

DINOSAUR CORRIDOR MAPPING PROJECT
Potential Tourism Development
for

ALBERTA TOURISM
Planning Division
Destination Planning Branch
April, 1989
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DINOSAUR CORRIDOR MAPPING PROJECT - DRUMHELLER

Potential Tourism Development

prepared for

**Alberta Tourism
Planning Division
Destination Planning Branch**

by

**Alberta Research Council
Terrain Sciences & Resource Technologies Departments**

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PROJECT SUMMARY

This project was undertaken for Alberta Tourism by a multi-disciplinary team within the Alberta Research Council to evaluate potential tourism development for the Dinosaur Corridor - Drumheller area. The study area, which extends along the Red Deer River Valley and includes a 0.5 mile adjacent upland buffer, comprises a total area of 47,093 ha (471 km²).

Alberta Tourism required that the project include the consideration of physical land conditions that might limit tourism development and that the assembled map information and its evaluation (modelling) incorporate the use of a geographic information system. Having the information in a digital form, provides planning staff with a greater flexibility for information display, querying, reporting and spatial analysis.

All relevant land information for the study area was acquired, prepared, and entered into a geographic information system through the import of digital base map files, the digitization of various point, line and polygon themes and the creation of associated attribute data bases (tables).

The interpretive models developed for the project were based solely on **potential limitations to tourism development imposed by limiting physical land conditions** using primarily existing data sources together with some supplementary air photo-interpretation. Potential tourism development was assessed in terms of the following activities:

- resort development, residences and cottages (i.e. permanent buildings with basements and permanent buildings without basements)
- recreational vehicle parks and campgrounds (i.e. primitive campground development and fully serviced campground development)
- golf course development and maintenance
- recreational trails (i.e. non-motorized trail development and motorized trail development)
- picnic area development
- playing field development

Two related interpretive models were also prepared for:

- septic tank adsorption fields
- agriculture capability

"Other" land information, relevant to the total assessment of potential tourism development, has been entered into the geographic information system for immediate future reference. It includes:

- existing (implied) land use, access and ownership
- existing tourism infrastructure and services including parks, campgrounds, recreation areas, hotels, viewpoints, etc.
- archaeological resource sensitivity zones
- archaeological sites
- palaeontological resource sensitivity zones
- CLI Land Capability for Recreation (as a reflection of and principle basis for current Palliser Planning Commission policies related to recreation development)
- Energy Resources Conservation Board well sites

Land information obtained, compiled and drafted, but not entered into the geographic information system includes:

- areas of potential geological interest
- One in 100 year flood line

Due to the necessary time restrictions for this project, the "other" land information was not incorporated into the interpretive models. These themes were presented in the form of individual or composite GIS resource themes plotted onto transparent mylar and suitable for visual overlay evaluations relative to limitations imposed by physical land features.

Now that the land information is in digital form, it is quite feasible that more comprehensive models that consider a broader spectrum of land information could be developed in the future. For example, physical land map units could be evaluated further with respect to limitations imposed (or advantages provided) by adjacent land conditions and the proximity of existing access and recreational facilities. These types of multiple theme models require and take greater advantage of the powerful spatial analytical capabilities of geographic information systems.

A total of 143 map products have been produced from the digital land information system prepared for the study area. These maps are best suited as "working documents" and have been prepared as such in order to meet the immediate, short term needs of Alberta Tourism staff. The geographic information system used for this project (as with other GIS software) is capable of producing significantly higher quality cartographic products than those delivered (e.g. colour differentiation of features, line and point

symboling, legend construction and other related map annotation.) Higher quality cartographic products can be prepared, but they require increased effort at the "map composition" stage of a project and a strong client involvement in map design.

Because Alberta Tourism currently does not have direct access to the geographic information system files, data base tables have also been provided for most of the associated map attribute files.

Keith Jones
Gwynneth Martin

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PROJECT TEAM & ACKNOWLEDGEMENTS

This project was conducted by a multi-disciplinary team within the Alberta Research Council comprising: Gwynneth Martin, Keith Jones, Roman Krzanowski, Claudia Palylyk, Vino Arora, Jennie Lutz, Larry Nikiforuk, Mark Fenton, Richard Stein, Michael Huemmert, Wang Zhuo and Sylvia Andrews-Smith.

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Finally, the project team wishes to acknowledge the support, patience and continual good humour expressed by Al McCully of Tourism Alberta throughout the duration of this project.

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1. INTRODUCTION

1.1 Background

This project was undertaken for Alberta Tourism, Planning Division, Destination Planning Branch to provide land information suitable for the evaluation of potential tourism development within the "Dinosaur Corridor - Drumheller Area" (Figure 1). The study area extends along the Red Deer River valley (including the perimeter plains and selected tributary coulees) extending from the Highway 27 crossing near Morrin to Western Monarch, near East Coulee. With the study area approximated by section boundaries, the total area comprises 47,093 ha or just under 471 km² (116,366 acres or just under 182 square miles).

During the initial stages of the project, several meetings were held with Alberta Tourism staff to review the objectives, scope and focus of the project. During these discussions, Alberta Tourism explained their interest in including a stronger consideration of biophysical land conditions within their internal planning process. In addition, it was the client's desire to incorporate the use of geographic information system technology in future planning activities in order to provide greater flexibility with information display, querying, reporting and spatial analysis.

1.2 Project Scope and Focus

Resulting from discussions between Alberta Tourism and the Alberta Research Council, it was agreed that the original project proposal, outlined in a document titled: "Proposed Approach for Modelling Tourism Development Potential for the Dinosaur Corridor, Drumheller, Alberta", be modified in terms of the following:

1. The interpretive models would be based solely on potential limitations to tourism development imposed by biophysical land features, with a particular emphasis on soils, surficial materials and groundwater hydrology features.
2. Other land information such as land zoning, land use, ownership and existing recreation features, while also of importance in the final evaluation of tourism development potential, would not be explicit to any interpretive model development.
3. (Rather,) other land information would be created and presented in the form of individual or composite GIS resource themes plotted on a transparent mylar base suitable for visual overlay evaluations relative to limitations imposed by physical land features.

Interpretive Model

The Alberta Research Council agreed to provide an evaluation of potential tourism development using primarily existing data sources together with some supplementary photo-interpretation for the following activities:

- resort development, residences and cottages i.e. permanent buildings with basements and permanent buildings without basements
- recreational vehicle parks and campgrounds i.e. primitive campground development and fully serviced campground development
- golf course development and maintenance
- recreational trails i.e. non-motorized trail development and motorized trail development
- picnic area development
- playing field development

Two related interpretive models were also prepared for:

- septic tank adsorption fields
- agriculture capability

Other Land Information

Other land information assembled and input to the geographic information system:

- existing (implied) land use, access and ownership
- existing tourism infrastructure and services including parks, campgrounds, recreation areas, hotels, viewpoints, etc.
- archaeological resource sensitivity zones
- archaeological sites
- palaeontological resource sensitivity zones

- CLI Land Capability for Recreation (as a reflection of and principle basis for current Palliser Planning Commission policies related to recreation development)
- Energy Resources Conservation Board well sites

Land information obtained, compiled and drafted, but not entered into the geographic information system:

- areas of potential geological interest
- One in 100 year flood line

2. DATA ACQUISITION, PREPARATION & DESCRIPTION

2.1 Study Area Organization

The study area is defined by Alberta Tourism (see also section 1.1) to include an approximately 0.5 mile buffer about the valley bottom and coulee draw areas into the adjacent uplands. Nine 1:20 000 National Topographic System - NTS (UTM Zone 12) map sheets were required to cover the total area. Figure 1 shows the orientation of the mapsheets in relation to the buffer area and Table 1 lists the nine mapsheet references and their (unofficial) assigned names used for the project.

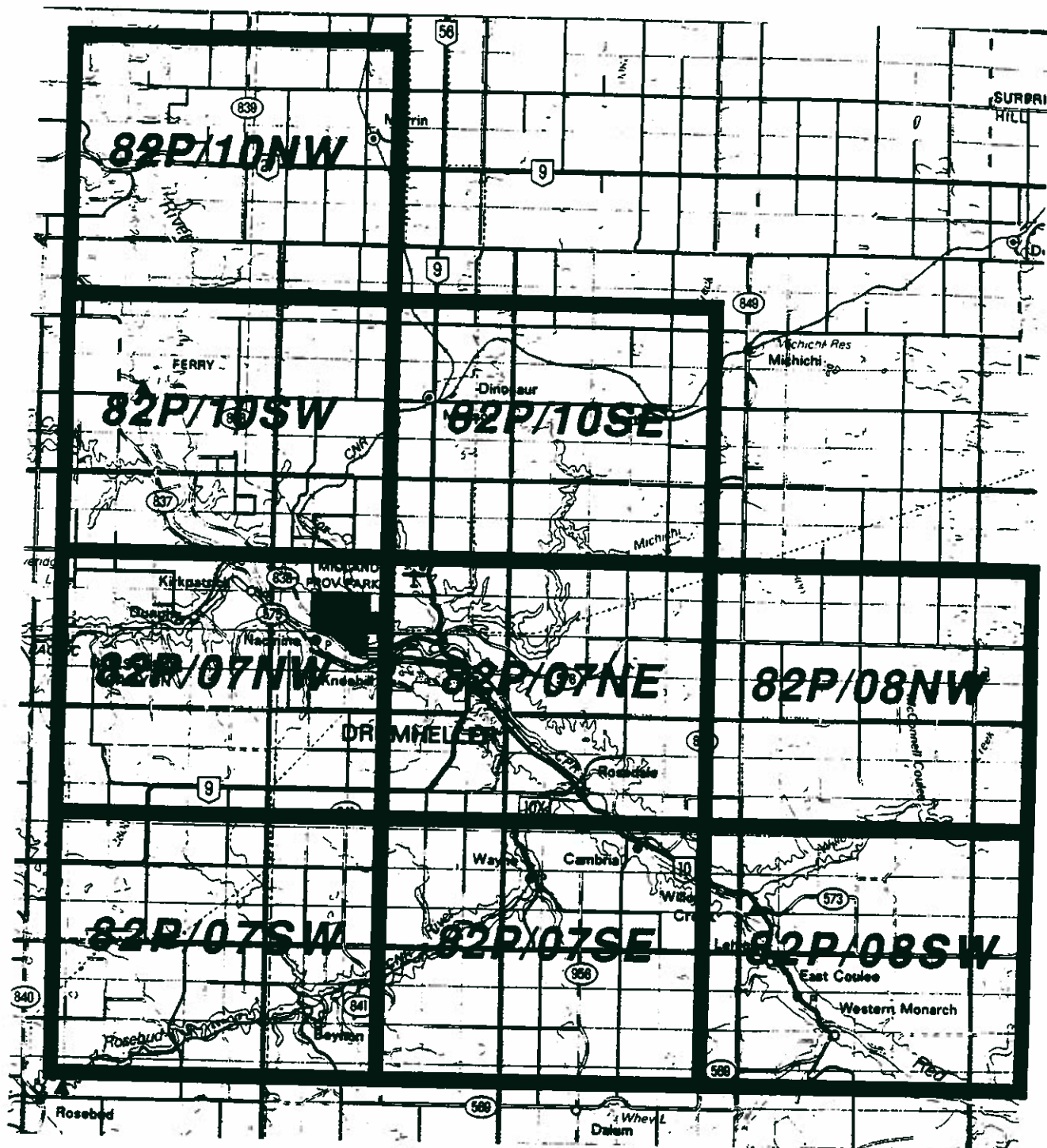
Within each NTS mapsheet, a study area "mask" that best approximated the 0.5 mile valley-coulee buffer zone has been created using section boundaries. The 178 sections that comprise the study area are listed for reference in Appendix 1. Table 1 lists the area coverage of the sectional "mask" for each NTS mapsheet. The use of the section boundaries to define the study area is viewed to be the most efficient and geographically logical structure for organizing the thematic data base.

All data bases on the geographic information system have been established within the nine 1:20 000 map sheet framework.

Table 1. Study area organization: NTS mapsheet reference, unofficial name; within each map sheet: area coverage of section mask and number of physical land unit polygons used for the project, listed from northwest to southeast in the study area (see also Figure 1).

MAPSHEET	NAME	MASK AREA ha	MASK AREA acres	No. of Polygons
82P/10NW	"MORRIN CROSSING"	2,595.7	6,414.3	40
82P/10SW	"BLERIOT FERRY"	9,039.2	22,335.8	62
82P/10SE	"MUNSON"	126.1	311.6	4
82P/07NW	"TYRRELL"	7,307.4	18,056.7	63
82P/07NE	"DRUMHELLER"	14,090.8	34,818.0	74
82P/08NW	"WILLOW CREEK"	239.1	590.9	8
82P/07SW	"ROSEBUD"	6,006.6	14,842.4	26
82P/07SE	"DALUM"	5,825.4	14,394.7	49
82P/08SW	"EAST COULEE"	1,862.5	4,024	10

Figure 1. Study area in relation to NTS map sheets -- the GIS "tiles".



2.2 Base Maps

Provincial base maps at a scale of 1: 20 000 were obtained in digital form from the Alberta Bureau of Survey and Mapping. Each computer map file contains 63 uniquely coded graphic features or levels (e.g. roads, rivers, contour lines) along with related map text descriptors. Each base map coverage was transformed from its original system coordinates into the six UTM coordinates used for zone 12. All base maps are stored as individual coverages with all feature codes maintained for future reference as in the original source files (e.g. types of roads, types of water-ways, ATS network, etc.).

2.3 Physical Land Units

The physical features described for the corridor area include soil series, topography and slope, surficial geology features of potential significance to development and ground water hydrology conditions. Through the consideration of these features, "Physical Land Units" were defined and mapped throughout the study area. A total of 336 physical land unit polygons were delineated with an average polygon size of 140.2 Ha (346 acres). The following sections describe the mapping and map unit characterization process.

2.3.1 Soils

Published soil maps at a scale of 1:190 000 (F.A. Wyatt et al. 1943. Soil Survey of Rosebud & Banff Sheets. Extension, Bull. No. 40, Univ. of Alberta) and their original manuscript field maps (1:30 000) dating from the 1940's were used as an initial basis to define the range and general distribution of soil and landscape properties. The reader is referred to this original report for a full description of the soils and their use in the region.

The original soil delineations were transferred from the manuscript maps and re-interpreted by the soil survey staff using current 1:40 000 scale stereo photography. Each soil polygon has been updated, correlated and redefined in terms of contemporary soil series names mapped in adjacent map sheets. Soil classes and map unit features of the physical land unit data bases are described in section 3.2 below.

2.3.2 Surficial Geology

Based solely on air photo interpretation and the experience of the project geologist, the air photos with mapped soil delineations were interpreted and annotated for surficial geology features potentially of significance to future tourism development. Mapping concentrated on the valleys. The only units mapped outside the valley are thrust moraine and glaciofluvial terraces and ridges.

Units perceived to be of most concern are the slump or landslide areas, the terraces and unit "F3" (defined in section 3.2.4). Slumps scars and debris occupy a significant portion of the valley slopes in both the Red Deer River and its tributaries. Their relatively ubiquitous distribution suggests the potential for failure elsewhere exists where-ever the groundwater and stratigraphic conditions are conducive. The fact most of the slumps appear on both the 1970 and more recent 1:80 000 photography suggests the rate of new failure formation is comparatively slow. No effort has been made to estimate if existing slumps had increased in size since 1970.

There are at least three terrace levels within the Red Deer valley, two of which exist only as erosional remnants. These remnants form isolated flat surfaces above the surrounding steeply sloping terrain which may make them suitable for observation points, parking lots, building sites and related structures. Their origin could also be included in discussions and tours focusing on the geologic history of the valley. Note however, more work would be required to provide the background for a proper geologic history of the valley (see also section 2.6). Surficial geology features within the physical land unit data bases are described in section 3.2.4 below.

2.3.3 Groundwater Conditions

Groundwater conditions for the study area have been described on the basis of existing published and unpublished maps and reports (e.g. Alberta Research Council - Alberta Hydrogeological Information Map Series, unpublished reports by Alberta Environment and private consulting firms, and raw groundwater information -- water-well records, chemical analyses -- on file with the Alberta Environment Groundwater Resources Information Service) together with the regional experience of ARC's staff groundwater hydrologist. Groundwater and surface water conditions for the study area are of particular importance when considering future tourism development in the corridor area.

Within the necessary time constraints for this project, two aquifer and associated groundwater condition zones have been defined and mapped in terms of their significance to potential tourism development.

Zone 1: Map units underlain by bedrock strata that generally have limited quantity and commonly quality, and within which groundwater supply is limiting to tourism development.

Zone 2: Map units within the Red Deer River floodplain, which yield substantially higher volumes of excellent quality groundwater. Tourism development is not limited by groundwater supply but aquifer protection is a concern.

Appendix 2 describes the zones in further detail.

These two zones have been mapped for the study area; the boundaries being coincident with the physical land unit delineations (i.e. each physical land unit polygon has been assigned a groundwater zone - see section 3.2).

Other Considerations

In parts of the study area, specifically along Kneehills Creek and the Rosebud River, groundwater availability and quality are such that development of facilities (such as golf courses) that require large amounts of good quality water will have to be restricted. In such areas, it should be possible to avoid such restriction by relying on water from surface sources and/or precipitation.

In order to predict accurately if the latter sources are adequate to meet such demand, it is advisable to consult streamflow data for the Rosebud River and Kneehills Creek and perhaps records of precipitation for the area. Borneuf (1972) indicates that a stream gauging station exists on the Rosebud River in NW 16-27-22-W4 and on Kneehills Creek in SE 23-29-21-W4. A weather station that monitors precipitation on a continuous basis is located in the Town of Threehills.

We advise that available streamflow and precipitation data should be examined for these areas in the future in order to fully evaluate water resource-limited development potentials.

2.4 One in 100 Year Flood Line

Flood line demarkation was obtained from Alberta Environment report: Drumheller Floodplain Study - B. Bigornia et al. 1983, Alberta Environment Water Resources Management Services, Technical Services Division. The

flood line location was determined on the basis of computer model ("HEC-2") predictions, calibrated to the 1954 Red Deer flood, which was close to one in 100 year rates.

Due to the late date at which these data were requested by Alberta Tourism and given the current form of the manuscript map, these data have not been included as a digital layer in the geographic information system. Rather, the source documents have been provided as received. To incorporate these data into the data base would require approximately three days of effort.

2.5 Existing Recreational Facilities

All immediately available information on existing recreational facilities was assembled and evaluated in terms of its currentness. The principle sources for this information were:

Big Country 1988 Traveller Guide and Brochure. Big Country Tourist Association. 1988, and

Drumheller - Dinosaurs and more! 1988. Drumheller and District Chamber of Commerce.

Because no precise geographic location data were available for the facilities, a visit was made to the City of Drumheller. A city engineer assisted by marking the location of all facilities on to a 1:50 000 base map. Descriptions for each facility identified are provided in Appendix 3.

Information provided in the "Alberta Hotel/Motel Guide - 1989" on hotel and motel facilities has been compiled and entered into a data base as was that for campgrounds within the study area based on information provided in the "Alberta Campground Guide - 1989".

2.6 Areas of Geological Interest

The tourist potential of the geologic resources within the study area cannot be fully evaluated without on-site appraisal by a geologist. Following field inspection all candidate sites could be documented more fully with text and photos in order to properly illustrate the nature and extent of typical features within the study area.

In general, features of potential interest to tourists are:

1. Bedrock geology: marine and nonmarine rocks deposited in a variety of fluvial, deltaic, eolian and ocean environments.
2. Dinosaurs, and other fossils, contained within the bedrock
3. Badlands geomorphology. Well exposed in some areas along the river.
4. Glacial deposits and history: which record the multiple glaciations through the region.
5. Glacially deformed bedrock: masses of bedrock that have been folded and faulted by the advancing glaciers in styles similar to that of the Rocky Mountains.
6. Post glacial history: three fluvial terraces in Red Deer River valley clearly illustrate both the fluvial history of the valley and the subsequent modification of these features by "badlands type" of erosion.
7. Landslides: a product of the groundwater and geology.
8. Coal: formation, mining history and associated information and materials.

Three areas of potential geological interest have been mapped out on the basis of air photo interpretation only (i.e. not ground-truthed) and have been manually drafted onto the 1: 50 000 map products (see section 5.4.1):

Area 1: Segment of Red Deer valley located in northern portion of the area; includes Area 3. From the cliff top on the west bank of the valley there is a good view of badlands terrain of the west side of the Red Deer River and low terrace partially buried by recent fan sediment on the east side of the river. Badlands area may exhibit the features 1-5 described above.

Area 2: Segment of Red Deer River valley located north west of Drumheller. North of river there is a dissected terrain which still preserves remnants of the three terrace levels and exposes the different bedrock layers. Landslide scars are visible on the cliffs the south side of the river. Area 2 may exhibit features 1-7 described above and includes the site of the Tyrell museum.

Area 3: Segment of Red Deer valley located in southern portion of the area; includes Section 15 (of Dominion Land Survey). The features of interest in this area can not be well defined from the airphotos alone. Those with greatest potential of being present are: glacially deformed bedrock, remnant of the upper fluvial terrace, landslides and old coal mine workings.

2.7 Archaeological Resource Sensitivity Zones

Archaeological resource sensitivity zone information was obtained from the "Archaeological Resource Sensitivity Zones" Map, scale 1:1 000 000 prepared by Alberta Culture and Multiculturalism, Historical Resources Division, Archaeological Survey of Alberta (1987). Degree of sensitivity to land surface disturbance is shown at a Section level of resolution in three zones - high, medium and low. Ratings were established on an evaluation of several contributing factors including: recorded site occurrences, prehistoric occupation pattern and physiographic and other natural resource features.

This mapped information "represents only an approximation of the degree of probability that any land surface modification will encounter significant archaeological resources" and should therefore not be used to replace on-site investigations.

2.8 Archaeological Sites

A list of all archaeological sites was obtained from the Archaeological Survey of Alberta. For each archaeological site location there is an associated "Bordon" reference number which can be used as an index to descriptive material contained within the Archaeological Survey of Alberta data base.

2.9 Palaeontological Resource Sensitivity Zones

Palaeontological resource sensitivity zones information was obtained from the "Palaeontological Resource Sensitivity Zones" Map, scale 1:1 000 000 prepared by Alberta Culture and Multiculturalism, Historical Resources Division, Archaeological Survey of Alberta (1984). Degree of sensitivity to land surface disturbance is shown at a Section level of resolution in four zones - high, medium and low plus and "unknown" class. Ratings were established on an evaluation of several contributing factors including: recorded site occurrences, outcrops of fossiliferous formations, physiographic and other natural resource features.

This mapped information "represents only an approximation of the relative degree of probability that any land surface modification will encounter significant palaeontological resources" and should therefore not be used to replace on-site investigations.

2.10 Land Ownership, Generalized Land Use & Land Zoning

Land ownership and generalized land use for the study area was determined through manual interpretation of existing municipal maps for each of the following municipalities:

County of Wheatland No. 16 (map date 1986)

M.D. Starland No. 47 (1986)

M.D. Kneehill No. 48 (1985)

I.D. No. 7 (1987)

It is recognized that the information was current at the time of municipal map production and that designated land ownership is subject to change over time.

Interpretations of the land ownership and implied land use (i.e. grazing leases, provincial parks and airports) were done manually for the 704 quarter sections comprising the corridor study area.

Land Zoning - Land Use Bylaws and Land Use Orders were obtained for the above listed municipalities, but were limited to a draft copy for I.D. No.7 and a preliminary copy for M.D. Starland No. 47. Alberta Tourism has chosen to interpret the land zone information according to their own requirements.

2.11 CLI Land Capability for Recreation

The Canada Land Inventory (CLI) - Land Capability for Recreation map (Drumheller 82P, Lands Directorate, Environment Canada, 1972) was included as a part of the land information assembled for the study area only because it best reflects and is the principle basis for current Palliser Planning Commission policies related to recreation development. The CLI map information is of a reconnaissance nature and based strongly on air photo

interpretation with little field sampling. The reader is referred to the original map legend regarding important assumptions related to Land Capability for Recreation interpretations.

2.12 Energy Resources Conservation Board (ERCB) - Well Sites

The Energy Resources Conservation Board data were obtained from the Alberta Geological Survey Data Base (AGSWDB) which in turn uses source data from the ERCB. The AGSWDB is a digital data base containing the basic descriptors for each well. Well sites falling within the study area were extracted from the AGSWDB and loaded into the geographic information system.

3. DATA BASE & GEOGRAPHIC INFORMATION SYSTEM

3.1 Overview of Data Bases & GIS

The GIS software used for the project was Environmental Systems Research Institutes's ARC/INFO (Version 4.0) residing on Alberta Research Council's VAX Cluster, as part of the Alberta Government GIS Network. ARC/INFO is a vector-based GIS in which "ARC" refers to the subsystem for managing of the graphical data and "INFO" refers to the subsystem for managing the attribute data base. ARC/INFO has the full capability to integrate and spatially analyze geographically-related graphic and tabular information.

All thematic information was organized according to each individual information theme (e.g. physical land units, base maps, archaeology, etc.) and within each theme the information was divided into the nine - 1: 20 000 (base) map sheets (as described in section 2.1 and presented in Figure 2).

3.2 Physical Land Unit & Interpretive Model Data Bases

The physical land resource data base comprises five related data files as described below and as shown schematically in Figure 3.

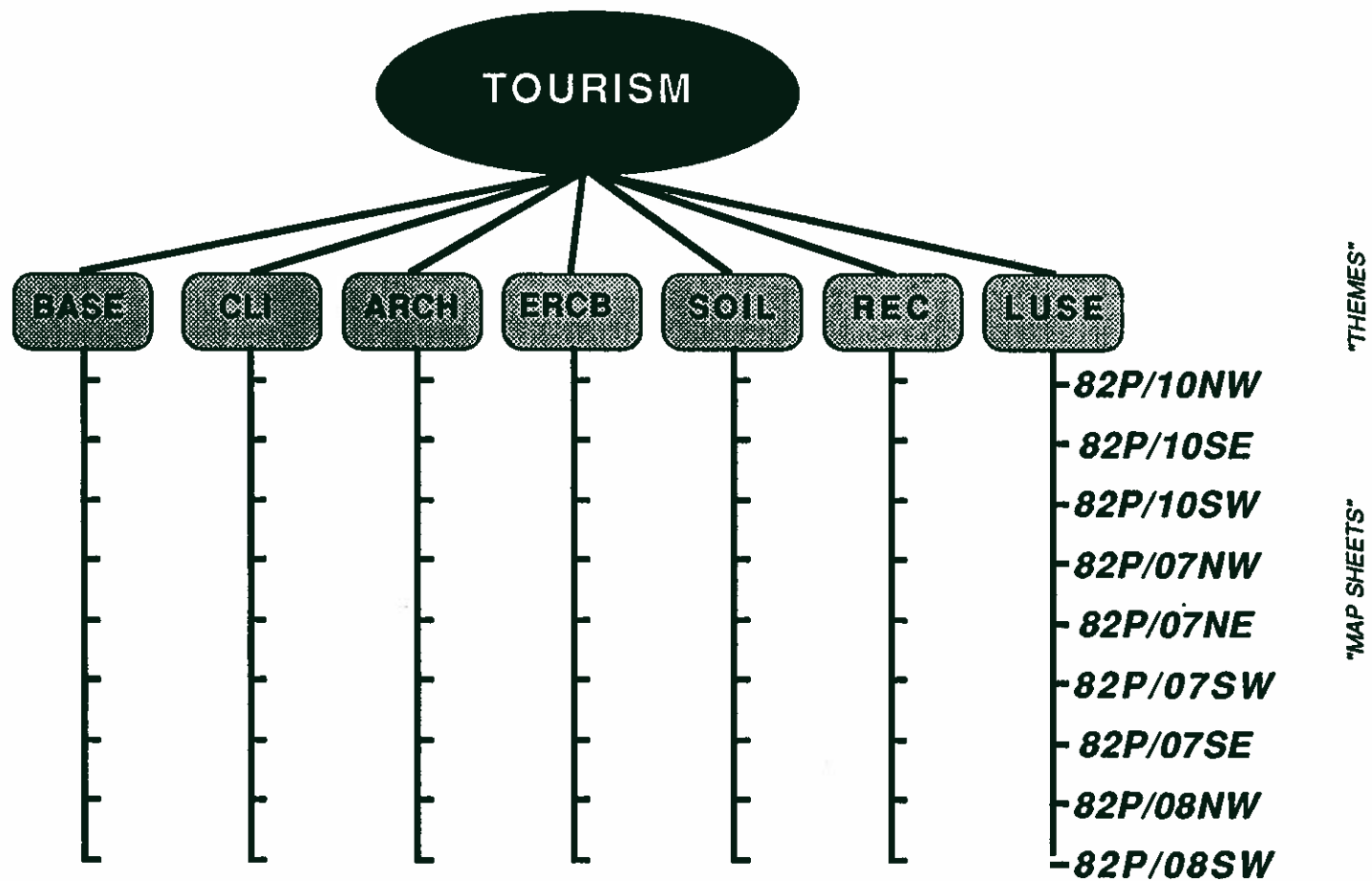
3.2.1 Polygon File

Describes each delineated physical land unit in terms of a soil map unit, topography, surficial geology, groundwater zone and area. Appendix 4 and 5 provide individual polygon listings stratified by mapsheet and including model interpretations. The "unique physical land unit class" variable links this data base to the Map Unit File.

3.2.2 Map Unit File

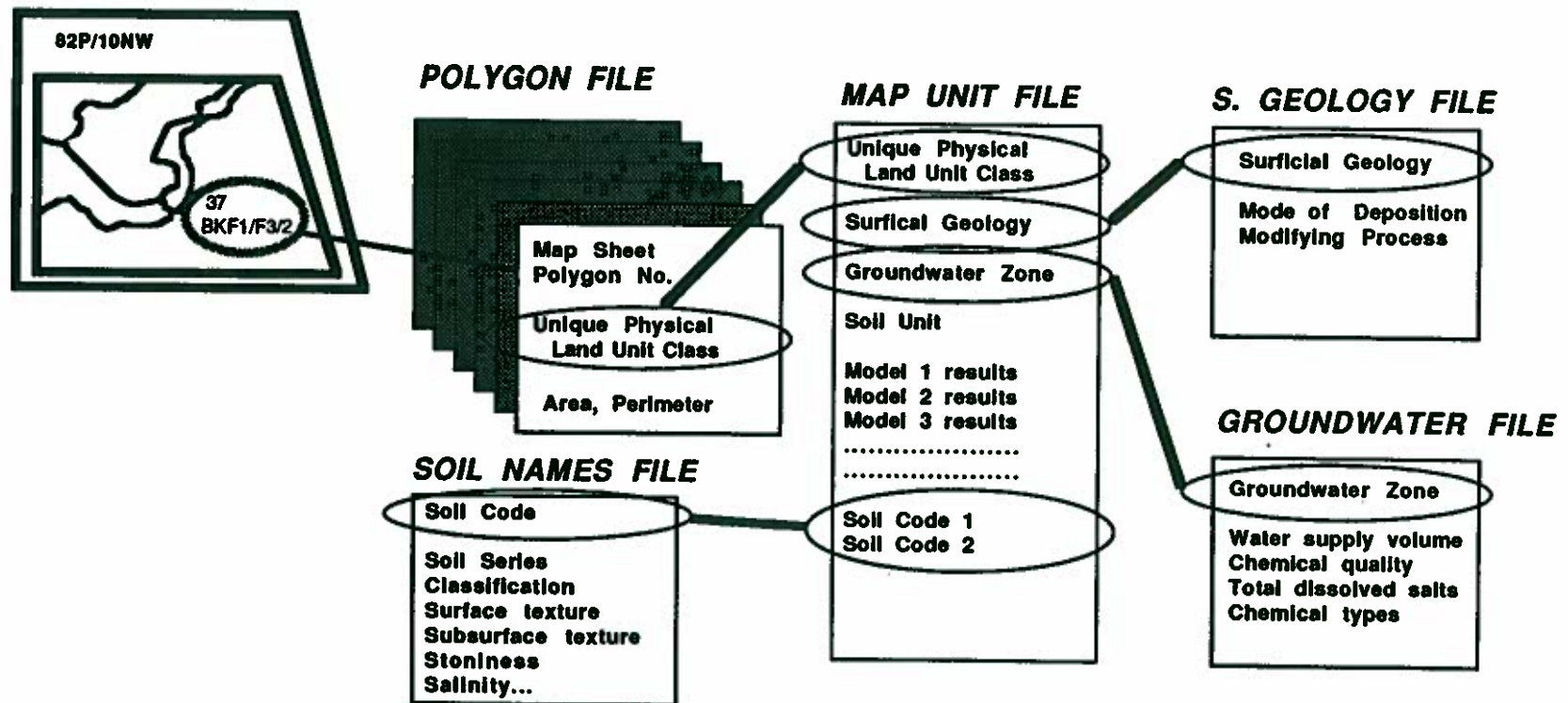
Describes those physical land unit conditions which comprise the unique combinations (31 in total) of soil map unit, topography, surficial geology and groundwater. Each soil map unit is further defined in terms of its dominant soil (soil code 1) and subdominant soil (soil code 2). For example, in Appendix 6, the "LET6" soil map unit is a combination of dominantly the "LET" - Lethbridge soil series and the "SCD" - Scollard soil series. Properties of these individual soil series are, in turn, defined in the Soil Names data base linked via the soil code (Appendix 8).

The 31 unique combinations of these features (classes) were used as basis to apply the interpretive model procedures and the results of these models are also a part this data file. A complete listing of the map unit file is provided in Appendix 6 and 7.



15/ Figure 2. Overview of data base directories.

MAP



16/ Figure 3. Physical Land Unit data base.

3.2.3 Soil Names File

Describes the soil properties for each soil series (soil code) in terms of morphological, physical and chemical characteristics. A total of 10 soil series characterize the study area (Appendix 8).

3.2.4 Surficial Geology File

The surficial geology data base defines the map unit symbols used in terms of their mode of deposition and any modifying processes. Appendix 9 provides a list of map unit descriptions for the study area.

3.2.5 Groundwater File

The groundwater file describes, for each groundwater zone (described in section 2.3.3): the upper and lower water supply volumes, chemical quality, total dissolved salts and chemical types (Appendix 10).

3.3 Existing Recreational Facilities Data Base

Each existing recreational facility, area or point of interest has been digitized labelled with a unique identifier and classified into 9 "types". Appendix 3 lists the entries in the "Names" file.

Types classified as either "Hotel" or "Campground" are further described by the "Hotels" and "Camps" files respectively. Based on information provided in the "Alberta Hotel/Motel Guide", the Hotel file characterizes each facility in terms of its: address, postal code, telephone number, number of rooms, cable vision, parking, air conditioning, kitchen, tavern, licensed food service, indoor swimming pool, whirlpool, sauna, accepted credit cards, room rate for single and double occupancy and rate for an additional person.

Based on information provided in the "Alberta Campground Guide", the Camps file characterizes each campground in terms of: number of sites, fee, power, water, sewage, fireplaces, flush toilets, chemical toilets, showers, pump water, tap water, fishing, playground, laundry, sewage disposal, groceries on site and nature of operator.

3.4 Archaeological Resource Sensitivity Zones

Archaeological Resource Sensitivity Zones were coded in the data base for each section as follows:

Sensitivity to land surface disturbance:

Low:	1
Medium:	2
High:	3

3.5 Archaeological Sites

Archaeological sites within the study were digitized and labelled individually. Each site/map reference number is linked to a Bordon number listed in Appendix 11.

3.6 Palaeontological Resource Sensitivity Zones

Palaeontological Resource Sensitivity Zones were coded in the data base for each section as follows:

Sensitivity to land surface disturbance:

Unknown:	0
Probable:	1
Low:	2
Medium:	3
High:	4

3.7 Land Ownership & Generalized Land Use Data Base

The following coding system was applied to the corridor area on a quarter section basis:

1 = crown land
2 = municipal land
3 = private
cont'd...

- 4 = airport
- 5 = small holdings
- 6 = provincial park
- 7 = grazing lease

Note: wherever multiple land ownership/land use occurred, the applicable codes were utilized. These codes do not indicate proportions of the respective ownership/use. For example, where crown land and grazing lease designations for a quarter section occurred, the code designated was "17".

3.8 CLI Land Capability for Recreation

Original polygons from the 1:250 000 Land Capability for Recreation map have been digitized and encoded to capability class and subclass(es). The GIS map products (scale 1:50 000) shade the original polygons according to the capability class and provide an individual polygon number. Appendix 12 lists the subclass(es) for each map polygon.

3.9 Energy Resources Conservation Board - Well Sites

Only the most basic items of information pertaining to well sites are contained in the data base: map well no. (i.e. identifier number for this project), ERCB identifier number and the well name. Further information on any well site can be obtained using that identifier as a reference.

Appendix 13 lists the ERCB identifier number and well name, by map sheet, with the "map well number" which links these items to the posted well locations on the maps. It is important to note however, that a few of the well sites listed in Appendix 13 are not posted on the map. This is because these are old well sites with more recent activity that have been added to the record data base but have not digitized to update the map coverage.

4. INTERPRETIVE MODELS

4.1 Background and Class & Modifier Definitions

The interpretive models used in this project are based solely on potential limitations to tourism development imposed by limiting physical land conditions using existing and "photo-interpretively" enhanced soil, geology and groundwater hydrology features. Other land information, relevant to a the total assessment of potential tourism development, has been entered into the geographic information system for immediate future reference. Due to the necessary time restrictions for this project, this latter information was not incorporated into the interpretive models (see also section 1.2).

In the future, more comprehensive models that consider a broader spectrum of land information could be developed. For example, physical land map units could be evaluated further with respect to limitations imposed (or advantages provided) by adjacent land conditions and the proximity of existing access and recreational facilities. These types of multiple theme models require and take greater advantage of the powerful spatial analytical capabilities of geographic information systems.

Given the emphasis on physical land limitations to tourism development, the "Guidebook for use with Soil Survey Reports of Alberta Provincial Parks and Recreation Areas" by G. Greenlee (Alberta Research Council, 1981, Earth Sci. Rpt. 81-1) was reviewed and used as a principle basis for evaluating the defined physical land units. In some instances, limiting groundwater conditions and geological features further modified the final evaluation of a physical land unit. Each interpretive model includes a copy of the interpretive criteria used from the original Alberta Research Council report by Greenlee.

The Physical Land Unit map polygons have been evaluated for each of the 10 recreation-related interpretive model criteria and rated in terms of having NONE-SLIGHT, MODERATE or SEVERE-VERY SEVERE limitations to the stated use/development. These ratings are defined as follows:

NONE-SLIGHT

Physical land units having properties favourable for the rated use. The degree of limitation is minor and can be easily overcome. Good performance and low maintenance can be expected.

MODERATE

Physical land units having properties moderately favourable for the rated use. Limitations may be overcome or modified by special planning, design or

maintenance. During some part of the year, the performance of the planned use may be somewhat less desirable than for physical land units rated none-slight.

SEVERE-VERY SEVERE

Physical land units having properties that pose severe-very severe limitations for the rated use. This degree of limitation generally requires major soil modification, special design or intensive maintenance considerations. Modification may require that soil materials be removed or replaced. In extreme situations, these modifications may prove to be economically impractical.

On the interpretive model maps, each polygon has been individually shaded according to the LIMITATION RATING shown on the legend. For those with either a MODERATE OR SEVERE-VERY SEVERE rating a MODIFIER symbol is given to indicate the reason for the limitation. Polygons may have more than one modifier; modifiers are separated by a comma (e.g. W,SST,S). A unique polygon number for each map sheet is also given to allow the user to access other related information to that polygon within the data base (Appendix 4 & 5). The MODIFIER symbols are described as follows:

MODIFIERS

Limitations due to:

WS	availability of or proximity to suitable water supply
P	soil permeability
PFA	potential frost action
S	slope
SL	slumping
SST	surface soil texture
SSW	shrink-swell potential
W	wetness

Modifier Notes:

- 1** if suitable water supply is available, Limitation = MODERATE with Modifiers = SST,P.
- 2** if suitable water supply is available, Limitation = NONE.
- 3** if suitable water supply is available, Limitation = MODERATE with Modifier = SST.
- 4** if local pockets of subsurface sand and gravel present, Limitation = MODERATE - SEVERE.
- 5** if surface textures not coarse loamy, Limitation = MODERATE -SEVERE.

4.2 Origin, Disclaimer and Total Areas pertaining to...

4.2.1 Limitations for Permanent Buildings With Basements

Origin: Limitations based on Physical Land Units with "Guide for Developing Soil Interpretations for Permanent Buildings With/Without Basements" -- (G. Greenlee, 1981, Alberta Research Council Earth Science Report 81-1); personal communication with City of Drumheller engineer (Appendix 14).

GUIDE FOR DEVELOPING SOIL INTERPRETATIONS FOR PERMANENT BUILDINGS

This guide provides ratings for undisturbed soils that are evaluated for single family dwellings and other structures with similar foundations. Slope, susceptibility to flooding, and seasonal wetness, that have effects beyond those related exclusively to foundations, are also considered. The properties affecting foundation support are those that affect bearing capacity and settlement under load, and those that affect excavation and construction costs. The properties affecting bearing strength and settlement of the natural soil are density, wetness, plasticity, texture, and shrink-swell behavior. Shrink-swell potential and plasticity (Atterberg limits) are inferred from the Unified Soil Classification. Properties influencing the ease and amount of excavation are wetness, slope, depth to bedrock and sand or gravel, stoniness and rockiness. These properties also affect the ease of installing underground utilities. Excluded are limitations for septic tank absorption fields (see Table 18, Soil limitations classes for septic tank absorption fields) and lawns and landscaping (see Table 15, Soil limitation classes for lawns and landscaping). On site investigations are needed for specific placement of buildings and utility lines, and for detailed design of foundations. All ratings are based on undisturbed soils to a depth of 1 to 2 m.

TABLE 17.
Soil limitation classes for permanent buildings

Properties Affecting Use	Degree of Limitation			
	None to Slight	Moderate	Severe	Very Severe
Flooding	None	None	Occasional (once in 5 years).	Frequent (every year).
Wetness ¹ (soil drainage class)	WITH BASEMENTS: very rapidly, rapidly & well drained soils. WT > 150 cm. WITHOUT BASEMENTS: very rapidly, rapidly, well & moderately well drained soils - no seepage or ponding. WT > 75 cm.	WITH BASEMENTS: moderately well drained soils - no seepage or ponding. WT 75-150 cm. WITHOUT BASEMENTS: moderately well drained soils - occasional seepage or ponding, imperfectly drained soils - no seepage or ponding. WT 50-75 cm.	WITH BASEMENTS: imperfectly drained soils - no seepage or ponding, poorly & very poorly drained soils. WT 25-75 cm 1 month or more during year. WITHOUT BASEMENTS: poorly & very poorly drained soils. WT 25-50 cm 1 month or more during year.	WITH BASEMENTS: permanently wet soils. WT < 25 cm. WITHOUT BASEMENTS: permanently wet soils. WT < 25 cm.
Slope ²	0-9% (aA-dD)	>9-15% (eE)	>15-30% (fF)	>30% (gG, hH)
Shrink-swell Potential ³	Low - Unified Groups GW, GP, SW, SP, GM, GC, SM, SC, & CL with P.I. ⁴ < 15.	Moderate ⁵ - Unified Groups ML, & CL with P.I. ≥ 15.	High ⁵ - Unified Groups CH, MH, OL & OH	Very High ⁵ - Unified Group Pt.
Potential Frost Action ⁶	Low (F1, F2)	Moderate (F3) ⁵	High (F4) ⁵	
Depth to Bedrock ⁷	WITH BASEMENTS: >150 cm WITHOUT BASEMENTS: >100 cm	WITH BASEMENTS: 100-150 cm WITHOUT BASEMENTS: 50-100 cm	WITH BASEMENTS: 50-100 cm WITHOUT BASEMENTS: <50 cm	WITH BASEMENTS: <50 cm
Potential Sulfate Attack ⁸ on Concrete	0-1000 ppm ⁹ or 0-0.20%	1000-2000 ppm or 0.20 - 0.50% ⁵	>2000 ppm or >0.50% ⁵	
Surface Stoniness ¹⁰	0 and 1	2	3 and 4	5
Rockiness ^{7, 11}	Rock exposures >75 m apart and cover <2% of the area.	Rock exposures 25-75 m apart and cover 2-10% of the area.	Rock exposures <25 m apart and cover >10% of the area.	Rock exposures too frequent to permit location of permanent buildings.

¹ Soil drainage classes are defined in this guidebook. ² Reduce the slope limits by one-half for soils subject to hillside slippage. ³ This item estimates the strength of the soil, that is, its ability to withstand applied loads. ⁴ P.I. means Plasticity Index, and is defined in Appendix I. ⁵ These factors are limitations only where basements and underground utilities are planned. ⁶ Frost heave only applies where frost penetrates to the assumed depth of the footings and the soil is moist. The potential frost action classes are outlined in Table 4. ⁷ If bedrock is soft enough to be dug with light power equipment, such as a backhoe, moderate & severe limitations may be reduced by 1 class. ⁸ Categories for sulfate attack on concrete are outlined in Table 7. ⁹ ppm means parts per million. ¹⁰ Surface stoniness classes are outlined in this guidebook. ¹¹ Very shallow soils are rated as having a severe limitation for rockiness. Rockiness classes are defined in the Canadian System of Soil Classification (Canada Soil Survey Committee, 1978).

Limitations for Permanent Buildings With Basements cont'd.

Disclaimer: Septic tank field considerations not included. Sulphate resistant concrete recommended, particularly when bedrock encountered. Map not to be used for site specific determinations.

<u>Area:</u>	NONE-SLIGHT Limitations:	2664 ha (6583 acres)
	MODERATE Limitations:	2789 ha (6894 acres)
	SEVERE-VERY SEVERE Limitations:	41,093 ha (101,382 acres)

4.2.2 Limitations for Permanent Buildings Without Basements

Origin: Limitations based on Physical Land Units with "Guide for Developing Soil Interpretations for Permanent Buildings With/Without Basements" -- (G. Greenlee, 1981, ARC Earth Sci. Rpt. 81-1); per. comm. City Drumheller Eng.

GUIDE FOR DEVELOPING SOIL INTERPRETATIONS FOR PERMANENT BUILDINGS

This guide provides ratings for undisturbed soils that are evaluated for single family dwellings and other structures with similar foundations. Slope, susceptibility to flooding, and seasonal wetness, that have effects beyond those related exclusively to foundations, are also considered. The properties affecting foundation support are those that affect bearing capacity and settlement under load, and those that affect excavation and construction costs. The properties affecting bearing strength and settlement of the natural soil are density, wetness, plasticity, texture, and shrink-swell behavior. Shrink-swell potential and plasticity (Atterberg limits) are inferred from the Unified Soil Classification. Properties influencing the ease and amount of excavation are wetness, slope, depth to bedrock and sand or gravel, stoniness and rockiness. These properties also affect the ease of installing underground utilities. Excluded are limitations for septic tank absorption fields (see Table 18, Soil limitations classes for septic tank absorption fields) and lawns and landscaping (see Table 15, Soil limitation classes for lawns and landscaping). On site investigations are needed for specific placement of buildings and utility lines, and for detailed design of foundations. All ratings are based on undisturbed soils to a depth of 1 to 2 m.

TABLE 17.
Soil limitation classes for permanent buildings

Properties Affecting Use	None to Slight	Moderate	Severe	Very Severe
Flooding	None	None	Occasional (once in 5 years).	Frequent (every year).
Wetness ¹ (soil drainage class)	WITH BASEMENTS: very rapidly, rapidly & well drained soils. WT > 150 cm. WITHOUT BASEMENTS: very rapidly, rapidly, well & moderately well drained soils - no seepage or ponding. WT > 75 cm.	WITH BASEMENTS: moderately well drained soils - no seepage or ponding. WT 75-150 cm. WITHOUT BASEMENTS: moderately well drained soils - occasional seepage or ponding, imperfectly drained soils - no seepage or ponding. WT 50-75 cm.	WITH BASEMENTS: imperfectly drained soils - no seepage or ponding, poorly & very poorly drained soils. WT 25-75 cm 1 month or more during year. WITHOUT BASEMENTS: poorly & very poorly drained soils. WT 25-50 cm 1 month or more during year.	WITH BASEMENTS: permanently wet soils. WT < 25 cm. WITHOUT BASEMENTS: permanently wet soils. WT < 25 cm.
Slope ²	0-9% (aA-dD)	>9-15% (eE)	>15-30% (fF)	>30% (gG, hH)
Shrink-swell Potential ³	Low - Unified Groups GW, GP, SW, SP, GM, GC, SM, SC, & CL with P.I. ⁴ < 15.	Moderate ⁵ - Unified Groups ML, & CL with P.I. ≥ 15.	High ⁵ - Unified Groups CH, MH, OL & OH	Very High ⁵ - Unified Group Pt.
Potential Frost Action ⁶	Low (F1, F2)	Moderate (F3) ⁵	High (F4) ⁵	
Depth to Bedrock ⁷	WITH BASEMENTS: > 150 cm WITHOUT BASEMENTS: > 100 cm	WITH BASEMENTS: 100-150 cm WITHOUT BASEMENTS: 50-100 cm	WITH BASEMENTS: 50-100 cm WITHOUT BASEMENTS: < 50 cm	WITH BASEMENTS: < 50 cm
Potential Sulfate Attack ⁸ on Concrete	0-1000 ppm ⁹ or 0-0.20%	1000-2000 ppm or 0.20 - 0.50% ⁵	>2000 ppm or >0.50% ⁵	
Surface Stoniness ¹⁰	0 and 1	2	3 and 4	5
Rockiness ^{7, 11}	Rock exposures > 75 m apart and cover < 2% of the area.	Rock exposures 25-75 m apart and cover 2-10% of the area.	Rock exposures < 25 m apart and cover > 10% of the area.	Rock exposures too frequent to permit location of permanent buildings.

¹ Soil drainage classes are defined in this guidebook. ² Reduce the slope limits by one-half for soils subject to hillside slippage. ³ This item estimates the strength of the soil, that is, its ability to withstand applied loads. ⁴ P.I. means Plasticity Index, and is defined in Appendix I. ⁵ These factors are limitations only where basements and underground utilities are planned. ⁶ Frost heave only applies where frost penetrates to the assumed depth of the footings and the soil is moist. The potential frost action classes are outlined in Table 4. ⁷ If bedrock is soft enough to be dug with light power equipment, such as a backhoe, moderate & severe limitations may be reduced by 1 class. ⁸ Categories for sulfate attack on concrete are outlined in Table 7. ⁹ ppm means parts per million. ¹⁰ Surface stoniness classes are outlined in this guidebook. ¹¹ Very shallow soils are rated as having a severe limitation for rockiness. Rockiness classes are defined in the Canadian System of Soil Classification (Canada Soil Survey Committee, 1978).

Limitations for Permanent Buildings Without Basements cont'd.

Disclaimer: Septic tank field considerations not included; sulphate resistant concrete recommended; particularly when bedrock encountered; map not to be used for site specific determinations.

Area: NONE-SLIGHT Limitations: 2664 ha (6583 acres)
MODERATE Limitations: 5730 ha (14,159 acres)
SEVERE-VERY SEVERE Limitations: 38,088 ha (94116 acres)

4.2.3 Limitations for Picnic Areas

Origin: Limitations based on Physical Land Units with "Guide for Developing Soil Interpretations for Picnic Areas" -- (Greenlee, 1981, ARC Earth Sci. Rpt. 81-1).

This guide applies to soils considered for intensive use as park type picnic areas, which are subject to heavy foot traffic by humans. It is assumed that most vehicular traffic will be confined to access roads and parking areas (see Table 20, Soil limitation classes for road location). Soil suitability for growing and maintaining vegetation is not a part of this guide, but is an important item to consider in the final evaluation of a site (see Table 15, Soil limitation classes for lawns and landscaping).

TABLE 12.
Soil limitation classes for picnic areas

Properties Affecting Use	Degree of Limitation			
	None to Slight	Moderate	Severe	Very Severe
Flooding	None during season of use.	May flood 1 or 2 times per year for short periods during season of use.	Floods >2 times during season of use.	Prolonged flooding during season of use.
Wetness ¹ (soil drainage class)	Very rapidly, rapidly, well & moderately well drained soils - no seepage or ponding. WT >50 cm during season of use.	Moderately well drained soils - occasional seepage or ponding, imperfectly drained soils - no seepage or ponding. WT < 50 cm for short periods during season of use.	Imperfectly drained soils - seepage or ponding, poorly & very poorly drained soils. WT < 50 cm & often near surface for a month or more during season of use.	Permanently wet soils.
Slope	0-9% (aA-dD)	>9-15% (eE)	>15-30% (fF)	>30% (gG, hH)
Permeability ²	Very rapid to moderately slow inclusive > 0.5 cm/hr	Slow and very slow < 0.5 cm/hr		
Surface Stoniness ³	0, 1 and 2	3	4	5
Rockiness ⁴	Rock exposures >25 m apart and cover <10% of the area.	Rock exposures 10-25 m apart and cover 10-25% of the area.	Rock exposures <10 m apart and cover >25% of the area.	Rock exposures too frequent to permit location of picnic areas.
Surface Soil Texture ⁵	SL, FSL, VFSL, L and LS with textural B. Not subject to soil blowing.	SiL, CL, SCL, SiCL, LS and sand other than loose sand.	SC, SiC, C, Si	Loose sand subject to severe blowing. Organic soils.

¹ Soil drainage classes are defined in this guidebook. ² In low rainfall areas, soils may be rated one class better. Restricted permeability is not considered a severe limitation for picnic areas. Soil permeability classes are defined in this guidebook. ³ Surface stoniness for the purpose of this table includes gravels and cobbles, or any coarse fragments >2 mm in diameter. Some gravelly soils may be rated none to slight when the gravel content exceeds 20% by only a small margin, if a) the gravel is embedded in the soil matrix, or b) the fragments are <2 cm in diameter. Surface stoniness classes are defined in this guidebook. ⁴ Very shallow soils are rated as having a severe limitation for rockiness. The nature and topography of bedrock exposures may significantly alter these ratings. On site investigations may be needed. Rockiness classes are defined in the Canadian System of Soil Classification (Canada Soil Survey Committee, 1978). ⁵ The soil textural classes are defined in this guidebook.

Limitations for Picnic Areas cont'd.

Disclaimer: Assume on-site drinking water not essential, chemical toilets; vehicular traffic on access road and parking area only; map not to be used for site specific determinations.

<u>Area:</u>	NONE-SLIGHT Limitations:	7323 ha (18094 acres)
	MODERATE Limitations:	21,702 ha (53626 acres)
	SEVERE-VERY SEVERE Limitations:	17,458 ha (43,140 acres)

4.2.4 Limitations for Primitive Campgrounds

Origin: Limitations based on Physical Land Units with "Guide for Developing Soil Interpretations for Primitive Camping Areas" -- (G. Greenlee, 1981, ARC Earth Sci. Rpt. 81-1);

This guide applies to soils which will undergo relatively light use in areas used for tents only. Access will be by hike in, canoe in, or horse; and pit toilets will be provided. A maximum of only seven sites per ha, and probably only three or four; and a maximum of 20 sites per facility, usually only five, will be provided (per. comm. D. Perraton, Provincial Parks Division of Alberta Recreation and Parks). It is assumed that little site preparation will be done, other than some minimum shaping, levelling, and gravel pads for tents. The soil should be suitable for relatively concentrated foot traffic by humans.

TABLE 10.
Soil limitation classes for primitive camping areas

Properties Affecting Use	Degree of Limitation			
	None to Slight	Moderate	Severe	Very Severe
Flooding	None	Very occasional during season of use. Once in 5-10 years.	Occasional during season of use. Once in 2-4 years.	Flooding during every season of use.
Wetness ¹ (soil drainage class)	Very rapidly, rapidly, well & moderately well drained soils - no seepage or ponding. WT > 75 cm during season of use.	Moderately well drained soils - occasional seepage or ponding, imperfectly drained soils - no seepage or ponding. WT > 50 cm during season of use.	Imperfectly drained soils - seepage or ponding, poorly & very poorly drained soils. WT < 50 cm during season of use.	Permanently wet soils.
Slope	0-15% (aA-eE)	>15-30% (fF)	>30-60% (gG)	>60% (hH)
Permeability ²	Very rapid to moderate inclusive >1.5 cm/hr	Moderately slow and slow 0.15-1.5 cm/hr	Very slow < 0.15 cm/hr	
Surface Stoniness ³	0 and 1	2	3 and 4	5
Rockiness ⁴	Rock exposures > 25 m apart & cover < 10% of the area.	Rock exposures 10-25 m apart & cover 10-25% of the area.	Rock exposures < 10 m apart & cover > 25% of the area.	Rock exposures too frequent to permit campground location.
Surface Soil Texture ⁵	SL, FSL, VFSL, L and LS with textural B. Not subject to soil blowing.	SIL, CL, SCL, SiCL, LS and sand other than loose sand.	SC, SiC, C, Si	Sand subject to severe blowing. Organic soils.

¹ Soil drainage classes are defined in this guidebook. ² In low rainfall areas, soils may be rated one class better. Soil permeability classes are defined in this guidebook. ³ Surface stoniness for the purpose of this table includes gravels and cobbles, or any coarse fragments > 2mm in diameter. Some gravelly soils may be rated none to slight when the gravel content exceeds 20% by only a small margin, if a) the gravel is embedded in the soil matrix, or b) the fragments are < 2 cm in diameter. Surface stoniness classes are defined in this guidebook. ⁴ Very shallow soils are rated severe for rockiness. Rockiness classes are defined in the Canadian System of Soil Classification (Canada Soil Survey Committee, 1978). ⁵ The soil textural classes are defined in this guidebook.

Limitations for Primitive Campgrounds cont'd.

Disclaimer: On-site source of suitable drinking water not considered, chemical toilets assumed; maximum 7 sites/ha; map not to be used for site specific determinations.

<u>Area:</u>	NONE-SLIGHT Limitations:	8395 ha (20743 acres)
	MODERATE Limitations:	21,817 ha (53,909 acres)
	SEVERE-VERY SEVERE Limitations:	16,271 ha (40,207 acres)

4.2.5 Limitations for Fully Serviced Campgrounds

Origin: Limitations based on Physical Land Units with "Guide for Developing Soil Interpretations for Fully Serviced Campgrounds" -- (G. Greenlee, 1981, ARC Earth Sci. Rpt. 81-1);

This guide applies to soils to be used intensively for tents and camp trailers of various sizes; and the accompanying activities of outdoor living. A maximum of 17 to 25 sites per ha will be provided and campsites will be gravelled or paved (per. comm., D. Perraton, Provincial Parks Division of Alberta Recreation and Parks). Modern sewage facilities will also be provided. The soil should be suitable for heavy foot traffic by humans, since natural areas will be left between campsites. Soil suitability for growing and maintaining vegetation is not a part of this guide, but is an important item to consider in the final evaluation of a site (see Table 15, Soil limitation classes for lawns and landscaping).

TABLE 11.
Soil limitation classes for fully serviced campgrounds

Properties Affecting Use	Degree of Limitation			
	None to Slight	Moderate	Severe	Very Severe
Flooding	None	Very occasional during season of use. Once in 5-10 years.	Occasional during season of use. Once in 2-4 years.	Flooding during every season of use.
Wetness ¹ (soil drainage class)	Very rapidly, rapidly, well & moderately well drained soils - no seepage or ponding. WT > 75 cm during season of use.	Moderately well drained soils - occasional seepage or ponding, imperfectly drained soils - no seepage or ponding. WT > 50 cm during season of use.	Imperfectly drained soils - seepage or ponding, poorly & very poorly drained soils. WT < 50 cm during season of use.	Permanently wet soils.
Slope	0-9% (aA-dD)	>9-15% (eE)	>15-30% (fF)	>30% (gG, hH)
Permeability ²	Very rapid to moderate inclusive >1.5 cm/hr	Moderately slow and slow 0.15-1.5 cm/hr	Very slow < 0.15 cm/hr	
Surface Stoniness ³	0 and 1	2	3 and 4	5
Rockiness ⁴	No rock exposures.	Rock exposures > 25 m apart & cover < 10% of the area.	Rock exposures 10-25 m apart & cover 10-25% of the area.	Rock exposures too frequent to permit campground location.
Surface Soil Texture ⁵	SL, FSL, VFSL, L and LS with textural B. Not subject to soil blowing.	SiL, CL, SCL, SiCL, LS and sand other than loose sand.	SC, SiC, C, Si	Sand subject to severe blowing. Organic soils.

¹ Soil drainage classes are defined in this guidebook. ² In low rainfall areas, soils may be rated one class better. Soil permeability classes are defined in this guidebook. ³ Surface stoniness for the purpose of this table includes gravels and cobbles, or any coarse fragments > 2mm in diameter. Some gravelly soils may be rated none to slight when the gravel content exceeds 20% by only a small margin, if a) the gravel is embedded in the soil matrix, or b) the fragments are < 2 cm in diameter. Surface stoniness classes are defined in this guidebook. ⁴ Very shallow soils are rated severe for rockiness. Rockiness classes are defined in the Canadian System of Soil Classification (Canada Soil Survey Committee, 1978). ⁵ The soil textural classes are defined in this guidebook.

Limitations for Fully Serviced Campgrounds cont'd.

Disclaimer: Consider also limitations for septic tank fields; maximum 17-25 sites/ha; map not to be used for site specific determinations.

Area: NONE-SLIGHT Limitations: 4658 ha (11,511 acres)
MODERATE Limitations: 0 ha (0 acres)
SEVERE-VERY SEVERE Limitations: 41,824 ha (103,349 acres)

4.2.6 Limitations for Septic Tank Adsorption Fields

Origin: Limitations based on Physical Land Units with "Guide for Developing Soil Interpretations for Septic Tank Absorption Fields" -- (G. Greenlee, 1981, ARC Earth Sci. Rpt. 81-1);

The septic tank absorption field is a subsurface tile system laid out in such a way that effluent from the septic tank is distributed with reasonable uniformity into the natural soil. When the effluent is percolated into the ground, the impurities it contains are attacked by a myriad of biological organisms, naturally present in the soil (Alberta Department of Manpower and Labour, 1972).

Absorption fields are influenced by the ease of downward movement of effluent through the soil. This guide provides ratings for undisturbed soils that are evaluated on their ability to absorb and filter the liquid or effluent passed through the tile field. Soils with slow permeability are rated severe. Clean sands and gravels with rapid permeability have slight limitations, unless a hazard exists for contaminating nearby water supplies. A rating of severe does not necessarily mean that a septic system should not be installed in a given soil, but rather suggests difficulty, in terms of installation and maintenance, which can be expected.

TABLE 18.
Soil limitation classes for septic tank absorption fields

Properties Affecting Use	Degree of Limitation			
	None to Slight	Moderate	Severe	Very Severe
Flooding	None	None	Occasional (once in 5 years)	Floods every year.
Wetness ¹ (soil drainage class)	Very rapidly, rapidly & well drained soils. Seasonal ² WT ≥ 180 cm	Moderately well drained soils - no seepage or ponding. Seasonal WT 120-180 cm.	Moderately well drained soils - occasional seepage or ponding, imperfectly drained soils - no seepage or ponding. Seasonal WT 60-120 cm. Very rapidly & rapidly drained soils if groundwater contamination hazard.	Imperfectly drained soils - seepage or ponding, poorly & very poorly drained soils, permanently wet soils. Seasonal WT ≤ 60 cm.
Slope	0-9% (aA-dD)	$\geq 9-15\%$ (eE)	$\geq 15-30\%$ (fF)	$\geq 30\%$ (gG, hH)
Permeability ³	Very rapid to moderately rapid inclusive ≥ 5.0 cm/hr	Moderate 1.5-5.0 cm/hr	Moderately slow & slow 0.15-1.5 cm/hr. Very rapid & rapid if groundwater contamination hazard ≥ 15.0 cm/hr.	Very slow ≤ 0.15 cm/hr
Percolation Rate ⁴ (Auger hole method)	About 8-18 min/cm	18-24 min/cm	Slower than 24 min/cm	
Depth to Bedrock ⁵ or Other Impervious Material	≥ 180 cm	120-180 cm ⁶	60-120 cm	≤ 60 cm
Depth to Sand or Gravel ⁵	≥ 180 cm	120-180 cm ^{6,7}	60-120 cm ⁷	≤ 60 cm ⁷

¹ Water table depth based on the assumption that tile depth is 60 cm in the soil. Soil drainage classes are defined in this guidebook. ² Seasonal means for more than one month. It may with caution be possible to make some adjustment for the severity of a water table limitation where seasonal use of the facility does not coincide with the period of high water table. A seasonal water table should be at least 120 cm below the bottom of the trench at all times for soils having a slight limitation (United States Department of Health, Education and Welfare, 1969). Where relief permits, the effective depth above a water table or rock can be increased by adding appropriate amounts of fill. ³ The limitation ratings should be based on the permeability of soil layers at and below the depth of the tile line. Soil permeability classes are defined in this guidebook. ⁴ Soils having a percolation rate faster than about 8 min/cm are likely to present a pollution hazard to adjacent waters. This hazard must be noted, but the degree must be assessed in each case by examining the proximity of the proposed installation to water bodies, water table, and related features. Refer to Alberta Manpower and Labour, 1972 for details of the auger hole procedure. ⁵ Based on an assumed tile depth of 60 cm in the soil. ⁶ Where the slope is $\geq 9\%$, a depth to bedrock, sand or gravel of 120-180 cm is considered a severe limitation. ⁷ Limitation if a groundwater contamination hazard exists.

Limitations for Septic Tank Adsorption Fields cont'd.

Disclaimer: Proximity to nearby water or lands having limitations are not considered; map not to be used for site specific determinations.

<u>Area:</u>	NONE-SLIGHT Limitations:	6397 ha (15,807 acres)
	MODERATE Limitations:	7714 ha (19,064 acres)
	SEVERE-VERY SEVERE Limitations:	32,371 ha (79,989 acres)

4.2.7 Limitations for Playing Fields

Origin: Limitations based on Physical Land Units with "Guide for Developing Soil Interpretations for Playgrounds" -- (G. Greenlee, 1981, ARC Earth Sci. Rpt. 81-1);

This guide applies to soils to be used intensively for playgrounds for baseball, football, and other similar organized games. These areas are subject to intensive foot traffic. A nearly level surface, good drainage, and a soil texture and consistence that gives a firm surface generally are required. The most desirable soils are free of rock outcrops and coarse fragments. Soil suitability for growing and maintaining vegetation is not a part of this guide, but is an important item to consider in the final evaluation of a site (see Table 15, Soil limitation classes for lawns and landscaping).

TABLE 16.
Soil limitation classes for playgrounds

Properties Affecting Use	Degree of Limitation			
	None to Slight	Moderate	Severe	Very Severe
Flooding	None during season of use.	Occasional. Once in 2-3 years during season of use.	Every year.	Prolonged flooding during season of use.
Wetness ¹ (soil drainage class)	Very rapidly, rapidly, well & moderately well drained soils - no seepage or ponding. WT > 75 cm during season of use.	Moderately well drained soils - occasional seepage or ponding, imperfectly drained soils - no seepage or ponding. WT > 50 cm during season of use.	Imperfectly drained soils - seepage or ponding, poorly & very poorly drained soils. WT < 50 cm during season of use.	Permanently wet soils.
Slope	0-2% (aA, bB)	>2-5% (cC)	>5-9% (dD)	>9% (eE-hH)
Permeability ²	Very rapid to moderate inclusive > 1.5 cm/hr	Moderately slow and slow 0.15-1.5 cm/hr	Very slow < 0.15 cm/hr	
Surface Stoniness ³	0 and 1	2	3 and 4	5
Rockiness ⁴	Rock exposures > 75 m apart and cover < 2% of the area.	Rock exposures 25-75 m apart and cover 2-10% of the area.	Rock exposures < 25 m apart and cover > 10% of the area.	Rock exposures too frequent to permit playground location.
Depth to bedrock	> 100 cm	50-100 cm ⁵	< 50 cm ⁵	
Surface Soil Texture ⁶	SL, FSL, VFSL, L	SIL, CL, SCL, SiCL, LS	SC, SiC, C, S, Si	S and LS subject to blowing. Organic soils.
Depth to Sand or Gravel ⁷	> 100 cm	50-100 cm	< 50 cm	

¹ Soil drainage classes are defined in this guidebook. ² In low rainfall areas soils may be rated one class better. Soil permeability classes are defined in this guidebook. ³ Surface stoniness for the purpose of this table includes gravels and cobbles, or any coarse fragments > 2 mm in diameter. ⁴ Surface stoniness classes are defined in this guidebook. ⁵ Very shallow soils are rated as severe for rockiness. Rockiness classes are defined in the Canadian System of Soil Classification (Canada Soil Survey Committee, 1978). ⁶ Downgrade to very severe if slope > 5%. ⁷ Surface soil texture influences soil ratings as it affects foot trafficability, surface wetness, dust, and maintenance. Adverse soil textures may be partially or completely overcome with the addition of topsoil. The soil textural classes are defined in this guidebook. ⁸ Depth to sand or gravel is considered a limitation in that levelling operations may expose sand or gravel, thereby bringing about adverse surface textures and undesirable amounts of coarse fragments. The addition of topsoil after levelling would overcome this limitation.

Limitations for Playing Fields cont'd.

Disclaimer: Irrigation needs not considered; map not to be used for site specific determinations.

<u>Area:</u>	NONE-SLIGHT Limitations:	0 ha (0 acres)
	MODERATE Limitations:	19,393 ha (47921 acres)
	SEVERE-VERY SEVERE Limitations:	27,089 ha (66,939 acres)

4.2.8 Limitations for Golf Courses

Origin: Limitations based on Physical Land Units with "Guide for Developing Soil Interpretations for Lawns and Landscaping" -- (G. Greenlee, 1981, ARC Earth Sci. Rpt. 81-1);

This guide applies to soils to be used for lawn turf, shrubs and trees. It is assumed that the addition of topsoil will not be needed for good establishment, and that some land grading or smoothing may be required. Irrigation is an assumed management practice.

TABLE 15.
Soil limitation classes for lawns and landscaping

Properties Affecting Use	Degree of Limitation			
	None to Slight	Moderate	Severe	Very Severe
Flooding	None during growing season.	May flood 1 or 2 times for short periods during growing season.	Subject to flooding ≥ 2 times during growing season.	Prolonged flooding during growing season.
Wetness ¹ (soil drainage class)	Very rapidly, rapidly, well & moderately well drained soils - no seepage or ponding. WT ≥ 50 cm during growing season.	Moderately well drained soils - occasional seepage or ponding, imperfectly drained soils - no seepage or ponding. WT ≤ 50 cm for short periods during growing season.	Imperfectly drained soils - seepage or ponding, poorly & very poorly drained soils. WT ≤ 50 cm & often near surface or ponded for a month or more during growing season.	Permanently wet soils.
Slope	0-9% (aA-dD)	≥ 9 -15% (eE)	≥ 15 -30% (fF)	≥ 30 % (gG, hH)
Surface Stoniness ²	0 and 1	2	3 and 4	5
Rockiness ³	Rock exposures ≥ 75 m apart and cover ≤ 2 % of the area.	Rock exposures 25-75 m apart and cover 2-10% of the area.	Rock exposures 2-25 m apart and cover 10-50% of the area.	Rock exposures ≤ 2 m apart and cover ≥ 50 % of the area.
Surface Soil Texture ⁴	SL, FSL, VFSL, L, SIL, and LS with textural B. Not subject to soil blowing.	CL, SCL, SiCL, and LS not subject to soil blowing	SC, SiC, C, Si, Organic soils, sand other than loose sand.	Loose sand subject to severe blowing.
Thickness of Ah Horizon ⁵	≥ 8 cm	0-8 cm	Lack of Ah horizon not a severe limitation by itself.	
Topsoil Salinity	EC ⁶ 0-1	EC ≥ 1 -3	EC ≥ 3 -8 ⁷	EC ≥ 8 ⁷
Depth to Bedrock, Sand or Gravel	≥ 100 cm	50-100 cm ⁸	25-50 cm	≤ 25 cm
Permeability ⁹	Moderately rapid to moderately slow inclusive 0.5-15.0 cm/hr	Slow and very slow ≤ 0.5 cm/hr 0.15	Rapid and very rapid ≥ 15.0 cm/hr	

¹ Soil drainage classes are defined in this guidebook. ² Surface stoniness for the purpose of this table includes gravels and cobbles, or any coarse fragments ≥ 2 mm in diameter. Cobbles and stones must be removed from areas to be landscaped, increasing development and maintenance difficulties. Some gravelly soils may be rated none to slight when the content of gravel exceeds 20% by only a small margin, if a) the gravel is embedded in the soil matrix, or b) the fragments are ≤ 2 cm in diameter. Surface stoniness classes are defined in this guidebook. ³ Very shallow soils are rated as having a severe limitation for rockiness. Rockiness classes are defined in the Canadian System of Soil Classification (Canada Soil Survey Committee, 1978). ⁴ The soil textural classes are defined in this guidebook. ⁵ Also known as topsoil, which is defined in this guidebook under the heading "Thickness of Topsoil." ⁶ EC means Electrical Conductivity, and is explained in Appendix 1. ⁷ These limits are taken from Richards (1954). ⁸ May be rated none to slight on 0-2% slopes. ⁹ In low rainfall areas finer textured soils may be rated one class better, and coarser textured soils may be rated one class lower. Soil permeability classes are defined in this guidebook.

Limitations for Golf Courses cont'd.

Disclaimer: Assume additional top soil will not be needed; map not to be used for site specific determinations.

Area: NONE-SLIGHT Limitations: 4658 ha (11,511 acres)
MODERATE Limitations: 0 ha (0 acres)
SEVERE-VERY SEVERE Limitations: 41,824 ha (103,349 acres)

4.2.9 Limitations for Non-Motorized Trails

Origin: Limitations based on Physical Land Units with "Guide for Developing Soil Interpretations for Paths" -- (G. Greenlee, 1981, ARC Earth Sci. Rpt. 81-1);

This guide applies to soils to be used for local and cross country footpaths, generally in relatively level areas. If built in rougher areas, they will be placed along contours; some soil excavating may be done, and some stairways may be used (per. comm., D. Perraton, Provincial Parks Division of Alberta Recreation and Parks). The steeper the slope upon which a path is to be built, the more miles of trail that will be needed to cover a given horizontal distance, and the more soil that will have to be moved to obtain a level tread (Coen and Holland, 1976). The paths will be covered by pavement, wood chips, fine gravel, or some other material. Soil features, such as texture and structure, that affect erodibility, stability, and dust, should be given special emphasis.

TABLE 13.
Soil limitation classes for paths

Properties Affecting Use	Degree of Limitation			
	None to Slight	Moderate	Severe	Very Severe
Flooding	None during season of use.	May flood 1 or 2 times for short periods during season of use.	Floods >2 times during season of use.	Prolonged flooding during season of use.
Wetness ¹ (soil drainage class)	Very rapidly, rapidly, well & moderately well drained soils - no seepage or ponding. WT > 50 cm during season of use.	Moderately well drained soils - occasional seepage or ponding, imperfectly drained soils - no seepage or ponding. WT < 50 cm for short periods during season of use.	Imperfectly drained soils - seepage or ponding, poorly & very poorly drained soils. WT < 50 cm & often near surface for a month or more during season of use.	Permanently wet soils.
Slope ²	0-9% (aA-dD)	>9-15% (eE)	>15-30% (fF)	>30% (gG, hH)
Surface Stoniness ³	0 and 1	2	3 and 4	5
Rockiness ⁴	Rock exposures >25 m apart and cover <10% of the area.	Rock exposures 10-25 m apart and cover 10-25% of the area.	Rock exposures <10 m apart and cover >25% of the area.	Rock exposures too frequent to permit location of paths.
Surface Soil Texture ⁵	SL, FSL, VFSL, and L	SiL, SiCL, SCL, CL, and LS	SC, SiC, C, Si and sand other than loose sand.	Loose sand subject to severe blowing. Organic soils.

¹ Soil drainage classes are defined in this guidebook. ² Slope in this context refers to the slope of the ground surface, not the slope of the tread. Soil erodibility is closely related to slope. Some adjustments in slope range may be needed in different climatic zones. ³ Surface stoniness for the purpose of this table includes gravels and cobbles, or any coarse fragments >2mm in diameter. Gravels tend to cause unstable footing when present in high amounts, and are also associated with increased erosion. Cobbles and stones must be removed from the trail tread, increasing construction and maintenance difficulties. Some gravelly soils may be rated none to slight when the content of gravel exceeds 20% by only a small margin, if a) the gravel is embedded in the soil matrix, or b) the fragments are <2 cm in diameter. Surface stoniness classes are defined in this guidebook. ⁴ Very shallow soils are rated as having a severe limitation for rockiness. The nature and topography of bedrock exposures may significantly alter these ratings. On site investigations may be necessary. Rockiness classes are defined in the Canadian System of Soil Classification (Canada Soil Survey Committee, 1978). ⁵ Texture refers to the soil texture which will form the tread texture. This is the surface texture on level areas, but may be a subsurface texture on slopes. The soil textural classes are defined in this guidebook.

Limitations for Non-Motorized Trails cont'd

Disclaimer: Map not to be used for site specific determinations.

<u>Area:</u>	NONE-SLIGHT Limitations:	11,145 ha (27,539 acres)
	MODERATE Limitations:	21,702 ha (53,626 acres)
	SEVERE-VERY SEVERE Limitations:	13,636 ha (33,695 acres)

4.2.10 Limitations for Motorized Trails

Origin: Limitations based on Physical Land Units with "Guide for Developing Soil Interpretations for Trails" -- (G. Greenlee, 1981, ARC Earth Sci. Rpt. 81-1);

This guide applies to soils to be used for primitive hiking trails. It is assumed that these areas will be used as they occur in nature, and that little or no soil will be moved (excavated or filled). It is also assumed that a dry stable tread is desirable and that muddy, dusty, worn, or eroded trail treads are undesirable. Hiking and riding trails are not treated separately, but as the design requirements for riding trails are more stringent, a given limitation will be more difficult to overcome. Only minimum preparation will be done, such as the clearing of trees and removal of a few boulders if necessary (per. comm., D. Perraton, Provincial Parks Division of Alberta Recreation and Parks). Soil features, such as surface texture and structure, that affect trafficability, dust, and design and maintenance of trails, should be given special emphasis.

TABLE 14.
Soil limitation classes for trails

Properties Affecting Use	Degree of Limitation			
	None to Slight	Moderate	Severe	Very Severe
Flooding	None during season of use.	May flood 1 or 2 times for short periods during season of use.	Floods >2 times during season of use.	Prolonged flooding during season of use.
Wetness ¹ (soil drainage class)	Very rapidly, rapidly, well & moderately well drained soils - no seepage or ponding. WT > 50 cm during season of use.	Moderately well drained soils - occasional seepage or ponding, imperfectly drained soils - no seepage or ponding. WT < 50 cm for short periods during season of use.	Imperfectly drained soils - seepage or ponding, poorly & very poorly drained soils. WT < 50 cm & often near surface for a month or more during season of use.	Permanently wet soils.
Slope ²	0-15% (aA-eE)	>15-30% (fF)	>30-60% (gG)	>60% (hH)
Surface Stoniness ³	0, 1 and 2	3	4	5
Rockiness ⁴	Rock exposures >25 m apart and cover <10% of the area.	Rock exposures 10-25 m apart and cover 10-25% of the area.	Rock exposures <10 m apart and cover >25% of the area.	Rock exposures too frequent to permit location of trails.
Surface Soil Texture ⁵	SL, FSL, VFSL, and L	SiL, SiCL, SCL, CL, and LS	SC, SiC, C, Si and sand other than loose sand.	Loose sand subject to severe blowing. Organic soils.

¹ Soil drainage classes are defined in this guidebook. ² Slope in this context refers to the slope of the ground surface, not the slope of the tread. Soil erodibility is closely related to slope. Some adjustments in slope range may be needed in different climatic zones. ³ Surface stoniness for the purpose of this table includes gravels and cobbles, or any coarse fragments > 2 mm in diameter. Gravels tend to cause unstable footing when present in high amounts, and are also associated with increased erosion. Cobbles and stones must be removed from the trail tread, increasing construction and maintenance difficulties. Some gravelly soils may be rated none to slight when the content of gravel exceeds 20% by only a small margin, if a) the gravel is embedded in the soil matrix, or b) the fragments are < 2 cm in diameter. Surface stoniness classes are defined in this guidebook. ⁴ Very shallow soils rated as having a severe limitation for rockiness. The nature and topography of bedrock exposures may significantly alter these ratings. On site investigations may be necessary. Rockiness classes are defined in the Canadian System of Soil Classification (Canada Soil Survey Committee, 1978). ⁵ Texture refers to the soil texture which will form the tread texture. This is the surface texture on level areas, but may be a subsurface texture on slopes. The soil textural classes are defined in this guidebook.

Limitations for Motorized Trails

Disclaimer: Assume complex topographic conditions are limiting (note however, they may be desirable in some cases); map not to be used for site specific determinations.

Area: NONE-SLIGHT Limitations: 12,217 ha (30,188 acres)
MODERATE Limitations: 21,817 ha (53,909 acres)
SEVERE-VERY SEVERE Limitations: 12,449 ha (30,763 acres)

4.2.11 Agriculture Capability

Each Physical Land Unit map polygon has been evaluated using the provincial index system and rated into one of seven "land capability classes" with subclass modifiers defined below.

Origin: Capability based on Physical Land Units with "Land Capability for Arable Agriculture in Alberta" (Alberta Soils Advisory Committee, 1987).

Disclaimer: Map not to be used for site specific determinations.

Area: CLASS 2: 14,864 ha (36,730 acres)
CLASS 3: 3608 ha (8916 acres)
CLASS 4: 5894 ha (14,564 acres)
CLASS 5: 9730 ha (24,042 acres)
CLASS 6: 5635 ha (13,924 acres)
CLASS 7: 6752 ha (16,684 acres)

- CLASS 1** Lands having no significant limitations for crop production: 80-100 index points (none present in study area).
- CLASS 2** Lands having slight limitations that restrict the range of crops or require modified management practices: 60-79 index points.
- CLASS 3** Lands having moderate limitations that restrict the range of crops or require special management practices: 45-59 index points.
- CLASS 4** Lands having severe limitations that restrict the range of crops that can be grown or require special management practices or both: 30-44 index points.

- CLASS 5** Land having very severe limitations for sustained arable agriculture. Annual cultivation using common cropping practices is not recommended: 20-29 index points.
- CLASS 6** Lands having such severe limitations for arable agriculture that cropping is not feasible even on an occasional basis: 10-19 index points.
- CLASS 7** Lands with no capability for arable agriculture: 0-9 index points.

SUBCLASSES - MODIFIERS

Note: only those occurring in the study area are listed.

- A** Climate - moisture limiting factor
- D** Soils - structure and consistence in mineral soils
- I** Organic Soils - wood content
- M** Soils - texture in mineral soils
- N** Soils - salinity
- R** Soils - depth to conforming layer (e.g. R, D, M)
- T** Landscape - slope
- W** Soils - drainage

Note: Some complex polygons were provided with a second agriculture capability rating also. This second rating is provided in the data base as a part of the modifier description. An example is given below.

- ND/7RT** Primary rating of physical land unit agriculture capability is limited due salinity (N), structural and consistence properties (D); the second soil condition within the map unit of much lesser extent is rated a class 7 due to limitations regarding the depth to a non-conforming layer (R) and excessive slopes (S).

5. MAP PRODUCTS

5.1 Base Maps

Base maps were prepared as a series of nine (9) maps, one for each map sheet (Table 1, Figure 1) with the following characteristics:

- black pen on paper medium
- scale - 1:20 000
- display all base map information from original source (e.g. contours, roads, hydrography, etc.)
- border annotation NTS lat.-long./UTM easting-northing/DLS
township-section-range

5.2 Interpretive Model Maps

Interpretive model maps prepared as series of nine (9) maps, one for each map sheet (Table 1, Figure 1), for EACH OF ELEVEN (11) models -- i.e. 99 maps in total -- with the following characteristics:

- black pen on paper medium
- scale - 1:20 000
- display physical land unit polygons shaded by limitation class (3) or agriculture capability class (7) for each interpretive model
- contain roads, rivers and surface water bodies from base map
- contain grid lines to section level
- contain some specific labelled features for reference

5.3 Overlay Maps

5.3.1 Physical Land Unit Maps

Physical Land Unit maps prepared as a series of nine (9), one for each map sheet (Table 1, Figure 1), with the following characteristics:

- black pen on paper mylar
- scale - 1:20 000
- display physical land unit polygons labelled with polygon number for that map sheet (Polygon attribute listings: Appendix 4 and 5)
- contain grid lines to section level

5.3.2 Land Ownership & Generalized Land Use

Land Ownership maps prepared as a series of nine (9), one for each map sheet (Table 1, Figure 1), with the following characteristics:

- black pen on paper mylar
- scale - 1:20 000
- display section grid with sections labelled with land ownership - generalized land use code (section 3.7)

5.4 Other Graphic Products

5.4.1 Existing Recreational Facilities & Areas of Geological Interest Maps

Existing Recreational Facilities and Areas of Geological Interest polygons (hand drafted) maps were prepared as two (2) maps -- one comprising the three northern-most (1:20 000) map sheets, the second comprising the 6 southern-most (1:20 000) map sheets for the study area -- with the following characteristics:

- black pen on paper medium
- scale - 1: 50 000
- display facility/area location and name; due to scale, does not show City of Drumheller sites (see Appendix 3)
- contain grid lines to section level

5.4.1 Archaeological Resource Sensitivity Zone Maps

Archaeological Resource Sensitivity Zone maps were prepared as two (2) maps -- one comprising the three northern-most (1:20 000) map sheets, the second comprising the 6 southern-most (1:20 000) map sheets for the study area -- with the following characteristics:

- black pen on paper medium
- scale - 1: 50 000
- display section grid with sections shaded by sensitivity zone

5.4.2 Archaeological Sites Maps

Archaeological Sites maps were prepared as two (2) maps -- one comprising the three northern-most (1:20 000) map sheets, the second comprising the 6 southern-most (1:20 000) map sheets for the study area -- with the

following characteristics:

- black pen on paper medium
- scale - 1: 50 000
- display archaeological sites with labelled number for reference to Borden number in Appendix 11.
- contain grid lines to section level

5.4.3 Palaeontological Resource Sensitivity Zone Maps

Palaeontological Resource Sensitivity Zone maps were prepared as two (2) maps -- one comprising the three northern-most (1:20 000) map sheets, the second comprising the 6 southern-most (1:20 000) map sheets for the study area -- with the following characteristics:

- black pen on paper medium
- scale - 1: 50 000
- display section grid with sections shaded by sensitivity zone

5.4.4 CLI Land Capability for Recreation

CLI Land Capability for Recreation maps were prepared as two (2) maps -- one comprising the three northern-most (1:20 000) map sheets, the second comprising the 6 southern-most (1:20 000) map sheets for the study area -- with the following characteristics:

- black pen on paper medium
- scale - 1: 50 000
- display outdoor recreation capability polygons shaded by capability class and labelled by polygon number for reference to Appendix 12
- contain grid lines to section level

5.4.5 Energy Resources Conservation Board - Well Sites

Energy Resources Conservation Board - Well Site maps were prepared as a series of nine (9) maps, one for each map sheet (Table 1, Figure 1) with the following characteristics:

- black pen on paper medium
- scale - 1:20 000
- display well location labelled with "map well no." (Appendix 13)
- contain roads, rivers and surface water bodies from base map
- contain grid lines to section level
- contain some specific labelled features for reference

APPENDICES

Appendix 1: List of Sections Comprising the Study Area

Format: "27 18 20" - Township Range Section

27 18 20	28 18 8	28 20 13
27 18 21	28 18 17	28 20 24
27 18 22	28 18 18	28 20 25
27 18 27	28 19 1	28 20 26
27 18 28	28 19 2	28 20 34
27 18 29	28 19 3	28 20 35
27 18 30	28 19 4	28 20 36
27 18 31	28 19 5	29 19 4
27 18 32	28 19 6	29 19 5
27 18 33	28 19 7	29 19 6
27 19 31	28 19 8	29 19 7
27 19 36	28 19 9	29 19 18
27 20 19	28 19 10	29 20 1
27 20 20	28 19 11	29 20 2
27 20 27	28 19 12	29 20 3
27 20 28	28 19 13	29 20 4
27 20 29	28 19 14	29 20 5
27 20 30	28 19 15	29 20 6
27 20 31	28 19 16	29 20 7
27 20 32	28 19 17	29 20 8
27 20 33	28 19 18	29 20 9
27 20 34	28 19 19	29 20 10
27 20 35	28 19 20	29 20 11
27 20 36	28 19 21	29 20 12
27 21 7	28 19 22	29 20 13
27 21 14	28 19 23	29 20 14
27 21 15	28 19 24	29 20 15
27 21 16	28 19 26	29 20 16
27 21 17	28 19 27	29 20 17
27 21 18	28 19 28	29 20 18
27 21 20	28 19 29	29 20 19
27 21 21	28 19 30	29 20 20
27 21 22	28 19 31	29 20 21
27 21 23	28 19 32	29 20 22
27 21 24	28 19 33	29 20 23
27 21 25	28 19 34	29 20 30
27 21 26	28 20 1	29 21 7
27 21 27	28 20 2	29 21 8
28 18 5	28 20 3	29 21 9
28 18 6	28 20 11	29 21 10
28 18 7	28 20 12	29 21 11

Format: "27 18 20" - Township Range Section

29 21 12	30 21 35
29 21 13	31 21 2
29 21 14	31 21 3
29 21 15	31 21 4
29 21 16	31 21 9
29 21 17	31 21 10
29 21 18	31 21 11
29 21 22	31 21 15
29 21 23	31 21 16
29 21 24	31 21 20
29 21 25	31 21 21
29 21 26	31 21 22
29 21 27	
29 21 28	
29 21 33	
29 21 34	
29 21 35	
29 21 36	
29 22 1	
29 22 12	
29 22 13	
30 21 2	
30 21 3	
30 21 4	
30 21 9	
30 21 10	
30 21 11	
30 21 14	
30 21 15	
30 21 16	
30 21 20	
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30 21 34	

Appendix 2: Detailed description of groundwater zones and list of reference materials.

Detailed Description of Groundwater Zones

Zone 1 contains aquifers within the bedrock strata consist of coal seams, sandstone units, and fractured shale of the Cretaceous Horseshoe Canyon and Bearpaw Formations. Water wells completed in these aquifers can generally produce in the range of .08 to 0.8 l/s (1 to 10 imperial gallons/minute). Sufficient water for domestic and farm use is encountered nearly everywhere at depths ranging from about 15 to 100 m. Chemical quality ranges from good to poor and differs laterally, and with depth. Three broad types of water can be recognized on the basis of dominance of dissolved ions:

1. $\text{Na}^+/\text{HCO}_3^-$ composition and total dissolved solids (TDS) content ranging between 800 and 1000 mg/l.
2. $\text{Na}^+/\text{HCO}_3^- + \text{SO}_4^{2-}$ composition and TDS content from 1000 to 2000 mg/l.
3. $\text{Na}^+/\text{HCO}_3^- + \text{Cl}^-$ composition with TDS ranging from 1200 to more than 3000 mg/l.

The available yield from bedrock aquifers allows for sufficient water for use by facilities such as campgrounds, but is restrictive to water intensive facilities such as golf courses.

With respect to chemical quality, the following restrictions may apply. Type 1 water above should not be restrictive for any uses, being generally suitable for both human consumption and irrigation. Types 2 and 3 will be in general suitable for human consumption in areas where the TDS is less than 1500 mg/l. In areas where TDS exceeds 1500 mg/l, Type 2 water may be laxative because of high SO_4^{2-} content. Both Types 2 and 3 may be problematic for persons who have heart problems and are on sodium-restricted diets. Water with a TDS content of greater than 1500 mg/l may also be unsuitable for long-term irrigation because of potential salt accumulation in the soils.

Zone 2 is underlain by the flood plain of the Red Deer River, contains a highly productive aquifer, and is characterized by excellent groundwater quality. The aquifer consist of one or more sand and gravel units, individually from 1 to 8 m thick, and overlain and separated by silt and clay deposits. The total alluvial sequence is as much as 20 m thick and considerable variations in lateral extent of sand and gravel units appears to exist.

The aquifer supplies part of the water supply for the City of Drumheller and has been quantitatively evaluated for production capability (Underwood McLellan Ltd., 1981). Production tests show that sustained production in the range of 4 to 8 l/s (50 to 100 imperial gal/minute) is possible from individual wells. The tests further show that the aquifer is unconfined and hydraulically connected to the Red Deer River. The latter conclusion is corroborated by water chemistry and position and fluctuations of the water table.

Water is of excellent chemical quality in zone 2, having a TDS content ranging from about 300 to 500 mg/l. It is of the $\text{Ca}^{2+}\text{Mg}^{2+}/\text{HCO}_3^-$ chemical type and the only problems occurring from place to place are high hardness (200 to 400 hardness units) and high iron content (as much as 2 mg/l), there appear to be no significant restrictions which dissolved constituents could place on uses such as human consumption or irrigation.

In a few places water of high TDS and SO_4^{2-} content occurs (TDS 800-1500 mg/l, SO_4^{2-} 200 to 800 mg/l) in shallow wells completed in the aquifer. Available data do not permit proper evaluation of this phenomenon but it may be related to influxes from underlying bedrock aquifers, production from both bedrock and alluvial aquifers, or from surface contamination.

Although the aquifer presents no restrictions for human consumption or irrigation, any development that could produce contaminants (sewage, landfills, chemical or fuel spills, and so on) should not be located above its course or should be adequately engineered to avoid aquifer contamination.

Alberta Department of Environment. 1973. Groundwater availability
M.D. of Starland #47. Report No. 1159, 9 pp., Edmonton.

Reference Materials

Alberta Department of Environment. 1977. Summary of test drilling:
City of Drumheller. 9 pp., Edmonton.

Borneuf, D. 1972. Hydrogeology of the Drumheller area, Alberta. Alberta Research Council Report 72-1, 7 pp., Map scale 1:250 000, Edmonton.

Marciniuk, J. 1980. Emergency water well program, assistance to
Morrin. Alberta Department of Environment Report No. 1800, 11 p.,
Edmonton.

Underwood McLellan Ltd. 1980a. Testhole drilling and pump testing, Hamlet of Rosedale, Rosedale, Alberta. Prepared for Alberta Department of Municipal Affairs. Alberta Environment Water Rights submission 19665-R1, 14 pp., plus app.

Underwood McLellan Ltd. 1980b. Pump test evaluation, Hamlet of Rosedale, addendum. Prepared for Alberta Department of Municipal Affairs. Alberta Environment Water Rights submission 19665-R2, 7 pp., plus app.

Underwood McLellan Ltd. 1981. Pump test evaluation, Drumheller production well, PW 81-14A. Prepared for City of Drumheller. 28 pp., plus app.

Znak, M. 1975. Test hole 1415-E, K.R. Brandt, NW8-27-21-W4. Alberta Department of Environment, 5 pp., Edmonton.

Appendix 3: Description of recreational facilities.

"Names" file

ID #	TYPE #	FACILITY NAME
1^	1	NEWCASTLE BEACH
2^	2	HOMESTEAD ANTIQUE MUSEUM
3	3	DINOSAUR CAMPGROUND
4^	3	SHADY GROVE CAMPGROUND
5^	6	TYRRANOSAURUS REX
6^	4	CRAWFORD BED AND BREAKFAST
7^	6	TYRRELL SPECIAL PROJECT CENTRE
8^	2	DRUMHELLER AND DISTRICT FOSSIL MUSEUM
9^	9	RV DUMP
10^	1	CENTENIAL PARK CENOTAPH
11^	1	RIVERVIEW PARK
12^	2	REPTILE WORLD
13	3	A G CAMPGROUND
14^	4	BADLANDS MOTEL
15^	4	DINOSAUR HOTEL
18^	4	HOO DOO MOTEL
20^	4	DINOSAUR HOTEL
21^	4	PARSONS BED AND BREAKFAST
22^	4	ROCKHOUND MOTOR INN
23^	4	WALDORF HOTEL
24	3	ROSEDALE COMMUNITY CAMPGROUND
25	3	ROSEBUD CAMPSITE
26	5	MCMULLEN ISLAND
27	3	MORRIN BRIDGE CAMPGROUND
28	3	BLERIOT FERRY CAMPGROUND
29	1	DRY CANYON PETTING ZOO
30	7	LITTLE CHURCH
31	2	TYRRELL MUSEUM
32	5	WALKING PATHS (MIDLAND PROV. PARK)
33	1	ROSEDALE SUSPENSION BRIDGE
34	5	ROSEDEER BALL PARK - CAMP KITCHEN
35	4	ROSEDEER HOTEL
38	6	BUFFALO Paddock (PRIVATE)
39	6	HOO DOOS
40	6	BLERIOT FERRY
41	6	DINO BASIN (FAST FOOD)
42	6	ORKNEY LOOKOUT
43	6	HORSETHIEF CANYON LOOK OUT
44	6	HORSETHIEF CANYON
45	6	ABANDONED RAILWAY STATION
46	2	EAST COULEE SCHOOL MUSEUM
47	6	ABANDONED TRAIN/VEHICLE BRIDGE
48	2	ATLAS COAL MINING MUSEUM

^ Sites within the City of Drumheller not digitized.

1 - Beaches; 2 - Museums; 3 - Campgrounds; 4 - Hotels; 5 - Path/Prov. Park;
6 - Points of Interest; 7 - Churches; 8 - Golf Courses; 9 - RV Dumpsite

Facility Descriptions

The following information, while not within the geographic information system, provides a brief description of some of the facilities. The identifier code for the feature is given in parentheses where applicable.

Rosebud Dinner Theatre (36):

A delightful and unique theatre experience. Located in the town of Rosebud 25 miles west of Drumheller, south off Highway 9. Dinner nightly at 6:00 p.m. Theatre at 8:00. Saturday matinees. Tuesday through Saturday, July - August. November - December, March - April. Also, a regional and local art gallery and Rosebud Centennial Museum. For further information and reservations: 677-2221.

Golf Course (37):

Beautiful 9-Hole Golf Course located just past Tyrrell Museum on North Dinosaur Trail -- 823-5622.

Driving Range & Mini Golf (37):

Located across from the Golf Course. Open daily from 10:30 a.m. to 7:30 p.m.

Drumheller Recreation Facilities: 823-6300

Visitors are encouraged to make use of the many fine recreation facilities operated by the City of Drumheller. A recreation complex which includes a swimming pool, tennis courts, horseshoe pitches and picnic facilities is located next to the arena near downtown Drumheller.

Points of Interest

Little Church (30):

This tiny Church seats only six at a time. Located on the North Dinosaur Trail, it is a charming and popular tourist stop.

Horsethief Canyon (44):

Spectacular canyon viewpoint, beautiful scenery and information about its colourful past. Look for sign as you head west on North Dinosaur Trail. Located in the bottom of the Horsethief Canyon, fossilized oyster beds are a vivid reminder of prehistoric times.

Bleriot Ferry (40):

Spanning the Red Deer River northwest of Drumheller, it links the North and South sections of the scenic Dinosaur Trail. One of the few remaining ferries in operation in Alberta.

Rosedale Suspension Bridge (33):

Located three miles east of the city on Highway 10, on the east side of Rosedale. This pedestrian bridge spans the Red Deer River and at one time, was the only means of access to the Star Mine. **WARNING:** do not climb on shale piles on north side of bridge.

Hoo Doos (39):

Located 10 miles east of the city on Highway 10 towards East Coulee. Unique rock formations which have been eroded by thousands of years of wind and rain. Picnic facilities located across the road. These formations are very fragile and you are reminded to **NOT** climb on them.

Atlas Coal Mine Tipple (48):

Located in East Coulee, this structure still stands as an eerie monument to the coal mining history of the Drumheller Valley. Please observe the **NO TRESPASSING** signs. Restoration presently underway.

East Coulee Trestle & Car Bridge (47):

Blocked off to traffic, this bridge may be viewed on foot. Built in the early 30's, it is the only remaining standing dual purpose bridge in Canada.

Buffalo Paddock (38):

Located a short drive northeast of Drumheller. Here you may see a herd of Buffalo maintained by a local resident for the interest and enjoyment of tourists. Enquire at Tourist Booths for directions.

Newcastle Beach (1):

Located west of Drumheller on 3rd Avenue. This day use area is under redevelopment and offers a beach area, 3 ball diamonds, concession and change room, picnic tables, play area for children, a parking lot and an outdoor rink for winter activities.

Dry Canyon Tradin' Post & Petting Zoo (29):

Located 10 km west of Drumheller on South Dinosaur Trail (SR. 575). Featuring a wide variety of farm and exotic animals, playground, trampoline, and a trading post nestled in a cozy, antique cabin. Open daily 10 a.m. to 8 p.m. from May 24th weekend to Labour Day weekend. September and October, open weekends only. Admission. Phone (403) 823-9421 (823-9477 in the off-season).

Orkney Hill Viewpoint (42):

Located on South Dinosaur Trail (S.R. 837), at the top of Orkney Hill. This spectacular panorama offers you a view of the Red Deer River valley, and the strata of the badlands. Visualize great herds of buffalo being stamped over the edge at a buffalo jump located very near to where you are standing.

What to See and Do - Attractions**East Coulee School Museum & Cultural Centre (46):**

Located in East Coulee, 13 miles east of Drumheller on Highway 10. A nostalgic visit to a 1930 style schoolhouse completely restored. A tribute to the coal miner as well as school student. Also a country craft store, tea room, and art gallery featuring works of local artists as well as travelling exhibits. Open daily to 4:00 p.m. and to 9:00 p.m. during July and August. No admission.

Drumheller Dinosaur & Fossil Museum (8):

Located in the heart of Drumheller at 3rd Avenue and 1st Street East. The museum is full of prehistoric fossils, Indian artifacts and the private DUNCAN COLLECTION of rocks and gems.

Drumheller Prehistoric Parks & Rock & Fossil Shop:

Approximately 1 km. from city centre, follow signs from Newcastle on South Dinosaur Trail. Life-size dinosaur models in a beautiful badlands setting. Admission charged.

Homestead Antique Museum (2):

North Dinosaur Trail. Housing thousands of artifacts associated with the early development of the Drumheller area and western Canada, many restored to working order. Open daily from spring to fall. Admission charged.

Midland Provincial Park (32):

On North Dinosaur Trail, next to Tyrrell Museum. 1500 acres of prairie, badlands, riverbank landscape and a network of interpretive and recreational trails. Also contains the old Midland Mine Office and interpretive displays of the coal mining history of the Drumheller area. Open daily. No Admission. 823-8086.

Tyrrell Museum of Palaeontology (31):

Five miles west of the city on North Dinosaur Trail. A world-class facility housing many fossils and exhibits as well as a palaeo-conservatory. Open daily from 9 to 9 summer months. No Admission. 823-7707. Donations to "Friends of the Museum" welcome.

Appendix 4. Individual polygon listing with 1st set of model interpretations including modifiers, organized from northwest to southeast in the study area.

POLYGON LISTING
with MODEL INTERPRETATIONS^a
(Organized NW to SE)

DINOSAUR CORRIDOR

*1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
POLYGON	AREA	AREA	UNIQUE	SOIL	TOPOG-	GROUND	SURF.	AGRI.	----	PERM.	----	PERM.	----	PIC-	----	PRIM.	----
NO.	Ha	Acres	PHYSICAL	UNIT	GRAPHY	WATER	GEOL.	CAP.	----	BLDG.	----	BLDG.	----	NIC	----	CAMP.	----
			LAND			ZONE											
			UNIT CLASS							MODI	BSMT.	MODI	BSMT.	MODI		MODI	MODI
			b		c	d	e										

** M A P S H E E T: 82P10NW (MORRIN CROSSING) *****

1	203.6	503.1	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST
2	91.3	225.6	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST
3	53.7	132.7	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST
4	171.9	424.8	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST
5	42.4	104.8	18 LET1	4	1	NA	3	AT	S	PFA	S	PFA	M	SST	M	SST
6	33.2	82.0	18 LET1	4	1	NA	3	AT	S	PFA	S	PFA	M	SST	M	SST
7	43.9	108.5	18 LET1	4	1	NA	3	AT	S	PFA	S	PFA	M	SST	M	SST
8	10.5	25.9	18 LET1	4	1	NA	3	AT	S	PFA	S	PFA	M	SST	M	SST
9	74.9	185.1	26 RB2	0	1	NA	7	RT	S	S	S	S	S	S	S	S
10	13.1	32.4	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S
11	395.1	976.3	25 RB1	0	1	NA	6	T	S	S	S	S	S	S	S	S
12	8.5	21.0	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S
13	8.7	21.5	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST
14	49.4	122.1	2 BKF1	3	2	F3	5	ND	M	PFA	M	PFA	N		N	
15	18.0	44.5	29 ZAV1	0	2	F	5	I	S	W	M	PFA,W	N		N	

*1 POLYGON NO.	2 AREA Ha	3 AREA Acres	4 UNIQUE PHYSICAL LAND UNIT CLASS	5 SOIL UNIT	6 TOPOG- RAPHY	7 GROUND WATER ZONE	8 SURF. GEOL.	9 AGRI. CAP.	10 ----- ----- MODI	11 PERM. BLDG. WITH BSMT.	12 ----- ----- MODI	13 PERM. BLDG. W/OUT BSMT.	14 ----- ----- MODI	15 PIC- NIC	16 ----- ----- MODI	17 PRIM. CAMP.	18 ----- ----- MODI
Notes:			a		c	b	e										
16	91.4	225.8	2 BKF1	3		2	F3	5	ND	M	PFA	M	PFA	N		N	
17	14.9	36.8	29 ZAV1	0		2	F	5	I	S	W	M	PFA,W	N		N	
18	79.9	197.4	2 BKF1	3		2	F3	5	ND	M	PFA	M	PFA	N		N	
19	18.9	46.7	29 ZAV1	0		2	F	5	I	S	W	M	PFA,W	N		N	
20	82.7	204.4	2 BKF1	3		2	F3	5	ND	M	PFA	M	PFA	N		N	
21	4.9	12.1	27 RB5	0		1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S
22	23.9	59.1	27 RB5	0		1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S
23	21.4	52.9	27 RB5	0		1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S
24	50.9	125.8	7 DMH1	3		1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST
25	88.5	218.7	7 DMH1	3		1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST
26	11.2	27.7	26 RB2	0		1	NA	7	RT	S	S	S	S	S	S	S	S
27	112.9	279.0	26 RB2	0		1	NA	7	RT	S	S	S	S	S	S	S	S
28	187.7	463.8	7 DMH1	3		1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST
29	41.3	102.1	27 RB5	0		1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S
30	16.9	41.8	26 RB2	0		1	NA	7	RT	S	S	S	S	S	S	S	S
31	108.9	269.1	26 RB2	0		1	NA	7	RT	S	S	S	S	S	S	S	S
32	41.5	102.5	7 DMH1	3		1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST
33	31.2	77.1	27 RB5	0		1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S
34	106.8	263.9	7 DMH1	3		1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST
35	8.2	20.3	7 DMH1	3		1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST
36	22.2	54.9	26 RB2	0		1	NA	7	RT	S	S	S	S	S	S	S	S
37	20.9	51.6	27 RB5	0		1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S
38	14.2	35.1	27 RB5	0		1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S
39	71.4	176.4	31 ZZZ	0				0									
40	104.8	259.0	25 RB1	0		1	NA	6	T	S	S	S	S	S	S	S	S

*1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
POLYGON	AREA	AREA	UNIQUE	SOIL	TOPOG-	GROUND	SURF.	AGRI.	----	PERM.	----	PERM.	----	PIC-	----	PRIM.	----
NO.	Ha	Acres	PHYSICAL	UNIT	GRAPHY	WATER	GEOL.	CAP.	----	BLDG.	----	BLDG.	----	NIC	----	CAMP.	----
			LAND			ZONE			----	WITH	----	W/OUT	----				
			UNIT CLASS						MODI	BSMT.	MODI	BSMT.	MODI		MODI		MODI

**** M A P S H E E T: 82P10SW (BLERIOT FERRY) *******

1	437.7	1081.6	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST
2	72.1	178.2	18 LET1	4	1	NA	3	AT	S	PFA	S	PFA	M	SST	M	SST
3	241.9	597.7	21 LET6	3	1	NA	2	A	S	PFA	S	PFA	M	SST	M	SST
4	689.6	1704.0	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST
5	55.3	136.6	18 LET1	4	1	NA	3	AT	S	PFA	S	PFA	M	SST	M	SST
7	782.6	1933.8	25 RB1	0	1	NA	6	T	S	S	S	S	S	S	S	S
8	5.1	12.6	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S
9	21.6	53.4	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S
10	108.8	268.8	26 RB2	0	1	NA	7	RT	S	S	S	S	S	S	S	S
11	4.1	10.1	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S
12	59.4	146.8	1 BKAV1	0	2	F2	5	ND/5I	M	PFA	M	PFA	N		N	
13	271.0	669.6	26 RB2	0	1	NA	7	RT	S	S	S	S	S	S	S	S
14	73.4	181.4	18 LET1	4	1	NA	3	AT	S	PFA	S	PFA	M	SST	M	SST
15	13.5	33.4	26 RB2	0	1	NA	7	RT	S	S	S	S	S	S	S	S
16	135.9	335.8	17 LET1	3	1	NA	2	A	S	PFA	S	PFA	M	SST	M	SST
17	3.6	8.9	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S
18	246.1	608.1	18 LET1	4	1	NA	3	AT	S	PFA	S	PFA	M	SST	M	SST
19	43.2	106.7	24 MET1	4	1	NA	4	MT	N		N		N		N	
20	386.7	955.5	17 LET1	3	1	NA	2	A	S	PFA	S	PFA	M	SST	M	SST
21	120.5	297.8	2 BKF1	3	2	F3	5	ND	M	PFA	M	PFA	N		N	
22	62.2	153.7	29 ZAV1	0	2	F	5	I	S	W	M	PFA,W	N		N	
23	3.3	8.2	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S
24	15.9	39.3	26 RB2	0	1	NA	7	RT	S	S	S	S	S	S	S	S
25	6.0	14.8	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S
26	120.1	296.8	26 RB2	0	1	NA	7	RT	S	S	S	S	S	S	S	S

*1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
POLYGON	AREA	AREA	UNIQUE	SOIL	TOPOG-	GROUND	SURF.	AGRI.	-----	PERM.	-----	PERM.	-----	PIC-	-----	PRIM.	-----
NO.	Ha	Acres	PHYSICAL	UNIT	GRAPHY	WATER	GEOL.	CAP.	-----	BLDG.	-----	BLDG.	-----	NIC	-----	CAMP.	-----
			LAND			ZONE			-----	WITH	-----	W/OUT	-----		-----		-----
			UNIT CLASS						MODI	BSMT.	MODI	BSMT.	MODI		MODI		MODI
Notes:																	
27	35.5	87.7	29 ZAV1	0	2	F	5	I	S	W	M	PFA,W	N			N	
28	2.6	6.4	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S		S	S
29	8.6	21.3	17 LET1	3	1	NA	2	A	S	PFA	S	PFA	M	SST		M	SST
30	79.9	197.4	29 ZAV1	0	2	F	5	I	S	W	M	PFA,W	N			N	
31	31.8	78.6	6 BKRB1	0	1	NA	5	ND/7RT	S	S	S	S	S	S		S	S
32	140.0	345.9	2 BKF1	3	2	F3	5	ND	M	PFA	M	PFA	N			N	
33	841.2	2078.6	25 RB1	0	1	NA	6	T	S	S	S	S	S	S		S	S
34	328.0	810.5	17 LET1	3	1	NA	2	A	S	PFA	S	PFA	M	SST		M	SST
35	27.5	68.0	25 RB1	0	1	NA	6	T	S	S	S	S	S	S		S	S
36	30.7	75.9	17 LET1	3	1	NA	2	A	S	PFA	S	PFA	M	SST		M	SST
37	7.8	19.3	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST		M	P,SST
38	49.5	122.3	28 RBAV1	0	1	NA	6	T/6I	S	S	S	S	S	S		S	S
39	11.1	27.4	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S		S	S
40	2055.8	5079.9	17 LET1	3	1	NA	2	A	S	PFA	S	PFA	M	SST		M	SST
41	114.5	282.9	2 BKF1	3	2	F3	5	ND	M	PFA	M	PFA	N			N	
42	21.9	54.1	29 ZAV1	0	2	F	5	I	S	W	M	PFA,W	N			N	
43	40.8	100.8	29 ZAV1	0	2	F	5	I	S	W	M	PFA,W	N			N	
44	154.1	380.8	2 BKF1	3	2	F3	5	ND	M	PFA	M	PFA	N			N	
45	4.7	11.6	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S		S	S
46	5.9	14.6	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S		S	S
47	137.1	338.8	2 BKF1	3	2	F3	5	ND	M	PFA	M	PFA	N			N	
48	10.7	26.4	29 ZAV1	0	2	F	5	I	S	W	M	PFA,W	N			N	
49	24.9	61.5	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S		S	S
50	28.2	69.7	26 RB2	0	1	NA	7	RT	S	S	S	S	S	S		S	S
51	94.7	234.0	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S		S	S
52	13.6	33.6	26 RB2	0	1	NA	7	RT	S	S	S	S	S	S		S	S
53	91.7	226.6	26 RB2	0	1	NA	7	RT	S	S	S	S	S	S		S	S

*1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
POLYGON	AREA	AREA	UNIQUE	SOIL	TOPOG--	GROUND	SURF.	AGRI.	----	PERM.	----	PERM.	----	PIC--	----	PRIM.	----
NO.	Ha	Acres	PHYSICAL	UNIT	GRAPHY	WATER	GEOL.	CAP.	----	BLDG.	----	BLDG.	----	NIC	----	CAMP.	----
			LAND			ZONE			----	WITH	----	W/OUT	----		----		----
			UNIT CLASS						MODI	BSMT.	MODI	BSMT.	MODI		MODI		MODI
Notes:																	

54	47.2	116.6	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P, SST	M	P, SST
55	218.9	540.9	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P, SST	M	P, SST
56	63.5	156.9	26 RB2	0	1	NA	7	RT	S	S	S	S	S	S	S	S
57	44.2	109.2	27 RB5	0	1	CS	6	T	S	S, SL	S	S, SL	S	S	S	S
58	58.6	144.8	29 ZAV1	0	2	F	5	I	S	W	M	PFA, W	N		N	
59	29.1	71.9	2 BKF1	3	2	F3	5	ND	M	PFA	M	PFA	N		N	
60	7.4	18.3	17 LET1	3	1	NA	2	A	S	PFA	S	PFA	M	SST	M	SST
61	1.5	3.7	17 LET1	3	1	NA	2	A	S	PFA	S	PFA	M	SST	M	SST
62	193.7	478.6	31 ZZZ	0	2	NA	0									
63	2.7	6.7	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P, SST	M	P, SST

**** MAP SHEET: 82P10SE (MUNSON) *******

1	70.4	174.0	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P, SST	M	P, SST
2	3.4	8.4	25 RB1	0	1	NA	6	T	S	S	S	S	S	S	S	S
3	26.3	65.0	25 RB1	0	1	NA	6	T	S	S	S	S	S	S	S	S
4	26.0	64.2	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P, SST	M	P, SST

**** MAP SHEET: 82P07NW (TYRRELL) *******

1	7.4	18.3	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P, SST	M	P, SST
2	11.9	29.4	26 RB2	0	1	NA	7	RT	S	S	S	S	S	S	S	S
3	8.0	19.8	26 RB2	0	1	NA	7	RT	S	S	S	S	S	S	S	S
4	280.4	692.9	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P, SST	M	P, SST
5	1152.8	2848.6	26 RB2	0	1	NA	7	RT	S	S	S	S	S	S	S	S

*1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
POLYGON	AREA	AREA	UNIQUE	SOIL	TOPOG-	GROUND	SURF.	AGRI.	----	PERM.	----	PERM.	----	PIC-	----	PRIM.	----
NO.	Ha	Acres	PHYSICAL	UNIT	RAPHY	WATER	GEOL.	CAP.	----	BLDG.	----	BLDG.	----	NIC	----	CAMP.	----
			LAND			ZONE			----	WITH	----	W/OUT	----		----		----
Notes:			UNIT CLASS						MODI	BSMT.	MODI	BSMT.	MODI		MODI		MODI
			A		C	D	E										
6	39.6	97.9	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P, SST	M	P, SST	
7	10.3	25.5	2 BKF1	3	2	F3	5	ND	M	PFA	M	PFA	N		N		
8	439.0	1084.8	29 ZAV1	0	2	F	5	I	S	W	M	PFA, W	N		N		
9	618.8	1529.1	26 RB2	0	1	NA	7	RT	S	S	S	S	S	S	S	S	
10	5.4	13.3	25 RB1	0	1	NA	6	T	S	S	S	S	S	S	S	S	
11	1107.8	2737.4	17 LET1	3	1	NA	2	A	S	PFA	S	PFA	M	SST	M	SST	
12	62.4	154.2	30 ZG	0	2	NA	5	W	S	W	S	W	S	W	S	W	
13	17.3	42.7	12 HND1	4	1	NA	3	AT	N		N		N		N		
14	11.0	27.2	23 MET1	4	1	FG	4	MT	N		N		N		N		
15	21.8	53.9	2 BKF1	3	2	F3	5	ND	M	PFA	M	PFA	N		N		
16	9.8	24.2	17 LET1	3	1	NA	2	A	S	PFA	S	PFA	M	SST	M	SST	
17	33.1	81.8	23 MET1	4	1	FG	4	MT	N		N		N		N		
18	4.9	12.1	2 BKF1	3	2	F3	5	ND	M	PFA	M	PFA	N		N		
19	5.7	14.1	2 BKF1	3	2	F3	5	ND	M	PFA	M	PFA	N		N		
20	9.5	23.5	2 BKF1	3	2	F3	5	ND	M	PFA	M	PFA	N		N		
21	120.7	298.2	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P, SST	M	P, SST	
22	17.6	43.5	18 LET1	4	1	NA	3	AT	S	PFA	S	PFA	M	SST	M	SST	
23	14.8	36.6	18 LET1	4	1	NA	3	AT	S	PFA	S	PFA	M	SST	M	SST	
24	92.3	228.1	17 LET1	3	1	NA	2	A	S	PFA	S	PFA	M	SST	M	SST	
25	50.4	124.5	17 LET1	3	1	NA	2	A	S	PFA	S	PFA	M	SST	M	SST	
26	6.0	14.8	27 RB5	0	1	CS	6	T	S	S, SL	S	S, SL	S	S	S	S	
27	7.3	18.0	27 RB5	0	1	CS	6	T	S	S, SL	S	S, SL	S	S	S	S	
28	121.0	299.0	17 LET1	3	1	NA	2	A	S	PFA	S	PFA	M	SST	M	SST	
29	7.9	19.5	27 RB5	0	1	CS	6	T	S	S, SL	S	S, SL	S	S	S	S	
30	6.2	15.3	2 BKF1	3	2	F3	5	ND	M	PFA	M	PFA	N		N		
31	313.7	775.2	17 LET1	3	1	NA	2	A	S	PFA	S	PFA	M	SST	M	SST	
32	91.7	226.6	17 LET1	3	1	NA	2	A	S	PFA	S	PFA	M	SST	M	SST	

*1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
POLYGON	AREA	AREA	UNIQUE	SOIL	TOPOG-	GROUND	SURF.	AGRI.	-----	PERM.	-----	PERM.	-----	PIC-	-----	PRIM.	-----
NO.	Ha	Acres	PHYSICAL	UNIT	RAPHY	WATER	GEOL.	CAP.	-----	BLDG.	-----	BLDG.	-----	NIC	-----	CAMP.	-----
			LAND			ZONE			-----	WITH	-----	W/OUT	-----		-----		-----
Notes:			UNIT CLASS						MODI	BSMT.	MODI	BSMT.	MODI		MODI		MODI
33	5.5	13.6	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S	S
34	84.1	207.8	8 DMH1	4	1	NA	3	AT	S	SSW	S	SSW	M	P,SST	M	P,SST	
35	17.0	42.0	3 BKF1	4	2	F3	5	ND	M	PFA	M	PFA	N		N		
36	92.7	229.1	29 ZAV1	0	2	F	5	I	S	W	M	PFA,W	N		N		
37	7.0	17.3	29 ZAV1	0	2	F	5	I	S	W	M	PFA,W	N		N		
38	466.0	1151.5	5 BKRB1	0	1	FTE	5	ND/7RT	S	S	S	S	S	S	S	S	S
39	122.1	301.7	29 ZAV1	0	2	F	5	I	S	W	M	PFA,W	N		N		
40	259.1	640.2	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST	
41	27.6	68.2	15 HND7	3	1	NA	3	A	N		N		N		N		
42	132.2	326.7	16 HND7	4	1	NA	3	AT	N		N		N		N		
43	5.4	13.3	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S	S
44	103.5	255.7	15 HND7	3	1	NA	3	A	N		N		N		N		
45	12.1	29.9	16 HND7	4	1	NA	3	AT	N		N		N		N		
46	9.2	22.7	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S	S
47	6.4	15.8	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S	S
48	181.9	449.5	26 RB2	0	1	NA	7	RT	S	S	S	S	S	S	S	S	S
49	64.6	159.6	16 HND7	4	1	NA	3	AT	N		N		N		N		
50	13.5	33.4	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S	S
51	26.8	66.2	6 BKRB1	0	1	NA	5	ND/7RT	S	S	S	S	S	S	S	S	S
52	16.4	40.5	15 HND7	3	1	NA	3	A	N		N		N		N		
53	48.0	118.6	29 ZAV1	0	2	F	5	I	S	W	M	PFA,W	N		N		
54	0.0	0.0	31 ZZZ	0	2	NA	0										
55	405.0	1000.8	25 RB1	0	1	NA	6	T	S	S	S	S	S	S	S	S	S
56	48.0	118.6	22 MET1	3	1	NA	4	M	N		N		N		N		
57	35.9	88.7	18 LET1	4	1	NA	3	AT	S	PFA	S	PFA	M	SST	M	SST	
58	113.8	281.2	17 LET1	3	1	NA	2	A	S	PFA	S	PFA	M	SST	M	SST	
59	13.9	34.3	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST	

*1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
POLYGON	AREA	AREA	UNIQUE	SOIL	TOPOG-	GROUND	SURF.	AGRI.	----	PERM.	----	PERM.	----	PIC-	----	PRIM.	----
NO.	Ha	Acres	PHYSICAL	UNIT	RAPHY	WATER	GEOL.	CAP.	----	BLDG.	----	BLDG.	----	NIC	----	CAMP.	----
			LAND			ZONE				WITH		W/OUT					
			UNIT CLASS						MODI	BSMT.	MODI	BSMT.	MODI		MODI		MODI
Notes:			D		C	D	E										

60	5.0	12.4	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S	S
61	217.5	537.4	20 LET1	5	1	NA	4	TA	S	PFA	S	PFA	M	SST,S	M	SST	SST
62	56.5	139.6	17 LET1	3	1	NA	2	A	S	PFA	S	PFA	M	SST	M	SST	SST
63	4.2	10.4	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S	S

**** M A P S H E E T : 82P07NE (DRUMHELLER) *******

1	26.1	64.5	17 LET1	3	1	NA	2	A	S	PFA	S	PFA	M	SST	M	SST	
2	36.8	90.9	22 MET1	3	1	NA	4	M	N		N		N		N		
3	420.0	1037.8	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST	
4	169.6	419.1	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST	
5	67.1	165.8	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST	
6	1848.5	4567.6	25 RB1	0	1	NA	6	T	S	S	S	S	S	S	S	S	S
7	55.4	136.9	6 BKRBI	0	1	NA	5	ND/7RT	S	S	S	S	S	S	S	S	S
8	122.7	303.2	29 ZAV1	0	2	F	5	I	S	W	M	PFA,W	N		N		
9	150.4	371.6	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST	
10	86.7	214.2	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST	
11	2630.1	6499.0	20 LET1	5	1	NA	4	TA	S	PFA	S	PFA	M	SST,S	M	SST	
12	654.4	1617.0	29 ZAV1	0	2	F	5	I	S	W	M	PFA,W	N		N		
13	3.5	8.6	5 BKRBI	0	1	FTE	5	ND/7RT	S	S	S	S	S	S	S	S	S
14	18.9	46.7	5 BKRBI	0	1	FTE	5	ND/7RT	S	S	S	S	S	S	S	S	S
15	172.9	427.2	2 BKF1	3	2	F3	5	ND	M	PFA	M	PFA	N		N		
16	701.8	1734.1	4 BKRBI	0	1	BD	5	ND/7RT	S	S	S	S	S	S	S	S	S
17	4.5	11.1	29 ZAV1	0	2	F	5	I	S	W	M	PFA,W	N		N		
18	202.9	501.4	15 HND7	3	1	NA	3	A	N		N		N		N		
19	319.1	788.5	26 RB2	0	1	NA	7	RT	S	S	S	S	S	S	S	S	S

*1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
POLYGON	AREA	AREA	UNIQUE	SOIL	TOPOG-	GROUND	SURF.	AGRI.	----	PERM.	----	PERM.	----	PIC-	----	PRIM.	----
NO.	Ha	Acres	PHYSICAL	UNIT	GRAPHY	WATER	GEOL.	CAP.	----	BLDG.	----	BLDG.	----	NIC	----	CAMP.	----
			LAND			ZONE			----	WITH	----	W/OUT	----		----		----
			UNIT CLASS						MODI	BSMT.	MODI	BSMT.	MODI		MODI		MODI
Notes:			D		C	D	E										
20	143.0	353.4	12 HND1	4	1	NA	3	AT	N			N		N		N	
21	2.4	5.9	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S		S	S
22	1446.7	3574.8	12 HND1	4	1	NA	3	AT	N			N		N		N	
23	9.6	23.7	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S		S	S
24	8.5	21.0	6 BKRB1	0	1	NA	5	ND/7RT	S	S	S	S	S	S		S	S
25	350.8	866.8	26 RB2	0	1	NA	7	RT	S	S	S	S	S	S		S	S
26	8.9	22.0	13 HND1	5	1	NA	4	TA	M	S	M	S	M	S		N	
27	16.4	40.5	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S		S	S
28	24.8	61.3	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S		S	S
29	71.2	175.9	26 RB2	0	1	NA	7	RT	S	S	S	S	S	S		S	S
30	118.1	291.8	26 RB2	0	1	NA	7	RT	S	S	S	S	S	S		S	S
31	4.2	10.4	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST	
32	15.4	38.1	26 RB2	0	1	NA	7	RT	S	S	S	S	S	S		S	S
33	545.0	1346.7	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST	
34	25.8	63.8	26 RB2	0	1	NA	7	RT	S	S	S	S	S	S		S	S
35	4.5	11.1	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST	
36	533.7	1318.8	26 RB2	0	1	NA	7	RT	S	S	S	S	S	S		S	S
37	208.8	515.9	11 HND1	3	1	NA	2	A	N			N		N		N	
38	214.5	530.0	10 DMH2	4	1	NA	2	AT/4WI	S	SSW	S	SSW	M	P,SST	M	P,SST	
39	63.5	156.9	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST	
40	676.1	1670.6	19 LET1	5	1	MT	4	TA	S	PFA,SL	S	PFA,SL	M	SST,S	M	SST	
41	88.6	218.9	3 BKF1	4	2	F3	5	ND	M	PFA	M	PFA	N			N	
42	20.4	50.4	6 BKRB1	0	1	NA	5	ND/7RT	S	S	S	S	S	S		S	S
43	17.6	43.5	3 BKF1	4	2	F3	5	ND	M	PFA	M	PFA	N			N	
44	15.5	38.3	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S		S	S
45	75.3	186.1	20 LET1	5	1	NA	4	TA	S	PFA	S	PFA	M	SST,S	M	SST	
50	40.1	99.1	1 BKAV1	0	2	F2	5	ND/5I	M	PFA	M	PFA	N			N	

*1 POLYGON NO.	2 AREA Ha	3 AREA Acres	4 UNIQUE PHYSICAL LAND UNIT CLASS	5 SOIL UNIT	6 TOPOG- RAPHY	7 GROUND WATER ZONE	8 SURF. GEOL.	9 AGRI. CAP.	10 ----- ----- ----- MODI	11 PERM. BLDG. WITH BSMT.	12 ----- ----- ----- MODI	13 PERM. BLDG. W/OUT BSMT.	14 ----- ----- ----- MODI	15 PIC- NIC	16 ----- ----- ----- MODI	17 PRIM. CAMP.	18 ----- ----- ----- MODI
Notes:			b		c	d	e										
51	9.7	24.0	3 BKF1	4		2	F3	5	ND	M	PFA	M	PFA	N		N	
52	77.6	191.7	14 HND2	6		1	NA	5	TA/5W	S	S	S	S	S	S	M	S
53	9.4	23.2	27 RB5	0		1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S
54	77.3	191.0	26 RB2	0		1	NA	7	RT	S	S	S	S	S	S	S	S
55	7.1	17.5	27 RB5	0		1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S
56	184.9	456.9	26 RB2	0		1	NA	7	RT	S	S	S	S	S	S	S	S
57	287.6	710.7	6 BKRB1	0		1	NA	5	ND/7RT	S	S	S	S	S	S	S	S
58	51.0	126.0	29 ZAV1	0		2	F	5	I	S	W	M	PFA,W	N		N	
59	7.4	18.3	27 RB5	0		1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S
60	8.1	20.0	27 RB5	0		1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S
61	14.0	34.6	25 RB1	0		1	NA	6	T	S	S	S	S	S	S	S	S
62	8.4	20.8	26 RB2	0		1	NA	7	RT	S	S	S	S	S	S	S	S
63	13.9	34.3	27 RB5	0		1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S
64	15.2	37.6	18 LET1	4		1	NA	3	AT	S	PFA	S	PFA	M	SST	M	SST
65	26.8	66.2	18 LET1	4		1	NA	3	AT	S	PFA	S	PFA	M	SST	M	SST
66	31.9	78.8	2 BKF1	3		2	F3	5	ND	M	PFA	M	PFA	N		N	
67	13.4	33.1	18 LET1	4		1	NA	3	AT	S	PFA	S	PFA	M	SST	M	SST
68	15.4	38.1	29 ZAV1	0		2	F	5	I	S	W	M	PFA,W	N		N	
69	6.4	15.8	17 LET1	3		1	NA	2	A	S	PFA	S	PFA	M	SST	M	SST
70	135.7	335.3	3 BKF1	4		2	F3	5	ND	M	PFA	M	PFA	N		N	
71	225.0	556.0	31 ZZZ	0		2	NA	0									
72	20.7	51.1	29 ZAV1	0		2	F	5	I	S	W	M	PFA,W	N		N	
73	11.5	28.4	7 DMH1	3		1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST
74	48.9	120.8	6 BKRB1	0		1	NA	5	ND/7RT	S	S	S	S	S	S	S	S

*1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
POLYGON	AREA	AREA	UNIQUE	SOIL	TOPOG-	GROUND	SURF.	AGRI.	----	PERM.	----	PERM.	----	PIC-	----	PRIM.	----
NO.	Ha	Acres	PHYSICAL	UNIT	RAPHY	WATER	GEOL.	CAP.	----	BLDG.	----	BLDG.	----	NIC	----	CAMP.	----
			LAND			ZONE			----	WITH	----	W/OUT	----		----		----
			UNIT CLASS						MODI	BSMT.	MODI	BSMT.	MODI		MODI		MODI
Notes:			D		C	D	E										

** M A P S H E E T: 82P08NW (WILLOW CREEK) *****

1	15.9	39.3	17 LET1	3	1	NA	2	A	S	PFA	S	PFA	M	SST	M	SST
2	75.6	186.8	26 RB2	0	1	NA	7	RT	S	S	S	S	S	S	S	S
3	4.5	11.1	20 LET1	5	1	NA	4	TA	S	PFA	S	PFA	M	SST,S	M	SST
4	15.7	38.8	1 BKAV1	0	2	F2	5	ND/5I	M	PFA	M	PFA	N		N	
5	35.4	87.5	26 RB2	0	1	NA	7	RT	S	S	S	S	S	S	S	S
6	2.1	5.2	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S
7	88.9	219.7	14 HND2	6	1	NA	5	TA/5W	S	S	S	S	S	S	M	S
8	1.0	2.5	26 RB2	0	1	NA	7	RT	S	S	S	S	S	S	S	S

** M A P S H E E T: 82P07SW (ROSEBUD) *****

1	117.1	289.4	12 HND1	4	1	NA	3	AT	N		N		N		N	
2	101.3	250.3	25 RB1	0	1	NA	6	T	S	S	S	S	S	S	S	S
3	113.3	280.0	29 ZAV1	0	2	F	5	I	S	W	M	PFA,W	N		N	
4	34.9	86.2	25 RB1	0	1	NA	6	T	S	S	S	S	S	S	S	S
5	34.0	84.0	17 LET1	3	1	NA	2	A	S	PFA	S	PFA	M	SST	M	SST
6	45.4	112.2	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST
7	1994.0	4927.2	6 BKRB1	0	1	NA	5	ND/7RT	S	S	S	S	S	S	S	S
8	394.8	975.6	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST
9	460.6	1138.1	17 LET1	3	1	NA	2	A	S	PFA	S	PFA	M	SST	M	SST
10	195.5	483.1	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST
11	38.3	94.6	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST
12	584.5	1444.3	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST
13	81.6	201.6	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST

*1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
POLYGON	AREA	AREA	UNIQUE	SOIL	TOPOG-	GROUND	SURF.	AGRI.	----	PERM.	----	PERM.	----	PIC-	----	PRIM.	----
NO.	Ha	Acres	PHYSICAL	UNIT	RAPHY	WATER	GEOL.	CAP.	----	BLDG.	----	BLDG.	----	NIC	----	CAMP.	----
			LAND			ZONE			----	WITH	----	W/OUT	----		----		----
			UNIT CLASS						MODI	BSMT.	MODI	BSMT.	MODI		MODI		MODI
			a		c	b	s										

14	23.5	58.1	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S	S
15	179.8	444.3	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST	P,SST
16	140.5	347.2	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST	P,SST
17	60.8	150.2	29 ZAV1	0	2	F	5	I	S	W	M	PFA,W	N		N		
18	29.3	72.4	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S	S
19	317.7	785.0	26 RB2	0	1	NA	7	RT	S	S	S	S	S	S	S	S	S
20	331.3	818.6	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST	P,SST
21	12.7	31.4	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S	S
22	3.1	7.7	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST	P,SST
23	16.1	39.8	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST	P,SST
24	219.3	541.9	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST	P,SST
25	301.0	743.8	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST	P,SST
26	176.2	435.4	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST	P,SST

**** M A P S H E E T: 82P07SE (DALUM) *******

1	57.9	143.1	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST	P,SST
2	157.6	389.4	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST	P,SST
3	142.8	352.9	6 BKRBI	0	1	NA	5	ND/7RT	S	S	S	S	S	S	S	S	S
4	10.8	26.7	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S	S
5	87.5	216.2	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S	S
6	138.4	342.0	29 ZAV1	0	2	F	5	I	S	W	M	PFA,W	N		N		
7	331.1	818.1	7 DMH1	3	1	NA	2	A	S	SSW	S	SSW	M	P,SST	M	P,SST	P,SST
8	268.3	663.0	26 RB2	0	1	NA	7	RT	S	S	S	S	S	S	S	S	S
9	13.1	32.4	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S	S
10	26.5	65.5	27 RB5	0	1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S	S

*1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
POLYGON	AREA	AREA	UNIQUE	SOIL	TOPOG-	GROUND	SURF.	AGRI.	----	PERM.	----	PERM.	----	PIC-	----	PRIM.	----
NO.	Ha	Acres	PHYSICAL	UNIT	GRAPHY	WATER	GEOL.	CAP.	----	BLDG.	----	BLDG.	----	NIC	----	CAMP.	----
			LAND			ZONE			----	WITH	----	W/OUT	----				
Notes:			UNIT CLASS						MODI	BSMT.	MODI	BSMT.	MODI		MODI		MODI

38	9.7	24.0	26 RB2	0	1	NA	7	RT	S	S	S	S	S	S	S	S	S
39	6.3	15.6	27 RB5	0	1	CS	6	T	S	S, SL	S	S, SL	S	S	S	S	S
40	32.3	79.8	26 RB2	0	1	NA	7	RT	S	S	S	S	S	S	S	S	S
41	30.2	74.6	27 RB5	0	1	CS	6	T	S	S, SL	S	S, SL	S	S	S	S	S
42	47.8	118.1	29 ZAV1	0	2	F	5	I	S	W	M	PFA, W	N			N	
43	119.2	294.5	26 RB2	0	1	NA	7	RT	S	S	S	S	S	S	S	S	S
44	191.6	473.4	14 HND2	6	1	NA	5	TA/5W	S	S	S	S	S	S	S	M	S
45	6.4	15.8	29 ZAV1	0	2	F	5	I	S	W	M	PFA, W	N			N	
46	57.6	142.3	3 BKF1	4	2	F3	5	ND	M	PFA	M	PFA	N			N	
47	101.0	249.6	29 ZAV1	0	2	F	5	I	S	W	M	PFA, W	N			N	
48	16.7	41.3	29 ZAV1	0	2	F	5	I	S	W	M	PFA, W	N			N	
49	52.9	130.7	31 ZZZ	0	2	NA	0										

** M A P S H E E T: 82P08SW (EAST COULEE) *****

1	141.0	348.4	8 DMH1	4	1	NA	3	AT	S	SSW	S	SSW	M	P, SST	M	P, SST
2	317.1	783.6	26 RB2	0	1	NA	7	RT	S	S	S	S	S	S	S	S
3	82.2	203.1	8 DMH1	4	1	NA	3	AT	S	SSW	S	SSW	M	P, SST	M	P, SST
4	99.1	244.9	29 ZAV1	0	2	F	5	I	S	W	M	PFA, W	N		N	
5	8.9	22.0	29 ZAV1	0	2	F	5	I	S	W	M	PFA, W	N		N	
6	32.0	79.1	29 ZAV1	0	2	F	5	I	S	W	M	PFA, W	N		N	
7	63.5	156.9	29 ZAV1	0	2	F	5	I	S	W	M	PFA, W	N		N	

*1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
POLYGON	AREA	AREA	UNIQUE SOIL	SOIL	TOPOG-	GROUND	SURF.	AGRI.	----	PERM.	----	PERM.	----	PIC-	----	PRIM.	----
NO.	Ha	Acres	PHYSICAL	UNIT	RAPHY	WATER	GEOL.	CAP.	----	BLDG.	----	BLDG.	----	NIC	----	CAMP.	----
			LAND			ZONE			----	WITH	----	W/OUT	----		----		----
			UNIT CLASS						MODI	BSMT.	MODI	BSMT.	MODI		MODI		MODI
Notes:			A		C	D	E										

8	223.1	551.3	26 RB2	0	1	NA	7	RT	S	S	S	S	S	S	S	S	S
9	828.6	2047.5	14 HND2	6	1	NA	5	TA/5W	S	S	S	S	S	S	S	M	S
10	67.0	165.6	31 ZZZ	0	2	NA	0										

* Actual Item Names in Data Base: 1 - POLY_NO; 2 - AREA_HA; 3 - AREA_ACRE; 4 - CLASS_ID; 5 - SOILUNIT; 6 - TOPO; 7 - GWZONE; 8 - SGEOL; 9 - AGRCAP; 10 - AGRCAP_M; 11 - BLDWBAS; 12 -BLDWBAS_M; 13 - BLDWOBAS; 14 - BLDWOBAS_M; 15 - PICNIC; 16 - PICNIC_M; 17 - PRIMCAMP; 18 - PRIMCAMP_M.

NOTES:

- A Descriptions for the interpretive model classes and modifiers are described in section 4.1.
- B This code represents the unique combination of all soils, topographic classes, groundwater zones and surficial geology conditions within the study area.
- C Topographic/slope classes are: 1: 0-0.5%; 2: 0.5-2%; 3: 2-5%; 4: 6-9%; 5: 10-15%; 6: 15-30%.
- D See Table 8 and section 2.3.3 for a description of groundwater zones.
- E See Table 7 for and section 3.2.4 for a description of surfical geology symbols.

Appendix 5. Individual polygon listing with 2nd set of model interpretations including modifiers, organized from northwest to southeast in the study area.

POLYGON LISTING
with MODEL INTERPRETATIONS^a
(Organized NW to SE)

DINOSAUR CORRIDOR

*1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
POLY- GON NO.	AREA Ha	AREA Acres	UNIQ. PHYS. LAND CLASS	SOIL UNIT	TOP- OG.	GROUND WATER ZONE	SURF. GEOL.	SERV. CAMP.	----- ----- MODI	SEPTIC TANK	----- ----- MODI	PLAY- ING FIELD	----- ----- MODI	GOLF	----- ----- MODI	NON- MOTOR TRAIL	----- ----- MODI	MOTOR TRAIL	----- ----- MODI
Notes:			b		c	d	e												

** M A P S H E E T: 82P10NW (MORRIN CROSSING) *****

1	203.6	503.1	7 DMH1	3	1	NA	S	WS,1	S	P	M	S,P,SST	S	WS	M	M	M	M
2	91.3	225.6	7 DMH1	3	1	NA	S	WS,1	S	P	M	S,P,SST	S	WS	M	M	M	M
3	53.7	132.7	7 DMH1	3	1	NA	S	WS,1	S	P	M	S,P,SST	S	WS	M	M	M	M
4	171.9	424.8	7 DMH1	3	1	NA	S	WS,1	S	P	M	S,P,SST	S	WS	M	M	M	M
5	42.4	104.8	18 LET1	4	1	NA	S	WS,3	N		S	S	S	WS	M	M	M	M
6	33.2	82.0	18 LET1	4	1	NA	S	WS,3	N		S	S	S	WS	M	M	M	M
7	43.9	108.5	18 LET1	4	1	NA	S	WS,3	N		S	S	S	WS	M	M	M	M
8	10.5	25.9	18 LET1	4	1	NA	S	WS,3	N		S	S	S	WS	M	M	M	M
9	74.9	185.1	26 RB2	0	1	NA	S	S,WS	S	S	S	S	S	S,WS	S	S	S	S
10	13.1	32.4	27 RB5	0	1	CS	S	S,WS	S	S	S	S	S	S,WS	S	S	S	S
11	395.1	976.3	25 RB1	0	1	NA	S	S,WS	S	S	S	S	S	S,WS	S	S	S	S
12	8.5	21.0	27 RB5	0	1	CS	S	S,WS	S	S	S	S	S	S,WS	S	S	S	S
13	8.7	21.5	7 DMH1	3	1	NA	S	WS,1	S	P	M	S,P,SST	S	WS	M	M	M	M
14	49.4	122.1	2 BKF1	3	2	F3	N		S	WS	M	S	N		N	N	N	N
15	18.0	44.5	29 ZAV1	0	2	F	N		S	WS	M	W	N		N	N	N	N
16	91.4	225.8	2 BKF1	3	2	F3	N		S	WS	M	S	N		N	N	N	N
17	14.9	36.8	29 ZAV1	0	2	F	N		S	WS	M	W	N		N	N	N	N
18	79.9	197.4	2 BKF1	3	2	F3	N		S	WS	M	S	N		N	N	N	N

*1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
POLY- GON NO.	AREA Ha	AREA Acres	UNIQ. PHYS. LAND CLASS	SOIL UNIT	TOP- OG.	GROUND WATER ZONE	SURF. GEOL.	SERV. CAMP.	----- ----- ----- MODI	SEPTIC TANK	----- ----- ----- MODI	PLAY- ING FIELD	----- ----- ----- MODI	GOLF	----- ----- ----- MODI	NON- MOTOR TRAIL	----- ----- ----- MODI	MOTOR TRAIL	----- ----- ----- MODI
Notes:																			

19	18.9	46.7	29 ZAV1	0	2	F	N		S	WS	M	W	N		N	N	N	N
20	82.7	204.4	2 BKF1	3	2	F3	N		S	WS	M	S	N		N	N	N	N
21	4.9	12.1	27 RB5	0	1	CS	S	S,WS	S	S	S	S	S	S,WS	S	S	S	S
22	23.9	59.1	27 RB5	0	1	CS	S	S,WS	S	S	S	S	S	S,WS	S	S	S	S
23	21.4	52.9	27 RB5	0	1	CS	S	S,WS	S	S	S	S	S	S,WS	S	S	S	S
24	50.9	125.8	7 DMH1	3	1	NA	S	WS,1	S	P	M	S,P,SST	S	WS	M	M	M	M
25	88.5	218.7	7 DMH1	3	1	NA	S	WS,1	S	P	M	S,P,SST	S	WS	M	M	M	M
26	11.2	27.7	26 RB2	0	1	NA	S	S,WS	S	S	S	S	S	S,WS	S	S	S	S
27	112.9	279.0	26 RB2	0	1	NA	S	S,WS	S	S	S	S	S	S,WS	S	S	S	S
28	187.7	463.8	7 DMH1	3	1	NA	S	WS,1	S	P	M	S,P,SST	S	WS	M	M	M	M
29	41.3	102.1	27 RB5	0	1	CS	S	S,WS	S	S	S	S	S	S,WS	S	S	S	S
30	16.9	41.8	26 RB2	0	1	NA	S	S,WS	S	S	S	S	S	S,WS	S	S	S	S
31	108.9	269.1	26 RB2	0	1	NA	S	S,WS	S	S	S	S	S	S,WS	S	S	S	S
32	41.5	102.5	7 DMH1	3	1	NA	S	WS,1	S	P	M	S,P,SST	S	WS	M	M	M	M
33	31.2	77.1	27 RB5	0	1	CS	S	S,WS	S	S	S	S	S	S,WS	S	S	S	S
34	106.8	263.9	7 DMH1	3	1	NA	S	WS,1	S	P	M	S,P,SST	S	WS	M	M	M	M
35	8.2	20.3	7 DMH1	3	1	NA	S	WS,1	S	P	M	S,P,SST	S	WS	M	M	M	M
36	22.2	54.9	26 RB2	0	1	NA	S	S,WS	S	S	S	S	S	S,WS	S	S	S	S
37	20.9	51.6	27 RB5	0	1	CS	S	S,WS	S	S	S	S	S	S,WS	S	S	S	S
38	14.2	35.1	27 RB5	0	1	CS	S	S,WS	S	S	S	S	S	S,WS	S	S	S	S
39	71.4	176.4	31 ZZZ	0										S,WS	S	S	S	S
40	104.8	259.0	25 RB1	0	1	NA	S	S,WS	S	S	S	S	S	S,WS	S	S	S	S

**** M A P S H E E T: 82P10SW (BLERIOT FERRY) *******

1	437.7	1082	7 DMH1	3	1	NA	S	WS,1	S	P	M	S,P,SST	S	WS	M	M	M	M
2	72.1	178.2	18 LET1	4	1	NA	S	WS,3	N		S	S	S	WS	M	M	M	M
3	241.9	597.7	21 LET6	3	1	NA	S	WS,3	N	4	M	S	S	WS	M	M	M	M
4	689.6	1704	7 DMH1	3	1	NA	S	WS,1	S	P	M	S,P,SST	S	WS	M	M	M	M

*1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
POLY- GON NO.	AREA Ha	AREA Acres	UNIQ. PHYS. LAND CLASS	SOIL UNIT	TOP- OG.	GROUND WATER ZONE	SURF. GEOL.	SERV. CAMP.	----- ----- MODI	SEPTIC TANK	----- ----- MODI	PLAY- ING FIELD	----- ----- MODI	GOLF	----- ----- MODI	NON- MOTOR TRAIL	----- ----- MODI	MOTOR TRAIL	----- ----- MODI
Notes:			B		C	D	E												
5	55.3	136.6	18	LET1	4	1	NA	S	WS, 3	N		S	S	S	WS	M	M	M	M
7	782.6	1934	25	RB1	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S
8	5.1	12.6	27	RB5	0	1	CS	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S
9	21.6	53.4	27	RB5	0	1	CS	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S
10	108.8	268.8	26	RB2	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S
11	4.1	10.1	27	RB5	0	1	CS	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S
12	59.4	146.8	1	BKAV1	0	2	F2	N		S	WS	M	S, SST	N		N	N	N	N
13	271.0	669.6	26	RB2	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S
14	73.4	181.4	18	LET1	4	1	NA	S	WS, 3	N		S	S	S	WS	M	M	M	M
15	13.5	33.4	26	RB2	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S
16	135.9	335.8	17	LET1	3	1	NA	S	WS, 3	N		M	S	S	WS	M	M	M	M
17	3.6	8.9	27	RB5	0	1	CS	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S
18	246.1	608.1	18	LET1	4	1	NA	S	WS, 3	N		S	S	S	WS	M	M	M	M
19	43.2	106.7	24	MET1	4	1	NA	S	WS, 2	M	PERC	S	S	S	WS	N	N	N	N
20	386.7	955.5	17	LET1	3	1	NA	S	WS, 3	N		M	S	S	WS	M	M	M	M
21	120.5	297.8	2	BKF1	3	2	F3	N		S	WS	M	S	N		N	N	N	N
22	62.2	153.7	29	ZAV1	0	2	F	N		S	WS	M	W	N		N	N	N	N
23	3.3	8.2	27	RB5	0	1	CS	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S
24	15.9	39.3	26	RB2	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S
25	6.0	14.8	27	RB5	0	1	CS	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S
26	120.1	296.8	26	RB2	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S
27	35.5	87.7	29	ZAV1	0	2	F	N		S	WS	M	W	N		N	N	N	N
28	2.6	6.4	27	RB5	0	1	CS	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S
29	8.6	21.3	17	LET1	3	1	NA	S	WS, 3	N		M	S	S	WS	M	M	M	M
30	79.9	197.4	29	ZAV1	0	2	F	N		S	WS	M	W	N		N	N	N	N
31	31.8	78.6	6	BKRB1	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	N	N	N	N
32	140.0	345.9	2	BKF1	3	2	F3	N		S	WS	M	S	N		N	N	N	N
33	841.2	2079	25	RB1	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S
34	328.0	810.5	17	LET1	3	1	NA	S	WS, 3	N		M	S	S	WS	M	M	M	M

*1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
POLY- GON NO.	AREA Ha	AREA Acres	UNIQ. PHYS. LAND CLASS	SOIL UNIT	TOP- OG.	GROUND WATER ZONE	SURF. GEOL.	SERV. CAMP.	----- ----- ----- MODI	SEPTIC TANK	----- ----- ----- MODI	PLAY- ING FIELD	----- ----- ----- MODI	GOLF	----- ----- ----- MODI	NON- MOTOR TRAIL	----- ----- ----- MODI	MOTOR TRAIL	----- ----- ----- MODI
Notes:			s		c	b	e												
18	4.9	12.1	2 BKF1	3	2	F3	N		S	WS	M	S	N		N	N	N	N	
19	5.7	14.1	2 BKF1	3	2	F3	N		S	WS	M	S	N		N	N	N	N	
20	9.5	23.5	2 BKF1	3	2	F3	N		S	WS	M	S	N		N	N	N	N	
22	17.6	43.5	18 LET1	4	1	NA	S	WS, 3	N		S	S	S	WS	M	M	M	M	
23	14.8	36.6	18 LET1	4	1	NA	S	WS, 3	N		S	S	S	WS	M	M	M	M	
24	92.3	228.1	17 LET1	3	1	NA	S	WS, 3	N		M	S	S	WS	M	M	M	M	
25	50.4	124.5	17 LET1	3	1	NA	S	WS, 3	N		M	S	S	WS	M	M	M	M	
26	6.0	14.8	27 RB5	0	1	CS	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	
27	7.3	18.0	27 RB5	0	1	CS	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	
28	121.0	299.0	17 LET1	3	1	NA	S	WS, 3	N		M	S	S	WS	M	M	M	M	
29	7.9	19.5	27 RB5	0	1	CS	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	
30	6.2	15.3	2 BKF1	3	2	F3	N		S	WS	M	S	N		N	N	N	N	
31	313.7	775.2	17 LET1	3	1	NA	S	WS, 3	N		M	S	S	WS	M	M	M	M	
32	91.7	226.6	17 LET1	3	1	NA	S	WS, 3	N		M	S	S	WS	M	M	M	M	
33	5.5	13.6	27 RB5	0	1	CS	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	
34	84.1	207.8	8 DMH1	4	1	NA	S	WS, 1	S	P	S	S	S	WS	M	M	M	M	
35	17.0	42.0	3 BKF1	4	2	F3	N		S	WS	S	S	N		N	N	N	N	
36	92.7	229.1	29 ZAV1	0	2	F	N		S	WS	M	W	N		N	N	N	N	
37	7.0	17.3	29 ZAV1	0	2	F	N		S	WS	M	W	N		N	N	N	N	
38	466.0	1152	5 BKRB1	0	1	FTE	S	S, WS	S	S	S	S	S	S, WS	N	N	N	N	
39	122.1	301.7	29 ZAV1	0	2	F	N		S	WS	M	W	N		N	N	N	N	
40	259.1	640.2	7 DMH1	3	1	NA	S	WS, 1	S	P	M	S, P, SST	S	WS	M	M	M	M	
41	27.6	68.2	15 HND7	3	1	NA	S	WS, 2	M	P	M	S	S	WS	N	N	N	N	
42	132.2	326.7	16 HND7	4	1	NA	S	WS, 2	M	P	S	S, SST	S	WS	N	N	N	N	
43	5.4	13.3	27 RB5	0	1	CS	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	
44	103.5	255.7	15 HND7	3	1	NA	S	WS, 2	M	P	M	S	S	WS	N	N	N	N	
45	12.1	29.9	16 HND7	4	1	NA	S	WS, 2	M	P	S	S, SST	S	WS	N	N	N	N	
46	9.2	22.7	27 RB5	0	1	CS	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	
47	6.4	15.8	27 RB5	0	1	CS	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	

*1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
POLY- GON NO.	AREA Ha	AREA Acres	UNIQ. PHYS. LAND CLASS	SOIL UNIT	TOP- OG.	GROUND WATER ZONE	SURF. GEOL.	SERV. CAMP.	----- ----- ----- MODI	SEPTIC TANK	----- ----- ----- MODI	PLAY- ING FIELD	----- ----- ----- MODI	GOLF	----- ----- ----- MODI	NON- MOTOR TRAIL	----- ----- ----- MODI	MOTOR TRAIL	----- ----- ----- MODI
Notes:			B		C	D	E												

48	181.9	449.5	26 RB2	0	1	NA	S	S,WS	S	S	S	S	S	S	S,WS	S	S	S	S
49	64.6	159.6	16 HND7	4	1	NA	S	WS,2	M	P	S	S,SST	S	S	WS	N	N	N	N
50	13.5	33.4	27 RB5	0	1	CS	S	S,WS	S	S	S	S	S	S	S,WS	S	S	S	S
51	26.8	66.2	6 BKRBI	0	1	NA	S	S,WS	S	S	S	S	S	S	S,WS	N	N	N	N
52	16.4	40.5	15 HND7	3	1	NA	S	WS,2	M	P	M	S	S	S	WS	N	N	N	N
53	48.0	118.6	29 ZAV1	0	2	F	N		S	WS	M	W	N			N	N	N	N
54	0.0	0.0	31 ZZZ	0	2	NA													
55	405.0	1001	25 RB1	0	1	NA	S	S,WS	S	S	S	S	S	S	S,WS	S	S	S	S
56	48.0	118.6	22 MET1	3	1	NA	S	WS,2	M	PERC	M	S	S	S	WS	N	N	N	N
57	35.9	88.7	18 LET1	4	1	NA	S	WS,3	N		S	S	S	S	WS	M	M	M	M
58	113.8	281.2	17 LET1	3	1	NA	S	WS,3	N		M	S	S	S	WS	M	M	M	M
59	13.9	34.3	7 DMH1	3	1	NA	S	WS,1	S	P	M	S,P,SST	S	S	WS	M	M	M	M
60	5.0	12.4	27 RB5	0	1	CS	S	S,WS	S	S	S	S	S	S	S,WS	S	S	S	S
61	217.5	537.4	20 LET1	5	1	NA	S	WS,3	M	S	S	S,SST	S	S	WS	M	M	M	M
62	56.5	139.6	17 LET1	3	1	NA	S	WS,3	N		M	S	S	S	WS	M	M	M	M
63	4.2	10.4	27 RB5	0	1	CS	S	S,WS	S	S	S	S	S	S	S,WS	S	S	S	S

**** M A P S H E E T: 82P07NE (DROMHELLER) *******

1	26.1	64.5	17 LET1	3	1	NA	S	WS,3	N		M	S	S	S	WS	M	M	M	M
2	36.8	90.9	22 MET1	3	1	NA	S	WS,2	M	PERC	M	S	S	S	WS	N	N	N	N
3	420.0	1038	7 DMH1	3	1	NA	S	WS,1	S	P	M	S,P,SST	S	S	WS	M	M	M	M
4	169.6	419.1	7 DMH1	3	1	NA	S	WS,1	S	P	M	S,P,SST	S	S	WS	M	M	M	M
5	67.1	165.8	7 DMH1	3	1	NA	S	WS,1	S	P	M	S,P,SST	S	S	WS	M	M	M	M
6	1848.5	4568	25 RB1	0	1	NA	S	S,WS	S	S	S	S	S	S	S,WS	S	S	S	S
7	55.4	136.9	6 BKRBI	0	1	NA	S	S,WS	S	S	S	S	S	S	S,WS	N	N	N	N
8	122.7	303.2	29 ZAV1	0	2	F	N		S	WS	M	W	N			N	N	N	N
9	150.4	371.6	7 DMH1	3	1	NA	S	WS,1	S	P	M	S,P,SST	S	S	WS	M	M	M	M

*1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
POLY- GON NO.	AREA Ha	AREA Acres	UNIQ. PHYS. LAND CLASS	SOIL UNIT	TOP- OG.	GROUND WATER ZONE	SURF. GEOL.	SERV. CAMP.	----- ----- ----- MODI	SEPTIC TANK	----- ----- ----- MODI	PLAY- ING FIELD	----- ----- ----- MODI	GOLF	----- ----- ----- MODI	NON- MOTOR TRAIL	----- ----- ----- MODI	MOTOR TRAIL	----- ----- ----- MODI
Notes:			b		c	d	e												
10	86.7	214.2	7 DMH1	3	1	NA	S	WS, 1	S	P	M	S, P, SST	S	WS	M	M	M	M	M
11	2630.1	6499	20 LET1	5	1	NA	S	WS, 3	M	S	S	S, SST	S	WS	M	M	M	M	M
12	654.4	1617	29 ZAV1	0	2	F	N		S	WS	M	W	N		N	N	N	N	N
13	3.5	8.6	5 BKRB1	0	1	FTE	S	S, WS	S	S	S	S	S	S, WS	N	N	N	N	N
14	18.9	46.7	5 BKRB1	0	1	FTE	S	S, WS	S	S	S	S	S	S, WS	N	N	N	N	N
15	172.9	427.2	2 BKF1	3	2	F3	N		S	WS	M	S	N		N	N	N	N	N
16	701.8	1734	4 BKRB1	0	1	BD	S	S, WS	S	S	S	S	S	S, WS	N	N	N	N	N
17	4.5	11.1	29 ZAV1	0	2	F	N		S	WS	M	W	N		N	N	N	N	N
18	202.9	501.4	15 HND7	3	1	NA	S	WS, 2	M	P	M	S	S	WS	N	N	N	N	N
19	319.1	788.5	26 RB2	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	S
20	143.0	353.4	12 HND1	4	1	NA	S	WS, 2	M	P	S	S	S	WS	N	N	N	N	N
21	2.4	5.9	27 RB5	0	1	CS	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	S
22	1446.7	3575	12 HND1	4	1	NA	S	WS, 2	M	P	S	S	S	WS	N	N	N	N	N
23	9.6	23.7	27 RB5	0	1	CS	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	S
24	8.5	21.0	6 BKRB1	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	N	N	N	N	N
25	350.8	866.8	26 RB2	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	S
26	8.9	22.0	13 HND1	5	1	NA	S	WS, 2	M	P, S	S	S	S	WS	M	M	N	N	N
27	16.4	40.5	27 RB5	0	1	CS	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	S
28	24.8	61.3	27 RB5	0	1	CS	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	S
29	71.2	175.9	26 RB2	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	S
30	118.1	291.8	26 RB2	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	S
31	4.2	10.4	7 DMH1	3	1	NA	S	WS, 1	S	P	M	S, P, SST	S	WS	M	M	M	M	M
32	15.4	38.1	26 RB2	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	S
33	545.0	1347	7 DMH1	3	1	NA	S	WS, 1	S	P	M	S, P, SST	S	WS	M	M	M	M	M
34	25.8	63.8	26 RB2	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	S
35	4.5	11.1	7 DMH1	3	1	NA	S	WS, 1	S	P	M	S, P, SST	S	WS	M	M	M	M	M
36	533.7	1319	26 RB2	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	S
37	208.8	515.9	11 HND1	3	1	NA	S	WS, 2	M	P	M	S	S	WS	N	N	N	N	N
38	214.5	530.0	10 DMH2	4	1	NA	S	WS, 1	S	P	S	S	S	WS	M	M	M	M	M

*1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
POLY- GON NO.	AREA Ha	AREA Acres	UNIQ. PHYS. LAND CLASS	SOIL UNIT	TOP- OG.	GROUND WATER ZONE	SURF. GEOL.	SERV. CAMP.	----- ----- ----- MODI	SEPTIC TANK	----- ----- ----- MODI	PLAY- ING FIELD	----- ----- ----- MODI	GOLF	----- ----- ----- MODI	NON- MOTOR TRAIL	----- ----- ----- MODI	MOTOR TRAIL	----- ----- ----- MODI
Notes:			b		c	d	e												
39	63.5	156.9	7	DMH1	3	1	NA	S	WS, 1	S	P	M	S, P, SST	S	WS	M	M	M	M
40	676.1	1671	19	LET1	5	1	MT	S	WS, 3	M	S	S	S	S	WS	M	M	M	M
41	88.6	218.9	3	BKF1	4	2	F3	N		S	WS	S	S	N		N	N	N	N
42	20.4	50.4	6	BKRB1	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	N	N	N	N
43	17.6	43.5	3	BKF1	4	2	F3	N		S	WS	S	S	N		N	N	N	N
44	15.5	38.3	27	RB5	0	1	CS	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S
45	75.3	186.1	20	LET1	5	1	NA	S	WS, 3	M	S	S	S, SST	S	WS	M	M	M	M
46	13.7	33.9	20	LET1	5	1	NA	S	WS, 3	M	S	S	S, SST	S	WS	M	M	M	M
47	3.0	7.4	20	LET1	5	1	NA	S	WS, 3	M	S	S	S, SST	S	WS	M	M	M	M
48	12.3	30.4	3	BKF1	4	2	F3	N		S	WS	S	S	N		N	N	N	N
49	313.7	775.2	29	ZAV1	0	2	F	N		S	WS	M	W	N		N	N	N	N
50	40.1	99.1	1	BKAV1	0	2	F2	N		S	WS	M	S, SST	N		N	N	N	N
51	9.7	24.0	3	BKF1	4	2	F3	N		S	WS	S	S	N		N	N	N	N
52	77.6	191.7	14	HND2	6	1	NA	S	S	S	S	S	S	S	WS	S	S	M	M
53	9.4	23.2	27	RB5	0	1	CS	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S
54	77.3	191.0	26	RB2	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S
55	7.1	17.5	27	RB5	0	1	CS	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S
56	184.9	456.9	26	RB2	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S
57	287.6	710.7	6	BKRB1	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	N	N	N	N
58	51.0	126.0	29	ZAV1	0	2	F	N		S	WS	M	W	N		N	N	N	N
59	7.4	18.3	27	RB5	0	1	CS	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S
60	8.1	20.0	27	RB5	0	1	CS	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S
61	14.0	34.6	25	RB1	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S
62	8.4	20.8	26	RB2	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S
63	13.9	34.3	27	RB5	0	1	CS	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S
64	15.2	37.6	18	LET1	4	1	NA	S	WS, 3	N		S	S	S	WS	M	M	M	M
65	26.8	66.2	18	LET1	4	1	NA	S	WS, 3	N		S	S	S	WS	M	M	M	M
66	31.9	78.8	2	BKF1	3	2	F3	N		S	WS	M	S	N		N	N	N	N
67	13.4	33.1	18	LET1	4	1	NA	S	WS, 3	N		S	S	S	WS	M	M	M	M

*1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
POLY- GON NO.	AREA Ha	AREA Acres	UNIQ. PHYS. LAND CLASS	SOIL UNIT	TOP- OG.	GROUND WATER ZONE	SURF. GEOL.	SERV. CAMP.	----- ----- ----- MODI	SEPTIC TANK	----- ----- ----- MODI	PLAY- ING FIELD	----- ----- ----- MODI	GOLF	----- ----- ----- MODI	NON- MOTOR TRAIL	----- ----- ----- MODI	MOTOR TRAIL	----- ----- ----- MODI
Notes:																			

68	15.4	38.1	29 ZAV1	0	2	F	N		S	WS	M	W	N		N	N	N	N
69	6.4	15.8	17 LET1	3	1	NA	S	WS, 3	N		M	S	S	WS	M	M	M	M
70	135.7	335.3	3 BKF1	4	2	F3	N		S	WS	S	S	N		N	N	N	N
71	225.0	556.0	31 ZZZ	0	2	NA												
72	20.7	51.1	29 ZAV1	0	2	F	N		S	WS	M	W	N		N	N	N	N
73	11.5	28.4	7 DMH1	3	1	NA	S	WS, 1	S	P	M	S, P, SST	S	WS	M	M	M	M
74	48.9	120.8	6 BKR1	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	N	N	N	N

**** M A P S H E E T: 82P08NW (WILLOW CREEK) *******

1	15.9	39.3	17 LET1	3	1	NA	S	WS, 3	N		M	S	S	WS	M	M	M	M
2	75.6	186.8	26 RB2	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S
3	4.5	11.1	20 LET1	5	1	NA	S	WS, 3	M	S	S	S, SST	S	WS	M	M	M	M
4	15.7	38.8	1 BKAV1	0	2	F2	N		S	WS	M	S, SST	N		N	N	N	N
5	35.4	87.5	26 RB2	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S
6	2.1	5.2	27 RB5	0	1	CS	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S
7	88.9	219.7	14 HND2	6	1	NA	S	S	S	S	S	S	S	WS	S	S	M	M
8	1.0	2.5	26 RB2	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S

**** M A P S H E E T: 82P07SW (ROSEBUD) *******

1	117.1	289.4	12 HND1	4	1	NA	S	WS, 2	M	P	S	S	S	WS	N	N	N	N
2	101.3	250.3	25 RB1	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S
3	113.3	280.0	29 ZAV1	0	2	F	N		S	WS	M	W	N		N	N	N	N
4	34.9	86.2	25 RB1	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S
5	34.0	84.0	17 LET1	3	1	NA	S	WS, 3	N		M	S	S	WS	M	M	M	M
6	45.4	112.2	7 DMH1	3	1	NA	S	WS, 1	S	P	M	S, P, SST	S	WS	M	M	M	M

*1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
POLY- GON NO.	AREA Ha	AREA Acres	UNIQ. PHYS. LAND CLASS	SOIL UNIT	TOP- OG.	GROUND WATER ZONE	SURF. GEOL.	SERV. CAMP.	----- ----- ----- MODI	SEPTIC TANK	----- ----- ----- MODI	PLAY- ING FIELD	----- ----- ----- MODI	GOLF	----- ----- ----- MODI	NON- MOTOR TRAIL	----- ----- ----- MODI	MOTOR TRAIL	----- ----- ----- MODI
Notes:			b		c	d	e												

7	1994.0	4927	6	BKRB1	0	1	NA	S	S,WS	S	S	S	S	S	S,WS	N	N	N	N
8	394.8	975.6	7	DMH1	3	1	NA	S	WS,1	S	P	M	S,P,SST	S	WS	M	M	M	M
9	460.6	1138	17	LET1	3	1	NA	S	WS,3	N		M	S	S	WS	M	M	M	M
10	195.5	483.1	7	DMH1	3	1	NA	S	WS,1	S	P	M	S,P,SST	S	WS	M	M	M	M
11	38.3	94.6	7	DMH1	3	1	NA	S	WS,1	S	P	M	S,P,SST	S	WS	M	M	M	M
12	584.5	1444	7	DMH1	3	1	NA	S	WS,1	S	P	M	S,P,SST	S	WS	M	M	M	M
13	81.6	201.6	7	DMH1	3	1	NA	S	WS,1	S	P	M	S,P,SST	S	WS	M	M	M	M
14	23.5	58.1	27	RB5	0	1	CS	S	S,WS	S	S	S	S	S	S,WS	S	S	S	S
15	179.8	444.3	7	DMH1	3	1	NA	S	WS,1	S	P	M	S,P,SST	S	WS	M	M	M	M
16	140.5	347.2	7	DMH1	3	1	NA	S	WS,1	S	P	M	S,P,SST	S	WS	M	M	M	M
17	60.8	150.2	29	ZAV1	0	2	F	N		S	WS	M	W	N		N	N	N	N
18	29.3	72.4	27	RB5	0	1	CS	S	S,WS	S	S	S	S	S	S,WS	S	S	S	S
19	317.7	785.0	26	RB2	0	1	NA	S	S,WS	S	S	S	S	S	S,WS	S	S	S	S
20	331.3	818.6	7	DMH1	3	1	NA	S	WS,1	S	P	M	S,P,SST	S	WS	M	M	M	M
21	12.7	31.4	27	RB5	0	1	CS	S	S,WS	S	S	S	S	S	S,WS	S	S	S	S
22	3.1	7.7	7	DMH1	3	1	NA	S	WS,1	S	P	M	S,P,SST	S	WS	M	M	M	M
23	16.1	39.8	7	DMH1	3	1	NA	S	WS,1	S	P	M	S,P,SST	S	WS	M	M	M	M
24	219.3	541.9	7	DMH1	3	1	NA	S	WS,1	S	P	M	S,P,SST	S	WS	M	M	M	M
25	301.0	743.8	7	DMH1	3	1	NA	S	WS,1	S	P	M	S,P,SST	S	WS	M	M	M	M
26	176.2	435.4	7	DMH1	3	1	NA	S	WS,1	S	P	M	S,P,SST	S	WS	M	M	M	M

** M A P S H E E T: 82P07SE (DALOM) *****

1	57.9	143.1	7 DMH1	3	1	NA	S	WS,1	S	P	M	S,P,SST	S	WS	M	M	M	M
2	157.6	389.4	7 DMH1	3	1	NA	S	WS,1	S	P	M	S,P,SST	S	WS	M	M	M	M
3	142.8	352.9	6 BKRBI	0	1	NA	S	S,WS	S	S	S	S	S	S,WS	N	N	N	N
4	10.8	26.7	27 RB5	0	1	CS	S	S,WS	S	S	S	S	S	S,WS	S	S	S	S
5	87.5	216.2	27 RB5	0	1	CS	S	S,WS	S	S	S	S	S	S,WS	S	S	S	S

*1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
POLY- GON NO.	AREA Ha	AREA Acres	UNIQ. PHYS. LAND CLASS	SOIL UNIT	TOP- OG.	GROUND WATER ZONE	SURF. GEOL.	SERV. CAMP.	----- ----- ----- MODI	SEPTIC TANK	----- ----- ----- MODI	PLAY- ING FIELD	----- ----- ----- MODI	GOLF	----- ----- ----- MODI	NON- MOTOR TRAIL	----- ----- ----- MODI	MOTOR TRAIL	----- ----- ----- MODI
Notes:			b		c	d	e												
6	138.4	342.0	29 ZAV1	0	2	F	N		S	WS	M	W	N		N	N	N	N	N
7	331.1	818.1	7 DMH1	3	1	NA	S	WS, 1	S	P	M	S, P, SST	S	WS	M	M	M	M	M
8	268.3	663.0	26 RB2	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	S
9	13.1	32.4	27 RB5	0	1	CS	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	S
10	26.5	65.5	27 RB5	0	1	CS	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	S
11	16.7	41.3	26 RB2	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	S
12	132.0	326.2	7 DMH1	3	1	NA	S	WS, 1	S	P	M	S, P, SST	S	WS	M	M	M	M	M
13	15.1	37.3	7 DMH1	3	1	NA	S	WS, 1	S	P	M	S, P, SST	S	WS	M	M	M	M	M
14	15.8	39.0	6 BKRB1	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	N	N	N	N	N
15	4.7	11.6	26 RB2	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	S
16	65.9	162.8	26 RB2	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	S
17	96.2	237.7	27 RB5	0	1	CS	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	S
18	671.2	1658	9 DMH1	5	1	NA	S	WS, 1	S	P	S	S	S	WS	M	M	M	M	M
19	45.0	111.2	26 RB2	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	S
20	6.7	16.6	27 RB5	0	1	CS	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	S
21	21.0	51.9	26 RB2	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	S
22	163.5	404.0	20 LET1	5	1	NA	S	WS, 3	M	S	S	S, SST	S	WS	M	M	M	M	M
23	204.6	505.6	7 DMH1	3	1	NA	S	WS, 1	S	P	M	S, P, SST	S	WS	M	M	M	M	M
24	109.4	270.3	26 RB2	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	S
25	9.2	22.7	10 DMH2	4	1	NA	S	WS, 1	S	P	S	S	S	WS	M	M	M	M	M
26	372.8	921.2	7 DMH1	3	1	NA	S	WS, 1	S	P	M	S, P, SST	S	WS	M	M	M	M	M
27	1019.5	2519	13 HND1	5	1	NA	S	WS, 2	M	P, S	S	S	S	WS	M	M	N	N	N
28	194.8	481.4	20 LET1	5	1	NA	S	WS, 3	M	S	S	S, SST	S	WS	M	M	M	M	M
29	2.0	4.9	26 RB2	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	S
30	16.1	39.8	26 RB2	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	S
31	8.2	20.3	26 RB2	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	S
32	2.2	5.4	3 BKF1	4	2	F3	N		S	WS	S	S	N		N	N	N	N	N
33	311.9	770.7	26 RB2	0	1	NA	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	S
34	8.6	21.3	27 RB5	0	1	CS	S	S, WS	S	S	S	S	S	S, WS	S	S	S	S	S

*1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
POLY- GON NO.	AREA Ha	AREA Acres	UNIQ. PHYS. LAND CLASS	SOIL UNIT	TOP- OG.	GROUND WATER ZONE	SURF. GEOL.	SERV. CAMP.	----- ----- ----- MODI	SEPTIC TANK	----- ----- ----- MODI	PLAY- ING FIELD	----- ----- ----- MODI	GOLF	----- ----- ----- MODI	NON- MOTOR TRAIL	----- ----- ----- MODI	MOTOR TRAIL	----- ----- ----- MODI
Notes:			b		c	d	e												

35	46.0	113.7	27 RB5	0	1	CS	S	S,WS	S	S	S	S	S	S	S,WS	S	S	S	S
36	43.7	108.0	13 HND1	5	1	NA	S	WS,2	M	P,S	S	S	S	S	WS	M	M	N	N
37	316.9	783.1	8 DMH1	4	1	NA	S	WS,1	S	P	S	S	S	S	WS	M	M	M	M
38	9.7	24.0	26 RB2	0	1	NA	S	S,WS	S	S	S	S	S	S	S,WS	S	S	S	S
39	6.3	15.6	27 RB5	0	1	CS	S	S,WS	S	S	S	S	S	S	S,WS	S	S	S	S
40	32.3	79.8	26 RB2	0	1	NA	S	S,WS	S	S	S	S	S	S	S,WS	S	S	S	S
41	30.2	74.6	27 RB5	0	1	CS	S	S,WS	S	S	S	S	S	S	S,WS	S	S	S	S
42	47.8	118.1	29 ZAV1	0	2	F	N		S	WS	M	W	N			N	N	N	N
43	119.2	294.5	26 RB2	0	1	NA	S	S,WS	S	S	S	S	S	S	S,WS	S	S	S	S
44	191.6	473.4	14 HND2	6	1	NA	S	S	S	S	S	S	S	S	WS	S	S	M	M
45	6.4	15.8	29 ZAV1	0	2	F	N		S	WS	M	W	N			N	N	N	N
46	57.6	142.3	3 BKF1	4	2	F3	N		S	WS	S	S	N			N	N	N	N
47	101.0	249.6	29 ZAV1	0	2	F	N		S	WS	M	W	N			N	N	N	N
48	16.7	41.3	29 ZAV1	0	2	F	N		S	WS	M	W	N			N	N	N	N
49	52.9	130.7	31 ZZZ	0	2	NA												N	N

**** M A P S H E E T: 82P08SW (EAST COULEE) *******

1	141.0	348.4	8 DMH1	4	1	NA	S	WS,1	S	P	S	S	S	S	WS	M	M	M	M
2	317.1	783.6	26 RB2	0	1	NA	S	S,WS	S	S	S	S	S	S	S,WS	S	S	S	S
3	82.2	203.1	8 DMH1	4	1	NA	S	WS,1	S	P	S	S	S	S	WS	M	M	M	M
4	99.1	244.9	29 ZAV1	0	2	F	N		S	WS	M	W	N			N	N	N	N
5	8.9	22.0	29 ZAV1	0	2	F	N		S	WS	M	W	N			N	N	N	N
6	32.0	79.1	29 ZAV1	0	2	F	N		S	WS	M	W	N			N	N	N	N
7	63.5	156.9	29 ZAV1	0	2	F	N		S	WS	M	W	N			N	N	N	N
8	223.1	551.3	26 RB2	0	1	NA	S	S,WS	S	S	S	S	S	S	S,WS	S	S	S	S
9	828.6	2048	14 HND2	6	1	NA	S	S	S	S	S	S	S	S	WS	S	S	M	M
10	67.0	165.6	31 ZZZ	0	2	NA													

*1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
POLY- GON NO.	AREA Ha Acres	AREA PHYS.	UNIQ. LAND CLASS	SOIL UNIT	TOP- OG.	GROUND WATER ZONE	SURF. GEOL.	SERV. CAMP.	----	SEPTIC TANK	----	PLAY- ING FIELD	----	GOLF	----	NON- MOTOR TRAIL	----	MOTOR TRAIL	----
Notes:			A		C	D	E		MODI		MODI		MODI		MODI		MODI		MODI

* Actual Item Names in Data Base: 1 - POLY_NO; 2 - AREA_HA; 3 - AREA_ACRE; 4 - CLASS_ID; 5 - SOILUNIT; 6 - TOPO; 7 - GWZONE; 8 - SGEOL; 9 - SERVCAMP; 10 - SERVCAMP_M; 11 - SEPTIC; 12 - SEPTIC_M; 13 - FIELDS; 14 - FIELDS_M; 15 - GOLF; 16 - GOLF_M; 17 - NMTRAIL; 18 - NMTRAIL_M; 19 - MTRAIL; 20 - MTRAIL_M.

NOTES:

- A Descriptions for the interpretive model classes and modifiers are described in section 4.1.
- B This code represents the unique combination of all soils, topographic classes, groundwater zones and surficial geology conditions within the study area.
- C Topographic/slope classes are: 1: 0-0.5%; 2: 0.5-2%; 3: 2-5%; 4: 6-9%; 5: 10-15%; 6: 15-30%.
- D See Table 8 and section 2.3.3 for a description of groundwater zones.
- E See Table 7 and section 3.2.4 for description of surficial geology symbols.

Appendix 6. Unique Physical Land Units and 1st. set of associated interpretive model results including modifiers.

PHYSICAL LAND UNIT (UNIQUE) MAP UNIT FILE WITH MODEL INTERPRETATIONS ^a DINOSAUR CORRIDOR																
*1 UNIQUE PHYSICAL LAND UNIT CLASS	2 SOIL UNIT	3 SOIL CODE 1	4 SOIL CODE 2	5 TOPOG- RAPHY	6 GROUND WATER ZONE	7 SURFICIAL GEOLOGY	8 AGRI. CAP.	9 ----- ----- ----- MODI	10 PERM. BLDG. WITH BSMT.	11 ----- ----- ----- MODI	12 PERM. BLDG. W/OUT BSMT.	13 ----- ----- ----- MODI	14 PIC- ----- ----- MODI	15 ----- ----- ----- MODI	16 PRIM. CAMP.	17 ----- ----- ----- MODI
Notes:	b			c	d	e										
1	BKAV1	BKF	ZAV	0	2	F2	5	ND/5I	M	PFA	M	PFA	N		N	
2	BKF1	BKF		3	2	F3	5	ND	M	PFA	M	PFA	N		N	
3	BKF1	BKF		4	2	F3	5	ND	M	PFA	M	PFA	N		N	
4	BKRB1	BKF	RB	0	1	BD	5	ND/7RT	S	S	S	S	S	S	S	S
5	BKRB1	BKF	RB	0	1	FTE	5	ND/7RT	S	S	S	S	S	S	S	S
6	BKRB1	BKF	RB	0	1	NA	5	ND/7RT	S	S	S	S	S	S	S	S
7	DMH1	DMH		3	1	NA	2	A	S	SSW	S	SSW	M	P, SST	M	P, SST
8	DMH1	DMH		4	1	NA	3	AT	S	SSW	S	SSW	M	P, SST	M	P, SST
9	DMH1	DMH		5	1	NA	4	TA	S	SSW	S	SSW	M	P, SST, S	M	P, SST
10	DMH2	DMH	ZG	4	1	NA	2	AT/4WI	S	SSW	S	SSW	M	P, SST	M	P, SST
11	HND1	HND		3	1	NA	2	A	N		N		N		N	
12	HND1	HND		4	1	NA	3	AT	N		N		N		N	
13	HND1	HND		5	1	NA	4	TA	M	S	M	S	M	S	N	
14	HND2	HND	ZG	6	1	NA	5	TA/5W	S	S	S	S	S	S	M	S
15	HND7	HND	HKR	3	1	NA	3	A	N		N		N		N	
16	HND7	HND	HKR	4	1	NA	3	AT	N		N		N		N	
17	LET1	LET		3	1	NA	2	A	S	PFA	S	PFA	M	SST	M	SST
18	LET1	LET		4	1	NA	3	AT	S	PFA	S	PFA	M	SST	M	SST

*1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
UNIQUE	SOIL	SOIL	SOIL	TOPOG-	GROUND	SURFICIAL	AGRI.	----	PERM.	----	PERM.	----	PIC-	----	PRIM.	----
PHYSICAL	UNIT	CODE	CODE	RAPHY	WATER	GEOLOGY	CAP.	----	BLDG.	----	BLDG.	----	NIC	----	CAMP.	----
LAND		1	2		ZONE			----	WITH	----	W/OUT	----		----		----
UNIT CLASS								MODI	BSMT.	MODI	BSMT.	MODI		MODI		MODI
Notes:	B			C	D	E										
19	LET1	LET		5	1	MT	4	TA	S	PFA,SL	S	PFA,SL	M	SST,S	M	SST
20	LET1	LET		5	1	NA	4	TA	S	PFA	S	PFA	M	SST,S	M	SST
21	LET6	LET	SCD	3	1	NA	2	A	S	PFA	S	PFA	M	SST	M	SST
22	MET1	MET		3	1	NA	4	M	N		N		N		N	
23	MET1	MET		4	1	FG	4	MT	N		N		N		N	
24	MET1	MET		4	1	NA	4	MT	N		N		N		N	
25	RB1	RB		0	1	NA	6	T	S	S	S	S	S	S	S	S
26	RB2	RB		0	1	NA	7	RT	S	S	S	S	S	S	S	S
27	RB5	RB		0	1	CS	6	T	S	S,SL	S	S,SL	S	S	S	S
28	RBAV1	RB	ZAV	0	1	NA	6	T/6I	S	S	S	S	S	S	S	S
29	ZAV1	ZAV		0	2	F	5	I	S	W	M	PFA,W	N		N	
30	ZG	ZG		0	2	NA	5	W	S	W	S	W	S	W	S	W
31	ZZZ			0			0									

* Actual Item Names in Data Base: 1 - CLASS; 2 - SOILUNIT; 3 - SOIL_CODE1; 4 - SOIL_CODE2; 5 - TOPO; 6 - GWZONE; 7 - SGEOL; 8 - AGRCAP; 9 - AGRCAP_M; 10 - BLDWBAS; 11 -BLDWBAS_M; 12 - BLDWOBAS; 13 - BLDWOBAS_M; 14 - PICNIC; 15 - PICNIC_M; 16 - PRIMCAMP; 17 - PRIMCAMP_M.

^A Descriptions for the interpretive model classes and modifiers are described in section 4.1.

^B This code represents the unique combination of all soils, topographic classes, groundwater zones and surficial geology conditions within the study area.

^C Topographic/slope classes are: 1: 0-0.5%; 2: 0.5-2%; 3: 2-5%; 4: 6-9%; 5: 10-15%; 6: 15-30%.

^D See Table 8 and section 2.3.3 for a description of groundwater zones.

^E See Table 7 and section 3.2.4 for a description of surfical geology symbols.

Appendix 7. Unique Physical Land Units and 2nd. set of associated interpretive model results including modifiers.

PHYSICAL LAND UNIT
(UNIQUE)
MAP UNIT FILE WITH MODEL INTERPRETATIONS^a

DINOSAUR CORRIDOR

*1	2	5	6	7	18	19	20	21	22	23	24	25	26	27	28	29
UNIQUE	SOIL	TOPOG-	GROUND	SURFICIAL	SERV.	----	SEPTIC	----	PLAY-	----	GOLF	----	NON-	----	MOTOR	----
PHYSICAL	UNIT	RAPHY	WATER	GEOLOGY	CAMP.	----	TANK	----	ING	----		----	MOTOR	----	TRAIL	----
LAND			ZONE			----		----	FIELD	----		----	TRAIL	----		----
UNIT CLASS						MODI		MODI		MODI		MODI		MODI		MODI
1	BKAV1	0	2	F2	N	S	WS	M	S, SST	N		N			N	
2	BKF1	3	2	F3	N	S	WS	M	S	N		N			N	
3	BKF1	4	2	F3	N	S	WS	S	S	N		N			N	
4	BKRB1	0	1	BD	S	S, WS	S	S	S	S	S, WS	N	5		N	5
5	BKRB1	0	1	FTE	S	S, WS	S	S	S	S	S, WS	N	5		N	5
6	BKRB1	0	1	NA	S	S, WS	S	S	S	S	S, WS	N	5		N	5
7	DMH1	3	1	NA	S	WS, 1	S	P	M	S, P, SST	S	WS	M	W, SST	M	W, SST
8	DMH1	4	1	NA	S	WS, 1	S	P	S	S	WS	M	W, SST	M	W, SST	
9	DMH1	5	1	NA	S	WS, 1	S	P	S	S	WS	M	W, SST, S	M	W, SST	
10	DMH2	4	1	NA	S	WS, 1	S	P	S	S	WS	M	W, SST, S	M	W, SST	
11	HND1	3	1	NA	S	WS, 2	M	P	M	S	WS	N			N	
12	HND1	4	1	NA	S	WS, 2	M	P	S	S	WS	N			N	
13	HND1	5	1	NA	S	WS, 2	M	P, S	S	S	WS	M	S		N	
14	HND2	6	1	NA	S	S	S	S	S	S	WS	S	S		M	S
15	HND7	3	1	NA	S	WS, 2	M	P	M	S	WS	N			N	
16	HND7	4	1	NA	S	WS, 2	M	P	S	S, SST	S	WS	N		N	
17	LET1	3	1	NA	S	WS, 3	N		M	S	WS	M	SST	M	SST	
18	LET1	4	1	NA	S	WS, 3	N		S	S	WS	M	SST	M	SST	
19	LET1	5	1	MT	S	WS, 3	M	S	S	S	WS	M	SST, S	M	SST	

*1	2	5	6	7	18	19	20	21	22	23	24	25	26	27	28	29
UNIQUE	SOIL	TOPOG-	GROUND	SURFICIAL	SERV.	----	SEPTIC	----	PLAY-	----	GOLF	----	NON-	----	MOTOR	----
PHYSICAL	UNIT	RAPHY	WATER	GEOLOGY	CAMP.	----	TANK	----	ING	----		----	MOTOR	----	TRAIL	----
LAND			ZONE			----		----	FIELD	----		----	TRAIL	----		----
UNIT CLASS						MODI		MODI		MODI		MODI		MODI		MODI
Notes:	b	c	d	e												
20	LET1	5	1	NA	S	WS,3	M	S	S	S,SST	S	WS	M	SST,S	M	SST
21	LET6	3	1	NA	S	WS,3	N	4	M	S	S	WS	M	S	M	S
22	MET1	3	1	NA	S	WS,2	M	PERC	M	S	S	WS	N		N	
23	MET1	4	1	FG	S	WS,2	M	PERC	S	S	S	WS	N		N	
24	MET1	4	1	NA	S	WS,2	M	PERC	S	S	S	WS	N		N	
25	RB1	0	1	NA	S	S,WS	S	S	S	S	S	S,WS	S	S	S	S
26	RB2	0	1	NA	S	S,WS	S	S	S	S	S	S,WS	S	S	S	S
27	RB5	0	1	CS	S	S,WS	S	S	S	S	S	S,WS	S	S	S	S
28	RBAV1	0	1	NA	S	S,WS	S	S	S	SST	S	S,WS	S	S	S	S
29	ZAV1	0	2	F	N		S	WS	M	W	N		N		N	
30	ZG	0	2	NA	S	W	S	W	S	W	S	W	S	W	S	W
31	ZZZ	0														

* Actual Item Names in Data Base: 1 - CLASS; 2 - SOILUNIT; 5 - TOPO; 6 - GWZONE; 7 - SGEOL; 18 - SERVCAMP; 19 - SERVCAMP_M; 20 - SEPTIC; 21 - SEPTIC_M; 22 - FIELDS; 23 - FIELDS_M; 24 - GOLF; 25 - GOLF_M; 26 - NMTRAIL; 27 - NMTRAIL_M; 28 - MTRAIL; 29 - MTRAIL_M.

- A Descriptions for the interpretive model classes and modifiers are described in section 4.1.
- B This code represents the unique combination of all soils, topographic classes, groundwater zones and surficial geology conditions within the study area.
- C Topographic/slope classes are: 1: 0-0.5%; 2: 0.5-2%; 3: 2-5%; 4: 6-9%; 5: 10-15%; 6: 15-30%.
- D See Table 8 and section 2.3.3 for a description of groundwater zones.
- E See Table 7 and section 3.2.4 for a description of surficial geology symbols.

Appendix 8. Soil Names - list and description of data base.

SOIL NAMES FILE
DATA BASE

DINOSAUR CORRIDOR

*1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
SOIL CODE	SOIL NAME (SOIL SERIES)	SUB GROUP	GREAT GROUP	ORDER	DRAIN- AGE	SURFACE TEXTURE	SUBSURFACE TEXTURE	STONI -NESS	CALCAR- ROUSNESS	SALIN- ITY	PARTICLE SIZE	PARENT MATERIAL	DEPTH TO BEDROCK CLASS	POTENTIAL SULPHATE ATTACK
BKF	BIGKNIFE	O	R	RG	W	SL-SIL	VARIABLE	P1	WC	MS	FNC	COL	1	1
DMH	DRUMHELLER	O	DB	CH	MW	SICL	C	P0	WC	NS	C	GLLC	2	2
HKR	HALKIRK	DB	SS	SZ	MW	L	CL	P1	MC	MS	FNL	TL	2	1
HND	HUGHENDEN	O	DB	CH	MW	L	CL	P1	MC	NS	FNL	TL	2	2
LET	LETHBRIDGE	O	DB	CH	W	SIL	SICL	P0	MC	NS	FNL	FLLC	2	2
MET	METISKO	O	DB	CH	W	SL	SL	P1	WC	NS	COL	FG	2	2
RB	ROUGH BROKEN	U	U	U	V	VARIABLE	VARIABLE	V	U	U	V	V	1	1
SCD	SCOLLARD	O	DB	CH	MW	GL	GCL	P3	MC	NS	LSK	FG	2	2
ZAV	ALLUVIUM	U	U	U	V	VARIABLE	VARIABLE	V	U	U	U	FL	2	2
ZG	UNDIFF. GLEYSOL	U	U	GL	P	VARIABLE	VARIABLE	P0	U	U	U	U	2	2

* Actual Item Names in data base: 1 - SOIL_CODE; 2 - SOILNAME; 3 - S_GROUP; 4 - G_GROUP; 5 - ORDER; 6 - DRAINAGE; 7 - TEXT_SURF; 8 - TEXT_SUB; 9 - STONINESS; 10 - CACL; 11 - SACL; 12 - PSD1; 13 - PMT1; 14 - DEPTH_BR; 15 - SULPH_POT.

Notes: 1 - Soil Code: 2 or 3 letter Canadian Soil Information System (CanSIS) code.
3 - Subgroup: DB - dark brown; O - orthic; SZ - Solonetzic.
4 - Great Group: DB - Dark Brown; SO - Solod; SS - solodized solonetz; R - regosol.
5 - Order: CH - chenzemic; GL - gleysol; RG - regosol; SZ - solonetz; U - undefined.
6 - Drainage: W - well; MW - moderately well; P - poorly; V - variable.
7 & 8 - Surface & Subsurface Texture: C - clay; CL - clay loam; GCL - gravelly clay loam; GL - gravelly loam; L - loam; SICL - silty clay loam; SIL - silt loam; SL - sandy loam; SL-SIL - sandy loam to silt loam;
9 - Stoniness: P0 - no stones; P1 - slightly stony; P2 - moderately stony; P3 - very stony; V - variable

Notes: 10 - Calcareousness: MC - moderately calcareous; U - undefined; WC - weakly calcareous.
11 - Salinity: MS - moderately saline; NS - non-saline; U - undefined.
12 - Particle Size: C - clayey; COL - coarse loamy; FNL - fine loamy; LSK - loamy skeletal; U - undefined; V - variable.
13 - Parent Material: COL - colluvium; FG - glaciofluvial ; FL - fluvial; FLLC - fluviolacustrine ; GLLC - glaciolacustrine; TL - till; U - undefined; V - variable.
14 - Depth to Bedrock: 1 - less than 100 cm; 2 - greater than 100 cm.
15 - Potential Sulphate Attack: 1 - present; 2 - absent.

Appendix 9. Surficial geology data base and map unit descriptions.

**SURFICIAL GEOLOGY
DATA BASE**

DINOSAUR CORRIDOR

*1 MAP SYMBOL	2 MODE OF DEPOSITION^A	3 MODIFIER^A
CS	COLLUVIUM	SLUMPED DEPOSITS
F	FLUVIAL	UNDIVIDED
F	FLUVIAL	UNDIVIDED & FANS
F	FLUVIAL	
FG	GLACIOFLUVIAL	UNDIVIDED
F	FLUVIAL	EROSIONAL TERRACE
M	MORaine	THRUST
B	BEDROCK	DISSECTED
N	NOT APPLICABLE	

Actual Item Names in Data Base: 1- SGEOL; 2 - MODE_DEP; 3 - MODIFIER

^A See section 3.2.4 for a complete description of symbols.

Description of Map Units

The following information provides further background on the nature of the material found within the study area, based solely on air photo interpretation and the experience of the project geologist.

CS - Slump deposits: these units consist of colluvium deposited by slumping, usually by rotational faulting or spalling from the cliff face of vertical sheets 1- 10 m thick, in which slump scars are still visible. Failure may be confined to the upper half of the slope or the entire slope. Debris is generally concentrated on the lower 2/3 or the middle 1/3 of the slope. The unit is poorly suited for construction because the sediment may still be undergoing movement and will have a high potential for failure. Where the slump was too small to be separated at this map scale it was left within the RB unit.

F - Fluvial sediment undivided: this unit includes material deposited by modern rivers and streams: sand, silt and small amounts of gravel and organic matter. The sediment is commonly moderately well to well sorted with well-developed to obscure stratification.

Ft fluvial terrace: any one particular unit may include two or more terraces.

Fte erosional terrace

Ftd dissected terrace: terrain dissected by many closely spaced valleys. Eroded and uneroded parts of the landscape cannot be separated at the map scale. Terraces have been mapped along both sides of the Red Deer River valley.

F2: undivided fluvial and fan sediment: Unit is recognized in the tributary valley to the Red Deer River.

F3 unit: composed of the smooth, sloping surfaces present near the base of the valley but above the modern fluvial plain. Surface is likely formed by fan and discontinuous fluvial sediment. Unit is underlain by either (i) fluvial sediment or (ii) bedrock that has been eroded to a relatively low relief. If (i) then good potential for gravel and aquifer if (ii) poor potential for either. Further information required to decide on condition (i) or (ii), particularly since this has rather important ramifications for land use.

FG - Glaciofluvial deposits, undivided: this unit consists of fluvial sediment deposited by glacial meltwater. The material is predominantly sand and gravelly sand with a small proportion of gravel and silt. Visible structure ranges from unstratified (especially in the units composed only of sand) to stratified and the sediment is moderately well to well sorted. This major portion of this unit is a terrace just above the west bank of the Red Deer River in the northern portion of the area. Glaciofluvial sediment can provide a good source of high quality aggregate if the deposit is large and clean.

MT - Thrust moraine: this unit consists of masses of originally subglacial sediment incorporated, transported, and deposited by a glacier more or less intact. The moraine is composed of two or more of: till, preexisting unconsolidated sediment, and bedrock. Sediment can be highly variable and will have a higher failure potential than other forms of moraine.

Bd: Dissected bedrock: terrain dissected by many closely spaced valleys. Eroded and uneroded parts of the landscape cannot be separated at the map scale. Unit is confined to the valley of the Red Deer River.

M - Moraine: terrain consisting of the sediment deposited by a glacier. The sediment is mainly till (a heterogeneous mixture of sand, silt, clay and a small amount of pebbles, cobbles and boulders). In places however, this unit either includes discontinuous layers of stratified sediment, generally sand, or is composed predominantly of one or more of mudstone, siltstone, and sandstone or preexisting till or stratified drift. The morphology ranges from hummocky to rolling, and the relief from high to flat.

Appendix 10. Groundwater hydrology data base.

GROUNDWATER HYDROLOGY
DATA BASE

DINOSAUR CORRIDOR

*1	2	3	4	5	6	7	8	9	10
GROUND	LOWER	UPPER	LOWER	UPPER	CHEMICAL	CHEMICAL	LOWER TOTAL	UPPER TOTAL	POTABILITY
WATER	YIELD	YIELD	YIELD	YIELD	COMPOSITION	TYPE	DISSOLVED	DISSOLVED	
ZONE	1/sec	1/sec	gal/min	gal/min	1	1	SOLIDS	SOLIDS	1
							1	1	
1	0.08	0.80	1	10	Na+/HCO3-	SODIUM BICARBONATE	800	1000	EXCELLENT
2	4.00	8.00	50	100	Ca2+&Mg2+/HCO3-	CALCIUM & MAGN. BICARB.	300	500	EXCELLENT (FE,

*1	11	12	13	14	15
GROUND	CHEMICAL	CHEMICAL	LOWER TOTAL	UPPER TOTAL	POTABILITY
WATER	COMPOSITION	TYPE	DISSOLVED	DISSOLVED	
ZONE	2	2	SOLIDS	SOLIDS	2
			2	2	
1	Na+/HCO3-&SO42-	SODIUM BICARBONATE SULPH.	1000	2000	MARGINAL @ TDS > 1500
2					

*1 GROUND WATER ZONE	16 CHEMICAL COMPOSITION 3	17 CHEMICAL TYPE 3	18 LOWER TOTAL DISSOLVED SOLIDS 3	19 UPPER TOTAL DISSOLVED SOLIDS 3	20 POTABILITY 3
1 2	Na+/HCO3- & Cl-	SODIUM BICARBONATE CHLOR.	1200	3000	MARGINAL @ TDS > 1500

Actual Item Names in Data Base:

1 - GWZONE; 2 - YIELDMET_L; 3 - YIELDMET_U; 4 - YIELDENG_L; 5 - YIELDENG_U; 6 - CHEMCOMP1;
 7 - CHEMTYPE1; 8 - CHEMTDS1_L; 9 - CHEMTDS1_U; 10 - CHEMPOTAB1; 11 - CHEMCOMP2; 12 -
 CHEMTYPE2; 13 - CHEMTDS2_L; 14 - CHEMTDS2_U; 15 - CHEMPOTAB2; 16 - CHEMCOMP3; 17 -
 CHEMTYPE3; 18 - CHEMTDS3_L; 19 - CHEMTDS3_U; 20 - CHEMPOTAB3.

Appendix 11. Archeological sites listing of point labels and associated Borden numbers.

SITE ID #	BORDEN #	Township/Section/Range		
MAPSHEET 82P/07NE "Drumheller"				
170	EiPe005	29	20	11
171	EiPe006	29	20	11
169	EiPe004	29	20	9
167	EiPe002	29	20	1
168	EiPe003	28	20	35
166	EiPd005	28	19	34
165	EiPd004	28	19	16
163	EiPd002	28	19	14
164	EiPd003	28	19	14
MAPSHEET 82P/07NW "Tyrell"				
174	EiPf006	29	21	23
175	EiPf007	29	21	23
172	EiPf001	28	22	13
MAPSHEET 82P/07SW "Rosebud"				
118	EhPf004	27	21	27
117	EhPf003	27	21	22
116	EhPf002	27	21	18
MAPSHEET 82P/07SE "Dalum"				
162	EiPd001	28	18	7
114	EhPe004	26	20	35
113	EhPe003	26	20	35

SITE ID #	BORDEN #	Township/Section/Range		
112	EhPe001	26	20	36
111	EhPd006	26	19	31
115	EhPe006	26	20	25

**MAPSHEET 82P/08NW
"Willow Creek"**

151	EiPb024	29	17	11
158	EiPc007	28	18	21
157	EiPc006	28	18	22
156	EiPc005	28	18	16
155	EiPc004	28	18	9
154	EiPc003	28	18	9
153	EiPc002	28	18	9

**MAPSHEET 82P/08SW
"East Coulee"**

23	EhPc003	27	18	28
88	EhPc098	27	18	14
89	EhPc099	27	18	11
22	EhPc002	27	17	7
101	EhPc111	27	18	11
71	EhPc079	27	17	7
25	EhPc008	27	18	9
70	EhPc078	27	17	6
102	EhPc112	27	18	2
21	EhPc001	27	18	4
44	EhPc041	27	18	4
26	EhPc009	27	18	5
27	EhPc010	27	18	5
28	EhPc011	27	18	5
43	EhPc040	27	18	4

SITE		BORDEN	Township/Section/Range	
ID #		#		
49	EhPc051	27	17	5
30	EhPc013	27	18	2
80	EhPc090	27	17	5
109	EhPc128	27	17	5
17	EhPb002	27	17	4
16	EhPb001	27	17	4
108	EhPc127	26	17	31
50	EhPc052	26	17	31
29	EhPc012	26	18	33
51	EhPc053	26	17	31
34	EhPc017	26	18	33
35	EhPc018	26	18	33
74	EhPc082	26	18	34
20	EhPb011	26	17	33
100	EhPc110	26	18	34
31	EhPc014	26	18	34
65	EhPc073	26	17	32
84	EhPc094	26	17	32
67	EhPc075	26	17	32
55	EhPc063	26	17	31
54	EhPc062	26	17	31
96	EhPc106	26	17	31
95	EhPc106	26	17	31
68	EhPc076	26	17	32
82	EhPc092	26	17	32
19	EhPb007	26	17	33
53	EhPc061	26	17	31
40	EhPc023	26	17	31
69	EhPc077	26	17	32
42	EhPc026	26	17	29
75	EhPc083	26	17	29
85	EhPc095	26	17	29
41	EhPc024	26	17	30
86	EhPc096	26	17	29
18	EhPb006	26	17	28
46	EhPc048	26	17	29

Appendix 12. Individual polygon listing for Canada Land Capability for Recreation.

Polygon Number	CLI CLASS	Sub-classes	Polygon Number	CLI CLASS	Sub-classes
1	6	PQV	41	5	EOQ
2	4	LRV	42	6	OPQ
3	5	LOQ	43	5	LOQ
4	5	LOQ	44	5	LRV
5	6	PQV	45	5	CEO
6	4	CKV	46	5	CKO
7	3	LRV	47	4	LRV
8	6	OPW	48	5	LOQ
9	5	LOQ	49	5	LOQ
10	5	LOQ	50	5	LOQ
11	4	LRV	51	6	OPW
12	4	CKO	52	5	KLQ
13	5	CKO	53	6	OPW
14	4	CKO	54	3	LQR
15	5	LOQ	55	4	CKO
16	6	OPW	56	5	LRV
17	5	LOQ	58	6	OPQ
18	5	OQV	59	4	KLO
19	5	LRV	60	4	LMQ
20	4	LRV	61	5	LOQ
21	5	CKO	62	6	OPQ
22	5	LOQ	63	5	LOQ
23	4	CKO	64	6	OPQ
24	3	LRV	65	5	LOQ
25	5	LOQ	66	6	OPQ
26	5	LRV	67	5	LOQ
27	5	LOQ	68	6	OPQ
28	4	LQR	69	5	LOQ
29	5	LRV	70	5	LOQ
30	5	LOQ	71	6	OPQ
31	6	PQV	72	5	LOQ
32	4	LRV	74	5	LOQ
33	5	LOQ	75	0	
34	5	CKO	76	4	LRV
35	4	CKQ	77	5	LOQ
36	5	CKO	78	6	OPW
37	5	CKV	79	6	PQW
38	3	LRV	80	6	OPQ
39	5	LRV	81	6	PQW
40	5	COV	82	4	OV

Polygon Number	CLI CLASS	Sub- classes	Polygon Number	CLI CLASS	Sub- classes
83	4	LRV	124	5	OPQ
84	4	LRV	125	5	LOQ
85	6	OPQ	126	5	KLQ
86	5	LOQ	127	5	OPQ
87	5	LOQ	128	5	LOQ
88	5	CKV	129	5	OPQ
89	4	LRV	130	5	OPQ
90	4	LVZ	131	5	LOQ
91	5	CKO	132	5	PQW
92	4	CKV	133	4	LRV
93	4	CKO	134	5	PQW
94	5	LRV	135	5	PQW
95	4	LRV	136	5	LOQ
96	5	LOQ	137	4	KLQ
97	5	KLQ	138	5	PQW
98	5	OPQ	139	5	LOQ
99	5	LOQ	140	5	LOQ
100	5	LOQ	141	5	LOQ
101	5	OPQ	142	5	LOQ
102	5	LQR	143	5	LOQ
103	4	KLR	144	6	OPQ
104	5	OPQ	145	4	PQW
105	5	OPQ	146	5	LPQ
106	4	LRV	147	6	OPQ
107	2	LRV	148	4	KLM
108	6	OPW	149	5	OPQ
109	5	LPQ	150	5	LOQ
110	3	LRV	151	5	OPQ
111	4	CEK	152	5	LOQ
112	4	LRV	153	5	LOQ
113	5	CKO	154	6	OPQ
114	5	LRV	155	6	OPQ
115	4	LRV	156	5	LOQ
116	4	LRV	157	5	LOQ
117	5	OPQ	158	5	PQW
118	5	LRV	159	5	LOQ
119	4	LRV	160	6	OPW
120	5	LRV	161	5	LOQ
121	3	VZ			
122	3	LRV			
123	5	PQW			

Provided below are the class and subclass definitions from the descriptive legend associated with standard CLI Land Capability for Recreation maps. Only classes and subclasses present in the study area are listed:

CLASSES

- CLASS 2** Lands in this class have a **high** capability for outdoor recreation. They have a natural capability to engender and sustain high total annual use based on one or more recreational activities of an intensive nature.
- CLASS 3** Lands in this class have a **moderately high** capability for outdoor recreation. They have a natural capability to engender and sustain moderately high total annual use based usually on intensive or moderately intensive activities.
- CLASS 4** Lands in this class have a **moderate** capability for outdoor recreation. They have a natural capability to engender and sustain moderate total annual use based usually on dispersed activities.
- CLASS 5** Lands in this class have a **moderately low** capability for outdoor recreation. They have a natural capability to engender and sustain moderately low total annual use based on dispersed activities.
- CLASS 6** Lands in this class have a **low** capability for outdoor recreation. They lack the natural quality and significant features to rate higher but have the natural capability to engender and sustain low total annual use based on dispersed activities.

SUBCLASSES

- C** Land fronting on and providing direct access to waterways with significant capability for canoe tripping.
- E** Land with vegetation possessing recreational value.
- K** Shoreland or upland suited to organized camping, usually associated with other features.
- L** Interesting landform features other than rock formations.

- M** Frequent small water bodies or continuous streams occurring in upland areas.
- O** Land affording opportunity for viewing upland wildlife.
- P** Areas exhibiting cultural landscape patterns of agricultural, industrial or social interest.
- Q** Areas exhibiting variety in topography or land and water relationships, which enhances opportunities for general outdoor recreation such as hiking and nature study or for aesthetic appreciation of the area.
- R** Interesting rock formations.
- V** A vantage point or area which offers a superior view relative to the class of the unit(s) which contain it, or a corridor or other area which provides frequent viewing opportunities.
- W** Lands affording opportunity for viewing of wetland wildlife.
- Z** Areas exhibiting major, permanent, non-urban man-made structures of recreational interest.

Appendix 13: List of Energy Resources Conservation Board well sites by mapsheet.

MAP WELL NO.	ERCB I.D. NO.	WELL NAME
MAPSHEET 82P/7NE "Drumheller"		
551	0284180706000	UTEXCAN DRUMHELLER 6-7-28-18
552	0284180707000	MAYNARD VERDANT 7-7-28-18
563	0284181711000	KR ET AL LEHIGH 11-17-28-18
564	0284181811000	MAYNARD BAYSEL DRUM 11-18-28-18
580	0284190910000	MERRILL-SOCONY-WAYNE NO 10-9
581	0284191310000	PEX DRUM 10-13-28-19
582	0284191406000	SIGNALTA ET AL DRUMHELLER 6-14-28-19
583	0284191411000	UTEXCAN BRINE DRUMHELLER 11-14-28-19
584	0284191411002	UTEXCAN BRINE DRUMHELLER 11-14-28-19
585	0284191411020	224917 DRUMHELLER 11-14-28-19
586	0284192007000	HOL ACROLL PCP DRUM 7-20-28-19
587	0284192111000	TENN MANA A1 DRUMHELLER 11-21-28-19
588	0284192214000	RENAISSANCE ET AL DRUM 14-22-28-19
589	0284192308000	RENAISSANCE ET AL DRUM 8-23-28-19
590	0284192311000	K-S SINCLAIR AERIAL 11-23-28-19
591	0284192312000	RENAISSANCE ET AL DRUM 12-23-28-19
592	0284192410000	PCI PRC DRUMHELLER 10-24-28-19
594	0284192608000	PASSBURG ET AL DRUM 8-26-28-19
595	0284192709000	BLAKE CLPT ET AL DRUM 9-27-28-19
596	0284193210000	RENAISSANCE CLPT DRUM 10-32-28-19
597	0284193308000	SINCLAIR KR AERIAL 8-33-28-19
598	0284193308020	WESTGROWTH ET AL DRUM 8-33-28-19
599	0284193308022	WESTGROWTH ET AL DRUM 8-33-28-19
600	0284193311000	RENAISSANCE ET AL DRUM 11-33-28-19
601	0284193404000	SUNCOR DRUMHELLER 4-34-28-19
602	0284193404002	SUNCOR DRUMHELLER 4-34-28-19

MAP WELL NO.	ERCB I.D. NO.	WELL NAME
603	0284193410000	KERR-MCGEE AERIAL 10-34-28-19
604	0284193411000	FREEHOLD FOCUS ET AL DRUM 11-34-28-1
620	0284201310000	TENN CPOG WAYNE 10-13-28-20
635	0284203610000	MOBIL ET AL DRUMHELLER 10-36-28-20
782	0294190406000	ASHLAND DRUMHELLER 6-4-29-19
783	0294190406020	WESTGROWTH ET AL DRUM 6-4-29-19
784	0294190507000	BAYSEL DRUMHELLER 7-5-29-19
785	0294190507002	OMEGA DRUMHELLER 7-5-29-19
786	0294190507003	OMEGA DRUMHELLER 7-5-29-19
787	0294190507020	OMEGA DRUMHELLER 7-5BR-29-19
788	0294190702000	DORCHESTER ET AL DRUM 2-7-29-19
789	0294190706000	DORCHESTER ET AL DRUM 6-7-29-19
790	0294190710000	EMPIRE ST DRUM 10-7-29-19
791	0294190714000	DORCHESTER ET AL DRUM 14-7-29-19
792	0294190715000	DORCHESTER ET AL DRUM 15-7-29-19
793	0294190716000	DORCHESTER ET AL DRUM 16-7-29-19
810	0294191802000	SILVERTON ET AL DRUM 2-18-29-19
811	0294191802020	SILVERTON ATLANTIS DRUM 2-18-29-19
812	0294191804000	EMPIRE ST. DRUM 4-18-29-19
813	0294191805000	GARVEY CCOL DRUM 5-18-29-19
814	0294191806000	SILVERTON ATLANTIS DRUM 6-18-29-19
815	0294191808000	SILVERTON ATLANTIS DRUM 8-18-29-19
816	0294191810000	FINA ET AL DRUM 10-18-29-19
817	0294191812000	DOMEDRUMHELLER 12-18-29-19
818	0294191814000	DOMEDRUMHELLER 14-18-29-19
872	0294200116000	ATLANTIS ET AL DRUMHELLER 16-1-29-20
873	0294200306000	PANALTA EMPIRE ST WAYNE 6-3-29-20
880	0294201016000	WEXCO ET AL WAYNE 16-10-29-20
881	0294201114000	PASSBURG ET AL DRUM 14-11-29-20
882	0294201116000	PASSBURG ET AL WAYNE 16-11-29-20
883	0294201206000	ALPINE SAGEO DRUMHELLER 6-12-29-20
884	0294201208000	SUNCOR DRUMHELLER 8-12-29-20
885	0294201210000	WHITE ROSE CWNG DRUM 10-12-29-20
886	0294201213000	KILLUCAN ET AL DRUM 13-12-29-20
887	0294201214000	WEXCO CHEROKEE ETAL DRUM 14-12-29-20
888	0294201216000	SUNCOR ET AL DRUMHELLER 16-12-29-20
889	0294201306000	PANALTA EMPIRE ST DRUM 6-13MU-29-20
890	0294201306002	PANALTA EMPIRE ST DRUM 6-13MU-29-20
891	0294201308000	PANALTA EMPIRE ST DRUM 8-13-29-20

**MAP
WELL
NO.**

ERCB LD. NO.

WELL NAME

892	0294201310000	PANALTA EMPIRE ST DRUM 10-13-29-20
893	0294201312000	PANALTA EMPIRE ST.DRUM 12-13-29-20
894	0294201314000	PANALTA EMPIRE ST DRUM 14-13-29-20
895	0294201314020	DOME ET AL DRUMHELLER EX 14-13-29-20
896	0294201316000	MUSKETEER ET AL DRUM 16-13-29-20
897	0294201410000	PANALTA EMPIRE ST DRUM 10-14-29-20
898	0294201413000	EMPIRE ST ET AL WAYNE 13-14-29-20
899	0294201416000	PANALTA EMPIRE ST DRUM 16-14-29-20
900	0294201507000	PANALTA EMPIRE ST DRUM 7-15-29-20
901	0294201510000	PASSBURG ET AL WAYNE 10-15-29-20
902	0294201513000	PASSBURG ET AL DRUM 13-15-29-20
903	0294201515000	SAMEDAN CONN WAYNE 15-15-29-20
904	0294201516000	PASSBURG ET AL WAYNE 16-15-29-20
909	0294201616000	PASSBURG ET AL WAYNE 16-16-29-20
916	0294202201000	SAMEDAN CONN WAYNE 1-22-29-20
917	0294202205W00	PASSBURG ET AL WAYNE 5-22-29-20
918	0294202206000	MOBIL ET AL DRUM 6-22-29-20
919	0294202207000	SAMEDAN ET AL DRUM 7-22-29-20
920	0294202209000	MOBIL CWNG DRUM 9-22-29-20
921	0294202211000	SAMEDAN CONN WAYNE 11-22-29-20
922	0294202303000	SAMEDAN CONN WAYNE 3-23-29-20
923	0294202304000	SAMEDAN CWNG DRUM 4-23-29-20
924	0294202305000	SAMEDAN ET AL DRUM 5-23-29-20
925	0294202308000	MOBIL ET AL DRUMHELLER 8-23-29-20
926	0294202310000	MOBIL CWNG DRUM 10-23-29-20
927	0294202310020	MOBIL ET AL DRUM 10-23N-29-20
928	0294202311000	MOBIL ET AL DRUM 11-23-29-20
1,712	0284192608020	PASSBURG ET AL DRUM 8A-26-28-19
1,762	0294190706020	SAMEDAN ET AL DRUMHELLER A6-7-29-19
1,765	0294191816000	SUNCOR ET AL DRUMHELLER 16-18-29-19
1,770	0294202212000	INVERNESS ET AL DRUM 12-22-29-20
2,192	0294202312000	INVERNESS DRUMHELLER 12-23-29-20
2,251	0284191116000	SIGNALTA ET AL DRUM 16-11-28-19
2,252	0284191516000	SIGNALTA ET AL DRUM 16-15-28-19
2,268	0294191807000	INVERNESS ET AL DRUM 7-18-29-19
2,272	0294201208020	QUESADA ET AL DRUMHELLER 8-12-29-20
2,273	0294201314022	DOME ET AL DRUMHELLER EX 14-13-29-20
2,274	0294202210000	INVERNESS ET AL DRUM 10-22-29-20

MAP
WELL
NO.

ERCB LD. NO.

WELL NAME

MAPSHEET 82P/7NW
"Tyrrell"

874	0294200411000	CASCADE MOBIL WAYNE 11-4-29-20
875	0294200611000	SUN ET AL WAYNE 11-6-29-20
876	0294200611020	SUN ET AL WAYNE A11-6-29-20
877	0294200706000	SUN WAYNE ROSEDALE 6-7-29-20
878	0294200706002	SUN WAYNE ROSEDALE 6-7-29-20
879	0294200809000	PROVIDENT ET AL WAYNE 9-8-29-20
905	0294201606000	PASSBURG ET AL DRUM 6-16-29-20
906	0294201607000	PASSBURG ET AL DRUM 7-16-29-20
907	0294201610000	PANALTA EMPIRE ST WAYNE 10-16-29-20
908	0294201614000	PASSBURG ET AL DRUM 14-16-29-20
910	0294201706000	PROVIDENT ET AL WAYNE 6-17-29-20
911	0294201911000	PANALTA EMPIRE ST DRUMW 11-19-29-20
912	0294202006000	IMP DRUMHELLER EAST 6-20-29-20
913	0294202106000	PASSBURG ET AL WAYNE 6-21-29-20
914	0294202106020	PASSBURG ET AL WAYNE 6-21-29-20
915	0294202110000	SAMEDAN CONN WAYNE 10-21-29-20
986	0294210907000	TENN Q2 WAYNE 7-9-29-21
987	0294211008000	LADD WAYNE 8-10-29-21
988	0294211107000	HARGAL DRUM 7-11-29-21
989	0294211206000	SUN WAYNE 6-12-29-21
990	0294211310000	TEXACO KIRKPATRICK 10-13-29-21
991	0294211312000	SUNCOR WAYNE 12-13-29-21
992	0294211511000	TPPL ET AL GPINE 11-15-29-21
993	0294211606000	NORCEN GHOST PINE 6-16-29-21
994	0294211810000	B.A. CARBON 10-18-29-21
998	0294212412000	KERR-MCGEE DRUMW 12-24-29-21
1,057	0294220107000	CPOG ZAPATA CARBON 7-1-29-22
1,058	0294220107002	CPOG ZAPATA CARBON 7-1-29-22
1,059	0294221311000	TPPL ET AL CARBON 11-13-29-22
1,768	0294200514000	SUNCOR WAYNE 14-5-29-20
1,769	0294201901000	COREXCAL WEST DRUMHELLER 1-19-29-20
1,779	0294211114000	SIGNALTA ET AL WAYNE 14-11-29-21
2,193	0294211806000	ULTRAMAR WAYNE 6-18-29-21

**MAP
WELL
NO.**

ERCB I.D. NO.

WELL NAME

**MAPSHEET 82P/7SE
"Dalum"**

328	0274193106000	LALTA CPR WAYNE 6-31-27-19
329	0274193106020	LALTA CPOG WAYNE A6-31MU-27-19
330	0274193106022	LALTA CPOG WAYNE A6-31MU-27-19
415	0274203407000	TENN F1 WAYNE 7-34-27-20
416	0274203407002	TENN F1 WAYNE 7-34-27-20
417	0274203606000	PCP WAYNE 6-36-27-20
418	0274203610000	PCP WAYNE 10-36-27-20
419	0274203614000	PCP WAYNE 14-36-27-20
550	0284180511000	MAYNARD EASTCO 11-5-28-18
579	0284190107000	CDCOG ET AL WAYNE 7-1-28-19
608	0284200210000	MOBIL OIL C.P.R. ROSEDALE 2-10
609	0284200310000	TENN A1 WAYNE 10-3-28-20
610	0284200310002	TENN A1 WAYNE 10-3-28-20
1,701	0274203508000	CANTERRA ET AL WAYNE 8-35-27-20
2,185	0274183213000	TINTAGEL ET AL WAYNE 13-32-27-18

**MAPSHEET 82P/7SW
"Rosebud"**

389	0274201906000	ZAPATA CPOG R HUSSAR 6-19-27-20
410	0274202802000	PENZL CPOG WAYNE 2-28-27-20
411	0274202810000	PENZL ET AL WAYNE 10-28-27-20
412	0274203110000	PENZL CPOG HUSSAR 10-31-27-20
413	0274203210000	TENN HI WAYNE 10-32-27-20
414	0274203307000	TENN E1 WAYNE 7-33-27-20
439	0274211407000	ZAPATA CPOG R HUSSAR 7-14-27-21
440	0274211510000	PENZL CPOG HUSSAR 10-15-27-21
441	0274211707000	CDCOG ET AL HUSSAR 7-17-27-21
442	0274211807000	TENN PCP HUSSAR 7-18-27-21
443	0274212210000	CPOG ROSEBUD 10-22-27-21
444	0274212210002	CPOG ROSEBUD 10-22-27-21
445	0274212301000	PCP HUSSAR 1-23-27-21
446	0274212306000	SPRUCE ET AL HUSSAR 6-23-27-21
447	0274212307000	PENZL CPOG R HUSSAR 7-23-27-21
448	0274212402000	CPOG R HUSSAR 2-24-27-21

**MAP
WELL
NO.****ERCB I.D. NO.****WELL NAME**

449	0274212406000	CPOG R HUSSAR 6-24-27-21
450	0274212406002	CPOG R HUSSAR 6-24-27-21
451	0274212506000	CPOG R HUSSAR 6-25-27-21
452	0274212606000	CPOG R HUSSAR 6-26-27-21
453	0274212706000	PENZL CPOG HUSSAR 6-27-27-21
454	0274212706002	PENZL CPOG HUSSAR 6-27-27-21

**MAPSHEET 82P/8NW
"Willow Creek"**

553	0284180807000	HB DRUMHELLER 7-8-28-18
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**MAPSHEET 82P/8SW
"East Coulee"**

279	0274182010000	CDCOG ET AL WAYNE 10-20-27-18
280	0274182107000	CDCOG ET AL WAYNE 7-21-27-18
281	0274182116000	CANTERRA ET AL WAYNE 16-21-27-18
282	0274182206000	UNEX ET AL WAYNE 6-22-27-18
283	0274182208000	UNEX ET AL WAYNE 8-22-27-18
284	0274182208002	UNEX ET AL WAYNE 8-22-27-18
285	0274182214000	UNEX ET AL WAYNE 14-22-27-18
286	0274182214002	UNEX ET AL WAYNE 14-22-27-18
287	0274182216000	UNEX ET AL WAYNE 16-22-27-18
288	0274182216002	UNEX ET AL WAYNE 16-22-27-18
298	0274182706000	MAYNARD BAYSEL WAYNE 6-27-27-18
299	0274182710000	SYRACUSE IOE EASTCO 10-27-27-18
300	0274182710020	MAYNARD WAYNE 10-27-27-18
301	0274182810000	MAYNARD BAYSEL WAYNE 10-28-27-18
302	0274182810002	MAYNARD BAYSEL WAYNE 10-28-27-18
304	0274183210000	MAYNARD EASTCO 10-32-27-18
305	0274183307000	MAYNARD BAYSEL WAYNE 7-33-27-18
549	0284180510000	MAYNARD BAYSEL DRUM 10-5-28-18
2,184	0274182808000	TINTAGEL ET AL WAYNE 8-28-27-18
2,240	0274182205000	UNEX ET AL WAYNE 5-22-27-18

**MAP
WELL
NO.**

ERCB I.D. NO.

WELL NAME

**MAPSHEET 82P/10NW
"Morrin Crossing"**

1,524	0314210207000	PAN AM A-1 GHOST PINE 7-2-31-21
1,525	0314210407000	PAN AM A-2 GHOST PINE 7-4-31-21
1,526	0314210407020	GULF UNIT GHOST PINE 7-4-31-21
1,529	0314210907000	MURPHY ASHLAND GPINE 7-9-31-21
1,533	0314211510000	GULF UNIT GPINE 10-15-31-21
1,535	0314212006000	B.A. GHOST PINE 6-20-31-21
1,536	0314212006002	B.A. GHOST PINE 6-20-31-21
1,537	0314212106000	GULF UNIT GHOST PINE 6-21-31-21
1,538	0314212210000	MURPHY ET AL ROWLEY 10-22-31-21
2,077	0314210214000	GULF 658 ELLIS TH 14-2-31-21
2,078	0314210313W00	GULF 604 ELLIS TH 13-3-31-21
2,086	0314210904W00	GULF 522 WILDCAT TH 4-9-31-21
2,087	0314210914000	GULF 589 ELLIS TH 14-9-31-21
2,088	0314211013000	SHELL 10 DRUMHELLER TH 13-10-31-21
2,092	0314211501S00	GULF 553 WILDCAT TH 1-15-31-21
2,093	0314211604W00	GULF 523 ELLIS TH 4-16-31-21
2,096	0314212004W00	GULF 560 ELLIS TH 4-20-31-21
2,097	0314212006003	B.A. GHOST PINE 6-20-31-21
2,098	0314212013W00	GULF 528 ELLIS TH 13-20-31-21
2,099	0314212113W00	GULF 529 WILDCAT TH 13-21-31-21
2,102	0314212703S00	GULF 563 WILDCAT TH 3-27-31-21
2,368	0314210914020	SHELL 14 DRUMHELLER TH 14-9-31-21

**MAPSHEET 82P/10SE
"Munson"**

929	0294202314000	MOBIL DRUM 14-23-29-20
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**MAPSHEET 82P/10SW
"Bleriot Ferry"**

997	0294212315000	COREXCAL DRUMW 15-23-29-21
999	0294212513000	SUPERIOR ET AL DRUMHELLER NO. 13-25
1,000	0294212514000	CIGOL DRUMW 14-25-29-21

MAP WELL NO.	ERCB I.D. NO.	WELL NAME
1,001	0294212514002	CIGOL DRUMW 14-25-29-21
1,002	0294212515000	CIGOL DRUM IN 15-25-29-21
1,003	0294212516000	COREXCAL WEST DRUMHELLER 16-25-29-21
1,004	0294212614000	HB WDRUM 14-26-29-21
1,005	0294212615000	WESTHILL WEST DRUMHELLER 15-26-29-21
1,006	0294212716000	CNW ET AL DRUMW 16-27-29-21
1,007	0294212804000	OHIO KIRKPATRICK 4-28-29-21
1,011	0294213308000	WESTDRUM DRUMW 8-33-29-21
1,012	0294213310000	QUASAR DRUM W 10-33-29-21
1,013	0294213310002	QUAZAR DRUM W 10-33-29-21
1,014	0294213316000	WESTDRUM DRUMW 16-33-29-21
1,015	0294213401000	BLAKE ET AL DRUMW 1-34-29-21
1,016	0294213406000	WSPC ET AL DRUMW 6-34-29-21
1,017	0294213408000	BLAKE ET AL DRUMW 8-34-29-21
1,018	0294213409000	HB WDRUM 9-34-29-21
1,019	0294213414000	HB WEST DRUMHELLER 14-34-29-21
1,020	0294213416000	HB WDRUM 16-34-29-21
1,021	0294213501000	CIGOL DRUMW 1-35-29-21
1,022	0294213502000	CIGOL DRUMW 2-35-29-21
1,023	0294213503000	HUDSON'S BAY WEST DRUMHELLER 35-3
1,024	0294213504000	HB WDRUM 4-35-29-21
1,025	0294213505000	HUDSON'S BAY WEST DRUMHELLER 35-5
1,026	0294213506000	HB WDRUM 6-35-29-21
1,027	0294213507000	MAZOL DRUMHELLER NO.2
1,028	0294213508000	CIGOL DRUMW 8-35-29-21
1,029	0294213509000	CARLETON MAZEL DRUMHELLER NO. 9-35
1,030	0294213510000	CARLETON MAZEL DRUMHELLER NO. 10-35
1,031	0294213511000	HB WDRUM 11-35-29-21
1,032	0294213512000	H.B. WEST DRUMHELLER NO. 35-12
1,033	0294213513000	HB W DRUM 13-35-29-21
1,034	0294213514000	HB WDRUM 14-35-29-21
1,035	0294213515000	CARLETON MAZEL DRUMHELLER NO. 15-35
1,036	0294213516000	CARLETON MAZEL DRUMHELLER NO 16-35
1,037	0294213516020	DECALTA W DRUM 16-35-29-21
1,038	0294213601000	CIGOL DRUM W-1-36-29-21
1,039	0294213602000	CIGOL DRUMW 2-36-29-21
1,040	0294213603000	CIGOL DRUM W 3-36-29-21
1,041	0294213604000	CIGOL DRUMW 4-36-29-21
1,042	0294213605000	CIGOL DRUMW 5-36-29-21

MAP WELL NO.	ERCB I.D. NO.	WELL NAME
1,043	0294213606000	MED DRUMHELLER 6-36-29-21
1,044	0294213606002	MED DRUMHELLER 6-36-29-21
1,045	0294213607000	MED DRUMW 7-36-29-21
1,046	0294213608000	CIGOL DRUM W 8-36-29-21
1,047	0294213610000	ALBERMONT WEST DRUMHELLER NO.1
1,048	0294213611000	CARLETON MAZEL DRUMHELLER NO.11-36
1,049	0294213612000	MAZAL DRUMHELLER NO. 1
1,050	0294213613000	CARLETON MAZEL DRUMHELLER NO.13-36
1,051	0294213613020	CARLETON MAZEL DRUMHELLER 13-36A
1,052	0294213614000	CARLETON MAZEL DRUMHELLER NO 14-36
1,053	0294213614020	DECALTA MAZEL DRUMW 14-36MU-29-21
1,054	0294213614022	DECALTA MAZEL DRUMW 14-36MU-29-21
1,055	0294213615000	ALBERMONT WEST DRUMHELLER NO. 2
1,056	0294213616000	ALBERMONT WEST DRUMHELLER NO.3
1,249	0304210201000	HUDSON'S BAY WEST DRUMHELLER NO 2-1
1,250	0304210201020	HB WDRUM 1-2-30-21
1,251	0304210201022	HB WDRUM 1-2-30-21
1,252	0304210202000	HUDSON'S BAY WEST DRUMHELLER NO 2-2
1,253	0304210203000	HUDSON'S BAY WEST DRUMHELLER NO. 2-3
1,254	0304210204000	HUDSON'S BAY WEST DRUMHELLER NO. 2-4
1,255	0304210205000	HUDSON'S BAY WEST DRUMHELLER NO. 2-5
1,256	0304210206000	HUDSON'S BAY WEST DRUMHELLER NO 2-6
1,257	0304210207000	HUDSON'S BAY WEST DRUMHELLER NO 2-7
1,258	0304210208000	HUDSON'S BAY WEST DRUMHELLER NO. 2-8
1,259	0304210208020	HB WDRUM 8-2-30-21
1,260	0304210209000	WEST DRUMHELLER NO 9-2
1,261	0304210209020	WEST DRUMHELLER LEDUC 9-2-30-21
1,262	0304210209022	WEST DRUMHELLER LEDUC 9-2-30-21
1,263	0304210210000	WEST DRUMHELLER NO. 10-2
1,264	0304210211000	WEST DRUMHELLER NO. 11-2
1,265	0304210212000	WEST DRUMHELLER 12-2
1,266	0304210216000	WEST DRUMHELLER NO. 16-2
1,267	0304210301000	HUDSON'S BAY WEST DRUMHELLER NO 3-1
1,268	0304210304000	HB WEST DRUMHELLER 4-3-30-21
1,269	0304210307000	HB WEST DRUMHELLER IN 7-3-30-21
1,270	0304210308000	HUDSON'S BAY WEST DRUMHELLER NO. 3-8
1,271	0304210309000	WEST DRUMHELLER NO. 9-3
1,272	0304210310000	WEST DRUMHELLER NO. 10-3
1,273	0304210314000	IMPERIAL MORRIN 14-3N-30-21

MAP WELL NO.	ERCB I.D. NO.	WELL NAME
1,274	0304210402000	ALTANA ET AL KIRKPAT 2-4-30-21
1,278	0304211101000	GULF WEST DRUMHELLER 1-11-30-21
1,279	0304211102000	WEST DRUMHELLER NO. 2-11
1,280	0304211104000	GULF WEST DRUM 4-11-30-21
1,281	0304211108000	WEST DRUMHELLER NO. 8-11
1,282	0304211114000	MONSANTO DRUMW 14-11-30-21
1,283	0304211116000	WEST DRUMHELLER NO. 16-11
1,295	0304211507000	GYPSY BARNWELL DRUM 7-15-30-21
1,297	0304212006000	GULF GPINE UNIT 6-20-30-21
1,298	0304212209000	BLAKE ET AL W DRUM 9-22-30-21
1,299	0304212211000	MURPHY ET AL DRUM W 11-22-30-21
1,303	0304212604000	IMP HB G PINE 4-26-30-21
1,304	0304212604002	BLAKE HB ET AL GPINE 4-26-30-21
1,305	0304212604003	BLAKE HB ET AL GPINE 4-26-30-21
1,306	0304212606000	WSPC HB GHOST PINE 6-26-30-21
1,307	0304212910000	B.A. HESKETH 10-29-30-21
1,309	0304213514000	GULF UNIT GHOST PINE 14-35-30-21
1,780	0294212316000	SHELL 8 DRUMHELLER TH 16-23-29-21
1,781	0294212511000	COREXCAL WEST DRUMHELLER 11-25-29-21
1,782	0294212704000	SHELL 211 DRUMHELLER TH 4-27-29-21
1,783	0294213313000	SHELL 214 DRUMHELLER TH 13-33-29-21
1,784	0294213405000	SHELL 208 DRUMHELLER TH 5-34-29-21
1,785	0294213512020	SHELL 207 DRUMHELLER TH 12-35-29-21
1,875	0304210206020	GULF 649 ELLIS TH 6-2-30-21
1,876	0304210301S20	GULF 534 WILDCAT TH 1-3-30-21
1,877	0304210414000	SHELL 206 DRUMHELLER TH 14-4-30-21
1,878	0304211104W00	GULF 535 WILDCAT TH 4-11-30-21
1,879	0304211106000	GULF 586 ELLIS TH 6-11-30-21
1,880	0304211113W00	GULF 536 WILDCAT TH 13-11-30-21
1,885	0304212016000	GULF 660 ELLIS TH 16-20-30-21
1,886	0304212201000	GULF 606 ELLIS TH 1-22-30-21
1,888	0304212603S00	GULF 566 ELLIS TH 3-26-30-21
1,889	0304212813000	GULF 521 WILDCAT TH 13-28-30-21
1,890	0304212815000	GULF 661 ELLIS TH 15-28-30-21
1,891	0304213001S00	GULF 659 ELLIS TH 1-30-30-21
1,894	0304213204W00	IMP 92 GPINE TH 4-32-30-21
1,895	0304213503S00	GULF 650 ELLIS TH 3-35-30-21
2,075	0314210104S00	GULF 565 WILDCAT TH 4-1-31-21
2,076	0314210204S00	GULF 605 ELLIS TH 4-2-31-21

MAP WELL NO.	ERCB LD. NO.	WELL NAME
2,079	0314210404S00	GULF 518 WILDCAT TH 4-4-31-21
2,208	0304211516000	RENAISSANCE GHOST PINE 16-15-30-21
2,209	0304212216000	RENAISSANCE GHOST PINE 16-22-30-21
2,277	0294203012000	SUNCOR ET AL DRUMW 12-30-29-20
2,281	0294212612000	SHELL 6 DRUMHELLER TH 12-26-29-21
2,282	0294212707000	SHELL 210 DRUMHELLER TH 07-27-29-21
2,283	0294212806000	SHELL 209 DRUMHELLER TH 06-28-29-21
2,284	0294212813W00	HB 17 DRUM TH 13-28-29-21
2,285	0294212815000	HB 6 DRUM TH 15-28-29-21
2,307	0304210205020	SHELL 7 DRUMHELLER TH 5-2-30-21
2,308	0304210301020	HB 5 DRUM TH 1-3-30-21
2,309	0304210303000	HB 1 DRUM TH 3-3-30-21
2,310	0304210308020	TURF ET AL DRUMW 8-3-30-21
2,311	0304210311000	HB 16 DRUM TH 11-3-30-21
2,312	0304210405W00	HB 14 DRUM TH 5-4-30-21
2,313	0304210406000	HB 8 DRUM TH 6-4-30-21
2,314	0304210413000	HB 7 DRUM TH 13-4-30-21
2,315	0304210416000	HB 2 DRUM TH 16-4-30-21
2,319	0304210913W00	HB 9 DRUM TH 13-9-30-21
2,320	0304211113000	HB 4 DRUM TH 13-11-30-21
2,323	0304211405000	HB 3 DRUM TH 5-14-30-21
2,326	0304212104W00	HB 12 DRUM TH 4-21-30-21
2,327	0304212306000	RENAISSANCE GHOST PINE 6-23-30-21

1. Is bedrock a problem for construction, for example, for digging basements?

No problem. Digging in bedrock is considerably more difficult than digging in floodplain sediment but 99% of the time the problems can be overcome by simply using larger machines. Blasting is not required. Romanitz identified "hilly parts of the valley near the toe of the escarpment" as areas where bedrock is shallow enough to be encountered during basement excavation.

2. Is sulphate resistant concrete required?

The City recommends its use everywhere and is particularly adamant that it **MUST** be used in areas where concrete is in contact with bedrock. High sulphate is not identified as a problem on fluvial sediment of the Red Deer River floodplain but its use is recommended anyway.

3. Is depth to water table a problem for construction?

No. The water table rises and falls with River stage but generally is at about 5 m or so.

4. Is the Red Deer River suitable for water sports that require human contact?

Yes. Sewage gets secondary treatment and is chlorinated before discharge to the Red Deer River. Sewage lagoons are lined (clay, concrete) and no leakage to the aquifer or River is possible. The river is regularly used for swimming upstream of Drumheller during summer months. Summer water levels are down considerably since construction of the Dixon Dam, and this has adversely affected its capability as a sport fishing resource. Apparently higher water temperature and a lack of deep pools are to blame. Reasonably good fishing for Walleye, Goldeye, Pike, Rocky Mtn. Whitefish, and Burbot is, however, still possible.

We did not discuss the suitability of the Red Deer River for boating and canoeing, but it is likely that boating (and water skiing) are out, but canoeing is possible. In fact, canoeing down the scenic valley would probably be a highly desirable activity.

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