table 3 Characteristics of Rural Roads

	rural locals	rural collectors	rural arterials	rural freeways
service function	traffic movement secondary consideration	traffic movement and land access of equal importance	traffic movement primary consideration	optimum mobility
land service	land access primary consideration		land access secondary consideration	no access
traffic volume vehicles per day (typically)	<1000	<5000	<12 000	>8000
flow characteristics	interrupted flow	interrupted flow	uninterrupted flow except at signals	free flow (grade separated)
design speed, km/h	50 - 100	60 - 100	80 - 130	100 - 130
average running speed, km/h (free-flow conditions)	50 - 90	50 - 90	60 - 100	80 - 110
vehicle type	predominantly passenger cars, light to medium trucks & occasional heavy trucks	all types, up to 30% trucks in the 3 t to 5 t range	all types, up to 20% trucks	all types, up to 20% heavy trucks
normal connections	locals collectors	locals collectors arterials	collectors arterials freeways	arterials freeways

Source - RTAC MANUAL

TRAFFIC IMPACT TO ADJACENT TRAFFIC CORRIDORS

The Springbank rural residential development will comprise of mainly working residents. As mentioned earlier, the traffic flow from this development will use Westbluff Road and Springbank Road for commuting purposes. Each of these roads performs a particular service in facilitating vehicular travel between points of trip origin and destination and in providing access to property in the neighbourhood. Using the RTAC illustration of the relationship between the Road Classifications shown in Fig 2 and the Site Plan in Fig 1, Westbluff Road would be classified as a Rural Local Undivided (RLU) and Springbank Road as a Rural Collector Undivided (RCU).

The forecasted traffic shown in Table 2 indicate that the maximum number of trips generated by this development is 37 trips/hr at PM time entering the subdivision and 31 trips/hr at AM time exiting the subdivision. The total traffic flow (vehicle trip ends) is 275 entering and 275 exiting the subdivision, most of which will occur during peak commuting time. The above rates of trips are considered reasonable for a subdivision and are within the normal expectations of the road corridors built in the area.

Table 4 shows the residential units that would use Springbank Road via Westbluff Road. The table was prepared based on analysing existing road layout servicing the surrounding areas, the available accesses and the shortest route to reach Springbank Road and the physical constraints imposed by the escarpment. This escarpment delineates the traffic flow from adjacent properties that would use the Springbank Road to the north from the lower Springbank Road to the south.

Traffic assignement to the corridors from the adjacent properties was based on the following distribution:

1. Springbank Rural Residential Subdivision : Total flow to Springbank Road via Westbluff Road.
2. Springland Manor and Springland Properties : Total flow directly to Springbank Road.
3. Deerwood Estates : Total flow to Springbank Road via Westbluff Road.
4. Westbluff Estates : Total flow to Springbank Road via Westbluff Road.
5. Westridge Estates : Total flow to Lower Springbank Road via Westbluff Road.
6. Heritagewood Estates : Total flow to 101 Street

Table 4 was prepared using the above criteria. Table 5 shows the traffic flow generated from the surrounding areas including the proposed development using Springbank Road via Westbluff Road.

cont'd

TRAFFIC IMPACT TO ADJACENT TRAFFIC CORRIDORS cont'd.

Figure 3 summarizes the most current traffic flow data based on 24 hr. traffic count performed by the M. D. of Rockyview. The actual traffic flow data on Westbluff Road of 442 trips per day is about 10% lower than the 490 trips per day using the ITE generation rates for Deerwood and Westbluff Estates (50 lots) that currently use Westbluff Road to access Springbank Road.

The capacity of any two lane roadway is expressed in vehicles per hour (vph) referred to as the design hour volume (DHV) of traffic travelling in both directions. RTAC does not assign DHV to roads classified under Rural Local Undivided (RLU) which typically carry up to 1000 vehicles/day (vpd). The forecast traffic flow volumes that will use Westbluff Road is shown in Table 5 and satisfies the requirements of a Rural Local Undivided (RLU) Road. As such Westbluff Road will be able to accommodate the anticipated traffic volume.

Springbank Road under the RCU Classification can typically carry up to 5000 vpd and the service volume and capacity of this road has been calculated as 1000 vph and 1800 vph respectively.

The traffic data in Fig 3 shows that the current daily traffic flow on Springbank Road east of Westbluff Road is only 1,958 vpd (both directions). The DHV values are not available but are estimated to be in the range of 250 vph.

The additional traffic flow generated by the proposed development shown in Table 2 clearly indicates that the impact to the current traffic flow is not significant based on carrying capacity of Springbank Road.

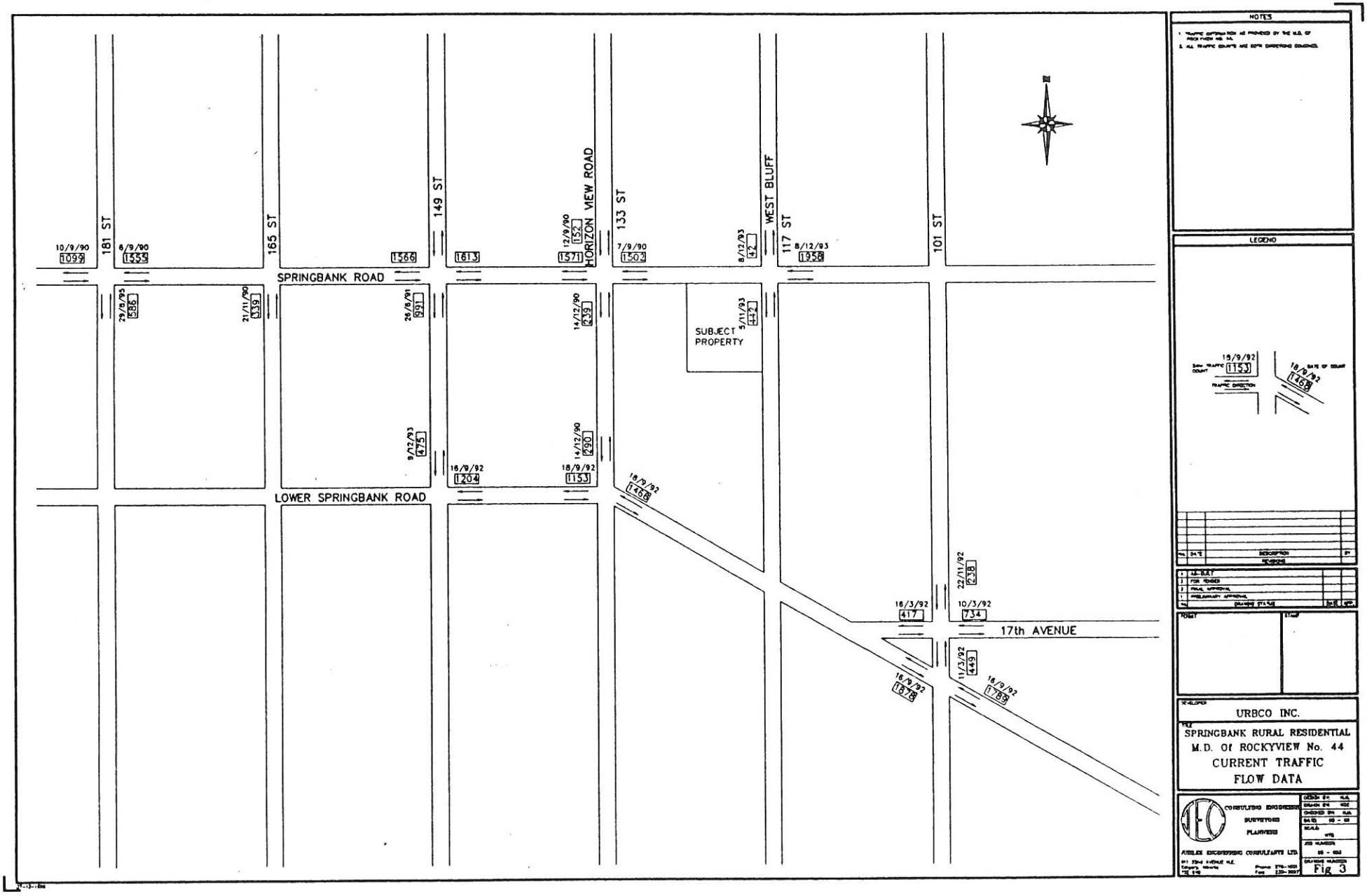
Given the probable buyer profile for this proposed "upper-end" development (eg. large percentage of "empty nesters"; large percentage of single, high-income, wage earners, etc.) the forecasted traffic flow volumes could be reduced by up to 20% as those future residents would display different commuting behaviour than the typical "average working couple with two children". Potential resident profiles have not been factored into the forecast model.

Table 4 Residential Units Using Springbank Road via Westbluff Road

SUBDIVISION	*UNITS TO WESTBLUFF ROAD*	*REMARKS*
1. Springbank Rural Residential	56	
2. Springland Manor and Springland Properties	0	Direct Access to Springbank Road
3. Deerwood Estates	36	
4. Westbluff Estates	13	
5. Westridge Estates	0	Access to Lower Springbank Road
6. Heritagewood Estates	0	Access to 101 Street
7. Others	1	
TOTAL	106	

Table 5 Forecast Traffic Flow Along Springbank Road Generated from Westbluff Road

PERIOD	*TRAFFIC FLOW (VEHICLE TRIP ENDS)*		
WEEKDAY (116 Units)	ENTER	520	trips/day
	EXIT	520	trips/day
A.M. PEAK	ENTER	21	trips/hr
	EXIT	58	trips/hr
P.M. PEAK	ENTER	70	trips/hr
	EXIT	41	trips/hr


181 ST
165 ST
149 ST
HORIZON VIEW ROAD
133 ST
WEST BLUFF
117 ST
101 ST
SPRINGBANK ROAD
LOWER SPRINGBANK ROAD
17th AVENUE
SUBJECT PROPERTY
10/9/90 1099
8/9/90 1555
1566
1613
12/9/90 152 1571
7/9/90 1502
8/12/93 42
8/12/93 1958
29/8/95 586
21/11/90 539
29/8/91 991
14/12/90 239
5/11/93 442
9/12/93 475
14/12/90 290
16/9/92 1204
18/9/92 1153
18/9/92 1468
22/11/92 238
16/3/92 417
10/3/92 734
11/3/92 449
18/9/92 1678
18/9/92 1789
NOTES
1. TRAFFIC INFORMATION AS PROVIDED BY THE M.D. OF ROCKYVIEW NO. 44.
2. ALL TRAFFIC COUNTS ARE BOTH DIRECTIONS COMBINED.
LEGEND
18/9/92 1153
SHOW TRAFFIC COUNT
TRAFFIC DIRECTION
18/9/92 1468
DATE OF COUNT
DESCRIPTION
BY
1 AS-BUILT
1 FOR TENDER
1 FINAL APPROVAL
1 PRELIMINARY APPROVAL
DRAWING STATUS
DATE
APP'D
PROJECT
STAMP
DEVELOPER
URBCO INC.
TITLE
SPRINGBANK RURAL RESIDENTIAL
M.D. Of ROCKYVIEW No. 44
CURRENT TRAFFIC
FLOW DATA
AXELSEN ENGINEERING CONSULTANTS LTD.
CONSULTING ENGINEERS
SURVEYORS
PLANNERS
DESIGN BY: KLA
DRAWN BY: KDC
CHECKED BY: KLA
DATE: 93 - 03
SCALE: NTS
JOB NUMBER: 93 - 024
DRAWING NUMBER: Fig 3

CONCLUSION

Based on the trip generation figures developed and the analysis of these results, the development of the Springbank Rural Residential Subdivision will generate traffic which can be accommodated by the adjacent traffic corridors.

Springbank Road is one of the collector roads facilitating vehicular travel from the adjacent developments.

The current traffic flow on Springbank Road is well below its capacity both in terms of daily traffic volumes (vehicles per day) and design hour volumes (DHV). The forecast traffic generated by the Springbank Rural Residential Development is not significant enough to affect the traffic flow on the Springbak Rural Road.

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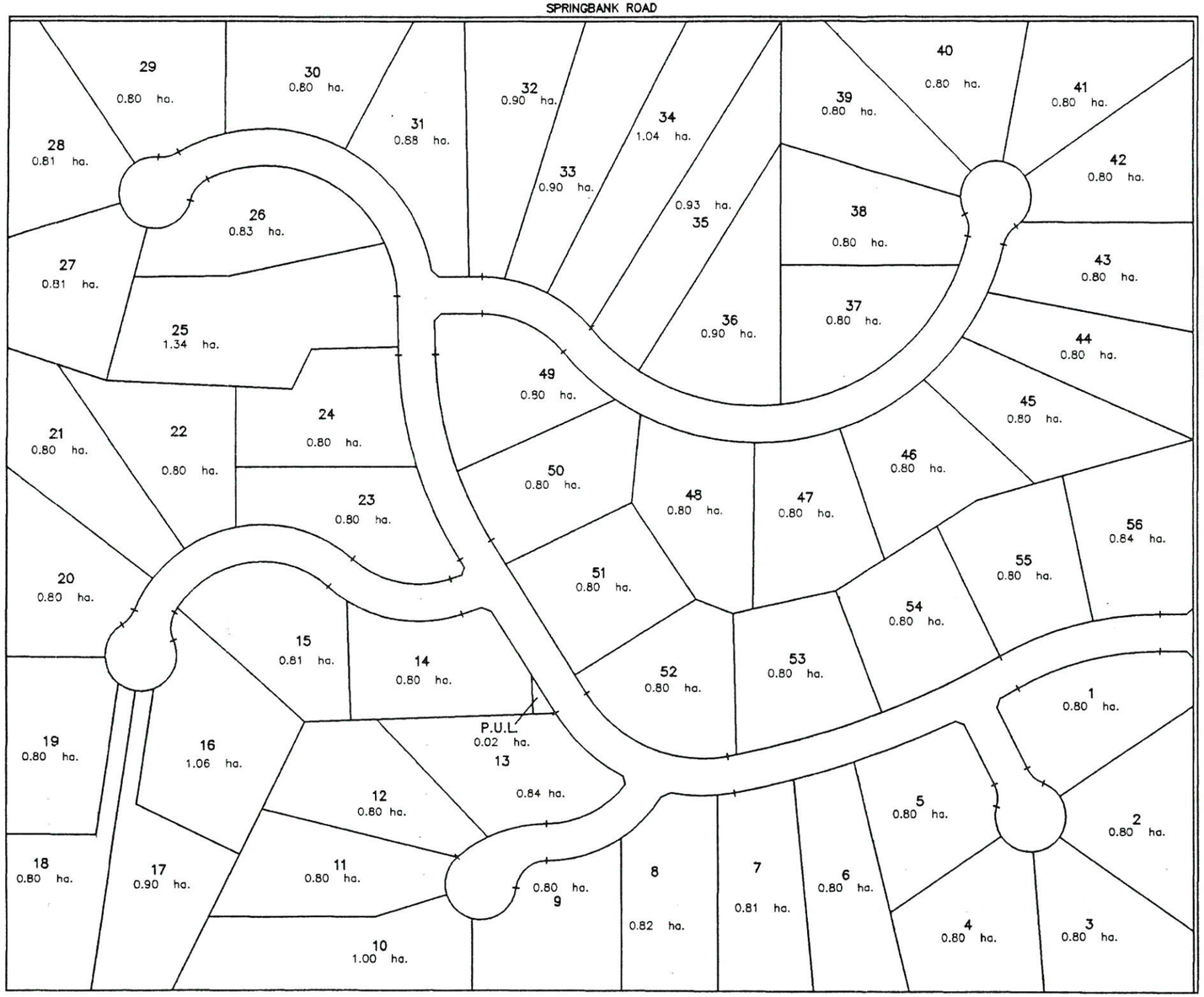
ITE Institute of Transportation Engineers.



NOTES

LEGEND

No.	DATE	DESCRIPTION REVISIONS	BY

No.	DRAWING STATUS	DATE	APP.
4	AS-BUILT		
3	FOR TENDER		
2	FINAL APPROVAL		
1	PRELIMINARY APPROVAL		

PERMIT

STAMP

DEVELOPER

URBCO INC,

TITLE

SPRINGBANK RURAL RESIDENTIAL
M.D. Of ROCKY VIEW No. 44
SUBDIVISION
LOT LAYOUT

CONSULTING ENGINEERS
SURVEYORS
PLANNERS

JUBILEE ENGINEERING CONSULTANTS LTD.
911 32nd AVENUE N.E.
Calgary, Alberta
T2E 5X8
Phone: 276-1001
Fax: 230-2867

DESIGN BY:	H.N.
DRAWN BY:	WBC
CHECKED BY:	H.N.
DATE:	95 - 08
SCALE:	NTS
JOB NUMBER:	95 - 033
DRAWING NUMBER:	A

Appendix 17.7

Jim A. Shaner

Soils Assessments

The following is an assessment of the feasibility of a small agricultural enterprise for a 130 acre parcel of land located within the boundaries of legal location NE¼ 19-24-2-W5

THE LAND

This property borders on an escarpment. The eastern side of the property is relatively flat with a variance in elevation of about 2 metres. With the exception of three wooded ridges this portion of the property (approximately 35 - 40 acres) is farmed as a tame hay stand. The balance of the property slopes steeply to the west and varies in elevation by approximately 40 metres. This portion of the property is utilized as a summer pasture for 13 head of cattle. The western portion of the property has no agricultural value except for pasture purposes.

The historical agricultural use of this property was devoted to dairy and beef cattle operations. With the encroachment of urban development these former agricultural operations have been reduced to hobby farms and rural estates. The property is now entirely surrounded by several country residential subdivisions.

COMMERCIAL PASTURE AND HAY ENTERPRISE FOR THE PROPERTY

Present operation

It was reported that the haying operation generated about $1500.00 in sales last summer. The balance of the property provided pasture for 13 head of cattle for 90 days. Pasture rental was available last summer for 60 cents per head per day. If the 60 cent formula were to be applied, it then follows that the value for the summer pasture could be estimated at $700.00.

Our estimated annual value of the hay and the pasture would be $2200.00.

Proposed operation

The 35 - 40 acre hay field requires rejuvenating and should be broken up and reseeded. If this were done the hay field could produce a yield of about two tons per acre for a total estimated production of 80 tons. This quantity of hay would convert to about 2400 bales. Current selling price for top quality hay is $3.50 per bale. On these assumptions future hay sales could be estimated $8400.00/annum.

A better proposition than renting pasture for cattle would be to provide pasture for horses on a year around basis. It is estimated that the pasture would support 6 horses on a year around basis with winter supplementary feed provided at the pasture renters expense. Currently such pasture is available at $50.00 per month per horse. On this basis the pasture could generate a rental income for the year of $3600.00

By using these assumptions the combined value of hay sales and pasture rent could be estimated for this enterprise at $12000.00/annum.

After the year of rejuvenating and a further year of crop establishment, the hay field could maintain a two ton average yield per acre for up five years under good management practices before rejuvenating would again be necessary. The year of crop establishment would produce a lesser product that could be sold at about half projected price.

Comments on this Agricultural Enterprise

1. Securing custom operators for breaking up the land, reseeding and harvesting the hay could present some problems since there are few commercial farmers in the area and their numbers are diminishing annually.

2. Supervision of the pasture such as maintenance of fences and checking on the livestock as well as organizing custom operators for the hay field and selling the hay have been estimated at a nominal $150.00 per month.

3. The market for the hay production and the pasture would remain good due to the equestrian interest in the community.

The Cost of Hay field Rejuvenating

		per acre cost
Spring 96 (Round-up herbicide & application)	Herbicide cost	$ 10.00
	Custom application	$ 7.00
Cultivating and disking	(3 operations)	$ 22.50
Seeding summer 1996	cover crop seed	$ 6.00
	legume and grass seed	$ 34.00
	custom seeding	$ 9.00
	starter fertilizer	$ 8.00
Total Cost Rejuvenating		**$ 96.50/ac**

Annual Production Costs

		cost per acre
Fertilizer costs	100 units fertilizer	$ 38.00
	fertilizer custom app	$ 5.00
Harvesting costs	mowing and condition	$ 10.00
	baling and stacking	$ 40.00
Total annual production costs		**$ 93.00/ac**

AGRICULTURAL ENTERPRISE ASSESSMENT
NE¼ 19-24-2-W5

Six Year Projection

Revenues	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**
Pasture rent	3600	3600	3600	3600	3600	3600
Hay sales	0	4200	8400	8400	8400	8400
Total	**3600**	**7800**	**12000**	**12000**	**12000**	**12000**

Expenses	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**
Hay rejuvenation	3860	0	0	0	0	0
Costs production	0	3720	3720	3720	3720	3720
Management costs	1800	1800	1800	1800	1800	1800
Total	**5660**	**5520**	**5520**	**5520**	**5520**	**5520**

Cash Flow Projection

Year	1996	1997	1998	1999	2000	2001
	-2060	**2280**	**6480**	**6480**	**6480**	**6480**

Conclusion

Maintaining this particular parcel of land as an agricultural enterprise is not feasible nor an appropriate use of this land. The projected cash flow barely covers the annual property taxes of $5000± per annum. Economic returns on an agricultural enterprise are negligible and the returns are even worse when factoring in the input value of the land.

Sources of Information

1. Forage seed costs ---- Alberta Wheat Pool
2. Horse pasture rental and hay bale prices --- Victor Longacre (stable owner, Okotoks)
3. Cattle pasture rental --- Roseburn Ranches, High River
4. Custom farming rates --- Alberta Agriculture - Custom Rates Survey, 1994
5. Fertilizer costs --- Green Drop, Carseland
6. Chemical costs and application --- Sherritt Fertilizers 601222 Ltd, Standard

Appendix 17.8

Westridge Water Supply Ltd.

Water Supply Letter

WESTRIDGE WATER SUPPLY LTD.
305, 1501 First Street S.W.
Calgary, Alberta
T2R 0W1
TEL: (403) 262 5451 Fax: (403) 262 4672

DATE: November 2, 1995

FAXED
Pg 1 Date 2/11/95
531-0727

TO: Mr. Barry Poffenroth,
Vice President, Urbco Inc.
110, 6131 - 6th Street S.E.
Calgary, Alberta T2H 1L9

FROM: T.A. Belliveau
President, Westridge Water Supply Ltd.

SUBJECT: Water Service - Country Residential Subdivision- NE 1/4 19 24 4 W4M

Dear Sir:

In response to your request for potable water service details to your proposed subdivision I offer the following comments:

1 We wish to confirm that the existing Westridge system includes available capacity which exceeds the maximum demand necessary to service your entire project and is capable of delivering such supply by extending the Westridge north 150 mm supply main at the Springland Manor subdivision located due east of your project. *Internal distribution design will be determined by the final layout of the development.*

3 As previously discussed, service provided by Westridge is subject to our standard Westridge/Developer water supply agreement which includes the Customer Service Contract and current construction design specifications. I am confident that we will conclude necessary contract negotiations in the near future and thereafter proceed with the approval process.

I trust that you find the above in order, please contact me if you have any questions or comments in this regard.

Yours truly,

T.A. Belliveau
President,
Westridge Water Supply Ltd.

Appendix 17.9

Urbco Inc./Nelson A. MacDonald Design Ltd.

Draft Architectural Guidelines

DRAFT
DECEMBER 1995

PINNACLE RIDGE
ARCHITECTURAL GUIDELINES

DRAFT

To Future Residents of Pinnacle Ridge

Developing the spectacular landscape that will become Pinnacle Ridge presents Urbco Inc. with an exciting challenge. The beautiful mountain views -- the naturally treed escarpment and the wooded knolls -- located in a country location so close to Calgary's downtown -- demands a community development plan that harmonizes the beautiful rural setting with the logistics of development.

The people at Urbco Inc. are proud to be part of Pinnacle Ridge. In an effort to create the pre-eminent country residential development in the Springbank we set out to accomplish three goals:

1. To create a community development plan that respects the spectacular views, natural topography and native vegetation;

2. To create a feeling of community; and

3. To create an architectural theme that will help enhance and preserve the investment residents make in their home at Pinnacle Ridge.

We believe Pinnacle Ridge accomplishes this and more.

To the 56 families who will have the select opportunity to build and live in Pinnacle Ridge, we wish you the best and hope you will enjoy the neighbourhood of Pinnacle Ridge.

URBCO INC.

C. Donald Wilson
President & C.E.O.

January 1996

PINNACLE RIDGE
Architectural Guidelines
Table of Contents

DRAFT

APPENDICES

PR.1 Architectural Approval Sheet*
PR.2 Sample Colour Board*
PR.3 Sample Plot Plan*
PR.4 Sample Grade Slip & Footing Check*
PR.5 Pinnacle Ridge Approved Materials*
PR.6 Restrictive Covenants*
PR.7 Easements & Maps*
PR.8 Pinnacle Ridge Architectural Committee & Technical Consultants*
PR.9 Pinnacle Ridge Homeowners Association Agreement*
PR.10 Realtor Co-operation Program*
PR.11 Pinnacle Ridge Price List*
PR.12 Pinnacle Ridge Lot Purchase Agreement*

DRAFT

Note: * **These administrative items will be created and refined after redesignation and subdivision approvals have been obtained and prior to marketing of the subdivision.**

1. Preface

DRAFT

Home, the spot of earth supremely blest, a dearer, sweeter spot than all the rest.
Robert Montgomery, 19th Century English Poet

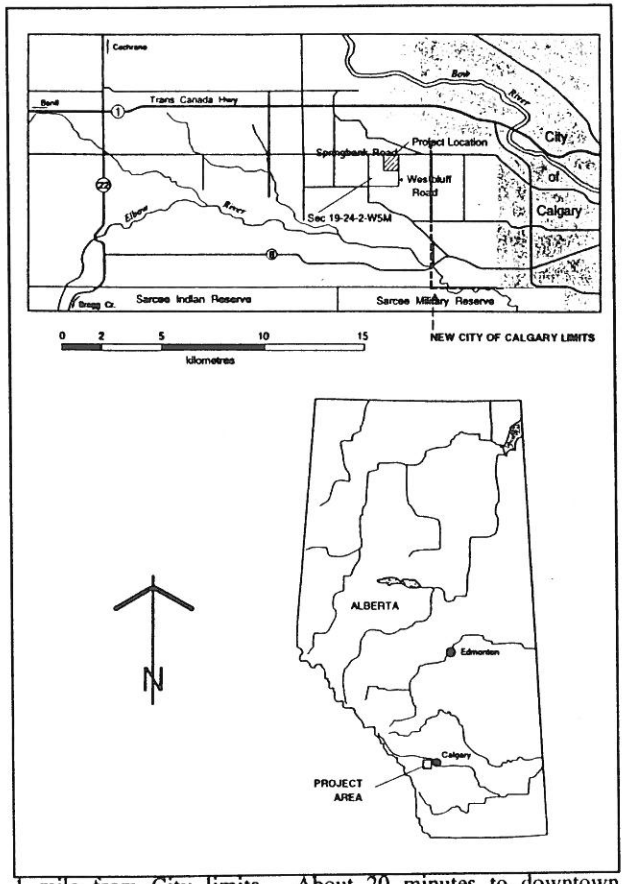
In designing Pinnacle Ridge, Urbco Inc. spent considerable time talking with residents in other country residential developments. We have incorporated the best of these suggestions into Pinnacle Ridge. We have established a high standard of Architectural Guidelines that homes built in Pinnacle Ridge will adhere to. The Architectural Guideline document that follows describes the general guidelines and specific specifications/requirements that will apply to the lots in Pinnacle Ridge. This document also outlines the procedure for obtaining the approvals of the Pinnacle Ridge Architectural Committee.

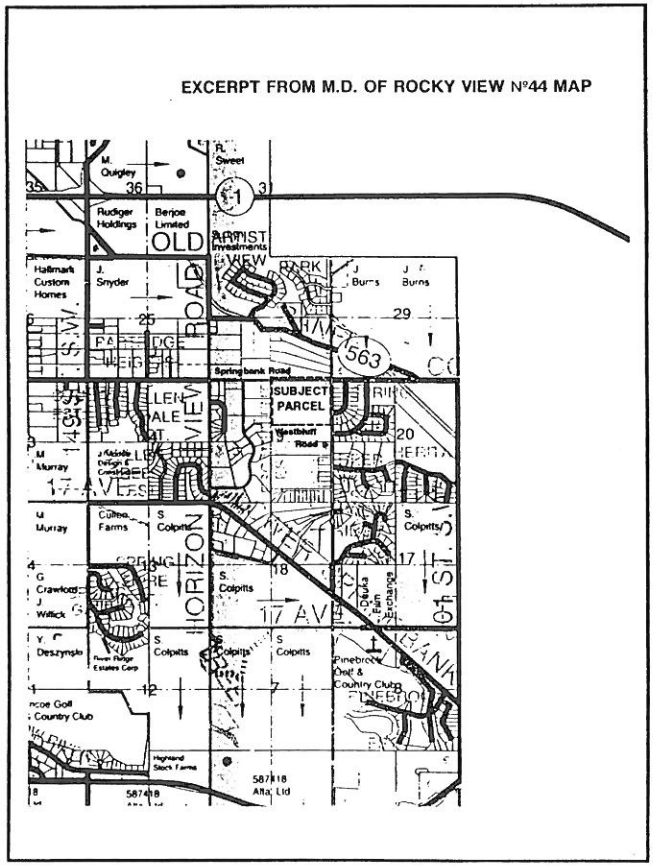
The Pinnacle Ridge Architectural Guidelines provides all the details needed to select a lot, prepare a set of plans and obtain approvals. We trust you will find them useful in helping you design your home exterior and landscape plan. Each homeowner/builder will have the latitude to choose a wide variety exterior styles and finishes however it must integrate into the overall architectural theme of Pinnacle Ridge. For example, homes that are merely enlargements of styles more suited to city developments or homes that have a pink or lime green coloured stucco, will not receive Architectural Approval -- as these designs in our opinion do not respect the landscape, setting or theme of Pinnacle Ridge.

To further help preserve and enhance the value of your investment in your home Urbco Inc. will provide a number of development features. Urbco will construct a dramatic entryway to the community and provide each lot with a driveway address pillar. This serves to create a sense of arrival and also serves to unify the architectural theme while allowing for diversity of home exteriors. A pathway and community gathering place will also contribute to sense of community. Urbco will pre-select building locations and pre-clear trees where applicable in order to protect view sheds and the existing aspen groves. Urbco will also undertake a major landscape plan that will involve transplanting or planting numerous trees and shrubs. All lots will be fully serviced with telephone electricity, gas, and water. Sewage disposal will be via a homeowner provided septic system.

2. MAPS

2.1 Location Map

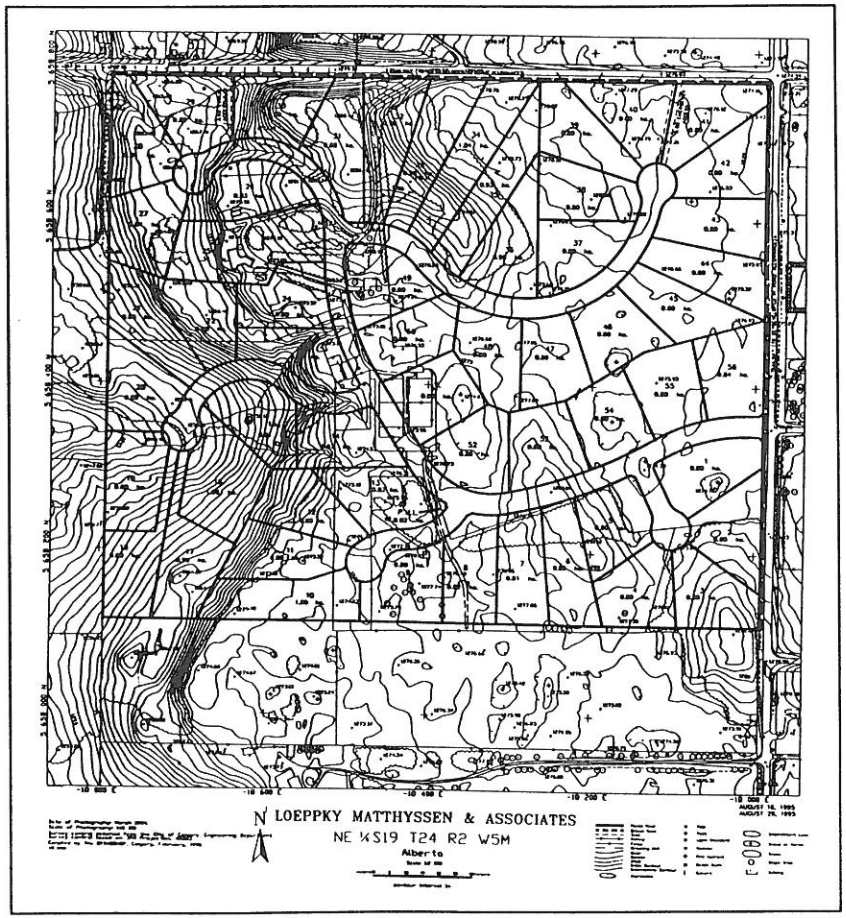




1 mile from City limits. About 20 minutes to downtown Calgary.

2.2 Subdivision Plan

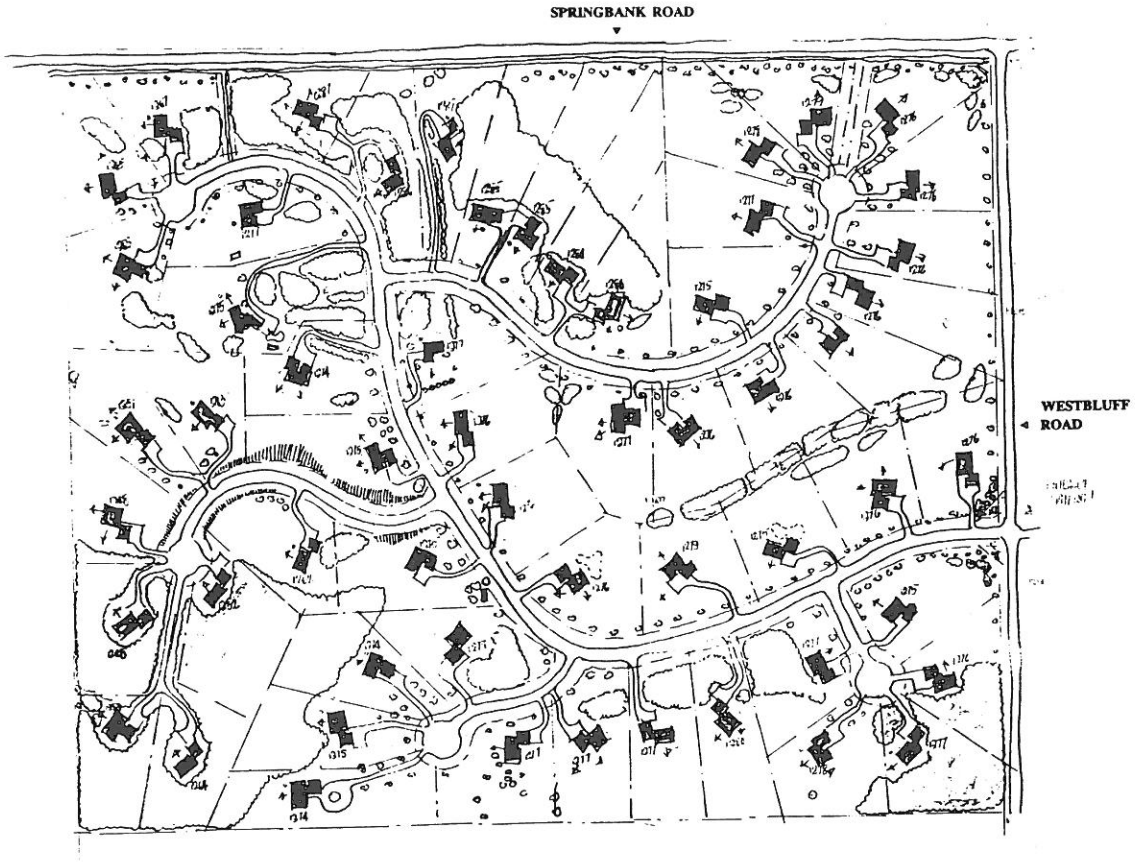
Pinnacle Ridge, a 56 lot country residential estate community.



3. DEVELOPMENT FEATURES

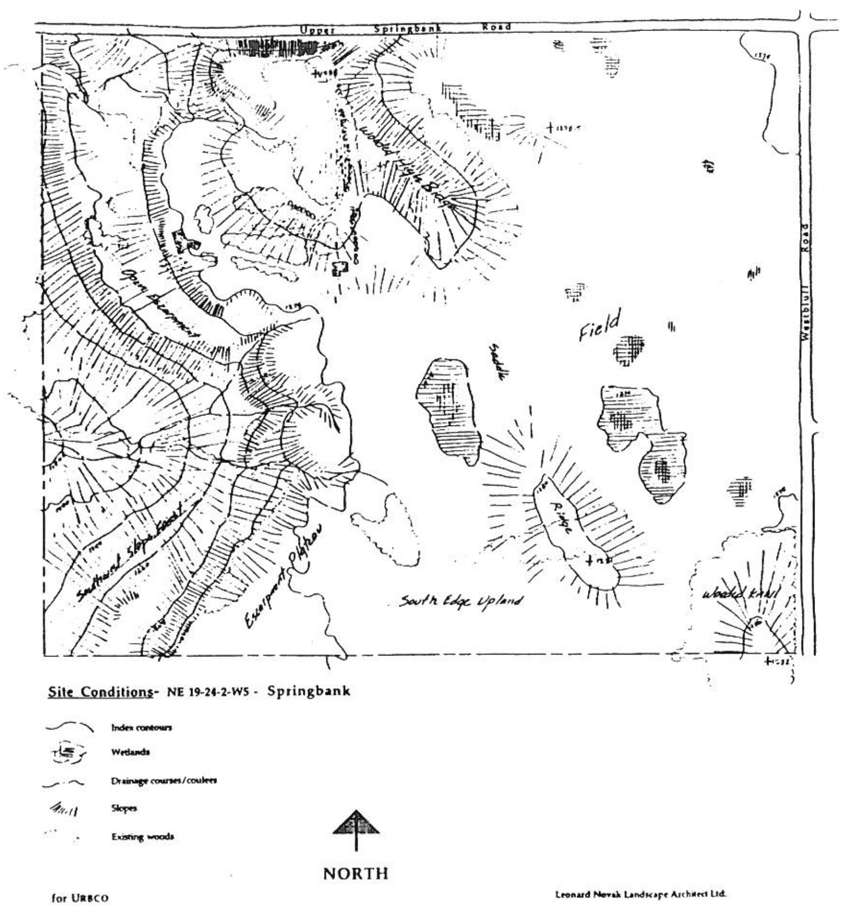
3.1 Building Site Location Map

Urbco Inc. is dedicated to developing a quality community at Pinnacle Ridge. To ensure a unity of architectural theme Urbco is providing a dramatic entry to the community and an address pillar for each lot (see renderings). As well, to ensure that view sheds, existing trees and privacy are maximized to their potential, all building sites have been pre-established. Pinnacle Ridge has approximately 12 ridge type lots with panoramic views of the foothills and Rocky Mountains. Another 14 or 15 lots have impressive mountain views. Another 10 or 11 lots are heavily treed with aspen groves. The balance of the lots will be influenced by Pinnacle Ridge's landscaping package and other dramatic topographical features.



3.2 Pinnacle Ridge Landscape Plan

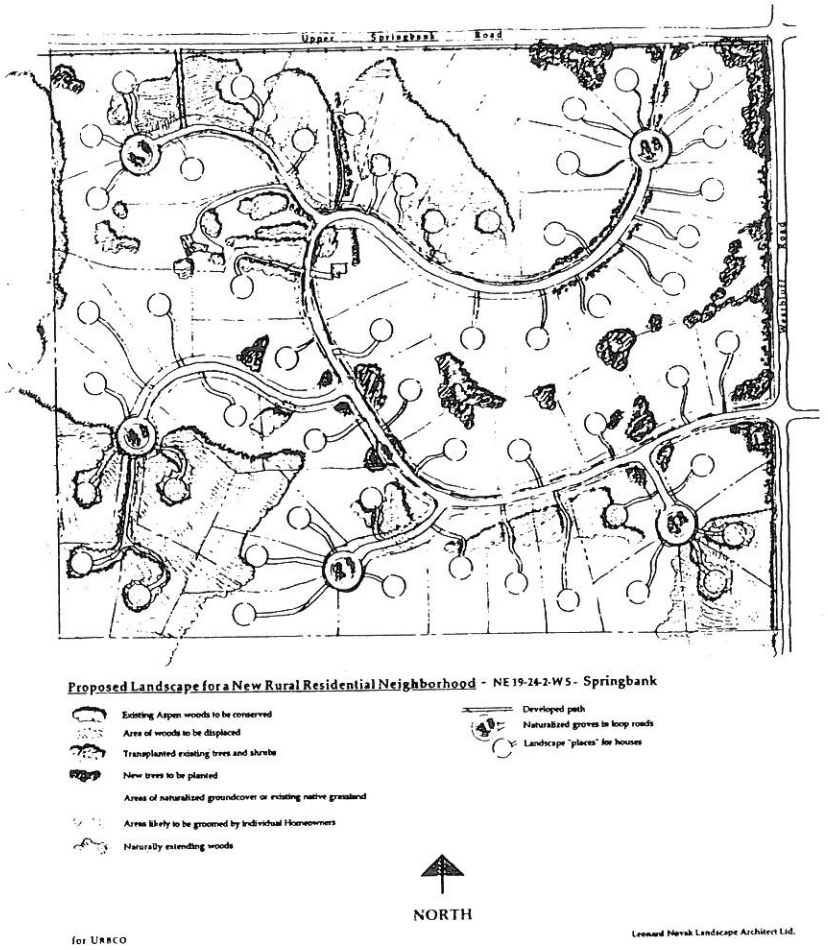
In the beginning of this document, Mr. Wilson, President of Urbco Inc., mentioned the "spectacular landscape" of Pinnacle Ridge. Perhaps the most important development feature one can contribute is to conserve the best of the existing landscape and enhance the remaining lands. Leonard L. Novak, Landscape Architect, has created the Pinnacle Ridge Landscape Plan. Mr. Novak has identified seven distinct topographic/vegetative features within Pinnacle Ridge. The site and landscape plan preserves and enhances these features in an appropriate and distinct manner. For example, in the area noted as Southwest Slope Forest, the driveway and house locations will be cleared by Urbco Inc. No further tree cutting will be allowed and the private landscaping should emphasize preserving the natural state. In the area noted as "Field", Urbco will undertake an extensive tree and shrub planting scheme as shown using native plantings such as Aspen, Poplar, Cherries, Willow, etc. Urbco Inc. will attempt to provide Mother Nature with a head start on "recreating" new Aspen groves. Homeowners are encouraged to "groom" a small area around one's house and take a more natural approach to the balance of their lot.



Site Features - Topographic & Vegetation

3.2 Pinnacle Ridge Landscape Plan (cont'd)

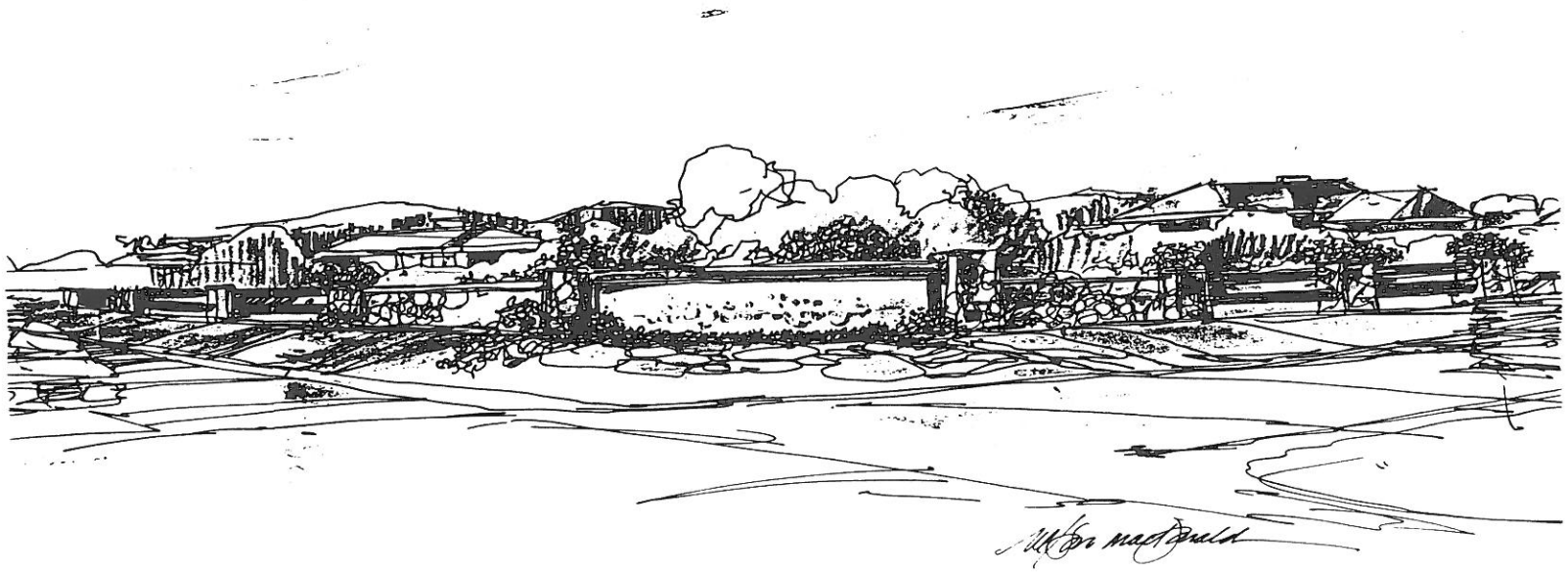
The map on the right illustrates the proposed landscape plan. Each lot purchaser will receive two hours consultation with Pinnacle Ridge's Landscape Consultant as part of their lot purchase.



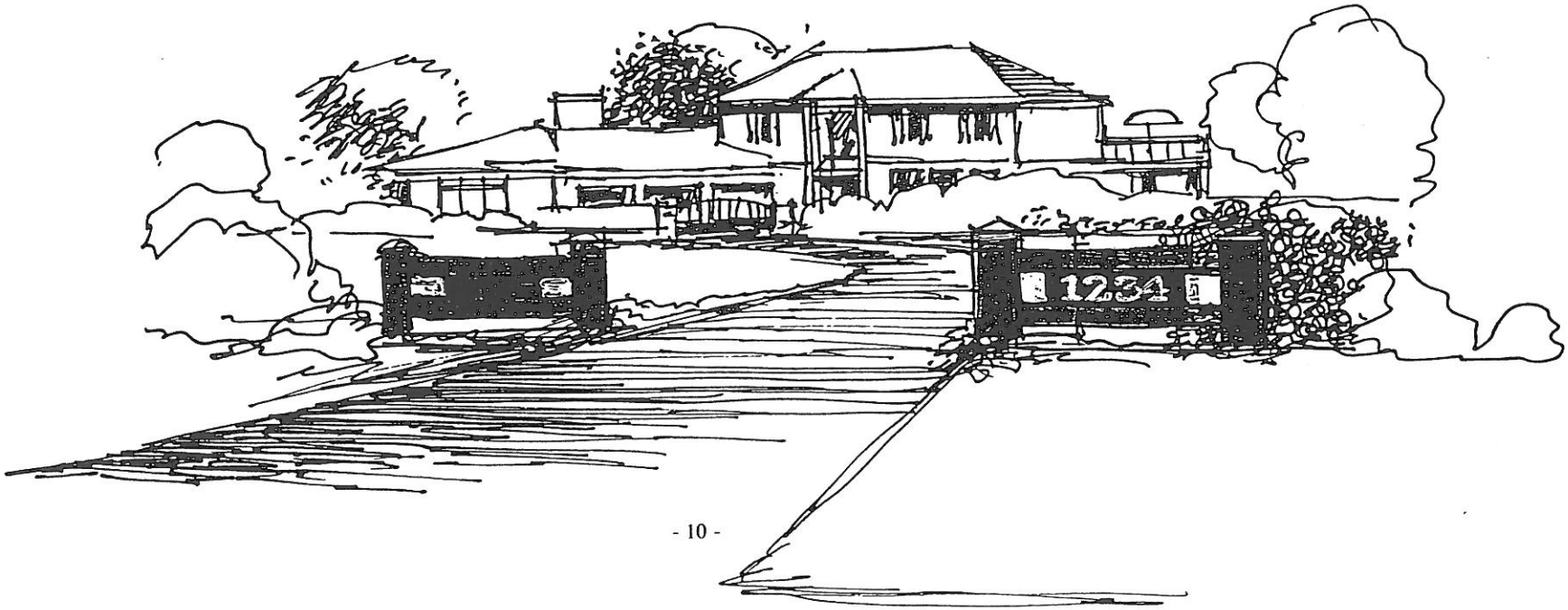
Landscape Plan

3.3 Entryway and Address Pillars

The internationally renowned designer Nelson MacDonald has created the overall Architectural theme, entryway and address pillars for Pinnacle Ridge. Features such as this will announce to visitors that they are entering a truly prestigious community and serve to unify the development while allowing for diversity.

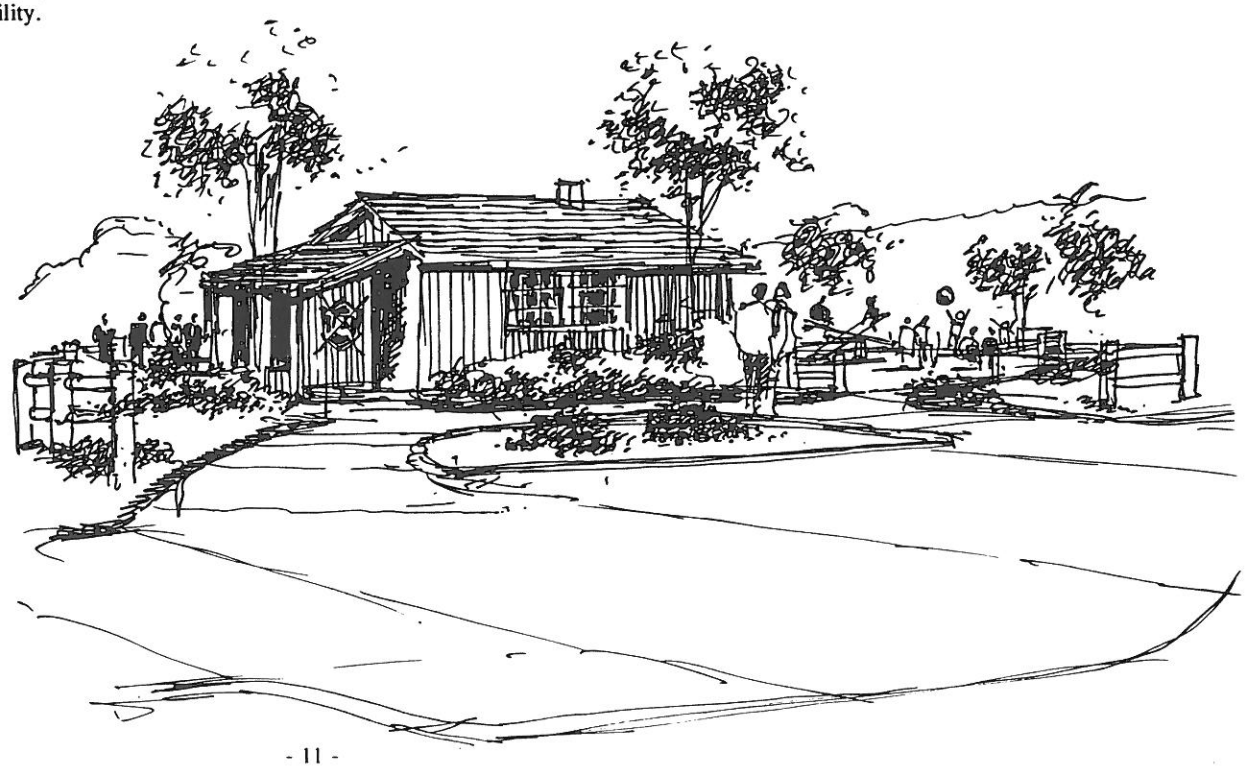


3.3 Entryway and Address Pillars (cont'd)



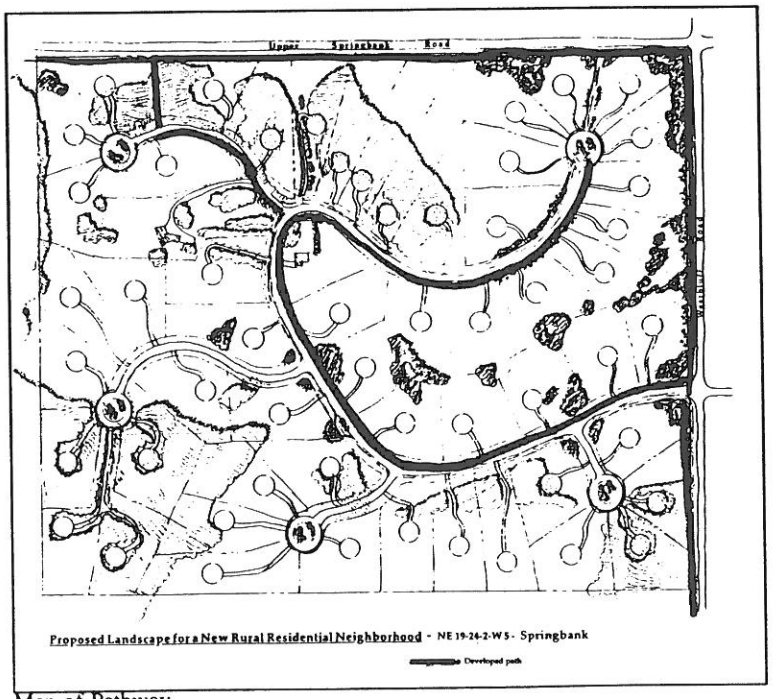
3.4 Historical Cabin

The land upon which Pinnacle Ridge is developed was owned by three generations of the Bilton family. In 1928, Mr. Victor Bilton built a log cabin that remains on the site today. It was a meeting place for friends and family during the 1930's. Urbco Inc. is moving this cabin to central location within Pinnacle Ridge. This cabin will act as a community "meeting spot". Decades ago, the post office served as the neighbourhood "meeting spot". We hope that Canada Post will agree to locate the mail boxes at the cabin and that it will serve as a bus stop for children. Urbco will install a set of toddler play equipment at the cabin site. The Pinnacle Ridge Homeowners Association will maintain this facility.

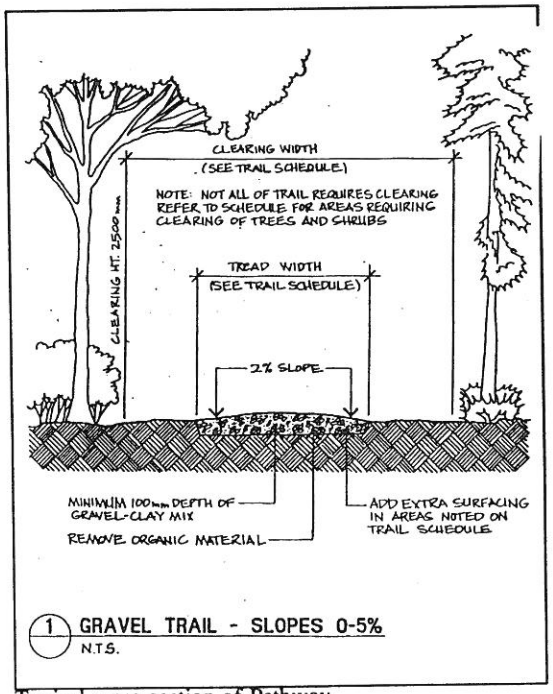


3.5 Pathway

In conjunction with the Rocky View Trails Association, Urbco Inc. has designed a walking path within Pinnacle Ridge. The 1.2 metre pathway situated within an easement will consist of gravel and clay and will be an alternative to walking on the road. The pathway is designed to blend into the environment. The Pinnacle Ridge Homeowner Association will maintain this feature.



Map of Pathway



Typical cross-section of Pathway

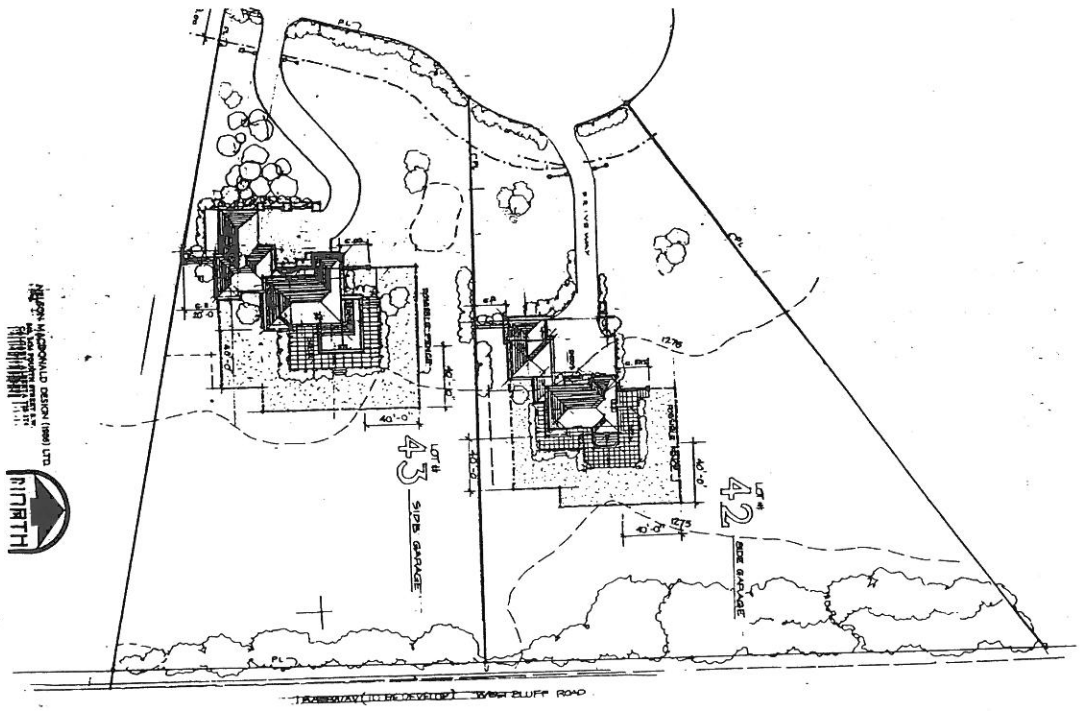
3.6 Private Landscaping and Fencing

We encourage residents to plant in clusters and groupings as opposed to rows. This style is more natural and allows for view sheds to be protected. We encourage residents to not grass from lot line to lot line in typical city fashion but to have areas within each lot that might be a natural setting.

Examples of private landscaping plans for two of the lots are shown herein:

As part of your lot purchase agreement you will have 2 hours of consultation with the project's Landscape Consultant.

The perimeter of Pinnacle Ridge is fenced with a post and page wire fence. Fencing on lot lines is not permitted as this would detract from the natural flow of topography and vegetation. It would also create an unnecessary sense of boundary. Pinnacle Ridge permits fencing of a backyard or sideyard to the height of 6 ft. and said fencing will not extend further than 40 ft. from the house exteriors.



3.7 Pinnacle Ridge Homeowner Association

The Pinnacle Ridge Homeowner Association will be formed as an association under the Societies' Act *RSA 1980. S-18* of Alberta for the purpose of:

a) helping to preserve and enhance the value of homes in Pinnacle Ridge;

b) promoting and fostering a community spirit within Pinnacle Ridge;

c) operating, insuring, and maintaining facilities of Pinnacle Ridge such as the Entry Sign, pathway, the historical cabin and play area equipment; and,

d) advancing any other interests and plans for the advantage of the residents of Pinnacle Ridge may decide are beneficial to the residents.

Each home owner and subsequent assigns shall become a member of the Association and each lot shall have an encumbrance against the title of the lot registering the by-laws and requiring the payment of $100 per annum. A copy of the by-laws is part of the lot purchase contract.

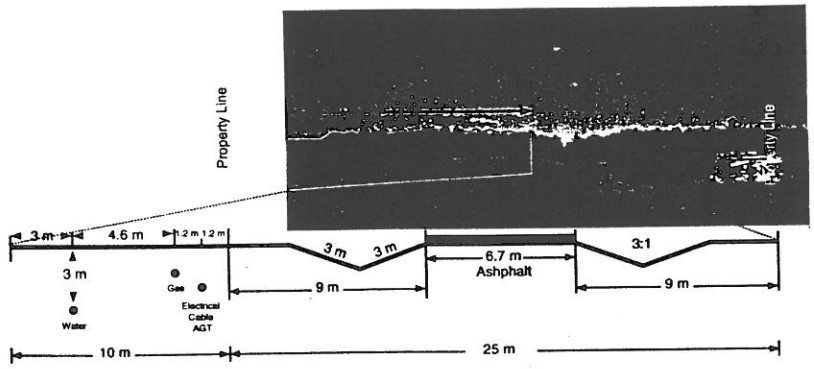
Urbco Inc. will initially capitalize the Association with a contribution of $10,000.

4. SITE DESIGN AND CONSTRUCTION

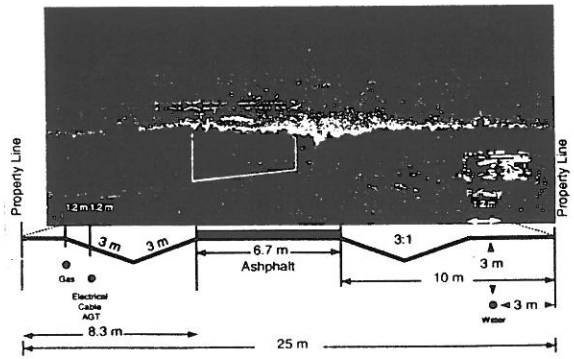
4.1 Street Engineering

The roads within Pinnacle Ridge shall be constructed to M.D. of Rocky View specifications. The roadway consists of a 6.7m asphalt surface, a 9m ditch on either side and a 10m utility easement. The exception to this standard is contained in the first three cul-de-sacs as one proceeds through the subdivision. In order to reduce the amount of trees that would have to be bulldozed in order to satisfy typical MD road requirement Pinnacle Ridge is attempting to obtain a relaxation in the ditch and easements requirements. The road, ditch and easement configurations are shown in figure 4.1(b)

a) Typical M.D. Road Cross-section -



b) Proposed Road Cross-section for environmentally sensitive areas



4.2 Shallow Utilities

Gas service is provided by Canadian Western Natural Gas. Electrical service is provided by City of Calgary Electric. Cable TV is available through Shaw Cable. Telephone service is provided by A.G.T. Just north of the subject parcel, off Westbluff Road, A.G.T. owns a remote station. Standard telephone service will be provided from that remote station. However, as there is fibre optic cable to this remote station, the proponent is negotiating with A.G.T. to provide Micro-Link® service to Pinnacle Ridge. This would increase the speed of telephone and data transmission from 4K bits per second to 144K bits per second. In the age of the Internet, telecommuting, e-mail, and teleconferencing this feature will find great appeal to future Pinnacle Ridge residents who want to work from the home as opposed to driving to the office. This could be the first subdivision in the Calgary area to offer this service to its residents. Services are "tied-off" approximately 3 - 4 metres inside property lines.

4.3 Near Surface Groundwater & Septic Field Requirements

Geotechnical tests indicate near surface groundwater is quite low (borehole tests indicate the water table is about 5.6m deep). Homeowner building locations within 1m of bedrock should have weeping tile around foundations. (Copies of geotechnical reports are available for nominal charge of $5.00 per copy.)

Sewage disposal is handled through septic tank and field disposal system that is to be installed by the builder/homeowner at their cost. Homeowners/builders are responsible for the construction, however Urbco Inc. will provide a percolation test for each lot. Prior to receiving Architectural Guideline approval, the septic disposal system requires a certificate, issued from the project's engineer, certifying the design is appropriate and complies with *The Drainage and Plumbing Act of Alberta*. Preliminary percolation tests indicate the lands are suitable for septic tank and field sewage disposal. (Copies of engineering reports are available for a nominal charge of $5.00 per copy.)

4.4 Setbacks & Sideyards

The setbacks and sideyards as set forth by the M.D. of Rocky View N°44 are listed below. All homes must comply with M.D. Bylaws and Architectural Guidelines.

MUNICIPAL DISTRICT OF ROCKY VIEW NO. 44
LAND USE BYLAW C-1725-84

Minimum Requirements

Front Yard Setback:

(a) 30m (98.42 feet) from any municipal road
(b) 60m (196.84 feet) from any primary highway or any secondary road or highway
(c) 15m (49.21 feet) from any internal subdivision road
(d) 10m (32.81 feet) from any service road adjacent to a highway
(e) 10m (32.81 feet) from any service road adjacent to a municipal road

Side Yard Setbacks:

(a) 30m (98.42 feet) from any municipal road
(b) 60m (196.84 feet) from any primary highway or any secondary road or highway
(c) 10m (32.81 feet) from any service road adjacent to a highway
(d) 10m (32.81 feet) from any service road adjacent to a municipal road
(e) 6m (19.68 feet) all other

Rear Yard Setbacks:

(a) 30m (98.42 feet) from any road
(b) 6m (19.68 feet) all other

Site dimensions:

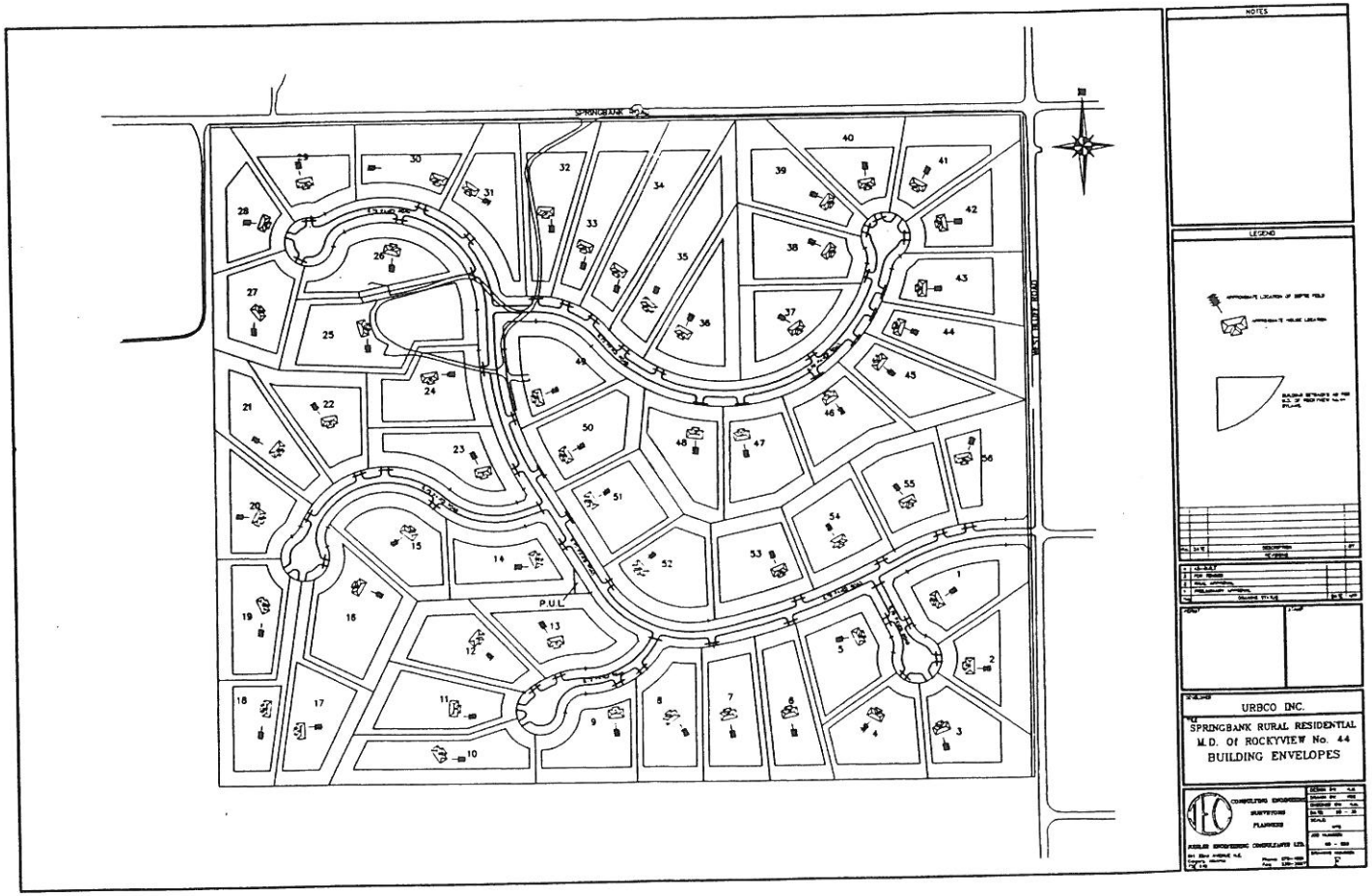
(a) each parcel shall have a minimum frontage width of 60.96m (200 feet) to a maximum frontage width of 182.88m (600 feet)
(b) each parcel shall have a minimum depth of 45.72m (150 feet), to a maximum depth of 152.4m (500 feet)
(c) the aggregate length of the frontage of the lot or lots when measured along or in relation to the right-of-way of the highway, is 304.8 (1,000 feet), or less

Building height

(a) maximum 10m (32.81 feet)

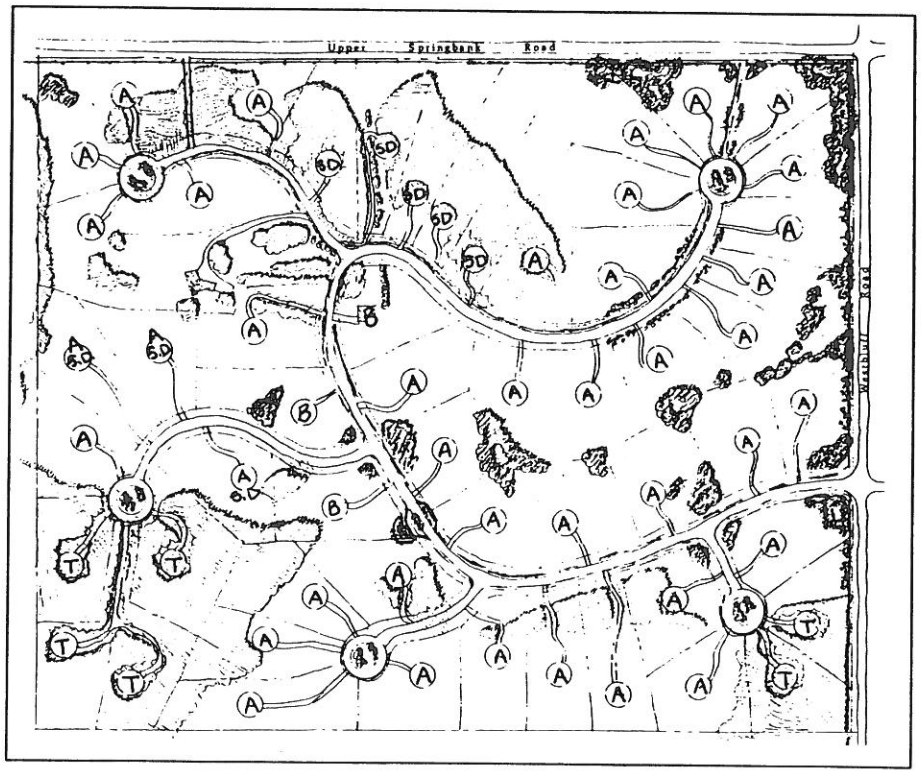
4.5 Building Site Location Detail

The map on the right denotes locations of driveway, culverts, house locations, and septic fields. Copies of 1:200 scale are available.



4.6 House Sizes & House Types

Certain lots are more conducive to certain types of house types due to slope, topography, view sheds and vegetation.



House Types

- (A) - All house types
- (B) - Bungalows Only
- (T) - Two storey and/or Split-level Only
- (S.D.) - Houses that may require drive under garage configuration or Special multi-level Design

Minimum Size of House excluding garage

Bungalows	:	2000 sq. ft. main level
Two storey/ Split level/ Multi-level	:	2500 sq. ft. on two levels with 1500 sq. ft. on the first level

4.7 Driveways

Urbco Inc. shall provide a 6.1m wide asphalt approach and culvert from the internal road to the property line of each lot. In certain cases, the driveways will be plotted, cleared of trees and rough graded (factored into the lot price). Homeowners must pave each driveway as part of the building commitment.

4.8 Exterior Lighting & Security Systems

Uplighting and backlighting enhances the appearance of the home and landscaping. These lights can project shadows of large trees onto walls or silhouette the interior structure of unusual plants or frame a panoramic view.

A soft or low voltage light using white or frosted bulbs in metal fixtures is acceptable. Coloured bulbs or lens covers and plastic fixtures are not acceptable.

Any security or additional lighting should not be of a wattage or lumen count which indiscriminately affects neighbouring properties. Flood lights must be aimed so as not to illuminate adjacent properties. The number and placement of all directional floodlights and/or security lights will be subject to the approval of the Pinnacle Ridge Architectural Guideline Committee.

The use of exterior security systems is permissable unless they alter the exterior architectural design of the home. Exterior bars and blinds are not permitted. The use of design type security doors must be in keeping with the architectural theme of the house. Note that all changes or additions must be approved prior to installation.

Lighting of the address pillar may be done and is to be incorporated into the electrical wiring of the home.

4.9 Electronic and Mechanical Hardware

No antenna or satellite dish may be affixed to the dwelling or located on the lot where thy are visible from any street. Central air conditioning or other mechanical hardware must be located where they are not visible from the street or park areas. Careful consideration should be given to sound levels of operating mechanical equipment which may affect adjacent properties.

4.10 Play Structures, Swing Sets & Storage Sheds

If play structures, swing sets and storage sheds are installed, they shall be located in the rear of the lot screened from public view. Construction materials should be resistant to decay and should be painted to match the colour scheme of the home. Roofing of the sheds shall match the material, shape, and slope of the home or garage. The maximum height of any structure shall not exceed 8 ft. No separate structure is to be build outside of the fencing perimeter boundary for each home.

4.11 Damages and Lot Inspections

Any damages to water service valves, fences, entrance signs, address pillars and retaining walls that are present when a builder is about to move onto the site shall be brought to the attention of Urbco, in writing. Any damage that is present at the time of the final lot inspection, but was not noted prior to the construction start, will be priced out and deducted from the damage deposit.

Lot inspections will not be undertaken until all exterior work is complete. An inspection may be made prior to sodding or seeding provided grading has been done in accordance with the approved grading plan.

4.12 Lot Signs

After an agreement has been executed between the builder and Urbco Inc., Urbco will install a "builder's sign" on the vacant lot. During home construction they may be attached to the dwelling. The signage provided will be in keeping with Urbco's colour scheme and lettering style along with the builder or realtor name and contact phone number. No other signage will be permitted.

4.13 Excavation Material/Topsoil

Builders must ensure that all excavation material is kept within the confines of their lot. Any spillage on the road or neighbouring lot must be removed immediately or Urbco will arrange for its removal and invoice the builder for expenses. Any excess material may be placed in designated areas in Pinnacle Ridge. Loading and hauling of excess excavated material, backfill material or topsoil is the responsibility of the builder.

4.14 Clean-up

Builders must keep building sites litter free and must supply garbage bins on-site. Failure to comply will result in clean-up costs being charged to the lot.

4.15 Restrictive Covenants

[Still to be drafted]

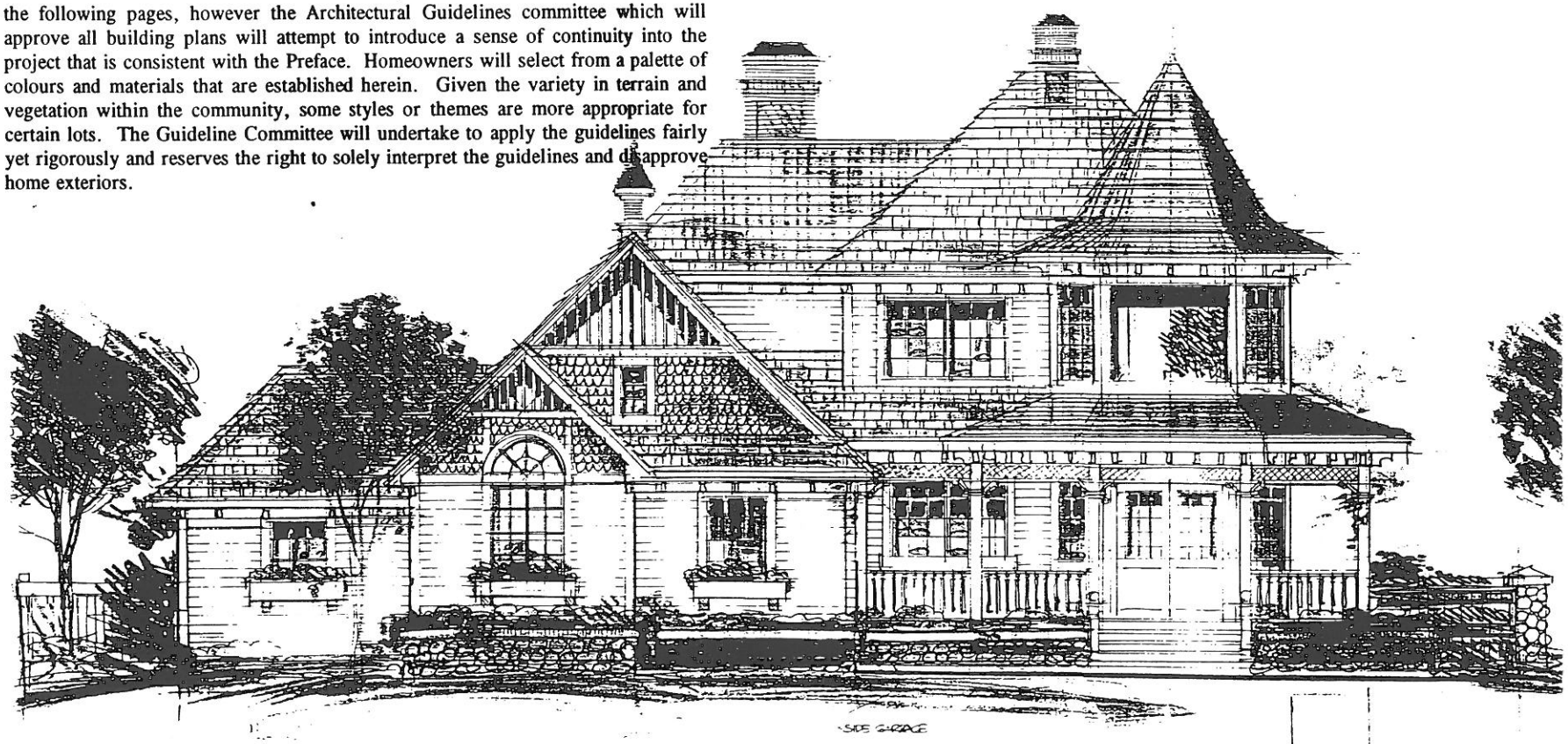
In addition to the required utility easements, Urbco will have restrictive covenants registered on the title of all lots. These advise the lot owner of certain actions that are not permitted. Such restrictions are imposed to assure that the best interests of the entire community are served and helps protect the value of adjacent properties. The restrictions relate to general topics applied to all lots, such as uses of the yard area and changes to the appearance of the home. For certain lots, it deals with additional concerns such as home style, setbacks, entrance monuments, fences and landscaping.

The builder and new homeowner should familiarize themselves with the content of these covenants prior to the lot purchase.

5. DESIGN SPECIFICATIONS

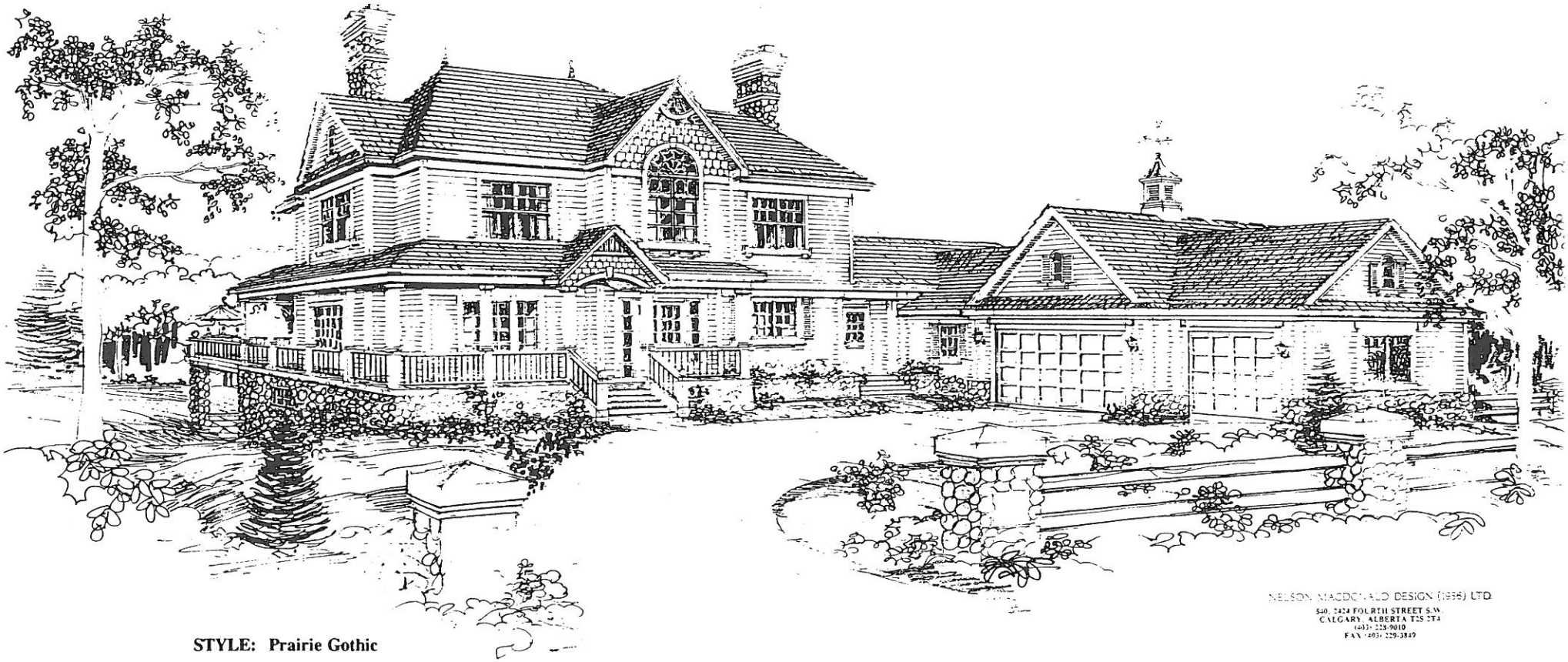
5.1 Suggested Architectural Themes

The Architectural Guidelines allow for a variety of architectural themes as noted on the following pages, however the Architectural Guidelines committee which will approve all building plans will attempt to introduce a sense of continuity into the project that is consistent with the Preface. Homeowners will select from a palette of colours and materials that are established herein. Given the variety in terrain and vegetation within the community, some styles or themes are more appropriate for certain lots. The Guideline Committee will undertake to apply the guidelines fairly yet rigorously and reserves the right to solely interpret the guidelines and disapprove home exteriors.



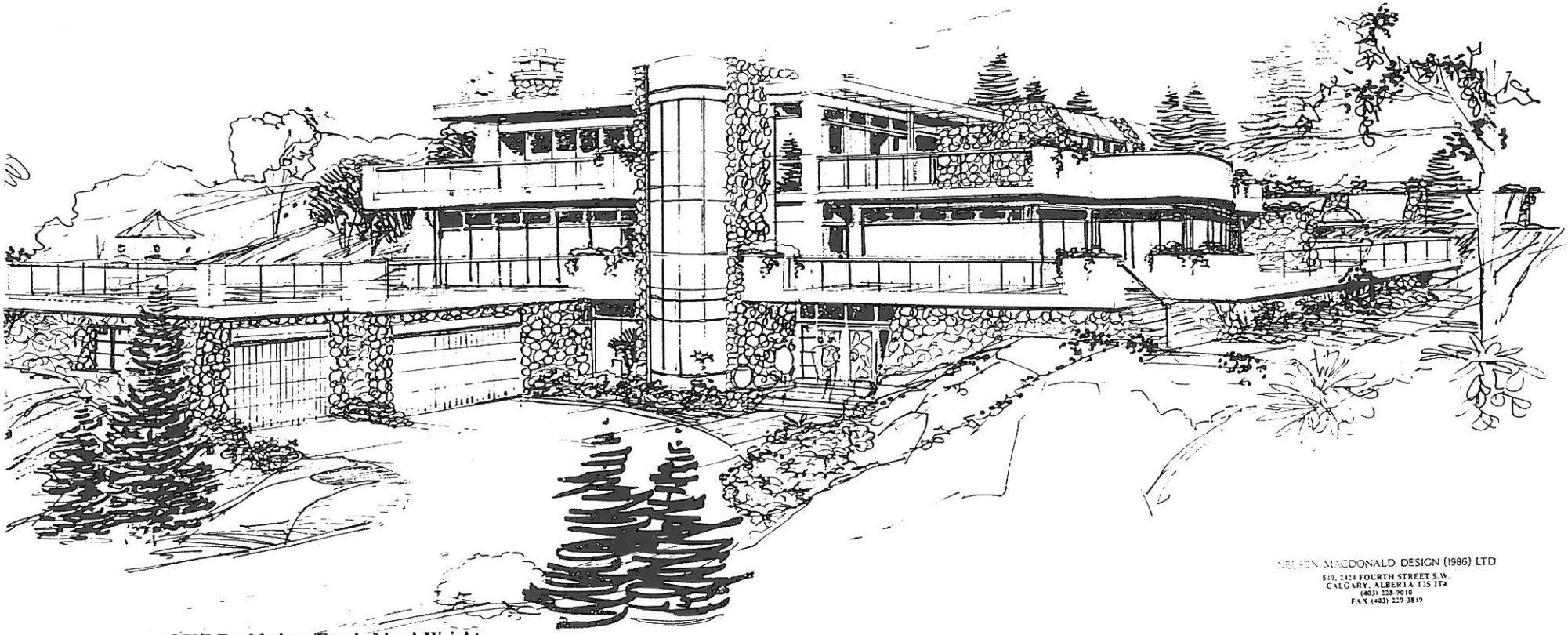
STYLE: Victorian

5.1 Suggested Architectural Themes (cont'd)



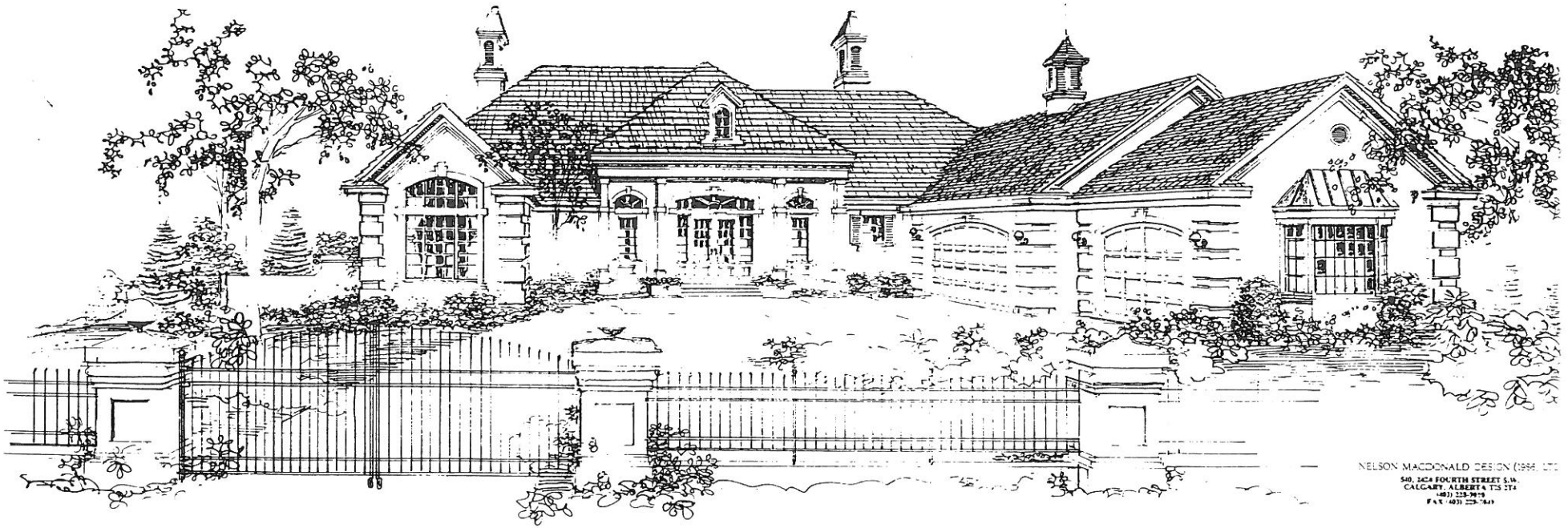
STYLE: Prairie Gothic

5.1 Suggested Architectural Themes (cont'd)



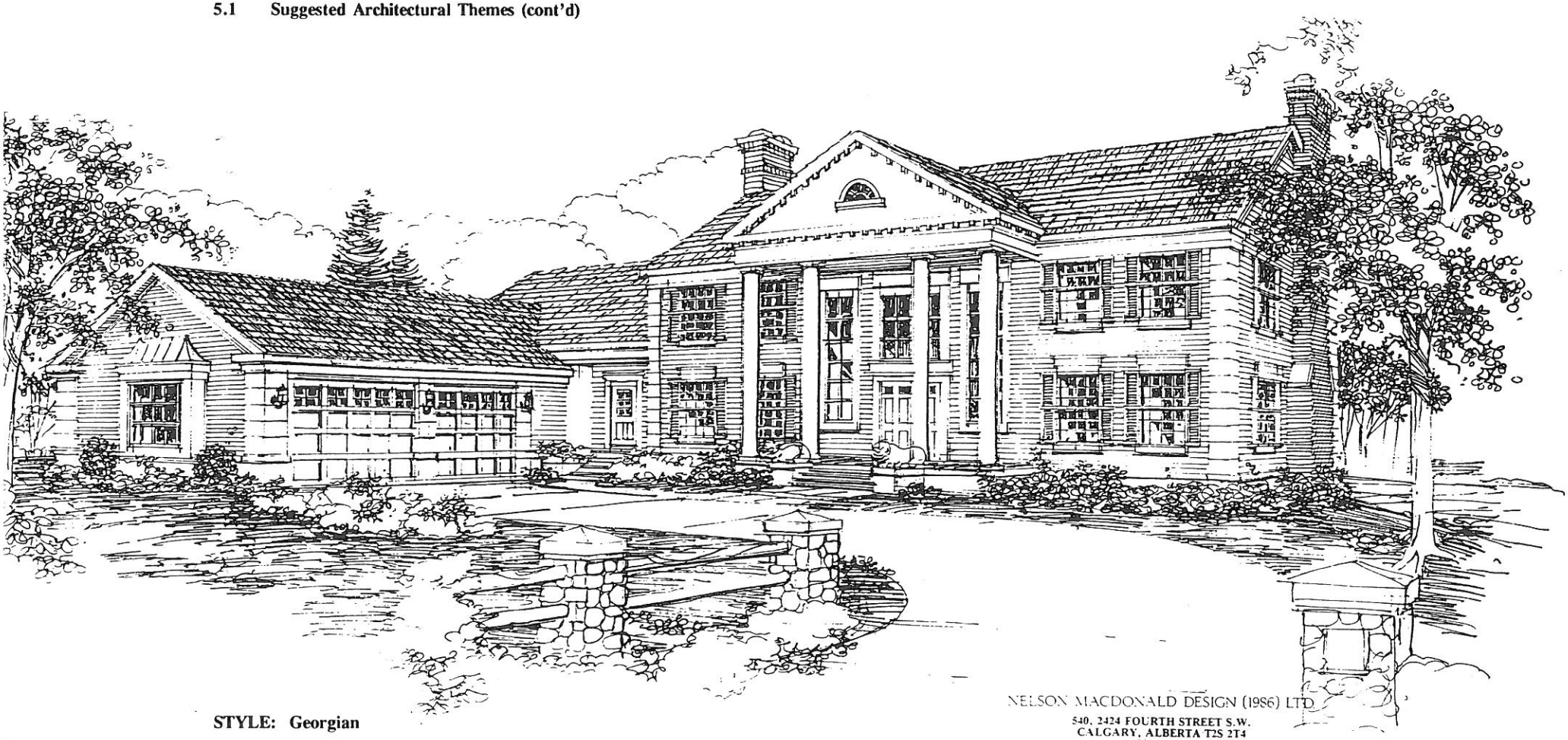
STYLE: Modern/Frank Lloyd Wright

5.1 Suggested Architectural Themes (cont'd)



STYLE: Country French Provincial

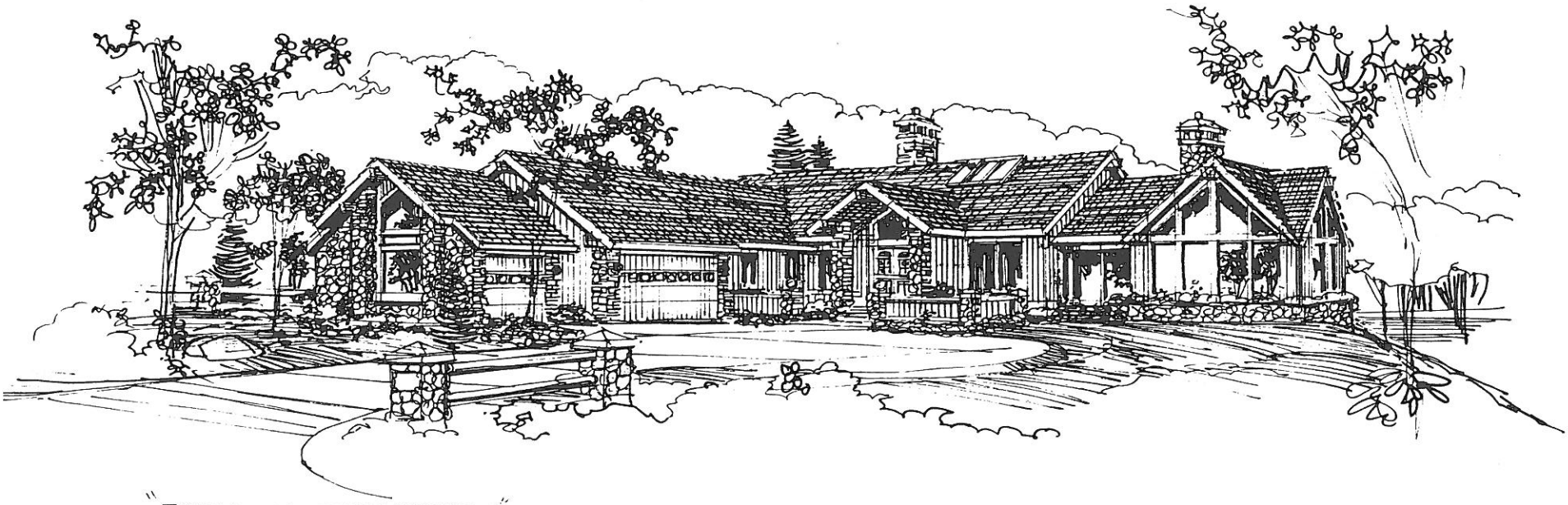
5.1 Suggested Architectural Themes (cont'd)



STYLE: Georgian

NELSON MACDONALD DESIGN (1986) LTD.
540, 2424 FOURTH STREET S.W.
CALGARY, ALBERTA T2S 2T4
(403) 228-9010
FAX (403) 229-3849

5.1 Suggested Architectural Themes (cont'd)



"BUNGALOW CONTEMPORARY"

STYLE: Contemporary

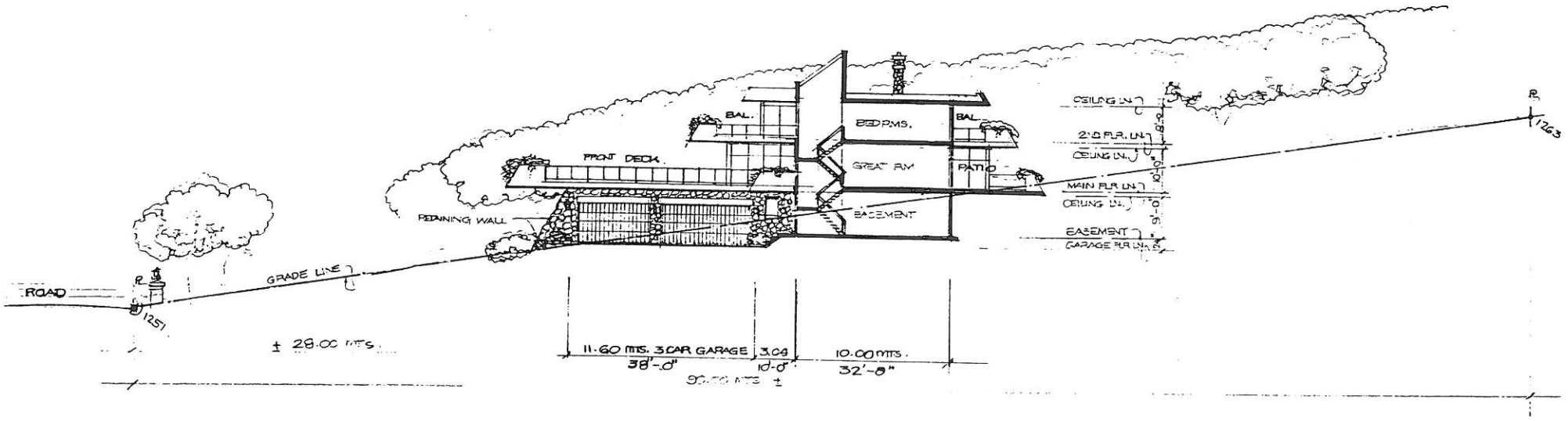
NELSON MACDONALD DESIGN (1986) LTD
540, 2424 FOURTH STREET S.W.
CALGARY, ALBERTA T2S 2T4
(403) 228-9010
FAX (403) 229-3849

STYLE: Tudor

NELSON MACDONALD DESIGN (1986) LTD.
540, 2424 FOURTH STREET S.W.
CALGARY, ALBERTA T2S 2T4
(403) 228-9010
FAX (403) 229-3849

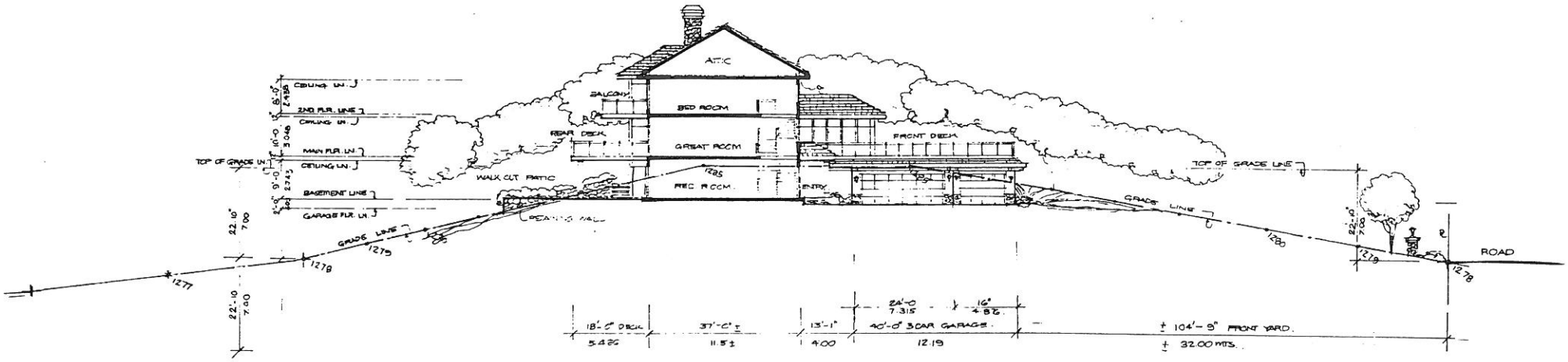
5.2 Cross-sections

The variety of topography at Pinnacle Ridge creates some unique home site opportunities. Two examples illustrate how design can work with the existing terrain. The first example illustrates how the Modern/ Frank Lloyd Wright style could fit on lot 16 (or possibly lots 15 or 22) while the other example illustrates how lots 31 through 35 might be handled.



TWO STOREY (FRANK LLYOD WRIGHT STYLE)
"LOT 16" UNDERDRIVE GARAGE

5.2 Cross-sections (cont'd)



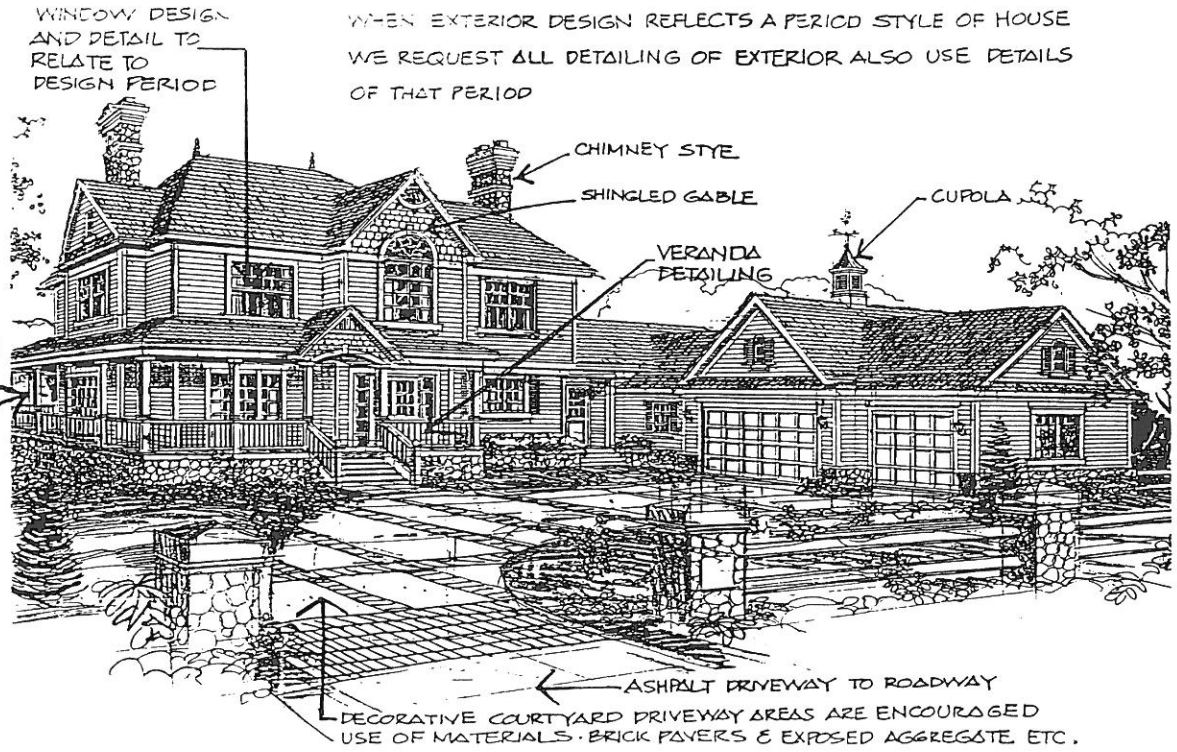
LOT #34.
POSSIBLE 31, 32, 33, 35.

"TWO STOREY"
WALK OUT PATIO & UNDERDRIVE GARAGE

5.3 Design Elements

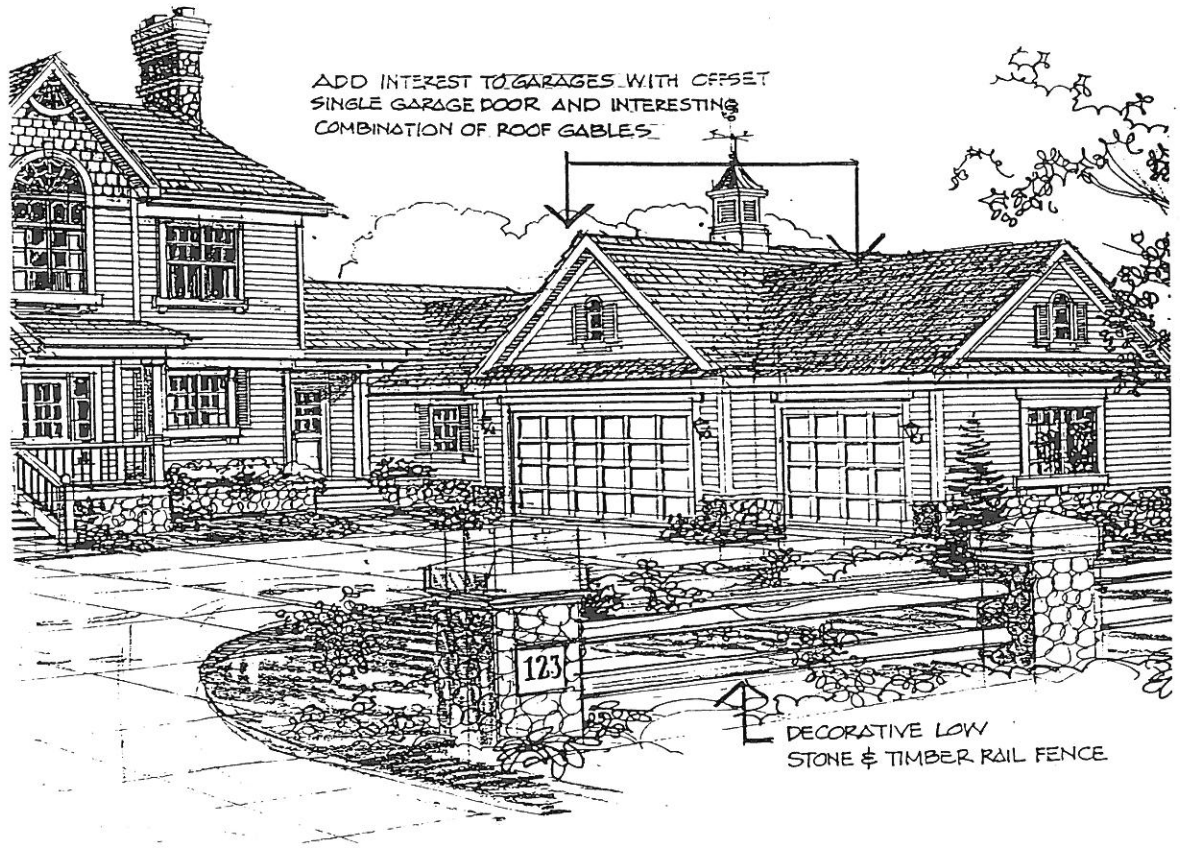
The Architectural Guidelines Committee will look for home designs to incorporate the elements noted over the next several pages.

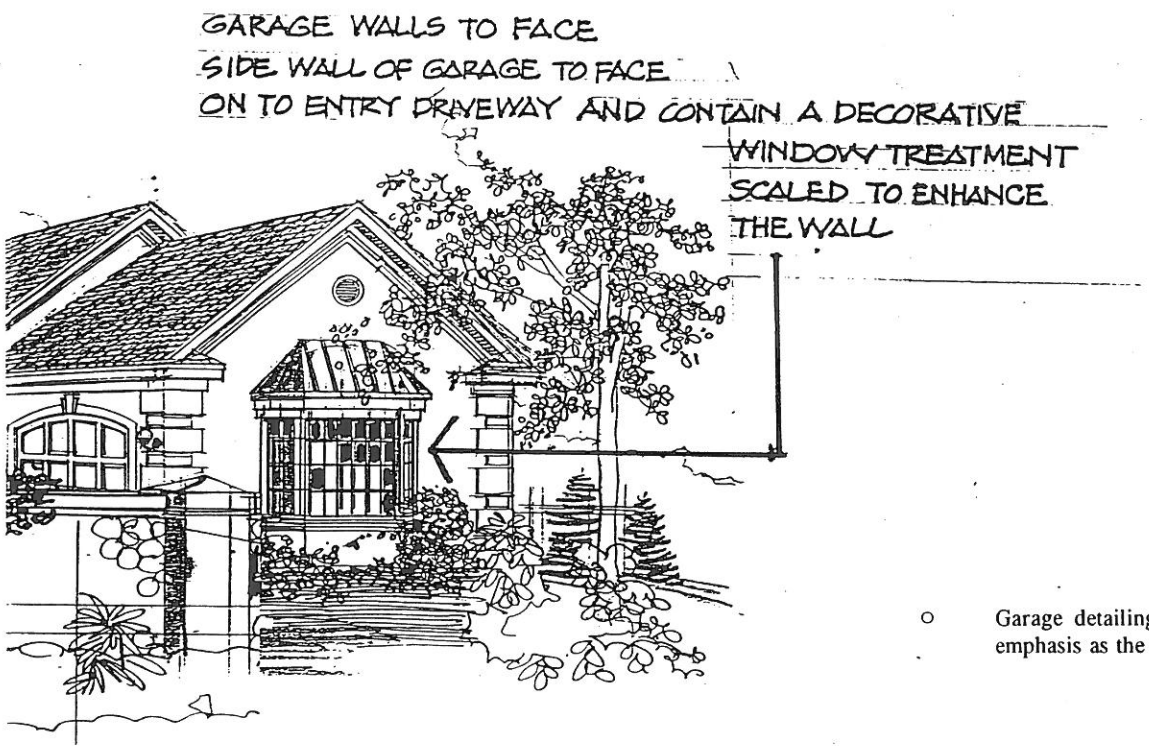
- In country residential living, the rear elevation of a home can be as important as the front elevation. The main design features, roof lines, cladding material, window treatment must be maintained on all elevations.
- Extensive use of fieldstone and brick is encouraged.
- Wood cladding is allowed where appropriate and the new product lines of vinyl siding are also very attractive, especially in the Prairie Gothic or Victorian styles.



5.3 Design Elements (cont'd)

- Garage doors shall not directly face onto the street. In order to create mass to the house and "get away from the city subdivision look" garages should have side or angled entries. Canting or staggering of the garage is encouraged.





- Garage detailing should include the same detailing emphasis as the rest of the house exterior.

5.3 Design Elements (cont'd)

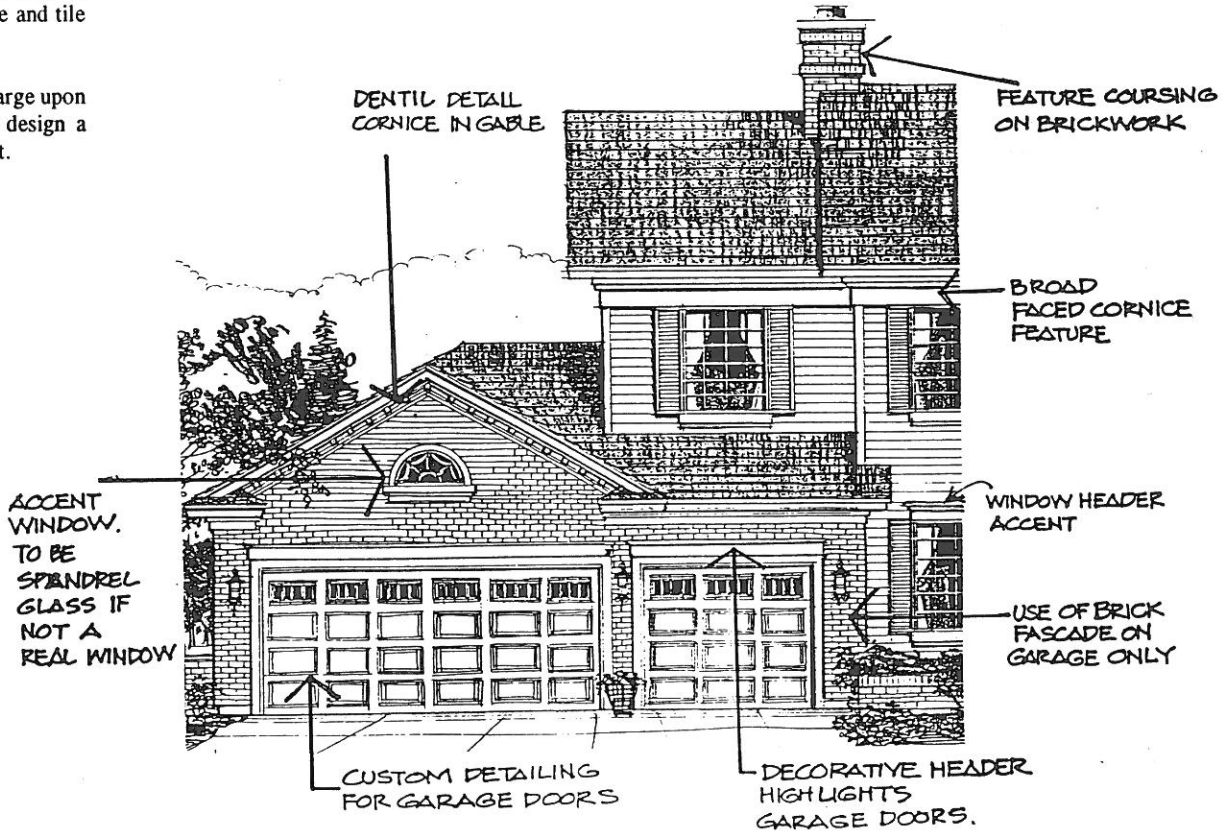
- Attention should be paid to add chimney detail that is consistent with cornice and eave detail.

- Privately initiated fencing and gating is to be within a 40 foot radius of the house exterior (subject to being appropriate for the lot and not detrimentally impacting the existing stands of trees).

5.3 Design Elements (cont'd)

- For certain styles of house, a premium Renaissance style asphalt shingle (eg. French Provincial) is appropriate while in other cases wood shake and tile are encouraged.

- The focus of the design should be not to enlarge upon typical city subdivision style housing, but design a home that is appropriate for its environment.



6. DESIGN, REVIEW, & INSPECTION PROCESS

6.1 Submission Process

The builder, having executed an Agreement for Purchase and Sale, applies to Pinnacle Ridge Architectural Committee by providing:

a. Completed Architectural Approval Sheet†

B. Two (2) Plot Plans @ 1:200 metric showing drainage and spot elevations.†

C. Sample Colour Board†. If a colour board is not submitted, Urbco will provide this service at a fee of $80.00 per colour board with prior notification.

D. Two sets of house plans which must include Lot, Block , Plan Number, and the Builders name and also whether the plan is reversed. Minimum scale is ¼in. = 1 ft.

E. Required Contract Performance Deposit - $5,000. (Paid by the lot purchaser.)

† See appendices for samples of Urbco forms

6.2 Review by Pinnacle Ridge Architectural Committee & Homeowners' Association

The Pinnacle Ridge Architectural Committee will review and approve the submitted plans on an individual basis.

It is not unusual for the committee to recommend enhancements to the architecture which will more appropriately capture the architectural theme. Such recommendations are made with the awareness of additional costs and always in the interest of a better designed community. The applicant is invited to discuss any changes, but the Pinnacle Ridge Architectural Committee reserves the right to decline approval of a particular plan.

A verbal response as well as written confirmation will be supplied regarding the Pinnacle Ridge Architectural Committee's decision.

6.3 Grade Slip Release & Footing Checks

The builder may pick up the grade slip necessary for obtaining the building permit when the following conditions are met:

A. Builders signature on approved Architectural Sheet.

B. Contract Performance Deposit is received.

C. Engineer's Certificate issued respecting septic field design and location.

D. Footing check required before pouring foundation.

6.4 Purchaser Inspection of Lot

The first requirement after application for the building permit is to inspect the lot for damage prior to moving onto the site. Any damage that is present must be brought to the attention of Urbco Inc. in writing. Damage to asphalt, water service valves and shallow utility facilities are specifically referred to but may include other structures or features that may be present on a lot. Any damage that is present at the time of the post-construction lot inspection but was not noted prior to construction start, will be assessed and costs of repair will be due from the lot purchaser.

After excavation and setting of footing forms, Urbco must be contacted to check the elevation of the form work, which must comply with the elevation of the grade slip. Footing must not be poured unless the builder has been advised that the elevation is correct.

6.5 Urbco Inc. Inspection of Lot

A requirement later in the construction process is the inspection of the water service valve by Urbco or its representative. This must be done after the lot is graded but prior to final landscaping and driveway construction. The builder is responsible for setting the valve to the finished grade elevation, be it in a landscaped area or driveway/sidewalk. If found to be deficient, the elevation and operation of the valve must be corrected before landscaping of the driveway is completed. Note that the valve may not be covered with any material after landscaping and driveway construction (eg. sod, concrete, etc.)

After landscaping and all house exterior work is completed, Urbco is called for a final lot inspection. An inspection may be made prior to sodding or seeding provided grading has been done in accordance with the approved grading plan. Any deficiencies must be corrected by the builder and a reinspection is then requested. If all deficiencies have been satisfactory corrected, the damage deposit (less the costs assessed for damages) is returned to the lot purchaser.

The builder is required to forward a copy of the approved grading plan to their customer and also disclose to the purchaser that any landscaping undertaken by that purchaser cannot alter the finished grade or drainage pattern on the lot. Should such drainage pattern or final grades be altered, Urbco may enter onto the lot to regrade the lot in accordance with the final grade plan and drainage pattern, and the cost for such work shall be the responsibility of that purchaser.

6.6 Additional Revision Request

Additional construction, improvements and/or changes to the original approved plans, must be submitted for review by the Pinnacle Ridge Architectural Committee prior to making such changes and/or additions. This includes security bars, sun rooms, decks, etc. Additional revisions requiring a new grade slip will result in a fee of $110.00.

6.7 Contract Performance Deposit/Release

6.8 Miscellaneous Guidelines

6.9 Building Commitments

APPENDICES

PR.1 Architectural Approval Sheet

PR.2 Sample Colour Board

PR.3 Sample Plot Plan

PR.4 Sample Grade Slip & Footing Check

PR.5 Pinnacle Ridge Approved Materials

PR.6 Restrictive Covenants

PR.7 Easements & Maps

PR.8 Pinnacle Ridge Architectural Committee & Technical Consultants

PR.9 Pinnacle Ridge Homeowners Association Agreement

PR.10 Realtor Co-operation Program

PR.11 Pinnacle Ridge Price List

PR.12 Pinnacle Ridge Lot Purchase Agreement

These are not available at time of the Concept Plan.

Appendix 17.10

Urbco Inc.

Profile and Financial Statements

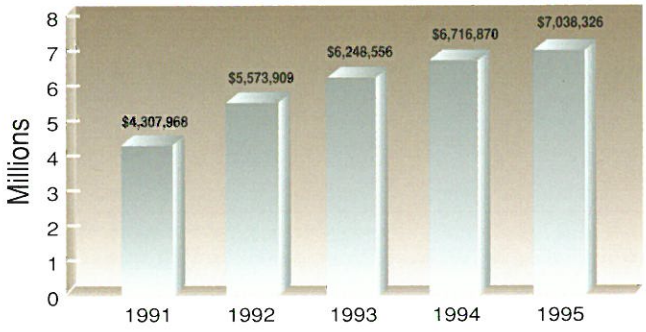
1995 Annual Report

URBCO INC.

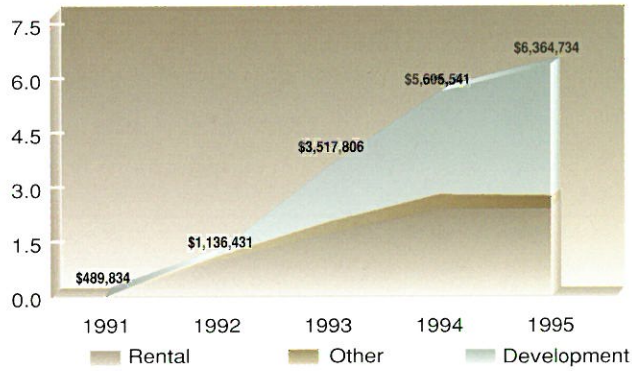
Urbco Inc. Financial Highlights

For the Year Ending July 31		1995		1994	Annual % Change
Total revenues	$	6,364,739	$	5,605,541	+13.5%
Pre-tax income	$	1,025,027	$	1,007,510	+ 1.7%
Net earnings	$	500,687	$	420,702	+19.0%
Cash and cash equivalents	$	951,530	$	1,230,211	-22.7%
Shareholders' equity	$	7,038,326	$	6,716,870	+ 4.8%
Total assets	$	25,440,139	$	18,759,892	+35.6%
Per common share	$	1.20	$	1.05	
Pre-tax income	$	0.19	$	0.19	
Net earnings	$	0.09	$	0.08	
Cash and cash equivalents	$	0.18	$	0.23	
Long-term debt to equity ratio		1.45:1		1.32:1	

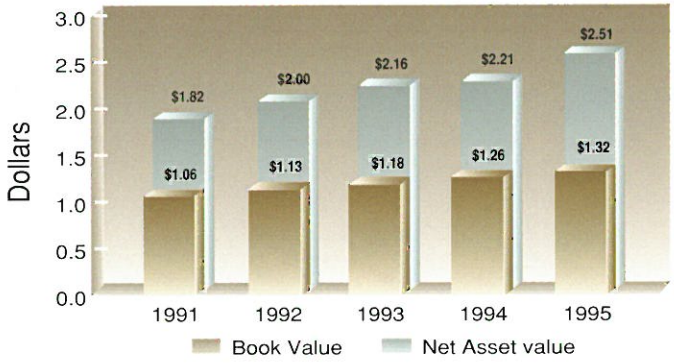
Shareholders' Equity



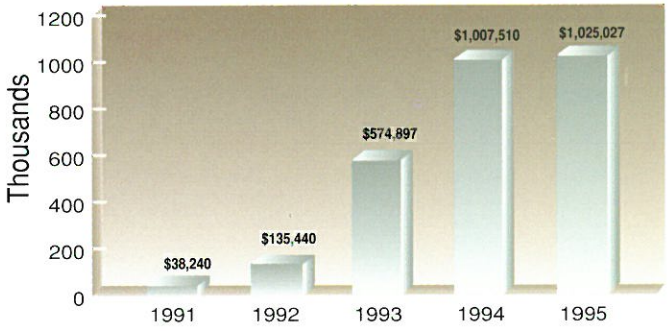
Revenue Growth



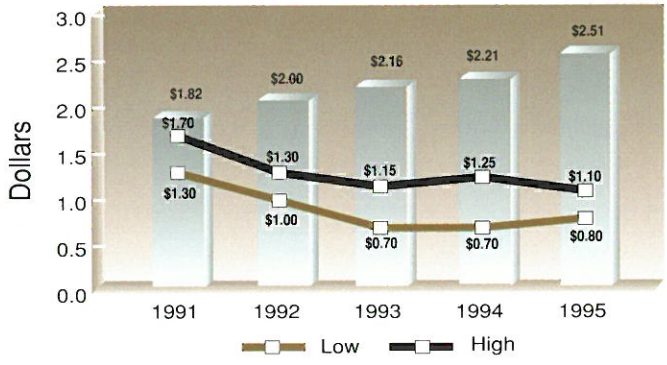
Book Value Per Share
Net Asset value Per Share



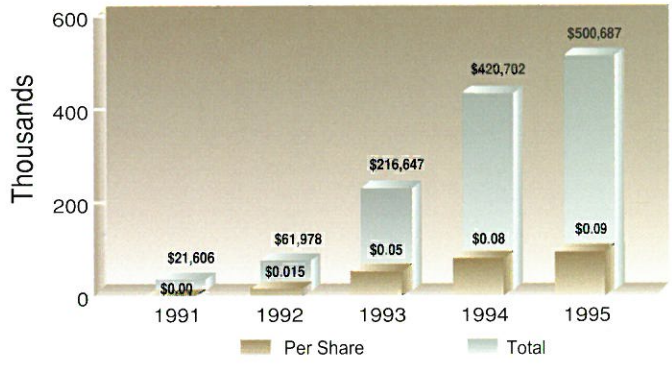
Pre-Tax Income



Net Asset Value Per Share
High-Low Trading Value Per Share



After-Tax Net Earnings



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Annual General Meeting

The Annual General Meeting will be held in the

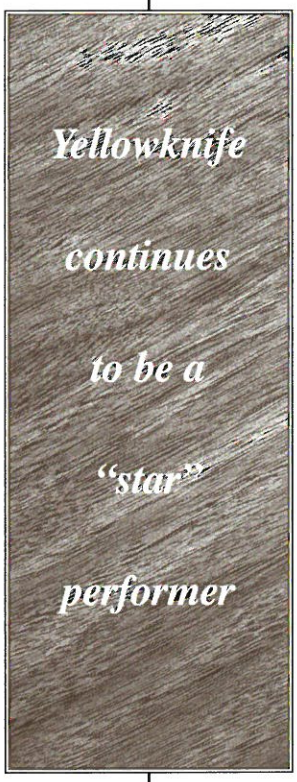
Lake Bonavista Room, Westin Hotel
320 - 4th Avenue S.W.
Calgary, Alberta

Thursday, December 7, 1995
3:00 p.m. (Calgary time)

Report to Shareholders

Urbco Inc. recorded its fifth consecutive year of increasing revenue, profits and shareholder's equity. Revenue at July 31, 1995 increased to $6,364,739 from $5,605,541 in 1994. This represents an increase of 14% . Pre-tax income showed a modest increase to $1,025,027 in 1995 compared to $1,007,510 in 1994. Net after tax income grew to $500,687 in 1995 from $420,702 for a gain of 19%.

These modest improvements are gratifying in a year that experienced a general "softening" in the residential real estate markets. Our land development operations were strong in the first half of the year, but the weakening of consumer confidence, slower resale activity and higher interest rates precipitated a drop in sales during the latter half of the year. Our rental property portfolio continued its excellent performance throughout the year. In the later stages of 1995 we added two premium properties to our portfolio (one in Yellowknife, N.W.T. and one in Okotoks).



Several years ago, Urbco Inc. set out to build a balanced asset base consisting of a low risk rental property portfolio combined with "niche type projects" land development operation. Our rental property portfolio contributed 37% of gross revenue in 1995 while development related activities contributed 57% of gross revenue.

Our diversified holdings in Yellowknife continue to be a "star" performer for the Company. The Company began construction on a 47 unit townhouse condominium project in Yellowknife in March 1995. This project, known as Diamond Park, sold out in six months with occupancies starting the last week of July 1995. Not only are we pleased with the profits generated but the project also received special recognition from the Yellowknife city council. The success of our condominium development represents an exciting dimension to the Company's activities. We have conditionally purchased another site in Yellowknife that will accommodate a 28 unit townhouse condominium.

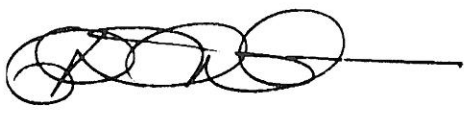
During the year the Company added a 25 unit apartment project in Yellowknife. The property was acquired and renovated for an "all-in" cost of $43,000 per unit which is about 60% of replacement cost. The project was fully rented in less than one month with rents averaging $900 per suite.

Another addition to Urbco Inc.'s rental property portfolio during the year was the construction of a 12,000 sq. ft. office/retail facility for United Grain Growers, Limited. This building, located north of Okotoks, is leased to U.G.G. for a 20 year term. This represents the second "design-build" commercial property in our portfolio — the first being our 58,000 sq. ft. store in Yellowknife, which is leased to Wal-Mart for another 16 years.

Land development operations at Sheep River Ridge, Okotoks and the Canyon Meadows Estates area of Calgary contributed $429,598 in pre-tax income during 1995. During 1996 we expect our activity in condominium development to more than offset any continuation of the slow market in residential lot sales.

In 1995, the Company proudly declared its first ever dividend of $0.03 per common share. We initiated this step in recognition of the patience and loyalty our shareholders have demonstrated since we become a public company in 1991. Our Company has in the past year increased earnings, book value, net asset value and paid a dividend. These achievements have not been recognized in the share trading price. We remain committed to sustainable earnings growth, and believe that in time the investment community will recognize our underlying value. Your Company is very strong financially and we have several excellent opportunities that we expect to bring to fruition in 1996. We are extremely enthusiasic about our prospects in the coming year and thank our shareholders for their support.

On behalf of the Board of Directors,



C. Donald Wilson

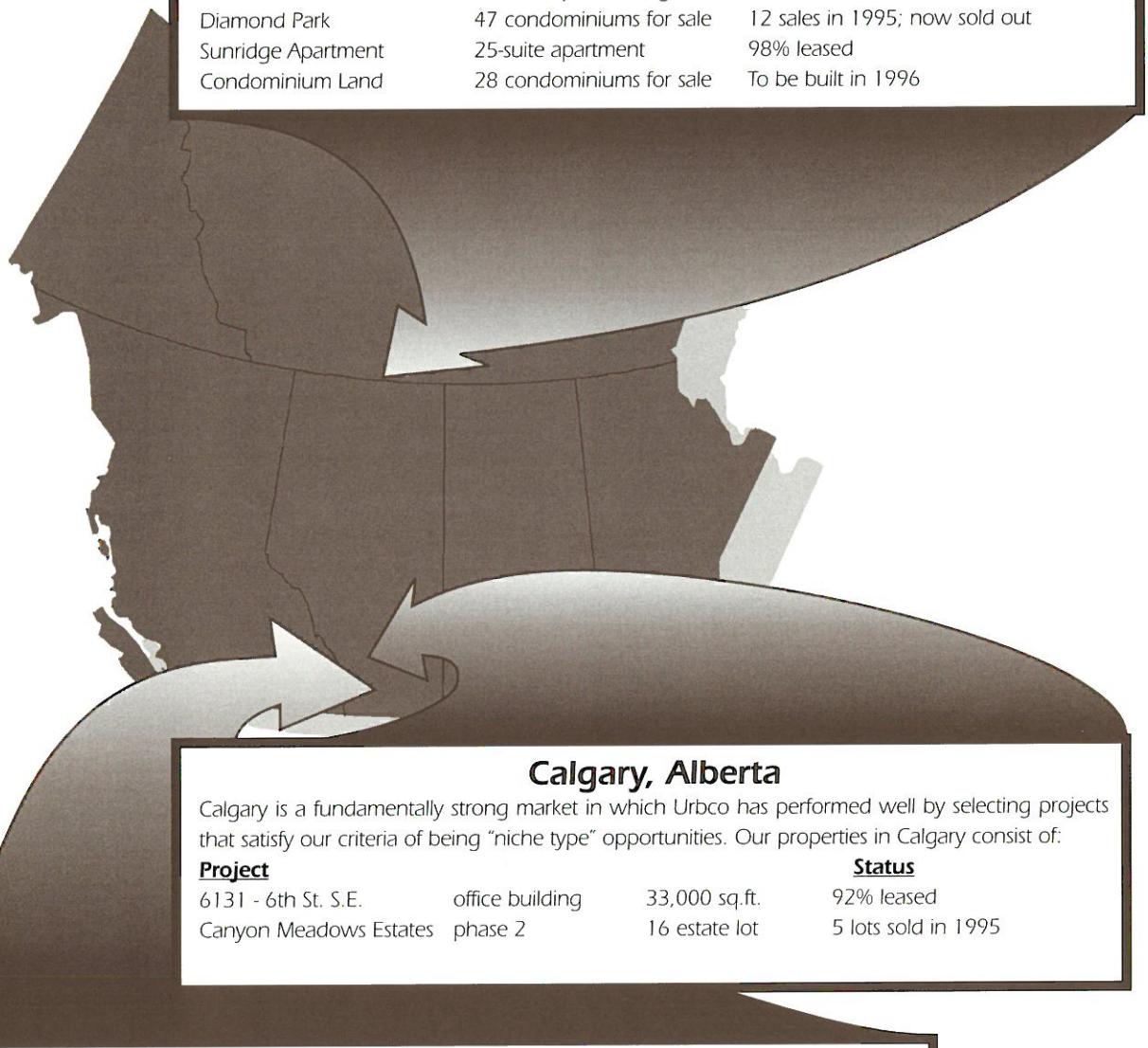
President & C.E.O.

Our Markets

Yellowknife, N.W.T.

Yellowknife continues to be a stable economic environment in which to do business, and our operations expanded in 1995 to include condominium development. We now enjoy a leading role in three separate markets in the Yellowknife area:

Project		Status
Garden Apartments	45-suite apartment	99% leased
The Gardens	40 townhomes	98% leased
Wal-Mart store	58,000 sq.ft. building	100% leased
Diamond Park	47 condominiums for sale	12 sales in 1995; now sold out
Sunridge Apartment	25-suite apartment	98% leased
Condominium Land	28 condominiums for sale	To be built in 1996



Calgary, Alberta

Calgary is a fundamentally strong market in which Urbco has performed well by selecting projects that satisfy our criteria of being "niche type" opportunities. Our properties in Calgary consist of:

Project			Status
6131 - 6th St. S.E.	office building	33,000 sq.ft.	92% leased
Canyon Meadows Estates	phase 2	16 estate lot	5 lots sold in 1995

Okotoks, Alberta

Our Sheep River Ridge subdivision continues to perform well and retains over 40% of the single family lot sales in Okotoks. The U.G.G. building was developed for a single use tenant and will provide long-term steady income and cashflow.

Project		Status
Sheep River Ridge	Phase 1 has 6 lots remaining	4 lots sold in 1995
	Phase 2 has 10 lots remaining	15 lots sold in 1995
	Phase 3 has 66 lots remaining	22 lots sold in 1995
Sheep River Ridge	undeveloped land	Land for 250± lots
U.G.G. Building	12,000 sq.ft. of commercial	100% leased

Management Report and Analysis

Overview

Urbco Inc.'s success and achievements in the real estate industry over the past five years have been built upon four cornerstones...

- strength and depth of our management team
- fiscal responsibility
- success in acquiring and developing niche projects
- strength and diversity in earnings growth.

Since listing on The Alberta Stock Exchange in 1991, revenue has grown from $489,834 in 1991 to $6,364,739 in 1995. Net earnings have increased from $21,606 in 1991 to $500,687 in 1995. As one looks back on these five years, Urbco Inc. has steadily developed a strong and stable foundation for continued growth. We intend to make outstanding progress over the next five years.

Fifth consecutive year of increased revenue and profits

Review of Real Estate Operations

Urbco Inc. continues to be involved in three main areas of the real estate market:

1. Ownership and management of residential and commercial rental properties,
2. Residential land development,
3. Special development projects such as condominiums and "design-build" commercial properties.

Residential and Commercial Portfolio

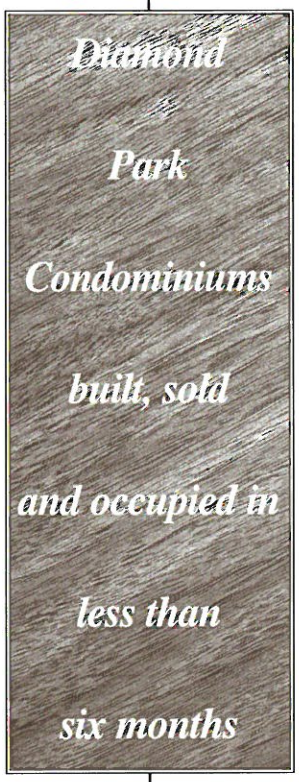
Over the past five years, Urbco Inc. has established a very profitable rental portfolio. Our portfolio consists of townhouses and apartment projects in Yellowknife, N.W.T. and Red Deer, a multi-tenant office building in Calgary, and two single tenant "design-build" properties leased to nationally based tenants.

Our residential portfolio consists of 124 townhouse and apartment units with approximately 90% situated in Yellowknife, N.W.T. Our properties have maintained 99% occupancy rates. Rental rates in Yellowknife continue to hold. Our 40-unit townhouse project achieves rents of $1,266 per month while rents for our 2-bedroom, 2-bath apartment average $1,214 per month. The Company's residential portfolio contributed $1,307,773 in revenue during 1995 and $429,675 in operating income (before depreciation and income tax). Debt placed upon our residential portfolio consists of a $2,764,519 mortgage against our 45-suite apartment building and a $894,571 mortgage against our new 25-suite apartment building. Our 40-unit townhouse project has no long-term debt.

The Company owns a 33,000 sq.ft. suburban office building situated in Calgary. The property contributed $310,033 in revenue during 1995 and $68,688 in operating income (before depreciation and income tax). This property continues to enjoy above average occupancy rates because of our focus on customer service and our efforts to cut operating costs.

The remainder of our commercial rental portfolio consists of a 58,000 sq.ft. store leased to

Wal-Mart Canada Inc. and a 12,000 sq.ft. retail/office building leased to United Grain Growers, Limited. There are 16 years and 20 years remaining on these two leases respectively. The $4,702,473 mortgage on the Wal-Mart store is fully amortized in 16 years. The $600,000 mortgage placed against the U.G.G. property is a 20-year amortization and is fixed at 9.75% for 10 years. Approximately 50% of our $10,029,369 in mortgages is lodged against these properties. Given the covenant of these two tenants, we consider these "coupon clippers" to be excellent properties within our portfolio. The Wal-Mart property contributed $743,746 in revenues and $173,971 in operating income (before depreciation and income tax) during 1995. The U.G.G. building was added in the last two months of 1995, and will contribute $26,000 of operating income (before depreciation and income tax) in 1996.



Residential Land Development

Currently Urbco Inc. has two residential land development projects. Sheep River Ridge in Okotoks, Alberta is targeted to the first time buyer and first time move-up market. Sheep River Ridge has enjoyed excellent sales and the project has averaged 40% to 45% share of the Okotoks new home marketplace. In 1993 and 1994 the Company sold 30 and 57 lots respectively. In 1995 we sold 41 lots, however the majority of the sales occurred in the first seven months of the year. Since February, 1995 our development has suffered from the same malaise that has affected the Okotoks, Calgary and Canadian housing market. Notwithstanding the current slowdown the Company is well positioned to maintain our market share and when the market improves so will the sales at Sheep River Ridge. During 1995 Sheep River Ridge contributed $1,629,070 in revenue and $392,071 in operating income. Undeveloped land at Sheep River Ridge will accomodate approximately 250 lots.

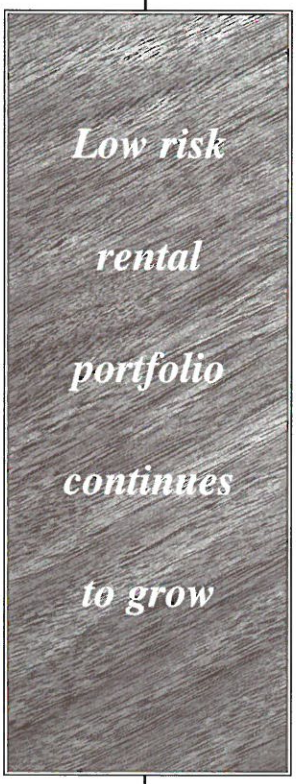
Our Canyon Meadows Estates development is targeted to the upper end market and consists of 16 estate type lots with an average sales price of $97,000 per lot. We sold 5 lots during 1995. Lot sales have been impacted by a slow resale market. This project is ideally situated across from Fish Creek Park within an established community of Calgary and we expect sales activity to resume in the spring. The project has $75,504 in project loans and contributed $517,027 in revenue and $83,830 in operating income during 1995.

Special Development Projects

This segment of the Company's operations was our most exciting area during 1995. The results of our Diamond Park condominium project in Yellowknife, far exceeded management's expectations. The Company built, sold and turned over 47 owner-occupied condominium units within a six-month time frame. The project, which was targeted to first time home buyers, sold for an average of $125,545 per home. The company booked 12 sales during 1995. Diamond Park contributed $1,458,290 in revenue and $220,863 in operating income. Buoyed by the success of this project, the Company has acquired another parcel of land in Yellowknife which will accommodate 28 units of similar design and price range. We expect to start this project in the spring of 1996.

As described earlier, the Company completed a "design-build" project for United Grain Growers, Limited. This type of project, which involves a long-term lease to a national tenant and a fixed rate mortgage, enables the Company to build a low-risk rental portfolio.

The Company also acquired a 25-unit apartment project in Yellowknife, N.W.T. The project was bought, renovated and fully leased within a three-month period. This is indicative of the type of niche projects that Urbco can undertake. The project, which has an "all-in" cost of $1,131,476 will contribute $265,272 in revenue, $134,658 in income before interest and $49,557 in operating income (before depreciation and income tax) during 1996.



Capital Structure and Liquidity

Since our inception, Urbco Inc. has traditionally been "debt averse". We have successfully concluded seven separate "asset for share" transactions; purchasing of $12,100,000 worth of assets and issuing 5,100,000 common shares. This strategy builds shareholders' equity and keeps the Company's long-term debt to equity ratio low (1.32:1 in 1994 and 1.45:1 in 1995). Where the Company undertakes to acquire properties with debt, it is generally a property with strong tenants, such as our Wal-Mart store, or a well-situated residential property, such as our Yellowknife apartment. Another component of our long-term debt management strategy is to fix interest rates under very long terms and have amortization periods of 20 years or less. At year end our capital structure was:

	1995	1994
Short-term debt	1.0%	.3%
Long-term mortgages	56.0%	54.7%
Deferred taxes	3.6%	3.3%
Shareholders' equity	39.4%	41.7%

Annual debt service from all rental properties was $1,231,680 in 1995 while income before interest was $1,667,527 indicating a 1.35 times coverage. With respect to our short-term related debt, the Company arranges project specific loans for land development servicing and condominium construction. At July 31, 1995 we had bank loans outstanding of $2,903,097. Approximately $1,923,728 was attributable to interim financing for the Diamond Park condominiums. As sales proceeds are released from escrow this amount will be fully repaid by November, 1995. Sheep River Ridge has approximately $903,865 remaining of its $1,850,000 established credit lines. The Sheep River Ridge receivables from sales booked during fiscal 1995 will pay down 70% of the loan. The remainder of the short-term bank loans consist of $75,504 drawn for Canyon Meadows Estates.

Cash and term deposits were down 22% over last year ($951,530 in 1995 versus $1,230,211 in 1994). However, we expect to receive a cash distribution of $1,600,000 (after repayment of the interim loan) from the Diamond Park condominium closings.

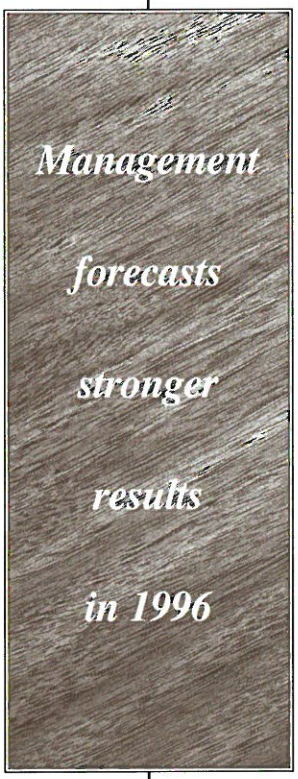
General and Administrative Costs

Administration costs (corporate overhead) continue to be a primary concern to management. Administration costs held steady at 6.7% of total revenue (6.7% in 1994), increasing by $54,354 as compared to an increase in revenue of $759,189. With respect to general and administrative costs (land development), the Company takes a conservative stance relative to the industry by expensing all interest costs associated with land development.

Net Asset Value

The Company obtains appraisals on most major assets to help establish a net asset value per share and track the Company's progress from year to year. Net asset value is determined by adjusting shareholders' equity (historical cost) to reflect the unrealized gain from appreciation in the current market value of our assets. At July 31, 1994 we determined our pre- tax net asset value per share to be $2.21 based upon 5,335,336 shares outstanding. At July 31, 1995 based upon the current number of shares outstanding of 5,315,336, our pre-tax net value per share is estimated to be:

	Total	Per Share
Shareholders' equity	$ 7,038,326	$1.32
Unrealized gain on properties	$ 6,295,478	$1.19
Net asset value	$13,333,804	$2.51



Normal Course Issuer Bid

Effective October 31, 1994, the Company implemented a normal course issuer bid and has acquired 50,200 shares for cancellation as of October 11, 1995. The Company believes that any shares acquired below book value, and subsequently cancelled, benefit all remaining shareholders.

Outlook for 1996

Management is very optimistic for 1996 notwithstanding the slowdown in the new and resale housing markets will keep lot sales in our land development divisions somewhat flat. New activity from our condominium developments and continued growth from our rental property portfolio will have positive impact on earnings.

The underlying fundamentals of the markets in which the Company operates remain strong. Urbco Inc. is pursuing several exciting prospects at the moment and if the Company closes on these transactions, they will have a significant impact during 1996 and beyond.

Auditor's Report

To the Shareholders
Urbco Inc.

We have audited the consolidated balance sheets of Urbco Inc. as at July 31, 1995 and 1994 and the consolidated statements of income and retained earnings and cash flow for the years then ended. These financial statements are the responsibility of the company's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with generally accepted auditing standards. Those standards require that we plan and perform an audit to obtain reasonable assurance whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation.

In our opinion, these consolidated financial statements present fairly, in all material respects, the financial position of the company as at July 31, 1995 and 1994 and the results of its operations and cash flow for the years then ended in accordance with generally accepted accounting principles.

COLLINS BARROW

Collins Barrow

CHARTERED ACCOUNTANTS

Calgary, Alberta
August 30, 1995

URBCO INC.

(Incorporated under the laws of Alberta)

Consolidated Balance Sheets

JULY 31, 1995 AND 1994

	1995	1994
Assets		
Cash and term deposits	$ 951,530	$ 1,230,211
Accounts receivable	3,095,157	1,501,555
Prepaid expenses	108,630	85,210
Land held for development and sale (note 2)	7,183,120	3,160,846
Deferred charge (note 3)	–	13,513
Investments (note 4)	446,590	440,714
Properties (note 5)	13,655,112	12,327,843
	$ 25,440,139	$ 18,759,892
Liabilities		
Accounts payable and accrued liabilities	$ 691,339	$ 408,631
Bank loans (note 6)	2,903,097	43,571
Income taxes payable	41,094	237,136
Land development service costs	4,073,003	1,996,804
Mortgages (note 7)	10,029,369	8,817,163
Deferred income taxes	663,911	539,717
	18,401,813	12,043,022
Shareholders' Equity		
Share capital (note 8)	5,927,593	5,950,236
Contributed surplus [note 8(c), (d)]	19,512	16,383
Retained earnings	1,091,221	750,251
	7,038,326	6,716,870
	$ 25,440,139	$ 18,759,892

Approved by the Board,

_____, Director

_____, Director

URBCO INC.
Consolidated Statements of Income and Retained Earnings

YEARS ENDED JULY 31, 1995 AND 1994

	1995	1994
Revenue		
Rental properties	$ 2,383,396	$ 2,371,188
Lot sales	2,176,200	2,833,500
Condominium sales	1,458,290	–
Gain on disposal of properties	160,123	242,647
Interest and other	142,844	117,106
Share of income from limited partnership	43,886	41,100
	6,364,739	5,605,541
Expenses		
Cost of lot sales	1,435,133	2,090,684
Cost of condominium sales	1,237,427	–
General and administrative - land development	311,469	238,908
- corporate overhead	429,862	375,508
Rental properties operating	749,119	656,662
Interest on mortgages	983,474	1,016,922
Professional fees	50,610	51,345
Depreciation and amortization	142,618	168,002
	5,339,712	4,598,031
Income before income taxes	1,025,027	1,007,510
Income taxes (note 10)	524,340	586,808
Net income	500,687	420,702
Retained earnings, beginning of year	750,251	329,549
	1,250,938	750,251
Dividends	159,717	–
Retained earnings, end of year	$ 1,091,221	$ 750,251
Earnings per share (note 11)	$ 0.09	$ 0.08

URBCO INC.
Consolidated Statements of Cash Flow

YEARS ENDED JULY 31, 1995 AND 1994

	1995	1994
Operating activities		
Net income	$ 500,687	$ 420,702
Add (deduct) items not affecting cash		
Gain on disposal of properties	(160,123)	(242,647)
Depreciation and amortization	142,618	168,002
Deferred income taxes	124,194	212,349
	607,376	558,406
Increase in accounts receivable	(1,593,602)	(756,291)
Decrease (increase) in prepaid expenses	(23,420)	19,224
Decrease (increase) in land held for development and sale	(4,022,274)	789,636
Increase in accounts payable and accrued liabilities	282,708	72,960
Increase (decrease) in income taxes payable	(196,042)	112,311
Increase (decrease) in land development service costs	2,076,199	(264,959)
	(2,869,055)	531,287
Financing activities		
Proceeds from bank loans, net	2,859,526	43,571
Decrease in bank overdraft	–	(163,041)
Repayments of revolving operating credit, net	–	(60,000)
Repayment of agreement payable	–	(2,800)
Proceeds from (repayments of) mortgages, net	1,212,206	(776,269)
Proceeds on issuance of share capital	–	47,612
Repurchase of shares	(19,514)	–
	4,052,218	(910,927)
Investing activities		
Decrease (increase) in investments	(5,876)	96,241
Acquisition of properties	(1,881,964)	(49,775)
Proceeds on disposal of properties	585,713	999,840
	(1,302,127)	1,046,306
Distributions to shareholders		
Dividends paid	(159,717)	–
Cash inflow (outflow)	(278,681)	666,666
Cash and term deposits, beginning of year	1,230,211	563,545
Cash and term deposits, end of year	$ 951,530	$ 1,230,211

1. SIGNIFICANT ACCOUNTING POLICIES

(a) General

The company follows the recommendations of the Canadian Institute of Chartered Accountants and the Canadian Institute of Public Real Estate Companies.

(b) Principles of consolidation

The consolidated financial statements include the accounts of the company and its wholly- owned subsidiaries.

(c) Land held for development and sale

(i) Land held for development and sale is valued at the lower of cost and net realizable value.

(ii) The company capitalizes all direct costs relating to land held for development and sale other than condominiums held for sale. Up to July 31, 1993, indirect costs such as financing and property taxes considered applicable were capitalized. Effective August 1, 1993, the company commenced expensing indirect costs, as incurred.

(iii) Costs capitalized to condominiums held for sale include all direct costs relating to the project and all indirect costs such as financing, property taxes and general and administrative costs, as incurred.

(iv) The total estimated servicing and development costs are recorded as a liability at the time development begins on a project. The unexpended portion of these costs are shown as "land development service costs". Whenever the estimate is determined to be materially different from the actual costs incurred or expected to be incurred, an adjustment is made to the provision with a corresponding adjustment to the cost of sales and lot inventory.

(d) Investments

The company accounts for its investment in the limited partnership using the equity method, whereby the investment is initially recorded at cost and the carrying value is adjusted thereafter to reflect the company's proportionate share of earnings.

The company records other investments using the cost method of accounting whereby the investment is initially recorded at cost; earnings from such investments are recognized only to the extent received or receivable.

Where there has been a permanent decline in value, the investment will be stated at estimated net realizable value.

(e) Depreciation

Depreciation of rental buildings and fixtures is determined on the sinking fund method over the buildings' estimated remaining useful lives ranging from 33 to 40 years. The sinking fund method provides a depreciation charge consisting of a fixed annual sum together with interest thereon compounded at a rate of 5% per annum, which is sufficient to fully depreciate the buildings over their anticipated useful lives.

Depreciation of office furniture and fixtures and equipment is determined on the declining balance method at rates of 20 to 30% per annum.

(f) Income recognition

Lot sales are recorded on closing or when a minimum of 15% of the sales price has been received and the sale is unconditional.

Condominium sales are recorded when:

(i) the sale is unconditional and full sale proceeds have been received (either in the form of cash or an irrevocable assignment of mortgage proceeds in favour of the company); and

(ii) a minimum of 95% of construction is completed on the condominium unit.

(g) Income taxes

On August 1, 1988, the company acquired certain property from its shareholders using the provision of subsection 85(1) of the Income Tax Act. As a result, certain income producing rental properties having a net book value of $1,068,106 (1994 - $1,359,328) for accounting purposes have a nil cost for income tax purposes.

The equity in limited partnership exceeds its cost for income tax purposes by $294,233 (1994 - $295,238).

No provision has been made in these financial statements for the additional income taxes which would be generated on the future sale of these properties.

2. LAND HELD FOR DEVELOPMENT AND SALE

	1995	1994
Land held for sale		
Land and development costs	$ 2,994,922	$ 2,518,066
Capitalized costs	–	–
	2,994,922	2,518,066
Land held for development		
Land	531,653	642,780
Development costs	47,382	
Capitalized costs	–	–
	579,035	642,780
Condominiums held for sale	3,201,557	–
Land and development costs		
Capitalized costs (including interest of $228,617)	407,606	–
	3,609,163	–
	$ 7,183,120	$3,160,846

3. DEFERRED CHARGE

Deferred charge consisted of an amount paid on July 31, 1991 to cancel a lease that originally was to expire in November, 1994. The property was leased to the Government of the Northwest Territories at an amount which was substantially below market value.

The amount was amortized on a straight-line basis over the remaining term of the cancelled lease.

4. INVESTMENTS

	1995	1994
Equity in limited partnership	$ 346,166	$ 340,290
Investment in marketable securities (market value - $60,480; 1994 - $78,435)	100,424	100,424
	$ 446,590	$ 440,714

The investment in limited partnership consists of seven of thirty units in the Vista Village Limited Partnership.

5. PROPERTIES

	Cost	Accumulated Depreciation	Net Book Value 1995	Net Book Value 1994
Rental properties				
Land	$ 1,832,773	$ –	$ 1,832,773	$ 1,578,264
Buildings and fixtures	12,461,211	660,825	11,800,386	10,730,334
	14,293,984	660,825	13,633,159	12,308,598
Office furniture and fixtures and equipment	43,793	21,840	21,953	19,245
	$ 14,337,777	$ 682,665	$ 13,655,112	$ 12,327,843

6. BANK LOANS

Bank loans consists of:

(i) demand capital financing loans to a maximum of $2,658,050 (1994 - $2,775,191) available for development of land. The loans bear interest at a Canadian chartered bank's prime lending rate plus 1.25% to 1.5% per annum and are secured by a first fixed charge against land under development, assignment of lot purchase agreements for each phase and a demand debenture in the amount of $4,300,000 collateralized by specific land developed or being held for development. Principal repayments are made from lot sale proceeds upon title transfer. As at July 31, 1995, balance owing is $979,369 (1994 - $43,571); and

6. BANK LOANS (continued)

(ii) demand capital financing loan to a maximum of $4,165,000 available for development of condominiums. The loan bears interest at a Canadian chartered bank's prime lending rate plus 2.0% per annum and is secured by a first fixed charge against condominium units under development and a corporate demand collateral debenture in the amount of $4,165,000 secured by specific capital properties owned by the company. Principal repayments are made from condominium sales proceeds upon title transfer. As at July 31, 1995, balance owing is $1,923,728 (1994 - $nil).

7. MORTGAGES

Mortgages bear interest at a weighted average interest rate of 11.25% per annum (1994 - 11.44%), are repayable in blended monthly instalments aggregating $105,911 (1994 - $92,940), are secured by rental properties and are due April 1, 1996 through June 1, 2015.

Anticipated repayments on the mortgages over the next five years, assuming that they are renewed at existing rates, are as follows:

1996	$ 177,150
1997	197,996
1998	221,309
1999	247,384
2000	276,550
Thereafter	8,908,980
	$ 10,029,369

8. SHARE CAPITAL

(a) Authorized
Unlimited number of common voting shares
Unlimited number of non-voting, cumulative, preferred shares

(b) Issued

			1995	1994
Common Shares	**Number of Shares**	**Stated Capital**	**Number of Shares**	**Stated Capital**
Balance, beginning of year	5,335,336	$ 5,950,236	5,300,338.8	$ 5,910,908
Issued upon exercise of stock options	–	–	43,283.5	47,612
Acquired and cancelled pursuant to normal course issuer bid [note 8(c)]	(20,000)	(22,643)	–	–
Less: Shares cancelled [note 8(d)]	–	–	(8,286.3)	(8,284)
Total issued	5,315,336	$ 5,927,593	5,335,336	$ 5,950,236

8. SHARE CAPITAL (continued)

(c) Effective October 31, 1994, the company commenced a normal course issuer bid under which it could purchase up to 100,000 of its common shares until October 31, 1995 at the market price of the shares at the time of acqusition. The company acquired and cancelled 20,000 common shares at an average price of $0.98 per share during the year. The excess of stated value over cost of reacquisition of $3,129 was credited to contributed surplus. Subsequent to July 31, 1995, the company repurchased an additional 12,200 common shares at an average price of $1.08 per share.

(d) During 1989, the company entered into an agreement to repurchase 41,419.5 common shares (8283.9 per year) over a five-year period for $24,000. The shares repurchased are reflected at reacquisition cost until such time as they are cancelled or reissued. During the year ended July 31, 1994, the company cancelled 8,286.3 of the repurchased shares having a stated value of $8,284. The excess of stated value over cost of reacquisition of $3,484 was credited to contributed surplus. The total shares under the agreement were repurchased as at July 31, 1994, therefore, no shares were cancelled in the current year.

(e) As at July 31, 1995, the following options to purchase common shares were outstanding:

Number	Exercise Price Per Share	Expiry Date
20,000	$ 1.10	December 31, 1995
280,000	$ 1.05	July 18, 1999

During the year, 56,000 options expired unexercised.

(f) As at July 31, 1995, 462,712 (1994 - 709,425) common shares having a stated value of $613,332 (1994 - $956,666) remain in escrow to be released as follows:

	Number	Date
i)	72,000	July 30, 1995
	72,000	July 30, 1996
	72,000	July 30, 1997
	72,000	July 30, 1998
ii)	174,712	Based on a performance formula, on a quarterly basis during the period December 31, 1993 to December 31, 1995, to a maximum of 174,712 per year
	Balance of shares not previously released	December 31, 1995

The 72,000 shares scheduled to be released from escrow on July 30, 1995 were released from escrow subsequent to year end.

9. MANAGEMENT REMUNERATION

Management remuneration for the year ended July 31, 1995 amounted to $251,602 (1994 - $257,243).

10. INCOME TAXES

Income taxes differ from that which would be expected when applying the combined federal and provincial rates of 45% (1994 - 45%) to income before income taxes as follows:

	1995	1994
Expected income tax expense	$ 461,261	$ 453,380
Increase (decrease) in income taxes resulting from:		
Depreciation on non-tax based assets	13,958	14,052
Rate reduction applicable to taxable capital gains	(20,339)	(32,059)
Gain on disposal of non-tax based assets	86,293	153,712
Other	(16,833)	(2,277)
Actual income tax expense	$ 524,340	$ 586,808

11. EARNINGS PER SHARE

Earnings per share has been calculated based on the weighted average number of common shares outstanding during the year of 5,331,610 (1994 - 5,323,236). The exercise of stock options would not be materially dilutive.

12. SEGMENTED INFORMATION

The company conducts its operations through two industry segments: rental of real estate properties and development and sale of real estate properties.

Earnings of industry segments exclude interest and other income and unallocated corporate expenses but include gains from disposition of segment assets. There are no intersegment sales.

Identifiable assets are those used in the operations of the segments. Corporate assets include cash and term deposits, corporate accounts receivable, prepaid expenses, corporate investments and corporate office furniture and fixtures and equipment

12. SEGMENTED INFORMATION (continued)

1995

	Rental of real estate properties	Development and sale of real estate properties	Corporate	Total
Sales	$ 2,427,282	$ 3,634,490	$ –	$ 6,061,772
Gain on disposal of properties	160,123	–	–	160,123
Interest and other	–	–	142,844	142,844
Total revenues	2,587,405	3,634,490	142,844	6,364,739
Cost of sales	–	2,672,560	–	2,672,560
General and administrative and rental properties operating	749,119	311,469	480,472	1,541,060
Interest on mortgages	954,754	–	28,720	983,474
Depreciation and amortization	137,853	–	4,765	142,618
Total expenses	1,841,726	2,984,029	513,957	5,339,712
Income before income taxes	745,679	650,461	(371,113)	1,025,027
Income taxes	–	–	(524,340)	(524,340)
Net income	$ 745,679	$ 650,461	$ (895,453)	$ 500,687
Identifiable assets	$ 13,979,325	$ 9,849,682	$ 1,611,132	$ 25,440,139
Acquisition of properties	$ 1,874,490	$ –	$ 7,474	$ 1,881,964

1994

	Rental of real estate properties	Development and sale of real estate properties	Corporate	Total
Sales	$ 2,412,288	$ 2,833,500	$ –	$ 5,245,788
Gain on disposal of properties	242,647	–	–	242,647
Interest and other	–	–	117,106	117,106
Total revenues	2,654,935	2,833,500	117,106	5,605,541
Cost of sales	–	2,090,684	–	2,090,684
General and administrative and rental properties operating	656,662	238,908	426,853	1,322,423
Interest on mortgages	951,769	–	65,153	1,016,922
Depreciation and amortization	163,799	–	4,203	168,002
Total expenses	1,772,230	2,329,592	496,209	4,598,031
Income before income taxes	882,705	503,908	(379,103)	1,007,510
Income taxes	–	–	(586,808)	(586,808)
Net income	$ 882,705	$ 503,908	$ (965,911)	$ 420,702
Identifiable assets	$ 12,648,888	$ 4,573,796	$ 1,537,208	$ 18,759,892
Acquisition of properties	$ 41,638	$ –	$ 8,137	$ 49,775

Corporate Information

Corporate Profile

Urbco Inc. is engaged in the acquisition, development, brokerage, management of real estate properties and real estate related opportunities.

Directors

C. Donald Wilson	Director	President and Chief Executive Officer, Urbco Inc.
Roy G. Wilson	Director	Chairman of the Board, Urbco Inc.
Kathleen E. McCaughey	Director	Secretary, Urbco Inc.
Arthur C. Cloutier	Director	President, Artco Developments
Robert V. Etcheverry *	Director	President, Plains Canada Ltd.
William J. Miller	Director	President, Wagonmaster Distributors Inc.
Douglas H. Mitchell, Q.C.*	Director	Partner, Howard Mackie, Barristers and Solicitors
Eric Proppe	Director	President, Proppe Architect Ltd.
Fred P. Studer *	Director	Past-President, Studer Foods (Alberta) Ltd.

* Member, Audit Committee

Officers

C. Donald Wilson	President and Chief Executive Officer
Roy G. Wilson	Chairman of the Board
Gregory N. Herndier	Vice-President
Barry J. Poffenroth	Vice-President
Kathleen E. McCaughey	Secretary

Corporate Office

#110, 6131 - 6th Street S.E.
Calgary, Alberta T2H 1L9
Telephone: (403) 531-0720
Facsimilie: (403) 531-0727

Legal Counsel

Howard Mackie, Barristers and Solicitors
Calgary, Alberta

Registrar & Transfer Agent

Montreal Trust
Calgary, Alberta

Auditor

Collins Barrow, Chartered Accountants
Calgary, Alberta

Stock Exchange Listing

The Alberta Stock Exchange

Trading Symbol

UBC

Quarterly Report

OPERATIONAL REPORT TO SHAREHOLDERS
FOR THE THREE MONTHS ENDED OCTOBER 31, 1995

Revenue for the three months ended October 31, 1995 was $5,326,904 compared to $1,406,229 for the previous year's three month period. Pre-tax income for the period was $657,640 versus $361,437 for the same period last year. Net income after tax was $294,715 at October 31, 1995 exceeding the October 31, 1994 result of $146,533. The Company's pre-tax earnings per share was $0.12 while net after tax earnings per share was $0.06 based upon 5,304,556 common shares outstanding.

The gains in revenue and earnings are attributable to the success of our 47 unit Diamond Park condominium project in Yellowknife. This project is 100% sold and occupied. Lot sales at our land development operations in Okotoks (Sheep River Ridge) and Calgary (Canyon Meadows Estates) remain very slow. However, the relocation of the head offices of major Canadian corporations to Calgary should strengthen the marketplace in 1996. Rental operations are performing strongly and on budget.

As of December 6, 1995, the Company has approximately $1,700,000 cash in the bank or about $0.32 per share. As we identify projects over the ensuing months these cash reserves will be appropriately invested.

Urbco Inc. looks forward to the coming year and on behalf of management and the board of directors we wish all our shareholders health and prosperity in 1996.

C. Donald Wilson
President and Chief Executive Officer
December 6, 1995

URBCO INC.

#110, 6131 - 6th Street S.E. Calgary, Alberta T2H 1L9 Phone (403) 531-0720 Fax (403) 531-0727

Urbco Inc.

(incorporated under the laws of Alberta)

Consolidated Balance Sheet

October 31, 1995

	1995	1994
Assets		
Cash and term deposits	$ 887,242	$ 1,685,805
Accounts receivable	1,272,678	1,614,609
Agreements receivable	5,985,607	0
Prepaid expenses	82,649	56,731
Land held for development and sale	3,501,885	4,542,210
Properties under development	22,052	78,954
Deferred charges	0	3,378
Investments	446,590	440,714
Properties, at net book value	13,628,462	11,869,380
	$ 25,827,166	$ 20,291,781
Liabilities		
Accounts payable and accrued liabilities	$ 439,999	$ 416,856
Income taxes payable	271,193	338,921
Land development service costs	1,548,000	3,184,507
Property development service costs	893,265	0
Loans payable	4,658,050	250,000
Mortgages payable	9,989,813	8,643,237
Deferred taxes payable	727,078	594,857
	18,527,397	13,428,378
Shareholders' Equity		
Share capital	5,891,162	5,950,236
Contributed surplus	22,672	16,382
Retained earnings	1,385,935	896,785
	7,299,769	6,863,403
	$ 25,827,166	$ 20,291,781

Urbco Inc.
Consolidated Statement of Income and Retained Earnings
Three Months Ended October 31, 1995

	1995	1994
Revenue		
Lot sales	$ 141,500	$ 627,800
Condominium sales	4,420,949	0
Rental properties	655,580	579,759
Gain on disposal of properties	0	160,123
Interest and other	99,074	28,747
Share of income from limited partnership	9,800	9,800
	5,326,904	1,406,229
Expenses		
Cost of lot sales	(102,580)	(434,914)
Cost of condominium sales	(3,844,163)	0
General and administrative – land development	(54,916)	(49,220)
General and administrative – corporate overhead	(129,889)	(114,435)
Rental properties operating	(193,091)	(163,468)
Interest on mortgages	(280,519)	(239,620)
Professional fees	(11,899)	(1,855)
Depreciation and amortization	(52,208)	(41,280)
	(4,669,264)	(1,044,792)
ncome before income taxes	657,640	361,437
Income taxes	(362,925)	(214,904)
Net income	294,715	146,533
Retained earnings, beginning of period	1,091,220	750,252
Retained earnings, end of period	$ 1,385,935	$ 896,785
Net income per share	$ 0.06	$ 0.03

Urbco Inc.
Consolidated Statement of Cash Flow
Three Months Ended October 31, 1995

	1995	1994
Operating activities		
Net income	294,715	146,533
Add (deduct) items not affecting cash		
Gain on disposal of properties	0	(160,123)
Depreciation and amortization	52,208	41,280
Deferred income taxes	63,167	55,140
	410,090	82,830
Decrease (increase) in accounts receivable	327,292	(113,054)
Increase in agreements receivable	(4,490,420)	0
Decrease in prepaid expenses	11,893	27,904
Decrease (increase) in land held for development and sale	72,072	(1,381,364)
Decrease (increase) in properties held development and sale	3,587,110	(58,432)
Increase (decrease) in accounts payable and accrued liabilities	(251,340)	8,226
Increase in income taxes payable	230,100	101,785
Increase (decrease) in land development service costs	(151,127)	1,437,703
Decrease in property development service costs	(1,480,612)	0
	(1,734,942)	105,598
Financing activities		
Proceeds from bank loan	1,915,003	0
Repayment of bank loan	(160,050)	(43,571)
Proceeds from mortgages	0	268,500
Repayments of mortgages	(39,558)	(442,426)
Repurchase of share capital	(33,272)	0
	1,682,123	(217,497)
Investing activities		
Acquisition of properties	0	(20,522)
Acquisition of assets	(11,469)	0
Proceeds on disposal of properties	0	588,015
	(11,469)	567,493
Cash (outflow) inflow	(64,288)	455,594
Cash and term deposits, beginning of period	951,530	1,230,211
Cash and term deposits, end of period	$ 887,242	$ 1,685,805

Our Number One Strength – People

Urbco Inc.'s success is a direct result of the efforts of a small group of dedicated and enthusiastic employees. A knowledgeable and experienced board of directors and executive team complement these talented employees.

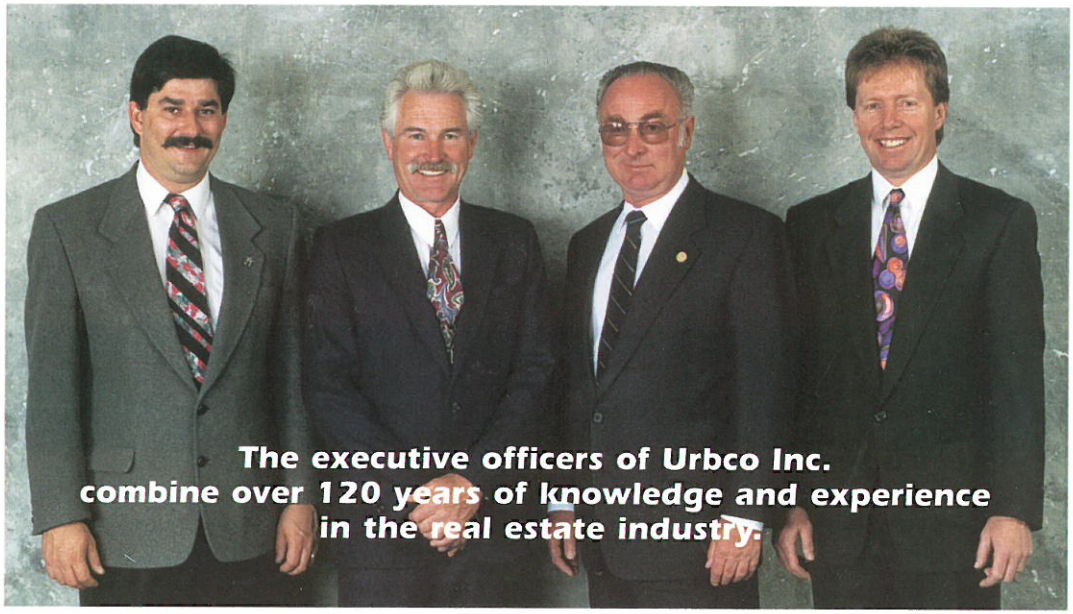
Executive Team:

Founder, President and Chief Executive Officer, **Don Wilson** has been involved in the real estate industry since 1953. Prior to founding Urbco Inc., he managed various segments of Genstar Corporation's North American home building operations.

Co-founder and Chairman of the Board, **Roy Wilson**, began his real estate career in 1951 and for over 28 years was a director of Carma, a large publicly traded development company with holdings throughout Canada and the U.S.A.

Vice President, **Barry Poffenroth** has been associated with North American real estate development and corporate finance activities since 1977.

Vice President, **Greg Herndier** has been involved in real estate marketing and the management of residential and commercial properties since 1979.



The executive officers of Urbco Inc. combine over 120 years of knowledge and experience in the real estate industry.

Greg Herndier Don Wilson Roy Wilson Barry Poffenroth

URBCO INC.

Building On A Strong Foundation

Urbco Inc., listed on The Alberta Stock Exchange in 1991, was established with the goal of becoming a leader in the real estate industry in western and northern Canada through well managed, sustainable growth. Every year since incorporation Urbco Inc. has increased earnings and added to shareholders' equity.

Urbco Inc.'s success and achievements have been built upon four cornerstones...

I Strength and Depth of Management Team...

Urbco Inc.'s executive brings together over **120 years of experience** in North American real estate markets. The board of directors and management team have created a sense of excitement and committment throughout the Company – as employees build upon a foundation of growth for the next century. All of our employees contribute directly to the success of Urbco Inc. and the company recognizes their contributions through share options and share purchase plans.

II Fiscal Responsibility...

Drawing from lessons of the past Urbco Inc. is committed to **growth through equity** and **internally generated cash flow.** Urbco Inc. employs a strategy of acquiring real estate assets for treasury stock of the Company – successfully completing seven such transactions. In using very little leverage, the Company has been successful in matching the majority of its mortgage maturities with lease expirations. Corporate debt to equity ratios have consistently been under 2 to 1.

III Pursuit of Market Niches...

Urbco Inc. has invested in real estate properties and markets that may have been **overlooked by others** or properties and markets that are benefitting from **emerging growth trends.** This enables the Company to mitigate competitive risks and focus on project profitability. The Company's many successful investments in Yellowknife, N.W.T. is an example of this strategy. Every project Urbco Inc. owns contributes to corporate cash flow.

IV Earnings Growth...

Urbco Inc. is committed to an acquisition and development strategy that benefits shareholders now and in the future. The Company's assets immediately contribute to cashflow while at the same time providing a long-term earnings horizon. **Half** of the Company's revenues are derived **from rental properties** and **half** are earned **from land development** ... a mix that provides stability, profitability and a healthy balance.

... What Does the Future Hold?

Capitalizing on years of experience in land, commercial and residential development, financing expertise in both private and public vehicles and exceptional property management skills, Urbco Inc. will continue to build upon these four cornerstones. We believe the Company is well positioned for growth and prosperity into the next century.

URBCO INC.

Our Markets

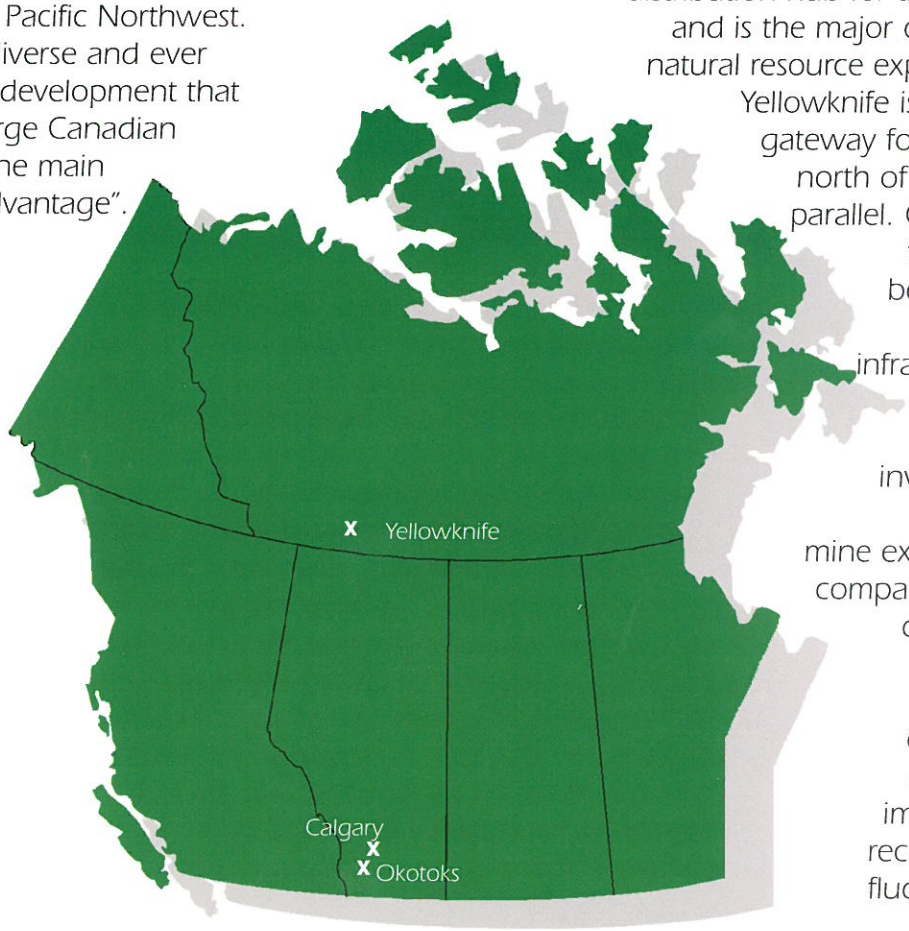
The old axiom about real estate **"Location - Location - Location"** applies to Urbco Inc. today!! The major markets in which the Company currently operates all have some unique advantages.

Calgary, Alberta

Calgary has, for many years, been known primarily as the centre for the oil and gas industry in Canada. In recent years Calgary has attracted new, leading edge industries such as agribusiness, telecommunications, computer software technology, and is becoming recognized as a major distribution hub for the Pacific Northwest. This provides Calgary with a diverse and ever improving economic base for development that is experienced in few other large Canadian cities. Calgary will be one of the main beneficiaries of the "Alberta Advantage".

Okotoks, Alberta

Of the four satellite communities surrounding Calgary, the Company shares the view that Okotoks provides the best alternative lifestyle location to families seeking the small town atmosphere. The Company's housing subdivision, known as Sheep River Ridge, provides spectacular views, a congenial lifestyle, and ease of access to Calgary – making it an attractive market for land development.



Yellowknife, Northwest Territories

The city of Yellowknife is the heart of Canada's north. Yellowknife is the centre for three levels of government in the Northwest Territories; continues to be the transportation and distribution hub for the north; and is the major centre for natural resource exploration. Yellowknife is also the gateway for tourism north of the 60th parallel. Currently, the city is benefitting from the infrastructure monies being invested by diamond mine exploration companies, and continues to enjoy a stable economy generally immune to recessionary fluctuations.

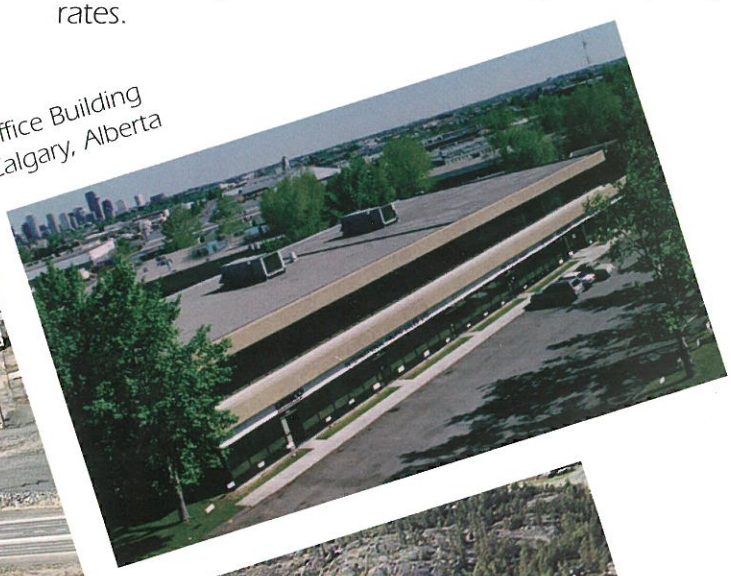
URBCO INC.

Our Major Rental Properties

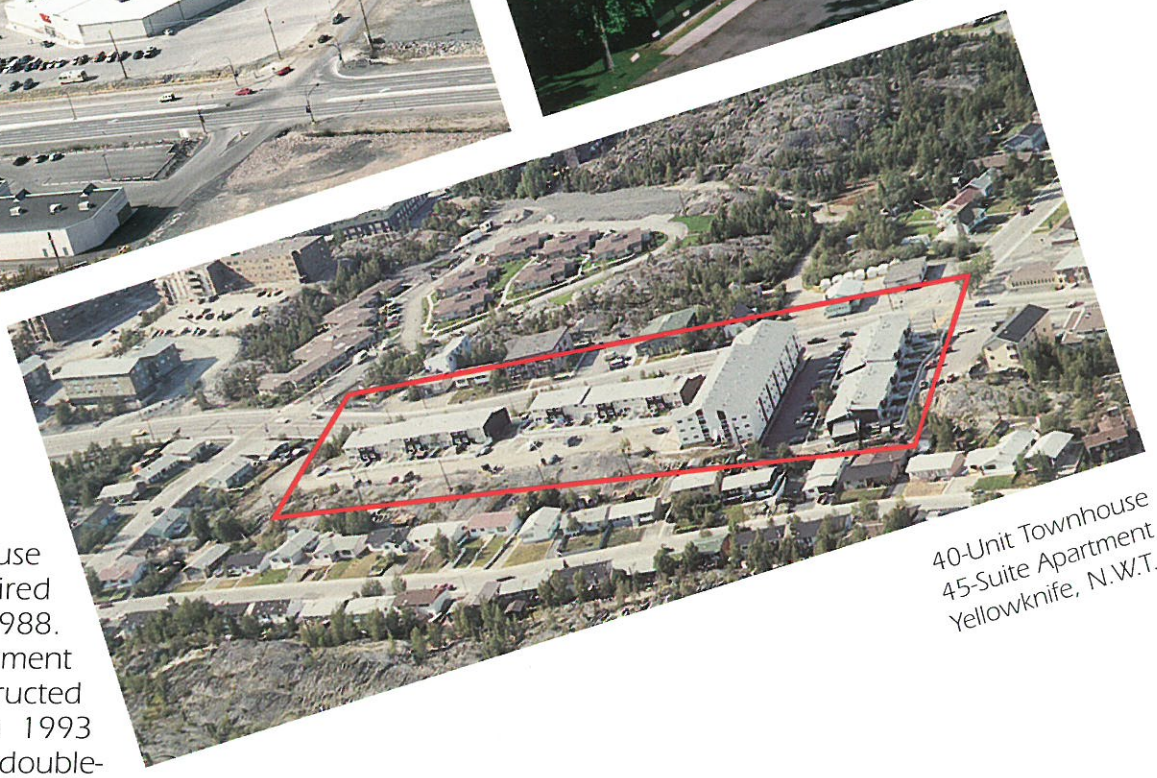
Urbco Inc. owns this 58,000 sq. ft. building in Yellowknife. The building was constructed in 1992 and is under lease to Wal-Mart Canada Inc. until 2013.

Wal-Mart Store – Yellowknife, N.W.T.

Urbco acquired this 33,000 sq. ft. office building in 1991. The site is well located in a suburban industrial park and accommodates 16± tenants. The building sustains above-average occupancy rates.



Office Building
Calgary, Alberta



40-Unit Townhouse
45-Suite Apartment –
Yellowknife, N.W.T.

This 40 Unit Townhouse project was acquired by Urbco Inc. in 1988. The adjoining apartment building was constructed by the Company in 1993 and consists of 45 double-master (2 bedroom, 2 bathroom) units. Both properties average a 98% occupancy rate and achieve rental rates 60% higher than comparable properties in Calgary.

URBCO INC.

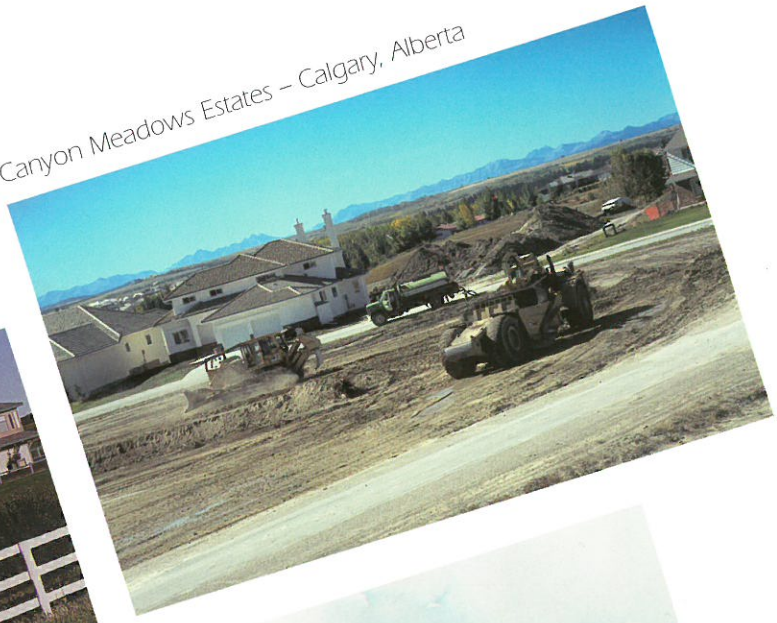
Our Current Development Projects

In 1991, Urbco Inc. commenced development of the Sheep River Ridge residential subdivision. The company has currently developed 43 acres of the 89 acre parcel. The project is expected to yield approximately 500 housing sites.

The Canyon Meadows Estate land development project consisted of two phases of estate lots ranging in price from $85,000 to $105,000. The initial phase, developed in 1993, was sold in nine months. The 2nd phase was offered to the market in late 1994.

Sheep River Ridge – Okotoks, Alberta

Canyon Meadows Estates – Calgary, Alberta



U.G.G. Building – M.D. of Foothills, Alberta

47 Unit Townhouse –Yellowknife, N.W.T.

Urbco Inc. was approached in late 1994 to develop a 12,000 sq. ft. office building/ retail centre for United Grain Growers, Limited. The project was completed in May 1995 and is leased to U.G.G. for a 20-year period.

Development commenced in April 1995 on this 47-unit townhouse/condominium project in Yellowknife. These three-bedroom units are targeted to first time home buyers and offer exceptional interior and exterior design.

URBCO INC.

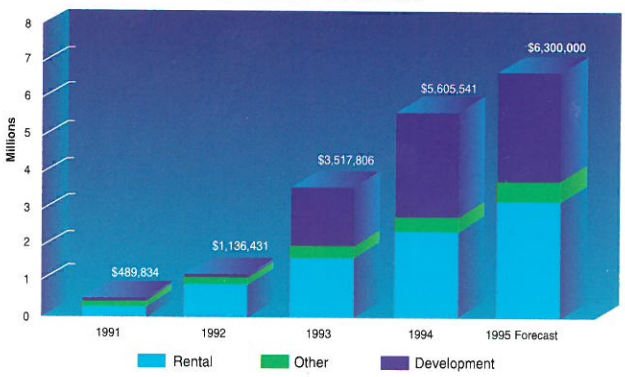
Financial Highlights

For the Year Ended July 31

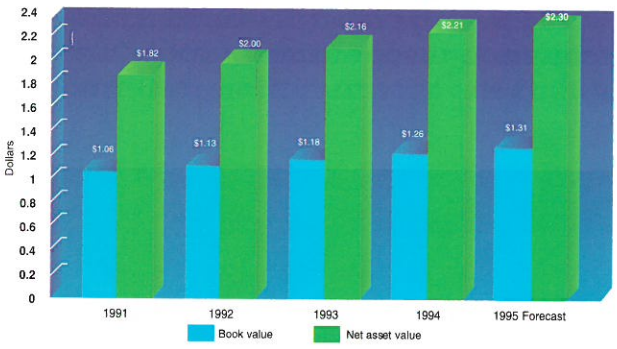
	1995 Projected	1994	1993
Total revenues	$ 6,300,000	$ 5,605,541	$ 3,517,806
Pre-tax income	$ 1,150,000	$ 1,007,510	$ 574,897
Net earnings	$ 575,000	$ 420,702	$ 216,647
Cash and cash equivalents	$ 650,000	$ 1,230,211	$ 563,545
Shareholders' equity	$ 7,000,000	$ 6,716,870	$ 6,248,556
Total assets	$ 22,000,000	$ 18,759,892	$ 19,117,456
Per common share			
Total revenues	$ 1.19	$ 1.05	$ 0.75
Pre-tax income	$ 0.22	$ 0.19	$ 0.12
Net after-tax income	$ 0.11	$ 0.08	$ 0.05
Cash and cash equivalents	$ 0.12	$ 0.23	$ 0.12
Long - Term debt to equity ratio		1.32:1	1.57:1

Shareholders Equity

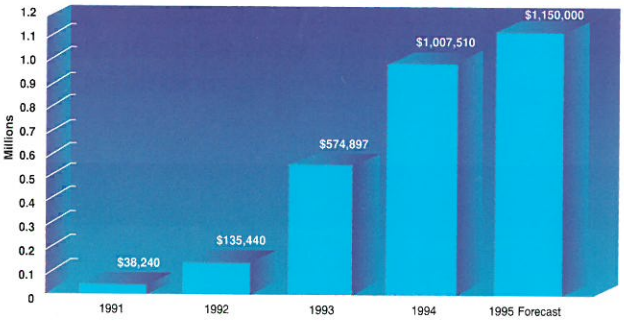
Revenue Growth



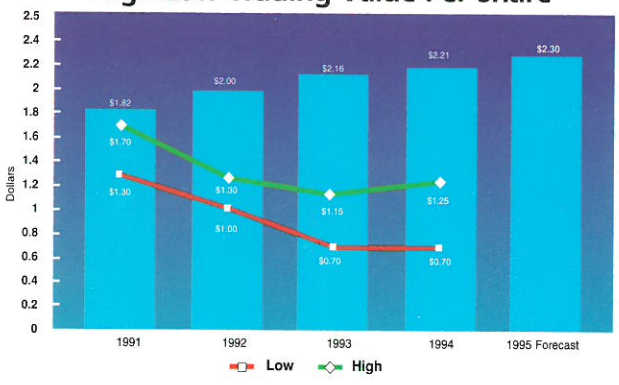
Book Value Per Share
Net Asset Value Per Share



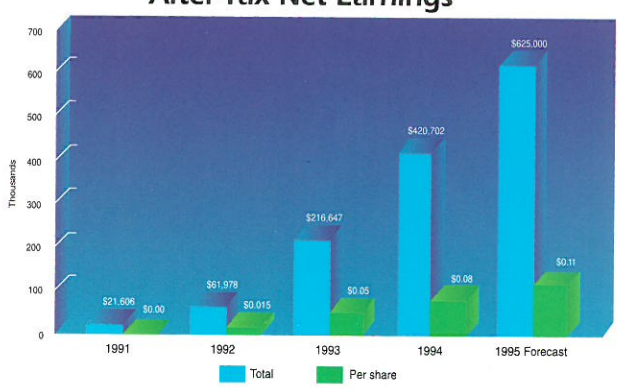
Pre-tax Income



Net Asset Value Per Share compared to High-Low Trading Value Per Share



After-Tax Net Earnings



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