



DESERT BLUME
Area Structure Plan

MUNICIPAL DISTRICT OF CYPRESS NO. 1

January 1991



DESERT BLUME GOLF RESORT
AREA STRUCTURE PLAN
MUNICIPAL DISTRICT OF CYPRESS NO. 1

Prepared for:

Spring Meadows Holdings Ltd.
Medicine Hat, Alberta

By:

Browning & Russell Design Inc.
Kyllo Planning & Development Ltd.
Urban Systems Ltd.

Head Office
1729-12 Street S.W. Calgary
Alberta, Canada T2T 3N1
Tel: (403) 245 5763
Fax: (403) 244 1202



**BROWNING
& RUSSELL**
DESIGN INC

Municipal District of Cypress No. 1
P.O. Box 108
Dunmore, Alberta
T0J 1A0

14 April, 1991

RE: Desert Blume Golf Resort - Area Structure Plan

On behalf of Spring Meadows Holdings Ltd., we are pleased to submit the final Area Structure Plan for the Desert Blume Golf Resort.

We look forward to the approval of the Area Structure Plan.

On behalf of Spring Meadows Holdings Ltd. and our project team, we would like to thank the Municipal District Council and staff for their assistance and consideration provided during this process.

Sincerely,

**BRoWNING & RUSSELL
DESIGN INC.**

**KYLLO PLANNING AND
DEVELOPMENT LTD.**

Gary E. Browning, A.A.L.A., C.S.L.A.

Leo Kylo, M.C.I.P., A.C.P.

ACKNOWLEDGEMENTS

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- . The City of Medicine Hat
- . St. Mary's River Irrigation District
- . Alberta Environment
- . Alberta Government Telephones
- . Alberta Energy Resources Conservation Board
- . Alberta Transportation and Utilities
- . Trans Alta Utilities Corp.
- . Gascan Resources Ltd.
- . Medicine Hat School District No. 76
- . Medicine Hat Catholic School Board of Education
- . Cypress School Division No. 4
- . Pannell Kerr Forster
- . Environment Canada

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Regional Setting Plan
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Regional Transportaion Plan
Area Structure Plan
Utilities Plan

1.0 INTRODUCTION

1.1 PURPOSE AND BACKGROUND

An Area Structure Plan is intended to "... provide a framework for subsequent subdivision and development of an area of land in a municipality..." (Alberta Planning Act, Section 64). The plan is to describe the land uses proposed for the area, population densities, locations of utilities and transportation routes and the intended sequence of development. It is to be an instrument leading to the efficient and timely development of the property.

This Area Structure Plan has been prepared under the direction of the Municipal District of Cypress No. 1. Upon receipt of a proposal for a golf course residential development the Municipal District requested the preparation of this plan in order to:

- Assess and analyze the site and its vicinity for opportunities and constraints relative to the proposed uses,
- Identify the implications and advantages of the proposed development,
- Provide a process for the analysis and formal review of the proposal,
- Establish development conditions, standards and guidelines in order to lead to an efficient development of the site, and
- Establish the appropriate mechanisms and structures to provide for the on-going operation and management of the development.

This plan is intended to achieve these purposes.

1.2 SITE LOCATION AND BOUNDARIES

The subject site is located south of the City of Medicine Hat in the west / central portion of the Municipal District of Cypress No. 1. The property which is the subject of this plan includes:

- Section 11, Township 12, Range 6, West of 4th Meridian.
- The undeveloped road allowance along the west boundary of Section 11 - 12 - 6 - W4.

Internal to Section 11 is a Municipal District roadway running north / south at the centre of the section. This road was developed on a purchased right-of-way in place of the undeveloped road to the west. The intent is to retain this road and to upgrade it as required. At the north boundary of the site is a developed road that is within the City of Medicine Hat. This road is outside the Area Structure Plan boundary but provision is made herein to provide for the upgrading of that route.

1.3 THE PLAN CONCEPT

The intention of the development proposed herein is to develop a world class championship golf course within the attractive setting of the Seven Persons Creek valley. In conjunction with the golf course and its related facilities will be residential development ranging from attached housing units to estate single family homes sited on large plots. The overall project density proposed is 0.3 hectares (0.75 acres) per residential unit. Because of the type and quality of development proposed, it is expected that the residential component will attract primarily an adult market.

Desert Blume Golf Resort is proposed to include:

- Eighteen holes of championship golf with provision for play from four tee positions for each hole.
- A full-service clubhouse with pro-shop, golf instruction, dining and beverage, service, administration and support services.
- A driving range and golf school.
- Access and parking.
- Maintenance facilities and structures.
- On-site water reservoirs.
- Landscaping and site amenities.

While the golf course and residential component will require site development, Seven Persons Creek and much of the valley is to be retained in its present condition.

2.0 SITE INVENTORY AND ANALYSIS

2.1 SURROUNDING LAND USE AND TRANSPORTATION LINKS

The proposed site for Desert Blume Golf Resort is shown within its regional context on the following map. Located along Seven Persons Creek on the south boundary of Medicine Hat and with excellent transportation connections, the development will be convenient for patrons from the City and for residents within the development itself. The proposed development will become an integrated feature within the context of the Municipal District of Cypress No. 1 and with its links to the City of Medicine Hat.

2.1.1 Relationship with Medicine Hat

Desert Blume Golf Resort, while located outside the City of Medicine Hat, will establish a compatible relationship with the City. The development will receive a number of services from the City, including water supply, under a separate purchase contract, and fire protection through a service agreement with the Municipal District. In addition, a variety of services will be provided to residents of Desert Blume by other agencies:

- Education - Being within the service boundaries of the Medicine Hat School District No. 76 (public) and Medicine Hat Catholic Board of Education, school facilities, programs and transportation will be the responsibility of these boards. Busing may be provided by Cypress School Division No. 4. These agencies expect to accommodate students from Desert Blume without difficulty. Educational taxes from the development will support these services.
- Health Care - Being within the Southeast Alberta Health Unit, public health services will be available from this agency. Hospital, extended health care and other medical attention will be available in Medicine Hat either at the Regional Hospital or through practitioners. Ambulance services are provided on a regional basis, including the subject area, and are covered by Municipal District contribution. Seniors housing and nursing home care is provided within Medicine Hat through the Cypress View Foundation, to which the Municipal District also contributes.
- Family and Community Support Services - While the Municipal District of Cypress does not participate in the FCSS program in Medicine Hat, clientele from the rural area are referred to this agency for which fees are paid by the Municipal District.
- Cultural / Recreational Services - No agreement exists between the City of Medicine Hat and the Municipal District of Cypress No. 1 regarding cultural and recreational services. However, patrons of the library from the Municipal District are levied an additional fee. The Municipal District re-imburses the patrons for half of this levy. Other recreation services partaken by rural residents reflect the normal user fees. On the other hand, taxes paid to the Municipal District support services outside the City, some of which are used by City residents.

While the above comments outline those services provided by the City of Medicine Hat, Desert Blume Golf Resort can be expected to provide services to City residents as well. The most obvious of these is the opportunity to golf on a championship course. The local patrons will pay for this service, but the course will also attract numerous tournaments and golfing tourists. These patrons will be lodged in Medicine Hat and will add greatly to the tourist and retail economy in the City.

No retail services are planned for Desert Blume so residents of the development will shop in Medicine Hat. A number will also operate businesses and provide services within the City.

While extensive recreation facilities are not intended within Desert Blume, an open space corridor is planned along the brow of the west hill. This corridor, which will have public access will offer a scenic overview of Seven Persons Creek and Desert Blume. This feature is intended to be linked to a future walking / bike path system connecting to the Medicine Hat Regional Trail System.

Other on-site recreation opportunities are likely to be more local in nature and include short nature trail loops and the use of the clubhouse for community events. These may be used to some extent by City residents.

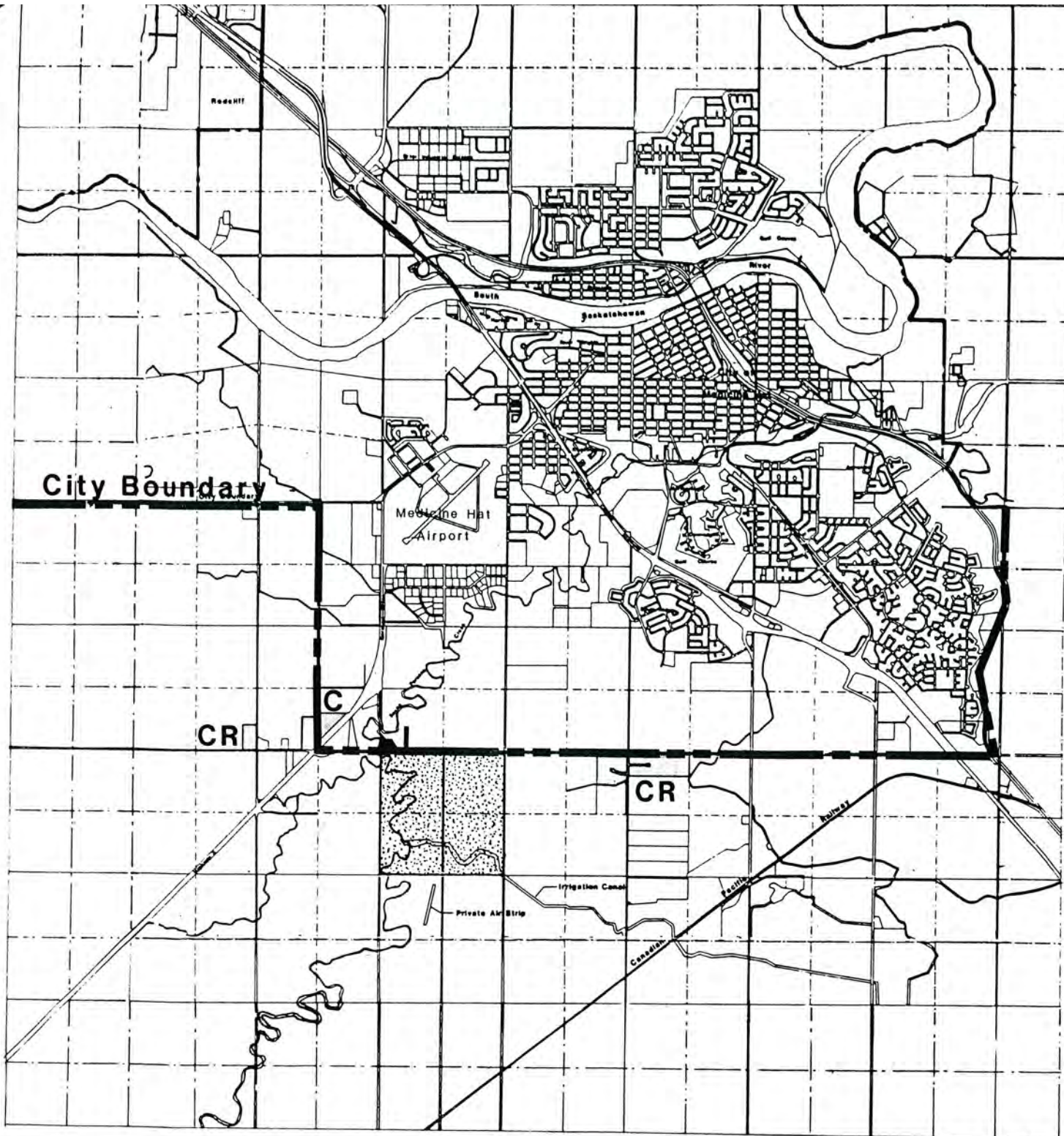
In summary, a number of Medicine Hat services and facilities will be utilized by Desert Blume. The majority of these will be financially supported by the residents of the development directly or through their tax contributions to the Municipal District. On the other hand, the City of Medicine Hat will gain substantial economic benefits through increased tourism and retail trade. It is suggested that an advantage will accrue to the City from this development.

2.1.2 Relationship with the Surrounding Rural Community

The land uses surrounding Desert Blume are predominantly agricultural. Although the City of Medicine Hat boundary extends to the north side of the site, agriculture continues in this recently annexed land. While up to-date land use data are presently not available for this area, the Southeast Alberta Regional Planning Commission's Urban Fringe Study (1987) and ID #1 Land Use Study (1983) provide a reasonable basis for analysis. Some additional update has been conducted in this analysis.

As shown on the Adjacent Land Use Plan, the following are adjacent or nearby Desert Blume:

- Multi-lot country residential developments are located in NW 7 - 12 - 5 - W4M, NE 12 - 12 6 - W4M and SE 16 - 12 -6 - W4M;
- A small industrial use (auto - body shop) is in SW 14 - 12 - 6 - W4M but is presently not in operation;
- A cemetery is located in SE 15 - 12 - 6 - W4M;
- An industrial subdivision is sited south of the Medicine Hat Airport in Section 23 - 12 - 6 - W4M.



-  Subject Site
-  I-Industrial
-  CR-Country Residential
-  C - Cemetery



Figure 1:
ADJACENT LAND USE

- A number of intensive livestock operations are found within the City limits and in the Municipal District of Cypress No. 1 (See Figure 2).

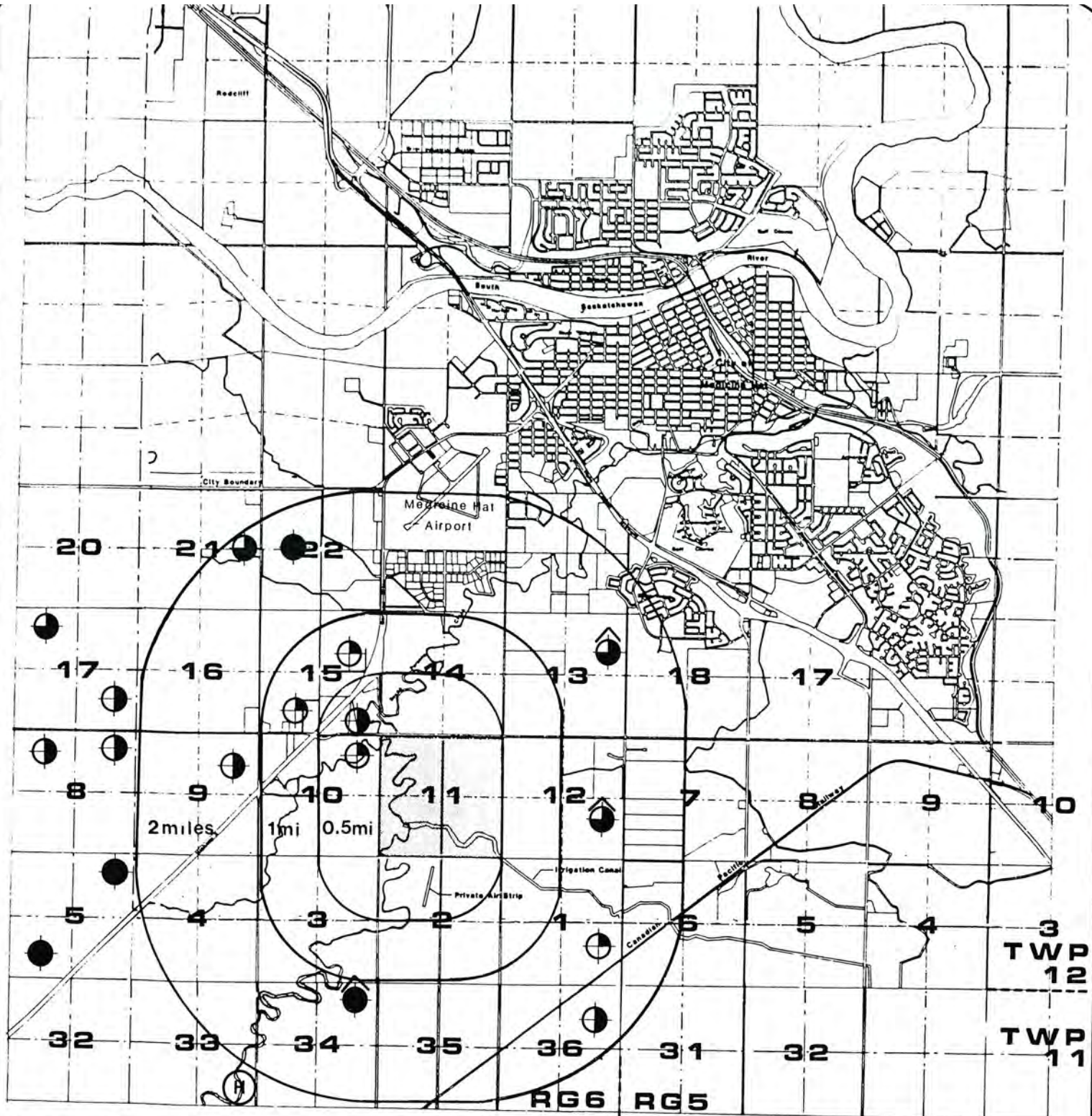
Apart from those uses identified on the plan, other land uses are also present in the surrounding area:

- A number of single parcel country residential and small hobby farm holdings are found in the area Southwest of the City limits. Approximately seven of these are found along Highway 3 just outside of the City in Section 10 - 12 - 6 - W4M. This would indicate that this area, just west from Desert Blume, is in transition from farming to non-agricultural use. This site is bisected by a tributary to Seven Persons Creek, it is scenic, has good access and, similar to Desert Blume, has greater value for uses other than agriculture.
- Natural gas facilities are found throughout the surrounding area, extracting sweet gas from the Medicine Hat field. These facilities pose no restriction on development of Desert Blume, other than those of specific on - site facilities which will be discussed later in this section.
- Irrigated farm production prevails in the vicinity, with water supplied by the St. Mary's River Irrigation District. This system is now used extensively for almost every quarter section that does not have topographic constraints. Consequently, the valleys of Seven Persons Creek and its tributary result in non - irrigated grazing land or hobby farm corridors through irrigated farmland. However, these valleys are important conveyance courses for irrigation water. Predominant crops are forage, grain and oil - seed. The irrigated farmland poses little obstacle to development of Desert Blume, although care will be taken to ensure that the flows in Seven Persons Creek are not affected by this development.

Apart from intensive agricultural operations, the adjacent land uses do not impede the development of Desert Blume. The westerly portion of the site is not presently used for intensive production; it provides only seasonal grazing. The easterly portion presently has an irrigation pivot covering about 48 hectares (120 acres). Following development, the land irrigated with treated effluent will comprise 35 hectares (87 acres). Additional acreage may be irrigated with water from the Irrigation District.

Intensive agricultural operations are common in the vicinity as shown on the Adjacent Agriculture Plan. Ranging from small, seasonal beef feedlots, to large feeding operations, to dairy farms and hog production, these types of agricultural facilities present the most serious limitations for development of Desert Blume. However, the following conditions affect this initial perspective:

- The most recent data relative to the type, size and duration of these operations is from 1984. Since that time, it is not believed that any of the nearer facilities have undergone any expansion or new operations have been undertaken in the area. Some in the vicinity may have actually been reduced in size.
- The intensive livestock operations in the area have not been registered with the Board of Health nor with Alberta Environment and therefore up - to - date data have not been kept nor have accurate setbacks been calculated.



Legend: Intensive Agriculture Operations

- | | | |
|----------------------------|-----------------------|------------------|
| ⊕ Cattle Feeding Under 100 | ● Cattle Feeding 1000 | ⬆ Dairy 500-1000 |
| ◐ Cattle Feeding 100-500 | ⬆ Dairy Under 100 | ● Dairy 1000 |
| ● Cattle Feeding 500-1000 | ◐ Dairy 100-500 | Ⓜ Hogs 100 |



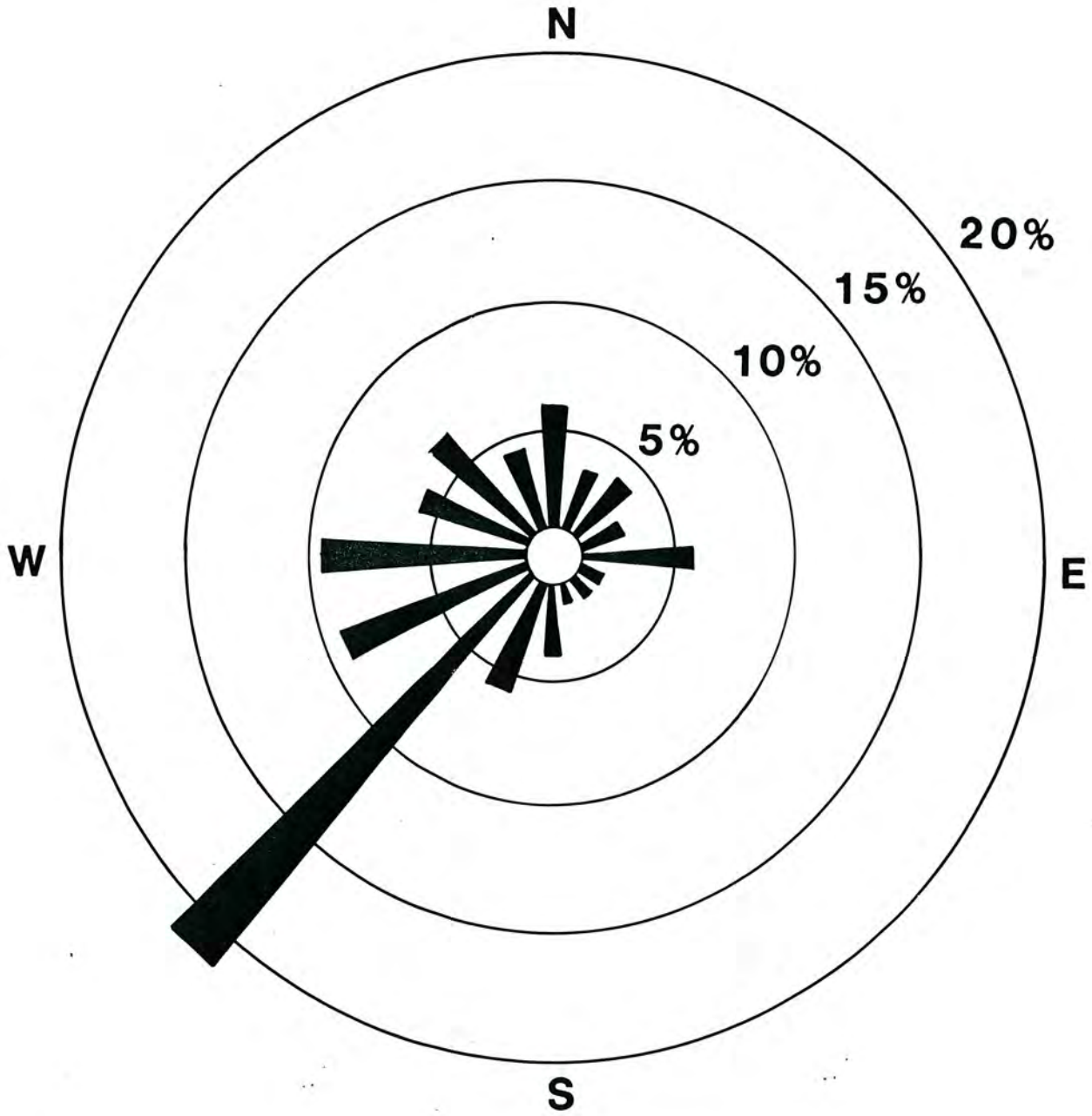
**Figure 2:
ADJACENT AGRICULTURE**

- The City of Medicine Hat expanded southwest into this area through a recent annexation. Two feedlots and one dairy operation were taken into the City but have continued to operate with an understanding that manure has to be handled properly.
- With the expansion of the City, the general planning policy respecting intensive livestock facilities would indicate that new or expanded operations within 4.8 kilometres (3 miles) of the City boundary would be subject to separation distance requirements. This condition would apply to most of the operations of concern to Desert Blume.
- The most serious aspects of intensive livestock operations which affect residential or recreation development are the potential for odour problems and the possibility of manure run off into water courses. The separation distances to the two up - stream livestock facilities on Seven Persons Creek appear sufficient to prevent a run off problem. However, odour is more serious especially for up - wind, year round operations. Winter use facilities present less of a problem. As indicated by the wind rose, (Figure 3), the predominant local wind direction, with over 20% frequency, is southwest, followed by west and west - southwest at just less than 10% each. Winds from the west - northwest to north directions, the direction of the closest facilities to Desert Blume, comprise less than 25% frequency.
- The predominant direction for wind at Desert Blume has no large operations within a 3.2 kilometre (2 mile) distance. However, two feedlot operations just beyond that distance are understood to be large, in excess of 1000 head on site. Because of their size and the predominant winds, they may still produce an occasional odour at Desert Blume. This occurrence should not be a reason to prevent the development of Desert Blume nor to restrict the operation of these livestock facilities.
- Planning authorities suggest minimum separation distances, assuming open feedlot or free stall dairy operations, as follows:

<u>Type of Operation</u>	<u>100 Head</u>	<u>500 Head</u>	<u>1000 Head</u>
Beef Herd	522m (1714 ft)	813m (2666 ft)	1000m (3283 ft)
Feeder Cattle	447m (1465 ft)	724m (2375 ft)	883m (2897 ft)
Dairy Herd	350m (1151 ft)	569m (1865 ft)	700m (2298 ft)

- As shown on the Adjacent Agriculture Plan, the nearest operations to Desert Blume are to the west and northwest and include:
 1. A beef overwintering operation in NE 10 - 12 - 6 - W4M understood to be less than 100 head. This facility is some 700 metres (2300 feet) from the first phase proposed for Desert Blume. Because this operation confines cattle during the winter when odours are lower, and because of the predominant wind direction, it is suggested that this facility should not prevent the development of Desert Blume. Conversely, the overwintering of cattle at this site should not be unduly restricted.

Wind Rose - Medicine Hat, Alberta



Frequency of Wind Direction based on a yearly average.

Figure 3:
WIND ROSE

2. A beef operation in SE 15 - 12 - 6 - W4M understood to contain between 300 and 500 head for three months each winter. This operation is within the City limits and is some 1000 metres (3283 feet) from the first phases and some 600 metres (1968 feet) from the later development phases proposed for Desert Blume. As this facility is larger and is within the City, its continuation for a long period is doubtful. Also, because it is used only for a short time during the winter and because of prevailing winds, it is not seen as a restriction on the development of Desert Blume.
3. Two small feedlots in the SW and NE of 15 - 12 - 6 - W4M and one larger operation in NE - 9 - 12 - 6 - W4M are not considered to be limitations because of adequate separation distances. It is also understood that the operation in SW 15 is no longer used.

- The operation of livestock confinement facilities in the vicinity should not be unduly restricted by the development of Desert Blume. These should be allowed to continue to operate at present stock levels and duration of confinement but any planned expansion should be analyzed in accordance with minimum separation distances from the City of Medicine Hat.
- As urban expansion of Medicine Hat proceeds southwest, along with the development of Desert Blume, land values in the area will increase and uses other than agriculture will prevail. This transition will be accelerated in the valleys of Seven Persons Creek and its tributary, as is already evident in Section 10 - 12 - 6 - W4M just west of Desert Blume. Thus, the larger of the intensive livestock facilities are likely to be short - lived, not because of potential odour problems but because of increasing land value.

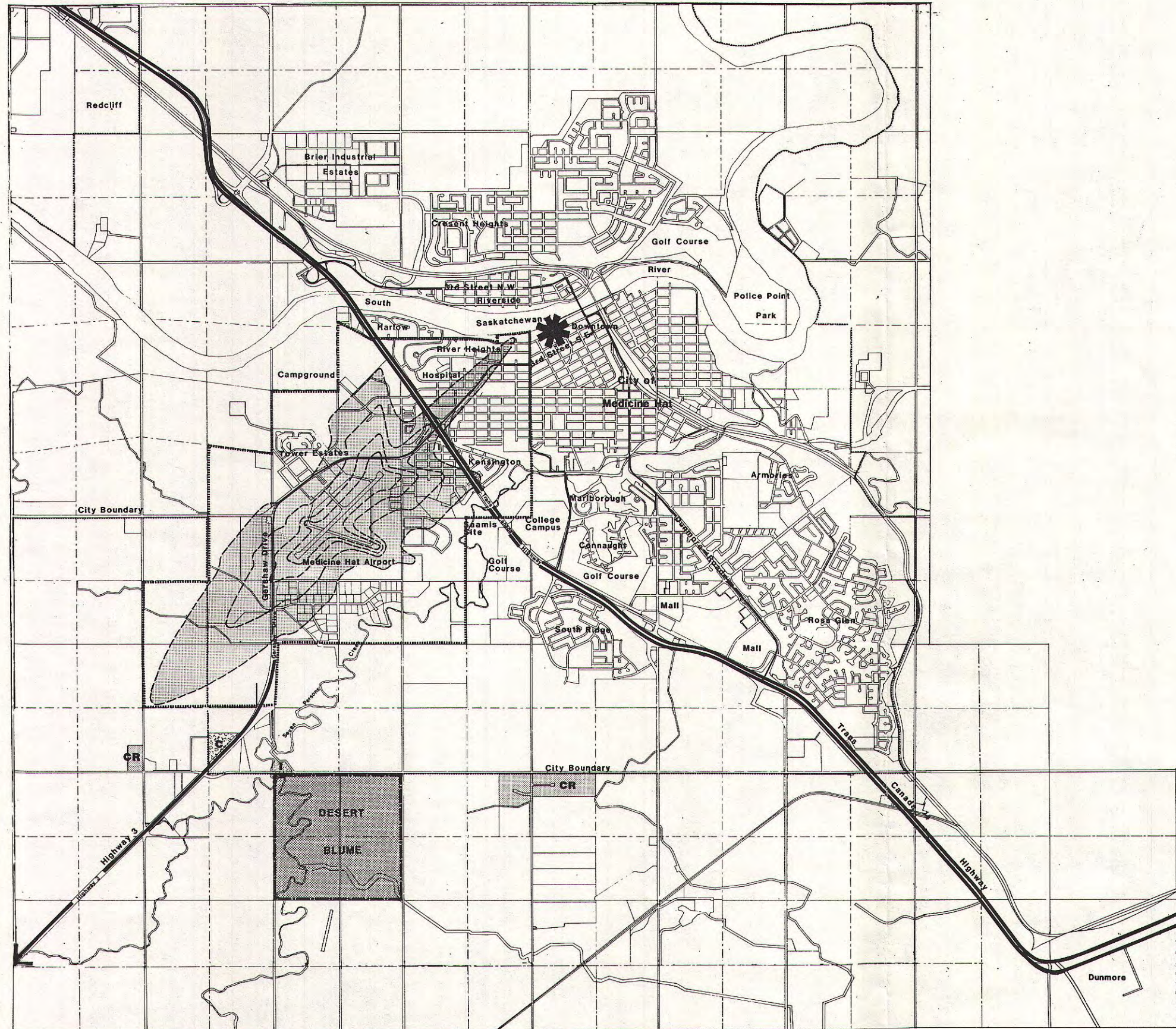
In summary, livestock confinement is prevalent in the vicinity of Desert Blume but due to seasonal operations, wind direction, separation distances, proximity to the City and the anticipated lifespan of these, they should not prevent the development of Desert Blume. Conversely, the presence of occasional odours at Desert Blume should not present restrictions on the continuation of these agricultural uses.

2.1.3 Constraints to Development






Apart from the limitation of intensive livestock operations discussed above, few constraints to development of the Desert Blume site are present. The most significant of these, slope stability and flood protection, are shown on the following Development Constraints Plan and will be discussed later in this section.

With respect to other site restrictions, the presence of natural gas wells pose minor limitations. The following natural gas facilities are recorded by the Energy Resources Conservation Board in Section 11 - 12 - 6 - W4M:


- A sweet gas well located in LSD 6, owned and operated by Gascan Resources Ltd.
- A sweet gas well located in LSD 7, owned and operated by the City of Medicine Hat.



LEGEND:

-  Country Residential
-  Cemetary
-  Light Industrial
-  Airport Noise Exposure Forecast Contours
-  Airport Vicinity Protection Area

Scale: 1:20 000
 0 200 500 1000 1500 2 500
 December 1990



CONSULTANTS:

Browning & Associates
 Design Group
 Landscape Architects Golf Course Architects

KYLLO PLANNING & DEVELOPMENT LTD.


USI urban systems ltd.
 consulting planners and engineers

DRAWING:

**REGIONAL
SETTING**

PROJECT:

**DESERT BLUME
AREA STRUCTURE PLAN**



THE MUNICIPAL DISTRICT OF CYPRESS NO.1

- An abandoned well located in LSD 11, drilled and plugged by North Canadian Oils.
- Gas collection pipelines owned and operated by Gascan. These are also shown on the Development Constraints Plan and are of 114mm (4.5 inch) diameter steel construction, licensed for 4960 kpa (720 psi). Normal operating pressures are under 700 kpa (100 psi).
- A gas collection pipeline owned and operated by the City of Medicine Hat leading south from their well in LSD 7. The line is 60mm (2.4 inch) steel and licensed for 3450 kpa (500 psi). Normal operating pressures are less than 700 kpa (100 psi).

The required setback for development from these facilities is the width of the right - of - way or easement. Based on preliminary discussions with the companies, the following are the proposed methods to protect these facilities from damage during development and ensure they do not pose a hazard for future residents:

- The Gascan well (LSD 6) will be incorporated in an island in the entry road to the Golf Course. It will be screened with a landscaped feature. Access for well servicing will be ensured.
- The City of Medicine Hat well (LSD 7) will be retained in its current state.
- The abandoned well will be located and any remaining equipment (ie. cemented surface casing, etc.) will be protected within the maintenance yard.
- The City gasline will remain in its present condition and location.
- The Gascan pipelines which would impede development, will be relocated within easements or in new roadways as required. Where these lines cross the golf course, they will be staked and protected or relocated during construction.

Prior to development proceeding, plans will be prepared for these relocations and negotiations with the appropriate companies completed.

The only other factor affecting the Desert Blume is the undeveloped road allowance along the west side of Section 11 - 12 - 6 - W4M. As this road allowance does not fit into the design, it is proposed that it be closed and exchanged for the roadway to be constructed slightly farther east. Access to the adjacent properties will be ensured.

The Vicinity Protection Area and Noise Exposure Forecast Areas (NEF Contours) for the Medicine Hat Municipal Airport are shown on the Transportation and Local Services Plan. The Desert Blume site does not fall within this area and will not be subject to any accoustical or construction conditions.

2.1.4 Vehicular Access

As shown on the Regional Transportation Plan, access to the Desert Blume development will be convenient and efficient.

The City of Medicine Hat intends to construct a south collector road leading from Highway 3 across Seven Persons Creek at the "Low - Level Crossing", along the south boundary of the City (and north boundary of Desert Blume) connecting back to the TransCanada Highway at the Dunmore Road Interchange. This program is expected to be completed over the next years as traffic warrants and the portion along the north boundary of Desert Blume will be upgraded by the developer. This road will provide excellent connections to the City, the Trans Canada Highway and Highway #3

The Municipal District of Cypress No. 1 has been upgrading an east/west road one mile south from Desert Blume as a south bypass linking Highway 3 and the TransCanada Highway at Dunmore. All but 1.6 kilometres (1 mile) of the upgrading is completed and a new bridge across Seven Persons Creek is planned. Construction is expected to be complete within three years and this road will provide excellent connections to the rural area south of the Desert Blume Development.

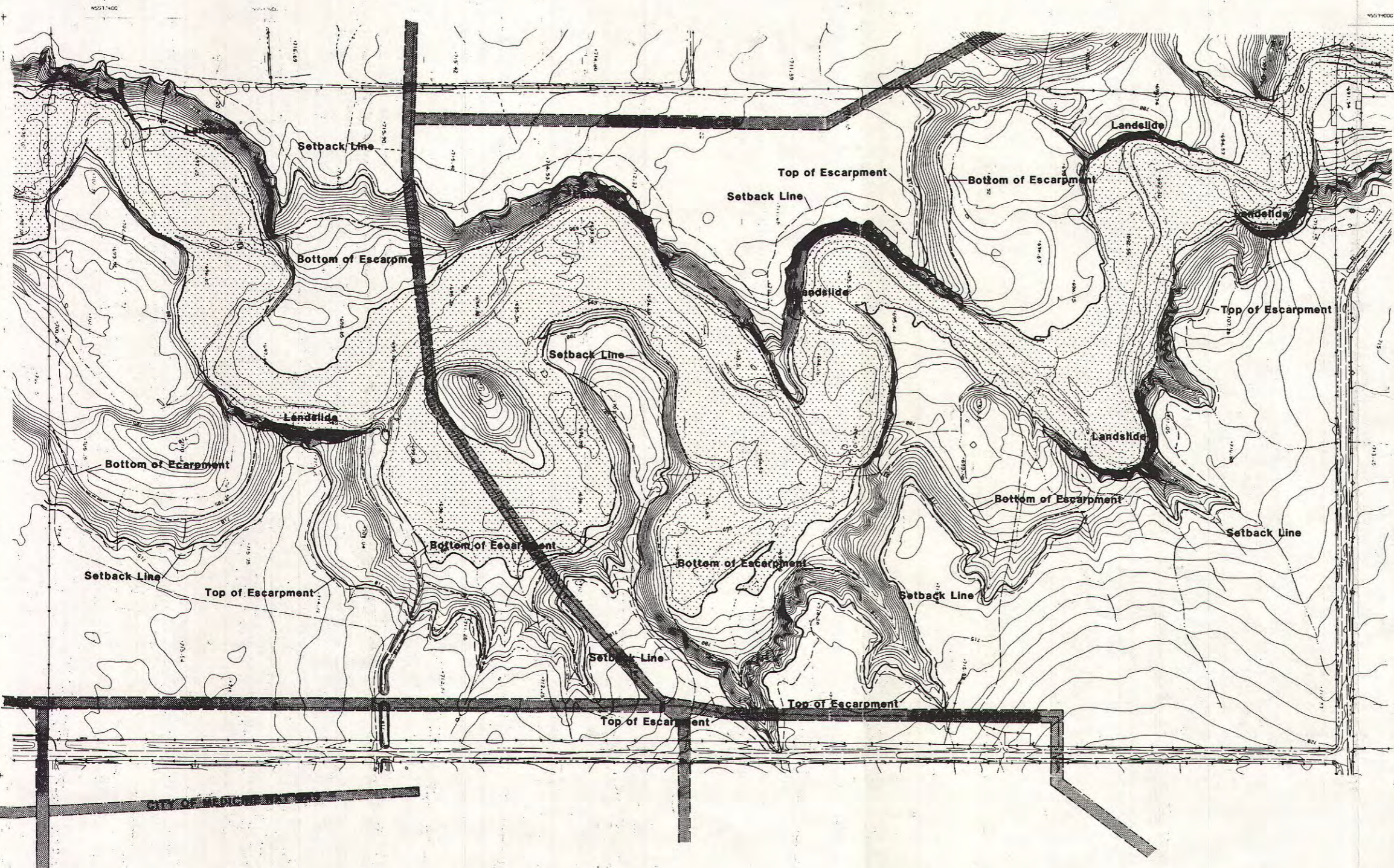
2.2 TOPOGRAPHY AND SLOPES

The topographic character of the study area is characterized by mildly undulating upland prairie that drains to the natural coulee of the Seven Persons Creek (a tributary of the South Saskatchewan River). The dramatic change in elevation of over 25 metres, from a height of 715 metres, in the west half and south east corner of the site to the lowest elevation of 689 metres, where Seven Persons Creek exits the property at the north east corner, provides an ideal setting for a golf resort. A SMRID irrigation canal flows through the south portion of the property and spills into the Seven Persons Creek.


The Seven Persons Creek coulee can be considered the main topographic feature of the project site. Most of the coulee wall segments are moderate to steeply sloping. For detailed planning purposes a slope analysis plan has been prepared (not included in this document) that describes six (6) classes of percentage slope as adapted from The Canadian System of Soil Classification, Canada Soil Survey Committee, (1976).


The slope classes identified for the one (1) metre contour interval mapping are described as follows:

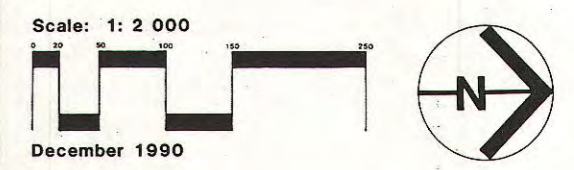
0 - 5%	-	level - very gentle slopes
5 - 10%	-	gentle slopes
10 - 15%	-	moderate slopes
15 - 20%	-	strong slopes
20 - 25%	-	strong - very strong slopes
25% +	-	very strong - extreme slopes



LEGEND:

 1 in 100 Year Floodplain Study (1986)
As extrapolated from the Medicine Hat Floodplain Study

 Gas Pipeline R.O.W.



CONSULTANTS:

Browning & Associates
Design Group
Landscape Architects Golf Course Architects

KYLLO Planning & Development

USI urban systems ltd.
consulting planners and engineers

DRAWING:


DEVELOPMENT

CONSTRAINTS PLAN

PROJECT:

DESERT BLUME

AREA STRUCTURE PLAN



THE MUNICIPAL DISTRICT OF CYPRESS NO.1

2.3 GEOTECHNICAL CONSIDERATIONS

A preliminary geotechnical investigation was carried out for the west half of the subject site. Geotechnical engineers limited their investigation to topographic maps and aerial photo interpretation. No on site investigations were conducted for the preparation of this Area Structure Plan. The objective was to provide a preliminary assessment as to the extent of usable land for development.

Areas potentially suitable for development were identified using the approach outlined in the "River Valley Related Regulations" section of the City of Medicine Hat Land Use By - law. The Development Constraints plan shows the Top of the Escarpment and Bottom of the Escarpment, together with a preliminary development setback line along the Top of Escarpment.

The Top of the Escarpment setback for Desert Blume was established using the procedure described above. For purposes of this preliminary assessment, a relatively conservative setback of 1.5 times the slope height (Depth of Valley) has been assumed adjacent to landslide and steep slope (> 33 percent) areas. Based on the work completed to date, there should be no geotechnical constraints to development in upland areas outside the Top of the Escarpment setbacks.

Most valley wall segments along Seven Persons Creek are moderately to steeply - sloping, and should only be considered for development subject to completion of additional site - specific geotechnical investigations. Where the overall slope is less than 15% (8.5 degrees), there is no setback requirement and development is considered feasible from a geotechnical stability point of view.

As noted in the City Regulations, only "low density" recreational land uses can be considered in valley bottom areas below the 1 in 100 year flood elevation. Some residential development potential may exist in valley bottom areas above this elevation, in which case a Bottom of Escarpment development setback would apply. For most slopes (with slopes of 15 to 33 percent), a 4 m minimum setback would apply. The setback increases to as much as 1.5 times Depth of Valley adjacent to the landslide and steep slope areas (i.e. equivalent to the Top of the Escarpment setback).

The 1:100 year flood elevation (and floodplain limits) although not known in detail, have been extrapolated from the Medicine Hat Floodplain Study (1986). The general extent of the floodplain boundaries are shown on the Development Constraints Plan. Further hydrological studies will be completed during the detailed design phase.

In conclusion, the Top of the Escarpment development setback shown defines the areas that are considered, on a preliminary basis, to be suitable for residential development from a geotechnical point of view. As noted, some potential may also exist in higher sections of the valley bottom.

Prior to the project proceeding it will be necessary to confirm the results of this preliminary geotechnical assessment by means of a site - specific program of field testing and laboratory analysis.

2.4 VEGETATION

The subject property can generally be described as an upland prairie, short grass plains that have been modified by use as livestock grazing and crop production. Much of the east half of the site is under mechanical irrigation for hay and grass production; the remainder is used for pasture. The west half of the property is unirrigated and used exclusively as grazing land.

General vegetation patterns of the area occur along the Seven Persons Creek coulee system and the numerous intermittent drainage channels that feed the coulee. Native grasses typical of the semi - arid prairie are not found in any abundance because of the over grazing. Isolated occurrences of Sandburg bluegrass (*Poa secunda*) and blue joint (*Agropyron Smithii*) along the wetter intermittent drainage channels or depressional areas; and common club moss (*Salaginella densa*) and prairie phlox (*Phlox Hoodii*) are found in the drier upland grazing areas. Also, two species of cacti, (*Opuntia polyacantha*) and (*Opuntia neomanilaria*) are found along drier, south facing exposures and along coulee ridges.

The vegetative cover along the coulee system, extending upward into the drainage channels includes the following common trees and shrubs in varying densities; winterfat (*Eurotia lanata*), sagebrush (*Artemesia sp.*), buck brush (*Symphoricarpos occidentalis*), greasewood (*cobatus vermiculatus*), willow (*salix sp.*), yarrow (*achillea millefolium*) and the prairie rose (*Rosa sp.*).

The above listed plants form the general vegetative cover of the subject site. More specific vegetation analysis and species identification have not been attempted for the purposes of this report. However, the vegetation prevalent on site will not limit development and does not offer significant value to restrict the project.

2.5 WILDLIFE

In the general project work carried out for the study several forms of wildlife (e.g., deer, antelope, rabbits, waterfowl, etc.) were seen on - site. No wildlife inventory was carried out; rather a description of the subject site's capability to support wildlife is provided based on Canada Land Inventory (CLI) information sheets.

The land capability class for ungulates is Class 4 (4 CGA) and for waterfowl Class 6 (6 TA).

For ungulates, the subject site is described as having moderate limitations to the production of ungulates. These limitations are due to characteristics of the site that affect the quality and quantity of habitat and to climatic factors that limit the mobility of ungulates or the availability of food and cover.

The capability of the subject site to support the production of waterfowl is described as very low. Site limitations identified include: aridity, salinity, flat topography, and extremely porous soils.

It is recognized that the CLI classification system is very broad and the information acquired from this source, combined with more detailed site data, is considered to be generally correct. Because of the increasing development in this sector of the Municipal District, wildlife populations will be in transition and species more attuned to development will prevail. These will include a variety of small mammals (rabbits, ground squirrels), amphibians (frogs, etc.) and song birds.

2.6 VISUAL ANALYSIS

A visual analysis of the subject site was conducted and considered the following inventory:

- views (on - site, off - site)
- landscape disturbances (roads, trails)
- prominent landscape features (vegetation masses, coulee bluffs)
- existing conditions / visual distractions (gas - wells, power lines, fencing)

The purpose of this visual analysis was to identify and determine valuable aesthetic qualities that would be maintained or enhanced and to mitigate negative aesthetic factors.

Clearly, the Seven Persons Creek and coulee system is the outstanding site feature, offering extraordinary view potential for both subdivision and golf development. It is intended that the primary valley features be retained and complemented by the development.

2.7 CLIMATE

Desert Blume Golf Resort was named because of the "desert like" conditions of the site. This area of the Province is classed as continental semi - arid with the lowest mean annual rainfall and highest mean annual temperature in the Prairie Provinces.

The mean annual temperature for the area is approximately 5.1 °C. On infrequent occasions summer highs of 40°C and winter lows of -40°C occur.

The mean annual precipitation as determined by Environment Canada is 347.9 mm (13.7 inches).

Dr. A.H. Laycock at the University of Alberta calculated that the vegetative season (ie., the period during which the moving five day average minimum temperature is consistently above 0°C) averaged over 170 days. The area receives, on average, 2325 hours of bright sunshine per year; or 8.5 hours out of an average of 14.5 hours of daylight for everyday of the vegetation season.

Windy days are prevalent in Medicine Hat. One percent of the days are calm. The wind rose (see Figure 3) clearly shows the predominant winds as being from the south - southwest.

The area can be summarily described as having a relatively long growing season; a long day length with a high percentage of sunshine and a combination of high summer temperatures and winds. These climatic factors all favor irrigation practices and are particularly favorable for golf course developments. A summary of climatic data is contained in the Appendix.

2.8 FLOOD PROTECTION

In May 1986, the River Engineering Branch of Alberta Environment released a study entitled "Medicine Hat Floodplain Study". The study investigated the 1 in 100 year flood risk area adjacent to the South Saskatchewan River, Ross Creek and Seven Persons Creek in the City of Medicine Hat.

The report determined that, in the 1 in 100 year flood, Seven Persons Creek would carry 121 m³/sec or 4273 cfs and that the Seven Persons Creek valley is subject to flooding. Discussions with Mr. T.H. Winhold PEng., author of the report, indicate that the water depths in the valley inside the City limits (the study dealt only with the City of Medicine Hat) may be over a metre above the present creek bank in places. Similar flooding can be expected in the Desert Blume Golf Course area as the slope and shape of the Seven Persons Creek valley is about the same as the area studied and described by Mr. Winhold.

A detailed hydrologic analysis of the W 1/2 11 - 12 - 6 - W4M will be undertaken at the time detailed design is done for the golf course and residential subdivision.

None of the residential lots created will be below the 1 in 100 year flood levels. If a sanitary sewer lift station and stand by power plant fall within the flood plain they will be designed and built in such a manner that they are above the 1 in 100 year flood level and that road access to the facility can be maintained in the event of a flood.

2.9 ARCHAEOLOGICAL / HISTORICAL RESOURCES

Alberta Culture, in its Archaeological Sensitivity Rating, assesses the area along Seven Persons Creek as having a high potential for archaeological and cultural resources. Therefore it is expected that a Historical Resources Impact Assessment (HRIA) will be required by Alberta Culture prior to commencement of development. If required, it is intended that this study be conducted in early 1991. Any features discovered on the site will be protected or properly recovered and mitigated (e.g., incorporated into design features or public reserve in more detailed stages of planning) prior to site construction.

3.0 DEVELOPMENT PLAN

3.1 THE DESERT BLUME PLAN

3.1.1 Development Concept

Sited in the scenic valley of Seven Persons Creek, Desert Blume has been designed as an intergrated development featuring:

- A world class 18 - hole championship golf course with driving range, golf school, clubhouse and maintenance facilities.
- A golf - residential development offering novel housing opportunities to present and prospective residents of the region. A variety of housing forms, sizes and types are to be offered, all with full services.
- Open spaces focusing on the scenery and natural features of the Seven Persons Creek, the irrigation spillway and the valley escarpments.

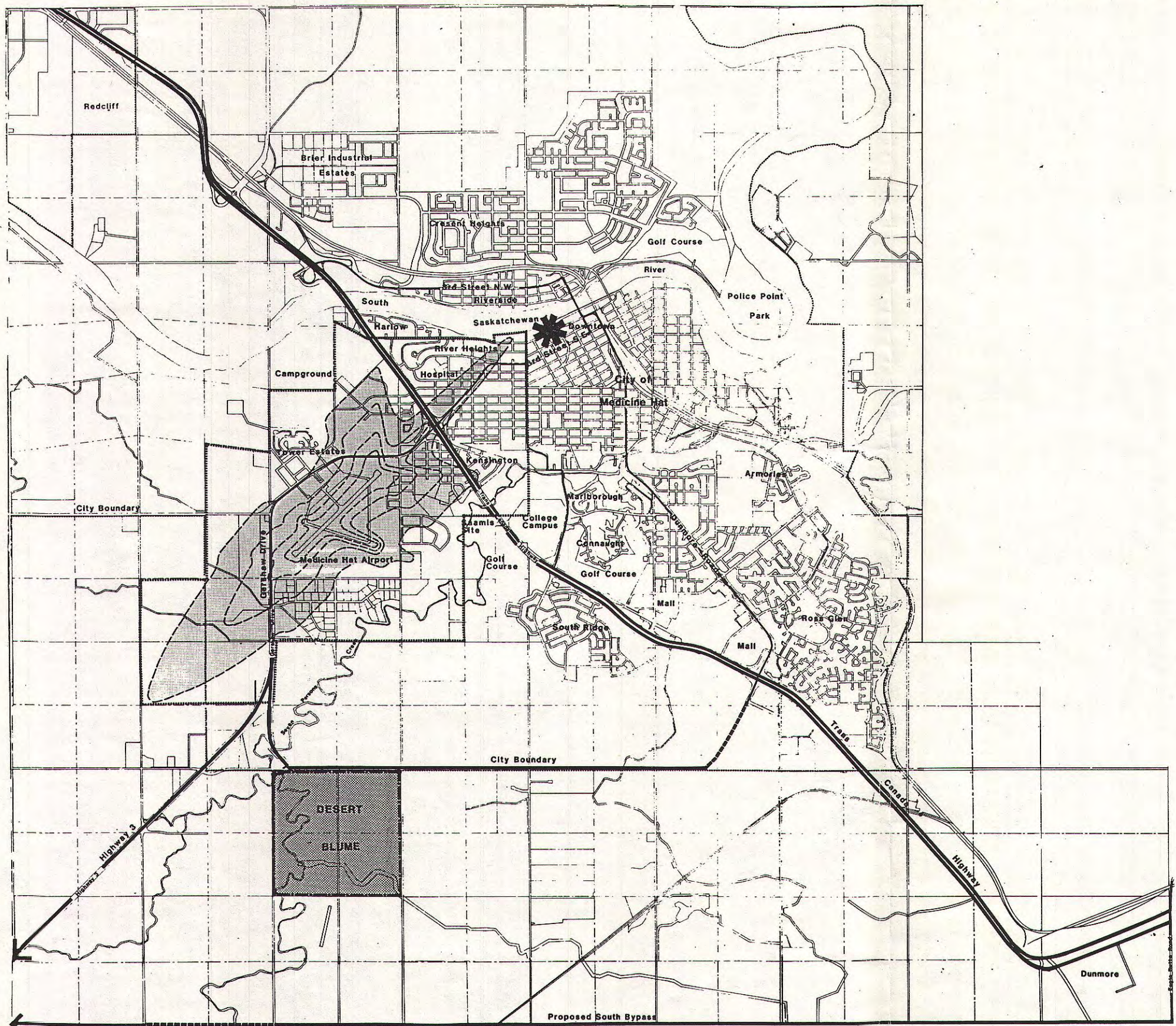
The substance of the design is shown on the Area Structure Plan. This plan is intended to show the generalized design and not to indicate rigid design or development boundaries.

3.1.2 Market Conditions



When the concept for Desert Blume was initiated, Pannell Kerr Forster Management Consultants were commissioned to analyze the market potential for both the golf course and the residential development. It is upon the findings of those two reports that the present concept has been prepared and proposed to the Municipal District of Cypress No. 1. The following are relevant conclusions from the Pannell Kerr Forster studies.

1. Residential Market:

- The Alberta economy is expected to remain stable over the next several years.
- The Medicine Hat region, while it did not rebound as rapidly as other Alberta centres, has also not been as subject to declines. Instead, the area has experienced slow but steady growth reflected by the population of the City expanding by more than 13% between 1979 and 1989.
- Projected population growth is expected to reach 1 % per annum over the next fifteen years which alone will generate a demand for some 150 units per year and growing to about 200 units per year toward the end of its period.



LEGEND:

-  Trans Canada Highway
-  Road Upgrading Incomplete
-  Airport Noise Exposure Forecast Contours
-  Airport Vicinity Protection Area

Scale: 1:20 000
 0 200 500 1000 1500 2 500

December 1990



CONSULTANTS:

Browning & Associates
 Design Group
 Landscape Architects Golf Course Architects

KYLLO PLANNING & DEVELOPMENT LTD.


USI urban systems ltd.
 consulting planners and engineers

DRAWING:

**REGIONAL
 TRANSPORTATION**

PROJECT:

**DESERT BLUME
 AREA STRUCTURE PLAN**



THE MUNICIPAL DISTRICT OF CYPRESS NO.1

- Household size is decreasing in the area; in 1971 it averaged 3.29 persons per unit and in 1986 it had dropped to 2.73. This trend is expected to continue but less dramatically and by 1991 the mean household size is expected to be 2.58 and by 2001 it will likely be 2.50. This reduction in household size will generate a demand for more than of 150 housing units per year.
- Replacement of housing stock will continue in the Medicine Hat area but it will fluctuate in volume from year to year. Expected replacement may range from 50 units (0.3% of housing stock) to as much as 150 units (1% of stock) per year.
- Single family development has accounted for 75% of all housing starts over recent years. It is expected that single family homes will continue to dominate the market but multiple - unit developments will increase to about one third of all new units over the next decade.
- A part of the increase in demand for multi-family development will result from the "empty - nester" market; households over ages of 45 to 50 and whose children have left home. Adult - oriented projects have become very popular in Western Canada and in Medicine Hat, particularly where much of the maintenance is provided, allowing more time for recreation and travel. The most popular projects are those which offer a strong amenity value.
- Over half of the households in the Medicine Hat area are over 45 years of age and this proportion is the fastest growing sector of the population. Over the next twenty five years, those over age 45 can be expected to triple.
- Medicine Hat and vicinity has become a retirement centre for southeastern Alberta and southwestern Saskatchewan. The provision for additional housing products with enhanced amenity values will increase this trend.
- Over the past decade single family residential lots have been supplied primarily by two developers, the City of Medicine Hat and Hat Developments Inc. While these developers have been able to supply an adequate volume of serviced residential land, the range of product has been somewhat limited. The demand for higher quality, view and amenity sites has exceeded the supply over the past few years.
- While market prices for standard single family lots have been modest, premium prices can be realized for better quality sites. These will in turn, generate better quality housing and increased economic value.
- Because of the narrow range of product and the limited completion, the market potential for a new developer offering a more unique, high amenity product is very good.

2. Golf Market

- The two 18 - hole golf courses in the City of Medicine Hat are over - subscribed and the expanded course at Redcliff is also expected to be at capacity shortly.

- . Golf is increasing in its participation across North America by more than 10% per year and this trend is expected to continue over the next twenty or more years. At this rate, the participation doubles every 7.5 years which, for the local market only, requires a doubling of the number of golf courses.
- . The aging of the North American population will continue this trend as those over age 45 play the majority of the rounds of golf. This situation is comparable for the Medicine Hat region.
- . A world class championship golf course in an attractive location can be expected to attract significant numbers of tourists and hold them in the area for an extended time. Golf tours, either by motor coach, recreation vehicle or private car, are becoming extremely popular, The increased tourism is a boost for the local economy, as golfing tourists are typically big spenders.

In conclusion, the market for both the golf course and the residential development is strong. Also, each will strengthen the other; golfing at Desert Blume will attract new residents and the housing opportunity will encourage new residents to take up the game.

3.1.3 Generalized Land Uses

It is proposed that Desert Blume be developed within an integrated land use district entitled "Recreation / Residential Resort(RRR)". This District will provide for the following activities and uses:

- . Golf course and associated facilities, including a clubhouse, driving range, golf school, parking, landscaping, water reservoirs and maintenance facilities;
- . Residential development including:
 - single family residences
 - semi-detached "villa residences
 - attached (row type) of stacked (apartment type) multi-family housing
 - associated parking and landscaping;
- . Open space including municipal reserve;
- . Public and private utility systems;
- . community services and facilities.

In addition to the Recreation / Residential Resort District, the area in the eastern half of the section that will be used for spray irrigation of sewage effluent and those sites not needed for the treatment facilities will be retained in Agricultural District with the Municipal Districts of Cypress No. 1. These land use Districts are shown on the accompanying Land Use Amendment.

While the Recreation / Residential Resort District will pertain to all the development related portions of Desert Blume, specific uses, activities and standards of development will be established and controlled through a negotiated "Development Agreement" between the Municipal District of Cypress No. 1 and the Developer of Desert Blume. This agreement, like those used to guide and control similar developments in other areas of the province (e.g. Calgary), will define more specifically the land uses and activities on the site, the standards for services and utilities, the quality of construction and maintenance and the means of operating and administering the facilities and services. Further, subdivision of land for residential development, environmental reserves and municipal reserves will provide the final definition of land use boundaries.

In keeping with the above discussion, the following is the summary of land uses for Desert Blume:

**DESERT BLUME GOLF RESORT
AREA STRUCTURE PLAN
GENERALIZED LAND USE SUMMARY**

Approximate Breakdown:	<u>Hectares</u>	<u>Acres</u>	<u>%</u>
1. Recreation Residential Resort Portion	132.76	328.00	
Golf Course / Natural Area	81.22	200.68	61.19
Residential	35.61	87.98	26.82
Municipal Reserve	5.73	14.14	4.31
Roads	10.20	25.20	7.68
2. Agricultural District/Service Portion	126.27	312.00	
Agricultural	97.72	241.47	
Services	20.24	50.00	
Municipal Reserve	8.31	20.53	
<hr/>			
TOTAL	259.03	640.00	

Note: The existing municipal road in the centre of the section has not been included in this calculation.

A brief description of the components and intentions of the significant activities follows.

3.1.4 Golf Course Plan

The Desert Blume Golf Course will be the first truly 'desert like' golf course developed in Western Canada. The Blume will preserve much of the natural area and incorporate many of the unique features into the layout. It will be this delicate balance that will result in one of the finest golfing facilities to be developed.

The design for the Desert Blume Golf Course will lead to the development of a world class, championship golf facility capable of attracting international tournaments and tourists to the area. Each hole will have the potential for four tee placements thereby complementing the abilities of the golfing public.

As a complement to the golf course, a driving range and golf school will be developed allowing professional instruction to be offered in all phases of the game. Also, the clubhouse will provide a pro - shop, dining room and lounge, banquet facilities, kitchen facilities, change and locker rooms, cart and club storage, meeting rooms, administration and support services. Parking will be available by the clubhouse and range for some 200 cars. Landscaping of the entry road, parking areas and clubhouse will add to the appeal of the site.

Maintenance facilities have been designed to allow convenient access for service and supply from the north / south municipal road. Also, the site allows quick access to the golf course. These facilities will include a maintenance building, storage building, machine storage and outside storage area. The structures will be complimentary in appearance to the clubhouse and landscaping and screening will be provided.

A basic outline of the golf course facilities has been shown on the Area Structure Plan. This is intended to show the approximate location and layout of the course but is subject to adjustment as more detailed design takes place.

3.1.5 Residential Plan and Housing Types

Similar to the outline for the golf course, the Area Structure Plan also shows the residential development. Again, this is for reference only and intended to show approximate locations of residential development. Adjustments are likely to be made as detailed planning and engineering are advanced.

A definitive quantity of each form of housing cannot be provided at this time. Product innovation, market acceptance, price factors, customer demographics and market demand will determine the extent, size and type of housing product which will ultimately be constructed. Instead of attempting to define these factors herein, the maximum density, minimum standard or a development range will be established:

- **Density** - utilizing the cluster design concept, the overall density of Desert Blume will not exceed one unit per 0.3 hectares (0.75 acres) or 3000m² (32,293 sq ft) per unit. Thus, for the 133 hectares (328 acres) in the west portion of the site, the maximum density would be some 440 units.
- **Single Family Lot Standards** - parcel sizes will range from a minimum of 600 m² (6459 sq ft) to a maximum of 1400 m² (15,070 sq ft) and all will be serviced with paved roads and full utilities.
- **Semi - Detached, "Villa" Unit Standards** - Parcel sizes will range from a minimum of 500 m² (5382 sq ft) to a maximum of 700 m² (7535 sq ft) per unit.

- **Attached or Stacked Multi - Family Standards** - Minimum parcel sizes will be 400 m² (4305 sq ft) per unit. Each development, whether of row - type or apartment type, will provide on - site circulation, parking and landscaping and full utilities.
- **Landscaping** - Boulevard or street trees will be planted for all phases of the development. Also, entry features will be constructed at each main entrance.
- **Emergency Routes** - long, single - entry roads will be developed for three residential cells; at the southeastern corner, north from the clubhouse road and in the northwest. Each of these will have an emergency route provided, capable of access by fire trucks or ambulance in any weather. Potential routes are shown on the Area Structure Plan.

3.1.6 Open Space Plan

As shown on the Area Structure Plan, three public parks are proposed in Desert Blume. These sites, which comprise municipal reserve are expected to total:

	<u>Approximate Reserve Calculations</u>	
	ha	ac
Northeast Park Neighborhood Park & Playground	0.42	1.04
North Escarpment Park Public Viewpoint	0.50	1.22
West Escarpment Park Public Walking & Bicycle Path	2.11	5.21
Lakeshore Park Public Viewpoint / Pavillion	2.70	6.67
TOTAL RESERVE DEDICATION - West Portion	5.73	14.14

Provision is made for an open space corridor for walking and bicycle paths connecting to various reaches of Seven Persons Creek. A short distance of this will be along a local roadway. Further public access across or nearby the golf course is not warranted due to the public hazard from golf balls.

The remainder of the public reserve, a balance of some 7.55 hectares (18.66 acres) will be provided in the east half section, south of the irrigation canal. In addition, the public reserve dedication for this parkland, some 0.76 hectares (1.87 acres) will be dedicated for a total of 8.31 hectares (20.53 acres).

3.1.7 Population Density and Structure

Based upon the maximum density of residential development for Desert Blume, the following is expected to be the population generation and structure at final build out:

<u>Units</u>	<u>Total Population</u>	<u>School Age Children</u>
Single Family - 290 unit	@ 2.75ppu 800	@ 0.6ppu 175
Semi - Detached Villas - 100 units	@ 2.2ppu 220	@ 0.2ppu 20
Multi - Family - <u>50 units</u>	@ <u>1.8ppu 90</u>	@ <u>0.1ppu 5</u>
440 units	1140 persons	200 children

Of the school aged population expected from Desert Blume, two thirds or 130 are likely to be public students and 70 will attend the Catholic School facilities.

3.1.8 Roadway Standards and Access

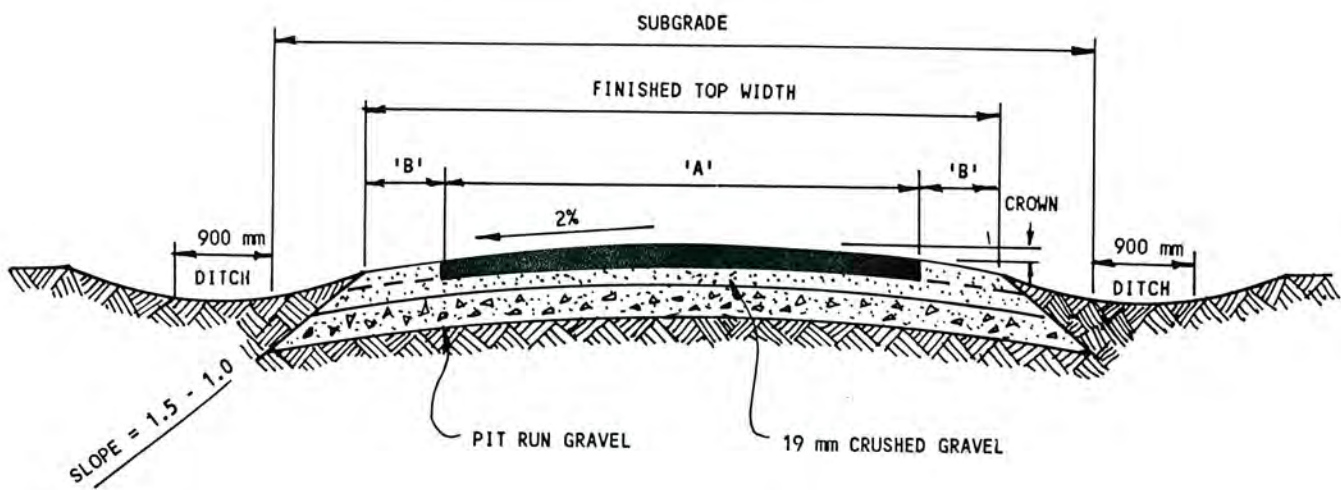
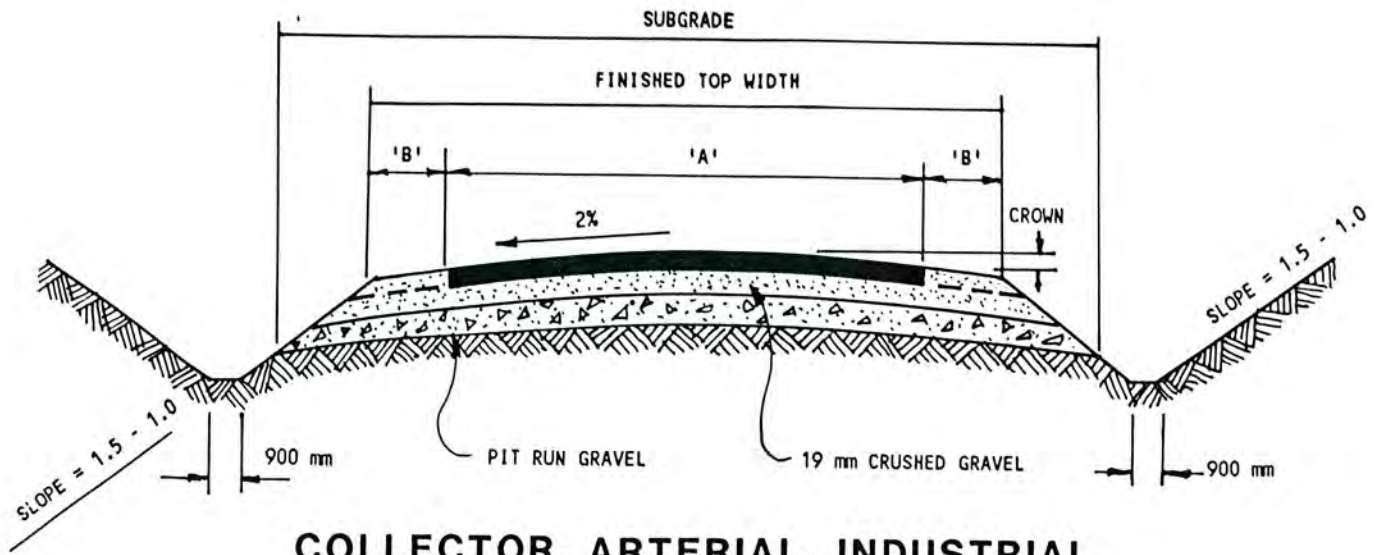
As shown in the Area Structure Plan paved primary access to first phases of Desert Blume will be via peripheral collector roads along existing City and Municipal District of Cypress road allowances. These will be upgraded to rural collector standards as shown on Figure 4. The final phase of the project, on the west bank, will require construction of 800 metres (0.5 miles) of connecting road from the centre of Section 10 - 12 - 6 - W4M.

Internal roads will be constructed to paved rural standards as shown on Figure 4. Emergency routes will have base construction and grades capable of carrying firetrucks in inclement weather. These will be protected from public access by break-away fencing.

3.1.9 Development Phasing

Desert Blume is expected to be constructed beginning with the central / north cell along with the golf course, clubhouse and maintenance facilities and the water and sewer systems. The second phase will consist of the northeast cell and then the southeast cell. The final phase will be on the west bank of Seven Persons Creek.

While this phasing program is expected to be reasonable, market conditions, uptake and development costs may influence the program. Establishment of more or fewer phases or modifications to the program should be taken as normal refinements.



STREET CLASSIFICATION	ROAD WIDTH 'A'	SHOULDER WIDTH 'B'	PITRUN	CRUSH	ASPHALT THICKNESS HOT MIX
LOCAL	7m	1.0m	300 mm	75 mm	50 mm
COLLECTOR	7m	1.5m	400 mm	75 mm	75 mm IN TWO LIFTS
ARTERIAL	8m	2.0m	450 mm	75 mm	100 mm IN TWO LIFTS
INDUSTRIAL	7m	1.5m	400 mm	75 mm	75 mm IN TWO LIFTS

Figure 4:
ROAD SECTIONS

3.2 SERVICING CONSIDERATIONS

3.2.1 Domestic Water and Fire Flows

The City of Medicine Hat has agreed to supply domestic water to the residential subdivision and golf course clubhouse. The developer will be required to build an opportunity sized feedermain from the point of contact with the City water system to the Desert Blume development.

It is proposed to connect to the City water system at 10th Avenue and 25th Street SW and construct the new feedermain south to the south City Limit in the 10th Avenue road allowance and then west to the Desert Blume development in the road allowance along the south city boundary.

The City of Medicine Hat has indicated that pressure at the point of contact is low and it will be necessary to build a booster station at the point of contact to ensure that adequate pressure for fire fighting purposes are provided within the Desert Blume development.

The water distribution system within the Desert Blume development will be designed and installed in accordance with Standards set forth by Alberta Environment, Standards and Approvals Division, Municipal Engineering Branch.

Fire hydrants will be installed in accordance with the Fire Underwriter's Survey publication entitled "Water Supply for Public Fire Protection - A Guide to Recommend Practice".

The Major components of the water supply and distribution system are shown on the Utilities Plan.

3.2.2 Golf course irrigation water

Water for the Desert Blume Golf Course will be provided by the St. Mary River Irrigation District under their standard municipal / Industrial / Recreation Agreement. In addition, surface runoff water from the adjacent residential subdivision will be directed to the irrigation storage ponds to supplement the water supplied by the **SMRID**.

The irrigation storage ponds will have the capacity to store a 60 day supply of water and will be designed in a number to keep the water circulating.

All irrigation retention ponds and irrigation designs will comply with Alberta Environment requirements.

3.2.3 Sanitary Sewage Collection; Treatment and Disposal

Sanitary sewage will be collected by means of a gravity sewer system on site and then pumped to a sewage treatment plant to be located in the East 1/2 11 - 12 - 6 - W4M. The treated effluent will be spray irrigated on the East 1/2 11 - 12 - 6 - W4M. The collection system, pumping system, treatment plant and spray irrigation system will be designed and constructed in accordance with standards set forth by Alberta Environment, Standards and Approvals Division, Municipal Engineering Branch.

The major components of the sewage collection and disposal system are shown on the Utilities Plan.

It should be noted that no detailed geotechnical investigations have yet been undertaken to determine the suitability of the soils on the East 1/2 11 - 12 - 6 W4M to accept the spray irrigation of effluent. However, the site presently is irrigated and the sand soils expected are conducive to irrigation.

Additional geotechnical and soils studies, along with others by Alberta Environment and Agriculture Canada, will be required to prove the viability of spray irrigating the sewage effluent.

3.2.4 Storm Drainage

Storm water in the Desert Blume development will be handled in a number of different ways. Initially the surface runoff waters will be handled in ditches and swales along roads in the development and then will be directed to Seven Persons Creek. In some cases the water will be allowed to flow overland through the golf course and eventually find its way to Seven Persons Creek.

Some water will be directed to the golf course irrigation ponds to supplement the water drawn from the **SMRID** canal. In other cases the water will be piped from the subdivision to water features on the golf course then allowed to discharge to Seven Persons Creek.

The valley slopes of Seven Persons Creek are subject to erosion and the storm drainage system will be designed and constructed to minimize the impact on these slopes and protective measures will be taken in sensitive areas.

3.2.5 Shallow Utilities

1. Natural Gas Service

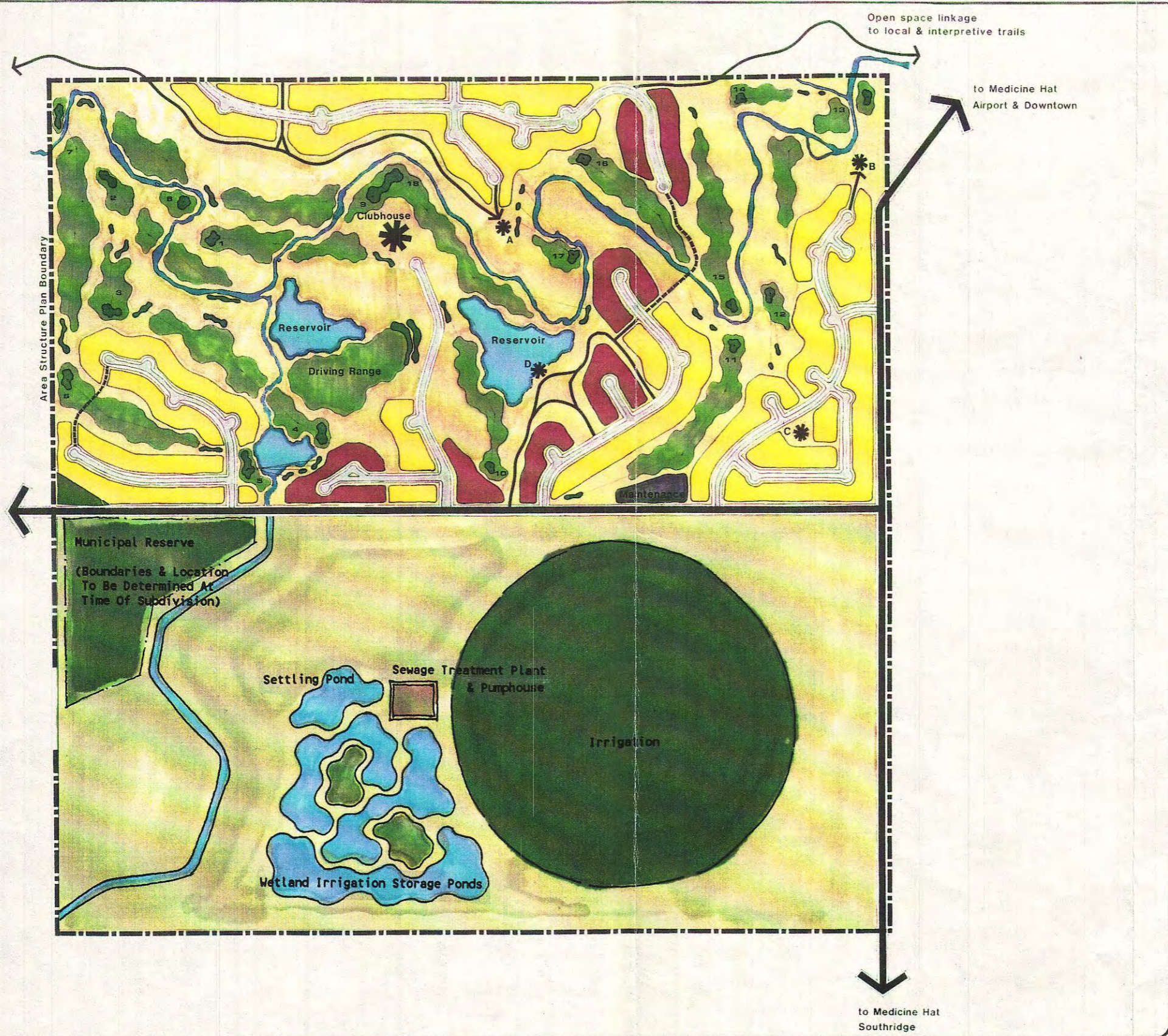
The Desert Blume development will be serviced with natural gas and is located within the I.C.G. service area. Facilities will be constructed in consultation between the developer and the company.

2. Electric Service and Street Lighting

At present the nw 1/4 11 - 12 - 6 - W4M lies within the City of Medicine Hat electric services area and the remainder of the section lies within the Trans Alta Utilities service area. The City operates on a primary power supply of 13.8 KVA and Trans Alta on 25 KVA and different rate structures apply for each service area as well.

The developer will be requesting to have the service area boundaries altered so this development may be served entirely by one utility company. The decision as to service will be more by the Energy Resources Conservation Board.

The electric service will be underground and street lighting will be provided on single davit steel street lights spaced to provide illumination in accordance with the Road and Transport Association of Canada publication "Guide for the Design of Roadway Lighting".



LEGEND

- Single Family Residential
- Multi-Family Residential
- Sewage Lagoons & Irrigation Effluent Area
- Golf Course

Open Space Nodes

- Major Focal (Clubhouse)
- Minor Focal
- A** West Escarpment Park
- B** North Escarpment Park
- C** Northeast Neighbourhood Park
- D** Lakeshore Pavilion

Open Space Walkways

- Reservoirs
- Seven Persons Creek
- SMRID Irrigation Canal
- Internal Roads
- Emergency Vehicle Access
- Major External Roads

Scale: 1:3 000

December 1990

CONSULTANTS

- Browning & Associates
Design Group
- KHIO
- USL Urban Systems Inc.

DRAWING

AREA STRUCTURE PLAN

PROJECT

**DESERT BLUME
AREA STRUCTURE PLAN**

THE MUNICIPAL DISTRICT OF CALGARY 2011

NOTE: This drawing is the property of the City of Calgary and is not to be reproduced without the written permission of the City of Calgary.

3. Telephone Service and Cable TV

Telephone service will be provided by AGT Limited while cable TV will be provided by Cablevision Medicine Hat.

Both of these on site utilities will be installed underground in a common trench with Trans Alta.

4. Line Assignments

Proposed on site utility line assignments are shown on Figure 5 and conform to the City of Medicine Hat standards.

3.2.6 Protective Services

1. Fire Department

The Desert Blume development lies within the portion of Municipal District of Cypress No. 1 covered by a fire fighting agreement with the City of Medicine Hat. A fire truck is stationed at the Central Fire Station, 440 Maple Avenue in Medicine Hat and is owned by the Municipal District.

Plans of the proposed development have been provided to the City of Medicine Hat Fire Department and a response time of 15 minutes to the golf course entrance has been established by them.

2. Police Service

Police service to Desert Blume will be provided by the RCMP from their detachment in Medicine Hat.

3.2.7 Solid Waste Collection and Disposal

Solid wastes for Desert Blume are to be collected and disposed through a contract arrangement with a local service. This contract could be with the Municipal District or the Residents Association.

NOTE:

1. (a) WATER AND STORM SEWER MAIN CAN BE LOCATED ON EITHER SIDE OF SANITARY SEWER.
(b) ELECTRIC AND GAS LINES COULD BE ON ONE OR BOTH SIDES OF THE STREET.
2. MINIMUM LONGITUDINAL GRADE OF STREETS SHALL BE 0.5% UNLESS OTHERWISE PERMITTED BY THE ENGINEER.
3. (a) MINIMUM COVER ON MAINS 900mm Ø AND SMALLER SHALL BE:
SANITARY AND STORM - 1.6 M
WATER - 2.6 M
(b) MINIMUM COVER ON MAINS LARGER THAN 900 mm Ø SHALL BE:
SANITARY - 1.6 M
STORM - 1.4 M
WATER - WITHOUT SERVICE CONNECTION 2.3 M
- WITHOUT SERVICE CONNECTION 2.6 M
(c) MINIMUM INVERT DEPTH OF SANITARY SEWER WITH SERVICE CONNECTION SHALL BE - 2.6 M UNLESS OTHERWISE PERMITTED BY THE ENGINEER.
4. NO TREE PLANTING, FENCING, ETC. BETWEEN BACK OF SIDEWALK AND R.

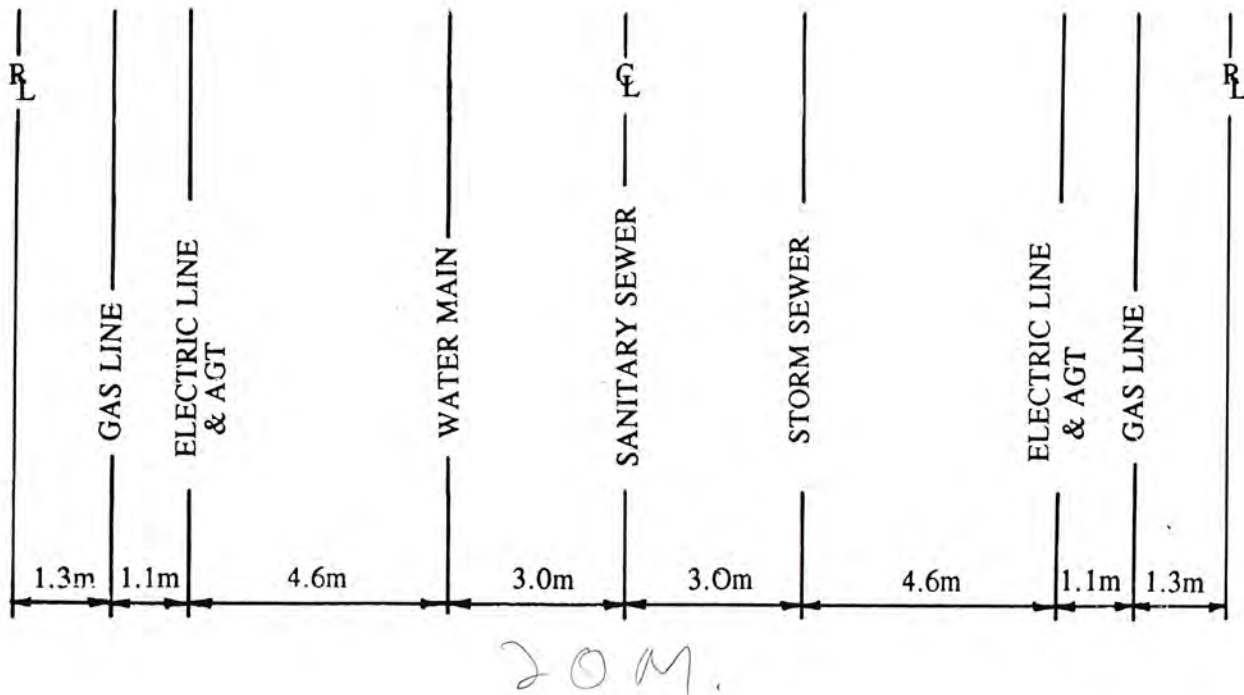
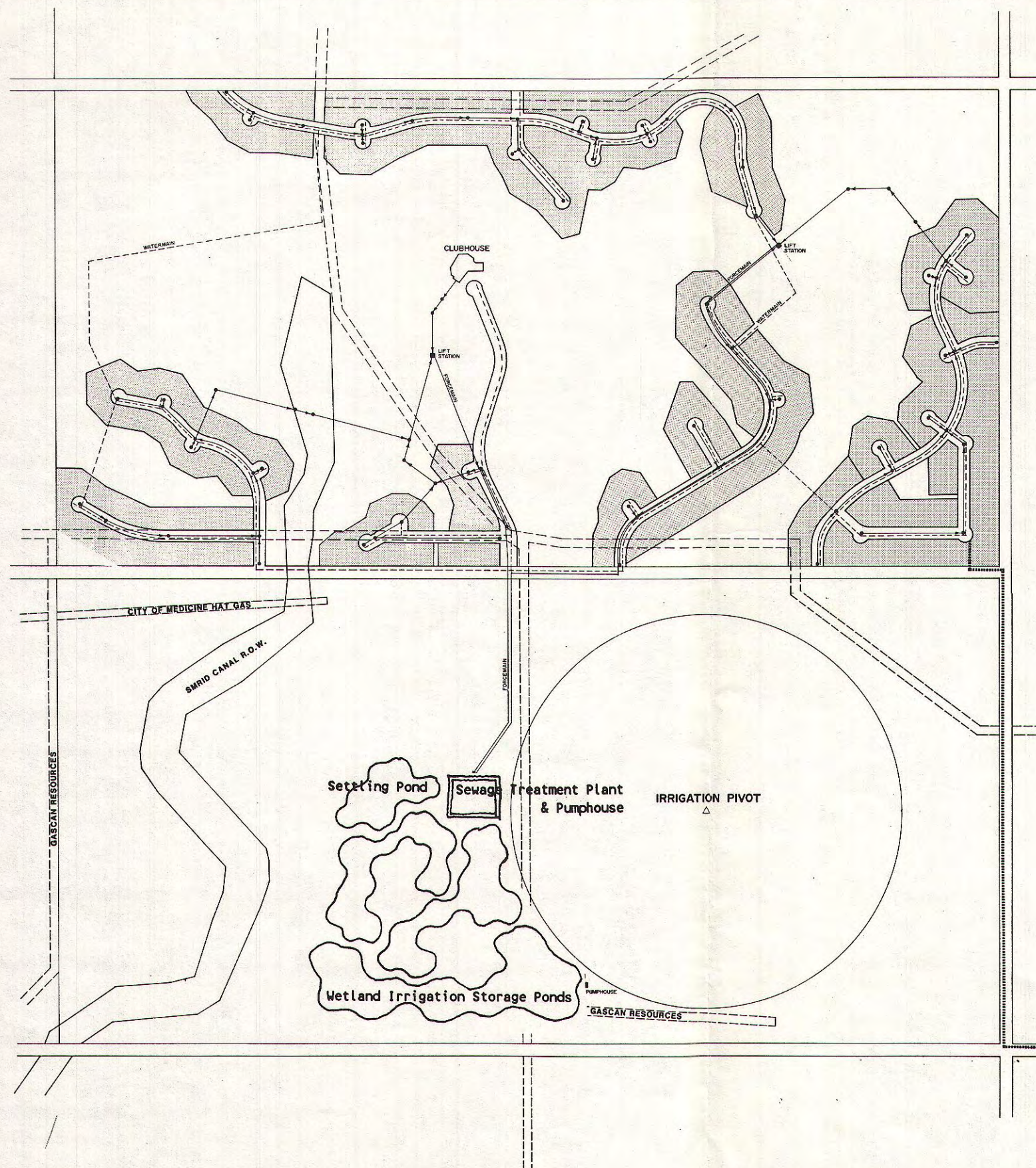







Figure 5:
LINE ASSIGNMENTS



LEGEND:

-  Residential
-  Sewage Lagoons
-  Sanitary Main
-  Water Main
-  Man Hole

Scale: 1:3 000



December 1990

CONSULTANTS:

Browning & Associates
Design Group
Landscape Architects *Golf Course Architects*

KYLLO Planning & Development


USL urban systems ltd.
consulting planners and engineers

DRAWING:

UTILITIES PLAN

PROJECT:

**DESERT BLUME
AREA STRUCTURE PLAN**

 THE MUNICIPAL DISTRICT OF CYPRESS NO. 1

4.0 DEVELOPMENT FEATURES AND CONTROLS

4.1 SITE DEVELOPMENT AND LANDSCAPE TREATMENT

4.1.1 Design Approach and Standards

Desert Blume will be an innovative and high quality development offering a unique lifestyle to its residents and a challenging experience to its golf patrons. Desert Blume will present the image and substance of quality throughout. The design and construction standards of its facilities and services will be very high and this will stimulate quality in the residences constructed on site.

To ensure a high quality of residential construction, architectural and landscape controls will be established and administered by the developer. These controls will set design guidelines, exterior finishing, entry and driveway treatment, fencing, minimum landscaping standards and minimum residential size. The objective will be to ensure that the residential development is compatible and complementary throughout and is in keeping with the golf course and valley setting. However, sufficient alternatives for design and treatment will be available to prevent the development from becoming boring.

In keeping with the architectural and landscape controls and to set an early standard and theme for development, a number of on site features will be constructed by the developer. These are briefly described below.

4.1.2 Park Development and Landscaping

The four public park areas within Desert Blume will be graded and landscaped as the adjacent phase of development proceeds. The northeast neighborhood park will be enclosed with a theme fence, will be seeded and trees will be planted. Design features could include a putting green, playground apparatus and seating.

The north escarpment park will be enclosed by a theme fence with emphasis on a safe setback from the bluff. The natural grassland will be retained and a shale walkway and seating are to be constructed.

The west escarpment park will also be fenced and a safe setback established. A shale walkway and bike path will be constructed and seating provided. It will also be retained in the natural grassland with the possible addition of some shade trees.

The lakeshore park will provide pedestrian access to the north shore of the reservoir and may include a shoreline pavillion suitable for both summer and winter activities. This park is sufficiently seperated from the golf course property so as to not pose any safety risk.

4.1.3 Entry Treatment

The first impression given to golfers, prospective residents or visitors to Desert Blume must convey the image of a comprehensive, high quality, themed recreational community. Proper treatment of the golf course entry road, the entry to each residential cell and the landscaping of the internal and periphery roads will be essential. The entry to the golf course and development cells will be landscaped with entry gates in keeping with the theme of development. Of particular importance will be the golf course entry, within which a centre median will contain the Gascan producing gas well.

Roadside tree planting will present an image of an established, shaded and sheltered development and a minimum of one tree per residence is planned. The trees selected will be a hardy species of sufficient size to give a good initial appearance and to allow them to establish quickly.

4.1.4 Fencing

Fencing will be constructed in Desert Blume for three reasons:

1. Safety - to prevent people from straying onto the golf course and onto unstable bluffs. The golf course will be enclosed at critical points by chainlink fencing. Escarpments with public access will have rail fencing to establish a safe setback.
2. Lot Definition - Residents who wish to fence their property will be required to construct to an approved design standard. Control will be retained by the developer.
3. Theme Fencing - Public parks, entries and other highly visible sites will have theme fences constructed by the developer.

4.2 COMMUNITY IDENTITY AND ASSOCIATION

4.2.1 Desert Blume Community Identity

In order to foster development of a strong community identity, Desert Blume will, at the outset, have a community association formed. As residents purchase homes in Desert Blume, they will be welcomed and encouraged to participate in community affairs and activities. These could include social events, golf tournaments, a design advisory council or a variety of community services.

4.2.2 Community Facilities

Meeting space for the Desert Blume community will be provided at the golf clubhouse. Other facilities, such as public park development, will be undertaken as needs are determined and funding is secured.

5.0 MANAGEMENT OPERATION AND MAINTENANCE OF SERVICES

5.1 MANAGEMENT SYSTEM

5.1.1 Approach

The Municipal District of Cypress No. 1 and the Developer, through the Development Agreement, will determine the responsibilities for management, operation and maintenance of the on - site services and facilities for Desert Blume. The Municipal District, through the provisions of the Planning Act and Municipal Act, will be assigned ultimate responsibility for roads and parks. Other services, such as water and sewer systems, can be assigned to a corporate entity responsible to the residents. Others, such as electric and natural gas service, are provided under franchise territories by utility companies controlled by the Alberta Public Utilities Board.

The following principles will govern the determination of service responsibilities for Desert Blume:

1. Those services governed by franchised utilities will be constructed and turned over to the appropriate company or constructed by the utility company.
2. Those services and facilities for which the Municipal District has management systems in place and wishes to assume responsibility will be assumed by that authority.
3. Those services and facilities which are beyond the normal services of the Municipal District will be managed and operated by one of two approaches:
 - by a services contract issued by the Municipal District, or
 - by a utility corporation which is owned and controlled by the residents of Desert Blume and the Desert Blume Golf Course.

The following defines the recommended system for each of the services and facilities for Desert Blume.

5.1.2 Shallow Utility Systems

The responsibility of shallow utilities will be assumed by the following:

- Natural gas service will be provided by I.C.G. Utilities (Alberta) Ltd. Design, construction and financing arrangements will be negotiated between the developer and the company.
- Electric service will be provided by Trans Alta Utilities Ltd. The design, construction and financing will be negotiated.
- Telephone service will be provided by AGT Limited. The design, installation and financing will be negotiated.

- Cable television will be provided by Medicine Hat Cablevision. The service installation will be negotiated.

5.1.3 Water and Sewer Services

The water system, from its supply connection to the City of Medicine Hat mainline, booster pump, supply lines and distribution system will be constructed by the developer and turned over to a utility corporation owned and controlled by the residents of Desert Blume and the Desert Blume Golf Club. The operation and maintenance of this service may be contracted out by the corporation.

Sewage facilities, including the collection system, lift stations, force mains, treatment system and disposal system will also be constructed by the developer and turned over to the utility corporation. Again, the corporation may contract out the operation and maintenance.

5.1.4 Road Maintenance

The Municipal District of Cypress No. 1 has equipment and staff for maintaining rural roads but is not well equipped to maintain paved roads such as those planned for Desert Blume. Therefore, it is proposed that the maintenance of on - site roads, including snow clearing, spot maintenance and resurfacing, be contracted out by the Municipal District. Some parts of the maintenance, such as snow cleaning, may be contracted by the Golf Course. The roads will be constructed by the developer and assigned to the Municipal District.

5.1.5 Park Maintenance

The municipal reserve dedicated to the Municipal District of Cypress No. 1 will be under their authority. A lease of these parcels to the Desert Blume Community Association may be considered.

5.1.6 Golf Course

The Desert Blume Golf Club will retain ownership of the balance of the site, following the subdivision of the residential and reserve parcels. The golf course operators will be responsible for all aspects of management, operation and maintenance of this property. The supply of irrigation water will be under contract with the St. Mary's River Irrigation District. The design and operation of storm water facilities, reservoirs, drainage systems, irrigation spillways and Seven Persons Creek will be reviewed and approved by the Municipal District, the Irrigation District and Alberta Environment. An access right-of-way along Seven Persons Creek and the Irrigation Canal will be provided in favor of the Municipal District of Cypress, the St. Mary's River Irrigation District and Alberta Environment.

6.0 CONCLUDING REMARKS

6.1 COMPANION DOCUMENTS

6.1.1 Municipal District of Cypress No. 1 Land Use Bylaw Amendment

Companion to this Area Structure Plan is a proposed amendment to the Municipal District Land Use Bylaw. This amendment provides for the establishment of a "Recreation / Residential Resort District" (RRR) under which the Desert Blume Golf Course Resort can be developed. The Area Structure Plan and Land Use Bylaw amendment are intended to proceed for approval at the same time.

6.1.2 Other Studies and Reports

In the conduct of planning, engineering, golf course architecture and market analysis for Desert Blume, a number of other studies and analyses have been undertaken. These are considered as background information to this Area Structure Plan and not a part of this Bylaw.

6.2 SUMMARY COMMENTS

6.2.1 Further Design and Analysis

As planning, engineering and golf course design for Desert Blume progress, this Area Structure Plan will be adhered to in its basic intent and design. However, strict adherence is not essential. Rather, this Plan should be interpreted in a fairly broad and flexible sense. More detailed and specific work may prompt adjustment in the design of individual components. Unless the intent of this plan is significantly modified or the basic design concept is disrupted, amendments to this Area Structure Plan will not be required.

7.0 REFERENCES

7.1 BIBLIOGRAPHY

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7.2 PERSONAL COMMUNICATIONS

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8.0 APPENDIX

8.1 METEOROLOGICAL TABLES

ALBERTA/ALBERTA

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
	JAN	FÉV	MAR	AVR	MAI	JUIN	JUIL	AOÛT	SEPT	OCT	NOV	DÉC	ANNÉE
MEDICINE HAT A													
50° 1'N 110° 43'W 717 m													
Daily Maximum Temperature	-7.0	-2.1	3.0	12.1	19.1	23.3	27.3	26.5	20.4	14.4	4.4	-2.0	11.6
Daily Minimum Temperature	-18.3	-13.3	-8.6	-0.9	5.4	9.8	12.4	11.2	5.9	0.4	-7.5	-13.1	-1.4
Daily Temperature	-12.6	-7.7	-2.8	5.6	12.3	16.6	19.9	18.9	13.2	7.4	-1.6	-7.6	5.1
Standard Deviation, Daily Temperature	4.9	4.8	3.8	2.9	1.5	1.7	1.2	1.8	2.3	2.3	3.7	4.5	1.1
Extreme Maximum Temperature	18.9	18.3	28.9	35.6	37.2	41.7	42.2	41.1	37.8	33.9	24.4	20.0	42.2
Years of Record	96	96	97	97	97	97	97	96	98	97	96	97	
Extreme Minimum Temperature	-46.1	-46.1	-38.9	-26.7	-11.1	-1.1	2.2	-0.6	-12.8	-23.3	-37.8	-45.6	-46.1
Years of Record	95	95	95	95	96	95	97	95	98	97	95	96	
Rainfall	0.4	0.4	1.6	12.7	38.5	63.5	40.4	36.4	30.6	8.6	2.3	0.8	236.2
Snowfall	25.9	18.3	18.3	18.4	1.6	0.0	0.0	0.0	1.9	8.0	14.1	19.0	125.5
Total Precipitation	22.7	16.6	18.5	30.2	40.1	63.5	40.4	36.4	32.4	16.2	14.6	16.3	347.9
Standard Deviation, Total Precipitation	13.4	10.8	14.4	23.1	24.1	36.9	21.9	25.5	22.6	13.3	11.7	9.5	85.3
Greatest Rainfall in 24 hours	5.1	5.1	24.9	24.6	40.1	71.6	57.4	121.9	118.6	42.4	22.1	11.2	121.9
Years of Record	94	95	95	97	97	97	97	96	97	94	97	96	
Greatest Snowfall in 24 hours	26.4	27.9	33.8	25.4	14.0	1.5	0.0	0.0	26.2	21.6	26.7	22.9	33.8
Years of Record	94	95	95	96	97	97	97	97	97	94	96	96	
Greatest Precipitation in 24 hours	20.6	27.9	33.8	32.3	40.6	71.6	57.4	121.9	118.6	42.4	26.7	22.9	121.9
Years of Record	94	95	95	96	97	97	97	96	97	95	96	96	
Days with Rain	.	.	1	4	9	10	8	7	7	4	2	1	53
Days with Snow	10	7	6	4	1	0	0	0	1	2	5	8	44
Days with Precipitation	10	7	7	7	9	10	8	7	7	5	6	8	91