

High River Airport Area Structure Plan

**Municipal District of Foothills
and
Town of High River**

*Prepared at the request of the Municipal District of
Foothills No. 31 by and in co-operation with the
Municipal District of Foothills No. 31
and the Town of High River.
In the year 2002.*

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1 INTRODUCTION

1.1 Plan Area Location

The area that is the subject of this Area Structure Plan (ASP) is situated in Portion of Section 19-18-29-W4M, Plan 8011027. The airport lands contain 63.545 hectares (157.01 acres) more or less and have an elevation reference point of 1043.8 metres (3431 feet) above sea level. The High River Airport is owned jointly by the Municipal District of Foothills No. 31 and the Town of High River. The airport lands fall entirely within the Municipal District of Foothills No. 31. The title is included in **Appendix 1**. An Area Map is included in **Figure 1**.

The facility is located 3.22 km (2 miles) south of the Town of High River's southerly limits. The High River Airport lands are currently bounded on the west by paved Municipal Road, 104th Street East. This road is sometimes referred to as the Cayley Road and it is formerly Highway 2A. To the east, the airport lands are bounded by the balance portion of S.E. 19-18-28-W4M, N.E. 19-18-28-W4M and then Highway 2. To the north and to the south the airport lands are bounded by private lands. Currently most of these lands are unsubdivided quarter sections.

The High River Airport is currently classified as a Code 2 B Non-Instrument, Registered Aerodrome. An explanation of Registered Aerodrome versus Certified Aerodrome is provided in **Appendix 2**.

1.2 Background Leading to this Area Structure Plan (ASP)

On August 26, 1976, Bylaw 405 was passed by the Municipal District of Foothills No. 31 (MD) in order to create a joint airport commission between the MD and the Town of High River (Town) that would be responsible for the affairs of the High River Airport. The Town had created Bylaw 3152/76 to the same effect on August 25, 1976. These bylaws both name the commission as the Highwood Airport Commission (HAC). Subsequent amendments have been made by the Town and the MD in order to update the specific functioning of the bylaws, but the intent remains the same.

At the time of the creation of these bylaws the airport lands were owned by the Province of Alberta and lease out to the MD and the Town. The Airport lands were surveyed on August 11, 1979 and then registered as Plan 8011027. On November 5, 1998 the Title to the Airport Lands was officially transferred to the ownership of the MD and the Town.

Over the years several plans have been proposed for the development of the High River Airport lands. At this time the Highwood Airport Commission has decided that an ASP should be formally adopted. On May 22, 2001 the Highwood Airport Commission passed Resolution 025/2001 recommending that the ASP of the High River Airport be forwarded for approval to the Town and to the MD.

1.3 Purpose of the ASP

The purpose of an Area Structure Plan within the Municipal District of Foothills No. 31 and as per the Municipal Government Act Section 633(1) is to provide a framework for the subsequent subdivision and development of an area within a municipality.

This ASP provides a statement of the planning intent and of the regulations which will govern the form, nature and location of future land use and development within the High River Airport Lands as defined by Plan 8011027. It is intended to be the guidelines by which any proposals for future development will be judged.

The policies established in this Plan:

- are intended to conform with all federal aviation regulations established by the Government of Canada;
- are intended to conform with the goals objectives and policies of the Municipal District of Foothills No. 31 Land Use Bylaws (LUB) and its Municipal Development Plan (MDP);
- are intended to provide guidance and direction with respect to future commercial and industrial development, open space systems and linkage, roadway networks, utility servicing, and environmental and development constraints;
- are intended to provide guidance and direction with respect to lot density, size and land use patterns.

This ASP will not address the day to day functioning of the airport facilities. It will not address a development schedule as that reliant on available funding. The purpose of the ASP will be to allocate space for various types of development deemed to be appropriate by the MD and the Town, as owners, for the airport facility. The process for approval for the occupation of individual spaces will also not be addressed by this ASP. This extends to individual occupants and the specifics of the lease agreements.

1.4 Hierarchy of Plans

All High River Airport development is to comply with the following as they are set currently and with any future amendments thereto. It is noted that certain federal regulations may supersede some provincial and municipal regulations currently in place. Those regulation which have jurisdiction are to be adhered to.

The High River Airport ASP will not address the contents of the federal regulations over which municipalities do not have jurisdiction. These include but are not limited to issues such as safety, security and flight patterns. The ASP will, however reference certain sections that are related to the development of the airport lands.

Federal:

- Transport Canada – Aeronautics Act;
- Transport Canada – Canadian Aviation Regulations (C.A.R.s);
- Transport Canada – TP 312;

- Transport Canada – TP 1247 E;
- any other relevant federal and federal aviation regulations in force.

Provincial:

- Municipal Government Act, Statutes of Alberta, 1984, Chapter M-26.1;
- any other relevant provincial regulations in force.

Municipal:

- Municipal District of Foothills No. 31. – Municipal Development Plan;
- Municipal District of Foothills No. 31. – Land Use Bylaws;
- any other relevant municipal regulations in force.

1.5 Interpretations and Definitions

Compliance with the policies of this ASP shall be interpreted and applied as follows:

shall or must - means mandatory compliance;

should - means it is strongly advised that the action be taken, subject to the discretion of Council or its approving authority where compliance is impractical or undesirable because of valid planning principles or circumstances unique to a specific application or development proposal; and

may - means a choice is available, with no particular direction or guidance intended.

Definitions:

airport – an aerodrome in respect of which a Canadian Aviation document is in force. An aerodrome for which, under Part III of the Air Regulations, an airport certificate has been issued by the minister.

aerodrome – means any area of land, water (including the frozen surface thereof) or other supporting surface used or designed, prepared, equipped or set apart for use either in whole or in part for the arrival and departure, movement or servicing of aircraft and includes any building, installation and equipment in connection therewith.

airside development – means any development that is situated in a location that has direct access to the aviation road system, ie; taxiways and runways, or any development that requires, for its purpose, access the aviation road system. (See landside development.) NOTE: certain developments may be both landside and airside.

approving authority - means the Council of the M.D. of Foothills No. 31.

bareland condominium – means a unit of land created by condominium plan under the Condominium Property Act and registered in the Land Registration District for which a title is issued for a unit.

building – includes a structure or any thing constructed or placed on, in over or under land but does not include a highway, road or a bridge forming part of a highway or road.

building height – means the vertical distance between grade and the highest point of a building including: a roof stairway entrance, elevator shaft, a ventilating fan, a skylight, a steeple, a chimney, a smoke stack, a fire wall, or a parapet wall, a flag pole, or similar devices not structurally essential to the building.

development - means any subdivision, development, redevelopment, infill, or rehabilitation project that occurs within the Plan area.

displaced threshold – additional portion of the runway added in advance of the threshold. Generally it is permissible to use the portion of the runway prior to the displaced threshold for taxiing, takeoff and for the landing roll-out from the opposite direction. In addition, the displaced threshold portion of the runway may be used for landing; however, it is the pilot's responsibility to ensure that the descent path can be safely adjusted to clear all obstacles. Similarly, obstacles which penetrate the obstacle limitation surface should be considered when using a displaced threshold at the departure end of the runway for part of the take off run.

fee simple – means a lot created by plan of subdivision under the Municipal Government Act and registered in the Land Registration District for which a certificate of title is issued for the lot.

Land Use Bylaws (LUB) – means the Land Use Bylaw adopted by the council of the Municipal District of Foothills No. 31.

landside development – means any development that is situated in a location that has direct access to the road system for non-aviation transportation, or any development that requires, for its purpose, access to the non-aviation road system. (See airside development.) NOTE: certain developments may be both landside and airside.

Municipal Development Plan (MDP) – means the Municipal Development Plan adopted by the Council of the Municipal District of Foothills #31.

Noise Exposure Forecast Contour (NEF) – means the noise exposure forecast ratings as a numbered contour established by the Department of Transportation based upon the intensity and type of aircraft using the airport facility.

obstacle – all fixed (whether temporary or permanent) and mobile objects, or parts thereof, that are located on an area intended for the surface movement of aircraft or that extend above a defined surface intended to protect aircraft in flight.

Obstacle Limitation Surface – an obstacle limitation surface establishes the limit to which objects may project into the airspace associated with and aerodrome yet assure that

aircraft operations at the aerodrome will be conducted safely. It included a takeoff surface, an approach surface, a transitional surface and an outer surface.

stopway – a rectangular area on the ground at the end of a runway, in the direction of take off, prepared a suitable area in which the aeroplane can be stopped in the case of an abandonment of takeoff. This area is not available for taxiing, the initial takeoff roll or the landing rollout.

threshold – the beginning of that portion of the runway usable for landing.

2 SITE ANALYSIS

2.1 Existing Conditions

2.1.1 Topography

The High River Airport area in itself is slightly rolling but generally flat with a rise to the east and southerly portion of the southwest quarter. The land form changes dramatically to the north and east. The Little Bow traverses the north half section of 19-18-28-W4M north of the button end of the crosswinds runway 14 and north of the button end of runway 28. The area lying to the south west of the main flight centre and the entrance road is gently sloping from its eastern edge down and out to the east and to the west. It is the main development area.

Appendix 3 is a contour map indicating the elevation changes in 5 foot contour lines. This map was produced in August of 1977. This map shows the elevation changes over the airport parcel prior to the development of the runways. All surfaces containing developments have been since levelled accordingly.

2.1.2 Vegetation

Vegetation throughout the runway and development area is grassland. Some brush occurs in scattered patches along the quarter section boundaries. Currently a large portion of the undeveloped airport land is under hay/grass crop.

The private lands adjacent to the airport facility are currently used mainly for crop production and agricultural use.

The land on Section 19-18-28-W4M is rated as per the Canadian Land Inventory Soils Classification System (C.L.I.). The land over the majority of the section is comprised of Class 2 9/C, 4 1/W soils. The land contained in just slightly over ¼ of the northern portion of Section 19-18-28-W4M is comprised of Class 3 8/S, 6 2/T soils. **Figure 2**, the Canadian Land Inventory Soil Classification Map, shows the soil class dispersion over the parcel and surrounding area. **Appendix 4** gives a more detailed description of each soil class.

The assessment rating for the land not covered or included in the airport surveyed plans is fairly good to very good arable land. The range is between 49% to 58%.

2.1.3 Existing Development

See **Figure 3**.

The ASP lands contain two runways (06/24 and 14/32), and associated taxi lanes. Runway 06/24 is asphalt and runs in a near east/west direction. The crosswinds runway 14/32 runs in a near north/south direction and is stabilised gravel. This runway is

currently in need of upgrading, and is in the process of being formally closed. The two runways intersect centrally.

Currently there are Five “C” lots. At this time the Hangar/Terminal takes up all of C1 and a portion of C2. Currently their lease is for both parcels. Lot C5 is the only lot created south of the low area. The remainder of this area is bare and used for crop land.

Currently there are twelve “P” lots. The intent of these lots is to be used for leased hangar space. Each lot has a separate lease and none of the buildings cross over the boundaries.

The road network access from 104th Street East into the South West portion of the airport lands.

From there it travels on the North and West of the utility right of way. The road network does not currently cross over the utility right of way. There is a parking area just to the South West of the terminal building, Lot C1 & C2. The road also extends between the two rows of Lots P1 to P12.

The taxiway network is currently more extensive. It accesses onto both runways, the North side of Lots C1 to C4 and on the outside of Lots P1 to P12.

Currently there are overhead lines that run along the East side of 104th Street East. They are buried at the point at which they cross in front of the button end of runway 06.

The Airport lands fall under Direct Control District 5. (**Appendix 7**)

2.1.4 Land Ownership Patterns

The subject land is under one land tenure, owned jointly by the Municipal District of Foothills No. 31, and the Town of High River.

Land adjacent to the subject lands are owned by individuals predominantly involved in agricultural. All adjacent land parcels are designated as Agriculture District and could each contain two residences as they are over 80 acres. No subdivision has occurred on the adjacent quarter sections and very little subdivision has occurred within the previously supplied NEF contour map boundary. Please see section on NEF Ratings Section 2.1.9.. Adjacent parcels are illustrated in **Figure 4** of this Plan.

2.1.5 Water Supply and Distribution

The site is currently devoid of a proven potable water supply or infrastructure for fire fighting. Users of the facility depend upon water transported to the site by truck.

Water wells drilled in the area and on the site have test yields ranging from a low of 0.5 gpm to a high of 15 gpm. A well drilled in 1979 had a test yield of 2.5 gpm. Testing of the water supply for domestic consumption was not contained within the files.

Currently the High River Airport has an easement agreement over S.W. 19-18-28-W4M and N.W. 19-18-28-W4M for the purpose of access to a well. The easement agreement is included as **Appendix 5**. Area well reports are included as **Appendix 6**.

2.1.6 Waste Disposal

Holding tanks and one outdoor privy are being used for human and domestic waste disposal. Solid wastes are disposed of through on site private containers and individually trucked to the regional land fill site.

2.1.7 Storm Water Management and Drainage

At this time there is no formal drainage system in place. **Figure 5** outlines the low areas and approximate drainage patterns around the current developments. Previously each development has had to take into account drainage accommodation separate from each other. It has been observed in times of significant precipitation or water accumulation that the lower area to the south of the “C” lots retains a large volume of water. An increase in development will further reduce the surface area available drainage and may then increase the Volume of water channelled into the low area.

A formal drainage study for the airport lands must be completed and put implemented prior to any development in the low area indicated in **Figure 5**. A formal drainage study may be required prior to other areas of the lands being developed in order to determine the effect of the reduction in surface drainage area. Should the studies indicate that this area, or any other on site area, not be suitable for development, or that undue negative effects may occur, no development shall occur.

Alternative uses may be considered. These may include a lagoon water storage system or other similar uses. Approval from Alberta Environment may be required for certain uses due to this being a natural drainage course.

Should any type of water storage be implemented, consideration must also be given to reducing the amount of exposed surface water with either covered options or more efficient drainage. This will help reduce the attraction of the site to birds and other wild life.

2.1.8 Shallow Utilities

UtiliCorp Networks Canada (Alberta) Ltd. (TransAlta Utilities Corporation) provides electricity and Telus Communications Inc. provides telephone service to the flight centre, maintenance shop and a public pay phone. ATCO (Canadian Western Natural Gas Co.) provides natural gas to the High River Flight Centre and High River Aviation. Some hanger units use propane. With an increase in development, one or more of the preceding utilities may require easements for utility right of ways for service lines.

2.1.9 Noise Exposure Forecast (NEF) Ratings

Airport Vicinity Protection Area (AVPA) regulations were previously established for the High River Airport and in full force and effect until December 31, 1998. The regulation was then automatically repealed via the adoption of the Municipal Government Act's Planning Legislation Division 12, Section 693. At that time it was noted that the NEF contours of existing AVPAs may not accurately represent existing and future traffic volumes and would need to be updated.

NEF contour models are calculated based on 11 factors; absolute noise levels, noise spectrum, maximum tone, noise duration, aircraft type, mix of aircraft, number of operations, runway utilisation, flight path, operation procedures and time of day. As a result of this they will vary with time and the use of the airport facilities.

The MD of Foothills has created the High River Airport as a specific land use district: Direct Control District #5. The current M.D. of Foothill's Land Use Bylaw still recognises development restrictions based on NEF contours as previously administered in the AVPA, on the airport lands. However, the referenced NEF contours have not been included within the M.D.'s Land Use Bylaw, and a current figure is not in place at this time. **Figure 6** illustrates the NEF contours current at the time of the repealed regulation.

3. DEVELOPMENT CONSTRAINTS

3.1 Constraints

As identified, these constraints provide the rationale used to determine the Plan policies and development concepts detailed in Section 3.0 of this document.

The following are constraints that can limit either use or development:

- **Topography:** Due to the nature of this development, small topographic variances can make a significant difference. At this point, the nature of the proposed development is not severely limited by the topography. The development is limited severely by water pooling and drainage in certain locations that is directed by the topography.
- **Drainage:** While most of the airport lands that meet the set back requirements from the runway are suitable for development, the portion to the south of the “C” lots is not. At this time the water pools in this area and currently exits via evaporation rather than surface or ground runoff.
- **Sanitary waste disposal:** With proposed increased usage of the airport facilities the disposal of sanitary waste will need to be addressed for the full site.
- **Water supply:** There is virtually no onsite supply of potable water or water for other uses. While there is minimal hook-up to a well located on property north of the airport lands, it is not adequate for increased use of any type.
- **Location:** The airport lands are situated between 104th Street East and Highway 2. Both of these roads have a paved surface and Highway 2, as a primary highway falls under the jurisdiction of the Provincial Government. As a result of this the length of runway 06/24 (East/West) is limited by the physical presence of the road and by the height of the take off/approach slope height restrictions. While runway 14/32 (North/South) is currently in the process of being closed, should funding become available and the necessary upgrades made it could be reopened. At this time there are no immediate obstacles to the north and south. It should be noted that residential development and development setbacks off the end of the runways are calculated based on runway length, and any change in the runway length would have to accommodate any existing developments and meet the setback requirements.
- **Noise Exposure Forecast contours:** Currently the NEF contour setbacks are applied only to the DC 5 lands. It is also to be noted that the NEF contours need to be updated.

3.2 Prior to Development

The following are recommended prior to the physical development of the airport lands for the purpose of verifying that the site can handle the impacts thereof.

- A topographic map to be prepared with 1 foot or 0.25 meter contour lines.
- A storm water management study to be completed and implemented.
- In conjunction with the storm water management study, drainage course identification should occur. Once identified, all development would be conducted in a manner that would accommodate the drainage pattern.
- A water supply plan will need to be put in place. This may allow for the installation of a cistern system as the current well potential is determined to be quite low. Another alternative would be to look at the feasibility of hook-up to an existing water system such as High River.
- A plan for the use of the balance undeveloped lands. This plan will insure the balance lands are not left with exposed soil, and are vegetated or used in such a way that they will not encourage any population of animals or weeds.
- Should the Direct Control District #5 continue to use NEF contours for development regulations on the airport lands, a new model should be drawn up that reflects the current use.
- All developments, buildings, roads, bridges etc. that fall within either the setback limitations or the height restrictions from the runways should be noted. This area list should then be consulted prior to any development changes in regards to the runways. Additionally all construction dates should be noted.

4. FUTURE FACILITY DEVELOPMENT

Various proposals for future expansion of the existing facility, to make the airport a viable and integral part of the High River area have been proposed. **Figure 10** illustrates some of the improvements contemplated. All improvements are subject to aforementioned constraints.

- Increase the hangar space available for the storage of planes and aviation related equipment. (Indoor storage.)
- Increase the number of tiedown facilities available. (Outdoor storage.)
- Runway 06/24 extension by 200 metres on both ends to provide for 1313.91 metre (4311 foot) landing strip has been proposed. Due to the proximity particularly of 104th Street East and to the proximity of Highway #2 extension of the runway is limited. The federal regulations for a certified airport indicate that the Obstacle Limitation Surface must be at a height of 4.3 meters over the crown of the road. It is noted that it is not until **Figure 7 and 8** illustrate Obstacle Limitation Surfaces. Transport Canada indicates that they would not recommend a displaced threshold as they are intended for use when there is a permanent obstacle such as a mountain or building. A stopway currently exists. This is, however only for distress situations. **Figure 9** illustrates Obstacle Limitation Surfaces for Airport Lands
- A parallel taxi-way to runway 06/24 would assist in the facilities operational efficiency and safety. The implementation and construction of this feature is being studied. The issue of the setback distance from the runway would need to be addressed.
- Upgrading to allow for the reopening of runway 14/32 (north/south).
- The users of the airport currently uses the Highwood Flight Centre's facilities as a quasi-terminal. The feasibility of constructing or locating a separate structure on site for a permanent terminal facility is being explored.
- Explore the possibility of a formal helicopter landing pad. With this an area for rotary use away from any gravelled surface being uses by plane traffic should be used. This will help avoid the damage that gavel, kicked up by a rotary machine can cause. As with the runways there are takeoff and landing surface space and setback requirements to take into account. There are also obstacle limitation surfaces to factor in.

5. PLAN POLICIES

5.1 High River Airport Plan

The Future Development Concept Plan (FDCP) illustrated in **Figure 10** has been compiled in light of the identification and analysis of constraints detailed in the previous sections of this Plan. It also attempts to employ the input received from persons in attendance at the open house and from submissions made to the M.D. and the Town as well as all current governing regulations.

As such, the FDCP is a generalised picture of how future land use and development is anticipated to extend from the existing built up area of the airport facilities into the undeveloped portions of the site. The FDCP outlines, in general terms, areas for future development, proposed future road and infrastructure system, runway and taxi-way improvements.

Phasing, or staging of future development is dependant upon several factors. 1) Market demand. 2) Funding availability. 3) The approval of the MD and the Town as joint owners of the property. 4) The approval of the MD as approving authority for the airport lands. 5) The approval of Transport Canada insofar as it is an area over which they have jurisdiction. 6) The expansion into these areas being a logical growth direction.

5.2 General Development

The following policies shall apply to any development that occurs in or is proposed for the airport facilities, hanger sites, and airport related commercial and industrial uses. The purpose of these policies is to ensure that any development project commenced within the ASP area will comply with and will be consistent with the provisions of the M.D. of Foothills No. 31 Municipal Development Plan and the M.D. of Foothills No. 31 Land Use By-law. In addition, the policies of this Plan establish a minimum performance or expectation standard against which all future proposed development in the Airport area will be assessed and must meet in order to proceed.

As previously stated the High River Airport is a Registered Aerodrome. The Airport therefor is not required to meet most of the federal regulations in place. It is, however recommended that every attempt be made to follow the current Federal Regulations.

As noted previously in Section 2.1.9 on NEF contours the currently available model for the High River Airport will need to be updated. The following policy is based on the NEF contours as they were at the time that the AVPA regulations were repealed.

The majority of the land considered for development is located between the 25 and 30 NEF contour lines where there are no restrictions on non residential development. However, as some of the land (training centre and maintenance areas) is within the 30 to 45 NEF contour intervals there may be a limited range of uses that can be developed on

the site. Uses that have a high employment rate may be required to have noise attenuation (sound insulation) incorporated into the building design.

It must be pointed out that if there is a desire to intensify the level of activity or increase the aircraft load limits so to cause a change in the NEF contours, any development with no noise attenuation and a high human factor density may reduce the potential the airport may have for expansion.

The first step in identifying a location for any proposed development on the airport lands will be to determine what facilities the development will need access to. Particularly if the development will need to be airside or landside. (Please see the explanation of these terms in the definition section.) The biggest reason for this is that there are two internal road systems (taxiway and roadway) that shall not cross.

- Any development activity proposed for the High River Regional Airport ASP area will be consistent with the M.D. of Foothills No. 31 Municipal Development Plan and Land Use By-law provisions. Council should delineate the NEF contours within the Land Use Bylaw in order to protect the Municipality's interests and afford direction to adjacent land owners.
- The minimum site area for the development of:
 - (a) hangars will be 500 square metres (5300 sq. ft.). Note: This will vary should a multi-lot hangar option be used;
 - (b) commercial and Industrial uses 930 square metres (0.25 ac.) minimum. Note: The size may vary to accommodate specific uses, particularly if more area is required to meet set back requirements. Larger parcels of 0.5 acres or greater will be encouraged.
- Building setbacks will be as set out in the Land Use Bylaw and the Alberta Building Code. (unserviced piped water lots minimum separation distance is 1.2 metres to property lines for the hangars).
- Development agreements, entered into between the M.D. of Foothills and any site owner/leasee, regarding lands within the Plan area shall ensure that:
 - a) the proposed development meets M.D. of Foothill's Land Use Bylaw, building requirements and development policies;
 - b) suitable arrangements have been made for the provision of water and sewer facilities, storm water drainage, and any other service or utility deemed appropriate by the approving authority.
- Applications for the development of lands within the Plan area which do not comply with and conform to the policies established in this Plan shall be discouraged.

5.3 Commercial Development

- Retail commercial activities such as concessions, eating and dining facilities will be restricted to terminal and public areas.
- Commercial enterprises, including, but not limited to, the selling or repairing of aircraft parts and accessories, flight tours, and other products and services related to the aircraft industry will be allowed to develop in the designated area.

5.4 Industrial Development

- Light industrial activities associated with the airport facilities operation and the aircraft industry will be allowed to develop in the designated area.
- Industrial developments that are a large consumer of water will be discouraged.

5.5 Residential Development

- With the exception of a caretaker/resident manager dwelling accommodation for the facilities, other forms of permanent residential development is not permitted.
- Temporary recreational vehicle motor home or trailer accommodation for periods not exceeding 80 hours may be allowed to occupy a site when the owner/leasee has aircraft or a hanger.

5.6 Parks and Open Space

- Airport lands are generally not considered ideal for typical park and open space development. There are several reasons for this. The first is vegetation as cover/shelter is a potential food source and is attractive to wildlife. Due to the nature of an airport's operation this is not desirable. Animals and birds can become a dangerous hazard to the facility operation. In addition any vegetation that has a vertical growth direction may eventually become an obstruction in aviation air space.
- The limitations on open green space should not be seen to preclude any development of this sort. Landscaping in the immediate vicinity of buildings could be considered using plants that are not attractive to wildlife either in terms of food or shelter.
- While outdoor eating areas such as a picnic area are easily done, serious consideration to refuse disposal must be taken into account. Proper refuse disposal must not only rely on the responsibility of the people creating the refuse to dispose of it into a gathering point, but the gathering point or storage container must be adequate in size strength and function.

5.7 Internal Road System

- The High River Airport lands area will be serviced by a network of internal lane ways connected to collector roads that connect to 104th Street East. These roads will connect to all landside development. All main road ways through the airport lands should have 30 meter (100 foot) right of ways. As the road branches off, ie. into the hangar area, the width may be reduced to 15.24 meters (50 feet).
- In addition to the internal road way system there will be an internal taxiway system. This will connect to all airside development. As a Code 2B airport the current maximum wingspan is up to but not including 24m. The taxiways there for should be 15.24 meters (50 feet) with additional area on corners and where need arises to accommodate safe manoeuvrability of the aircraft.
- Development standards for the road system shall be as defined in the development agreement.
- There will not be any point at which aircraft and land vehicle traffic should cross.
- Pedestrian crosswalks and traffic calming devices shall be located as deemed necessary by the approving authority.

5.8 Utilities

- At a minimum, the developer should install electricity and gas services to the individual sites together with an overall overland drainage scheme.
- A water supply capable of supplying domestic and fire fighting capabilities should be implemented prior to the creation and/or sale of any sites.
- When reviewing and deliberating upon development proposals, the approving authority shall ensure that adequate provision is made for water, sanitary sewer and shallow utilities.
- Storm water retention facilities should be incorporated into the development area. Overland drainage should be directed to the retention area or other suitable drainage paths.
- Sanitary waste disposal should be handled by individual pump-out tanks and with a monitoring system recorded by the HAC.
- The provision of a "lagoon system" or other form of sanitary treatment facility should be investigated prior to any form of "permanent industrial/commercial" or "public" land uses are approved. This should also attempt to use a covered system so as to minimise the attraction to wildlife.

6. IMPLEMENTATION

6.1 Plan Adoption

An Area Structure Plan is a statutory document: that means, a set of formal regulations made law by a legislative body (Council). The regulations contained in this Plan must be adopted by by-law, pursuant to the Municipal Government Act, Chapter M-26.1, R.S.A. 1994 as amended. Upon adoption, the Plan becomes Schedule "A" to the adopting bylaw.

6.2 Municipal Development Plan Conformity

The Municipal Government Act requires that an Area Structure Plan must be consistent with all other statutory plans of a municipality. Though this the High River Airport Area Structure Plan must be consistent with the provisions of the Municipal Development Plan and the Land Use Bylaw.

6.3 Time Frame for ASP Review

This Plan is a statement of intentions and desires regarding the long-term development of the High River Airport area, and is intended to guide and direct that development. The policies set forth in it are based upon current trends and expectations for the future. However, as the future is an uncertain entity, this document should be periodically examined to ensure that its policies reflect the current desires of Council and affected landowners.

Should future development conditions, issues or proposals change to such a degree that the Plan's policies become ineffective, obsolete or an impediment to the continued development of the High River Airport, this ASP should be repealed.

6.4 Future Amendments and Reviews

Amendments to the Area Structure Plan of either a minor or major nature may be required as a result of changing trends or development demands and influences.

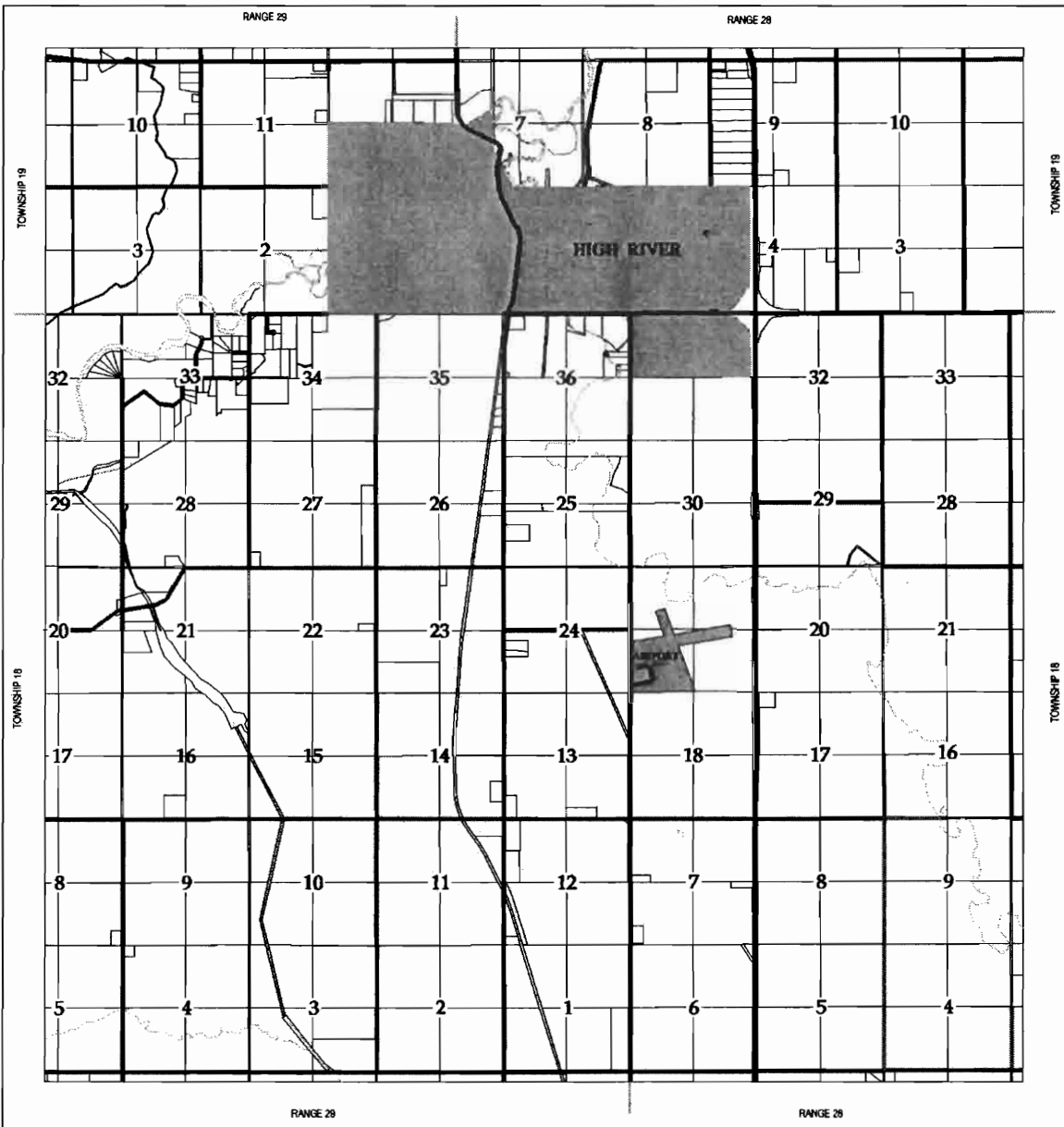
Prior to any amendment to the ASP being adopted in the future, the approving authority must first ensure that the proposed changes are not in conflict with the overall goals, objectives and policies of the Municipal Development Plan. If the proposed amendment does not comply with the general intent of the MDP, revisions or amendments must be made accordingly.

6.5 Public Participation in Amendments or Reviews



Any change to the policies established in this Plan should be done in consultation with and as a result of direct input from and participation of the adjacent landowners and the

users of the airport facility. The facility operators and land owners of the sites should also assist in monitoring the Plan's policies and should be solicited with respect to expectations and perspective when the Plan is to be reviewed. This could be accomplished by establishing a Review Committee, or by holding a series of open houses and/or information sessions to ascertain public input.

Figure 1 AREA MAP



LEGEND

	Urban Municipality
	Airport

ROADS







	Primary Highway
	Secondary Highway
	Paved Road
	Oiled Road
	Gravel Road
	Dirt Road

Figure 2
CANADA LAND INVENTORY (C.L.I.)
SOIL CLASSIFICATION MAP

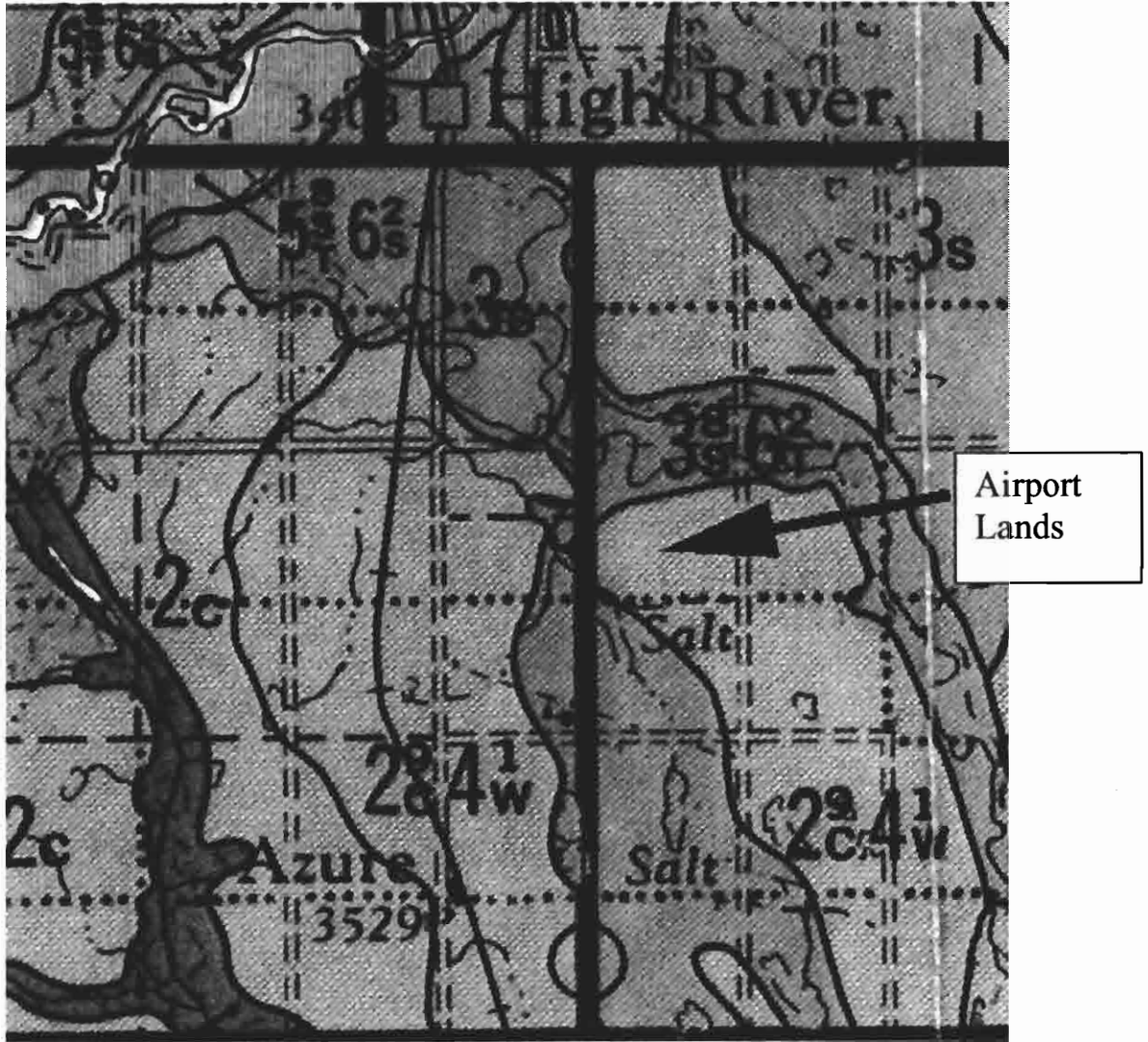


Figure 3
EXISTING DEVELOPMENT MAP



Figure 4
LAND OWNERSHIP MAP

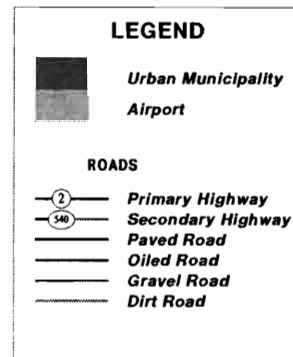
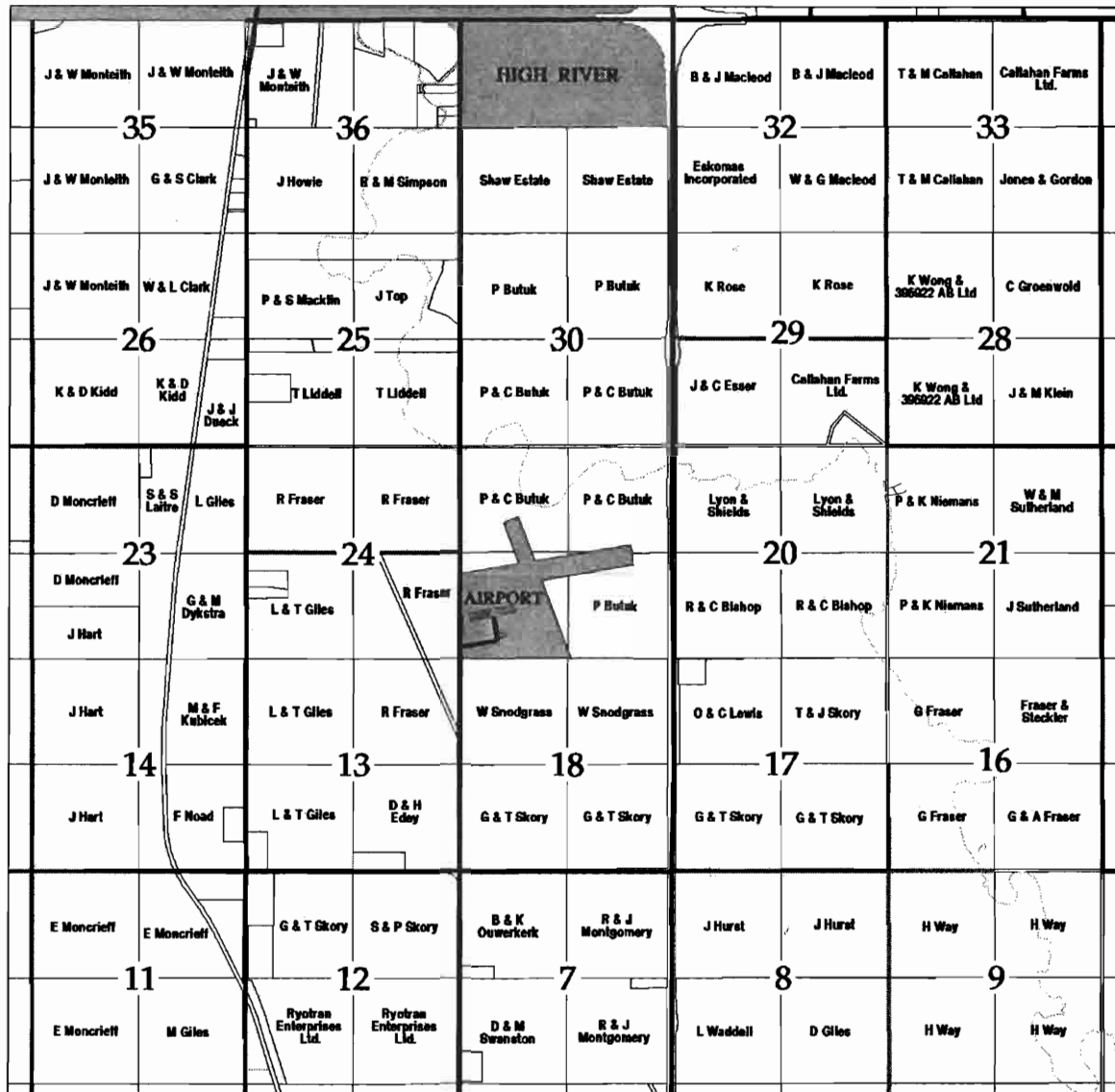
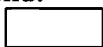


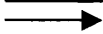
Figure 5
CURRENT DRAINAGE PATTERNS
MAP



Legend:



Culvert

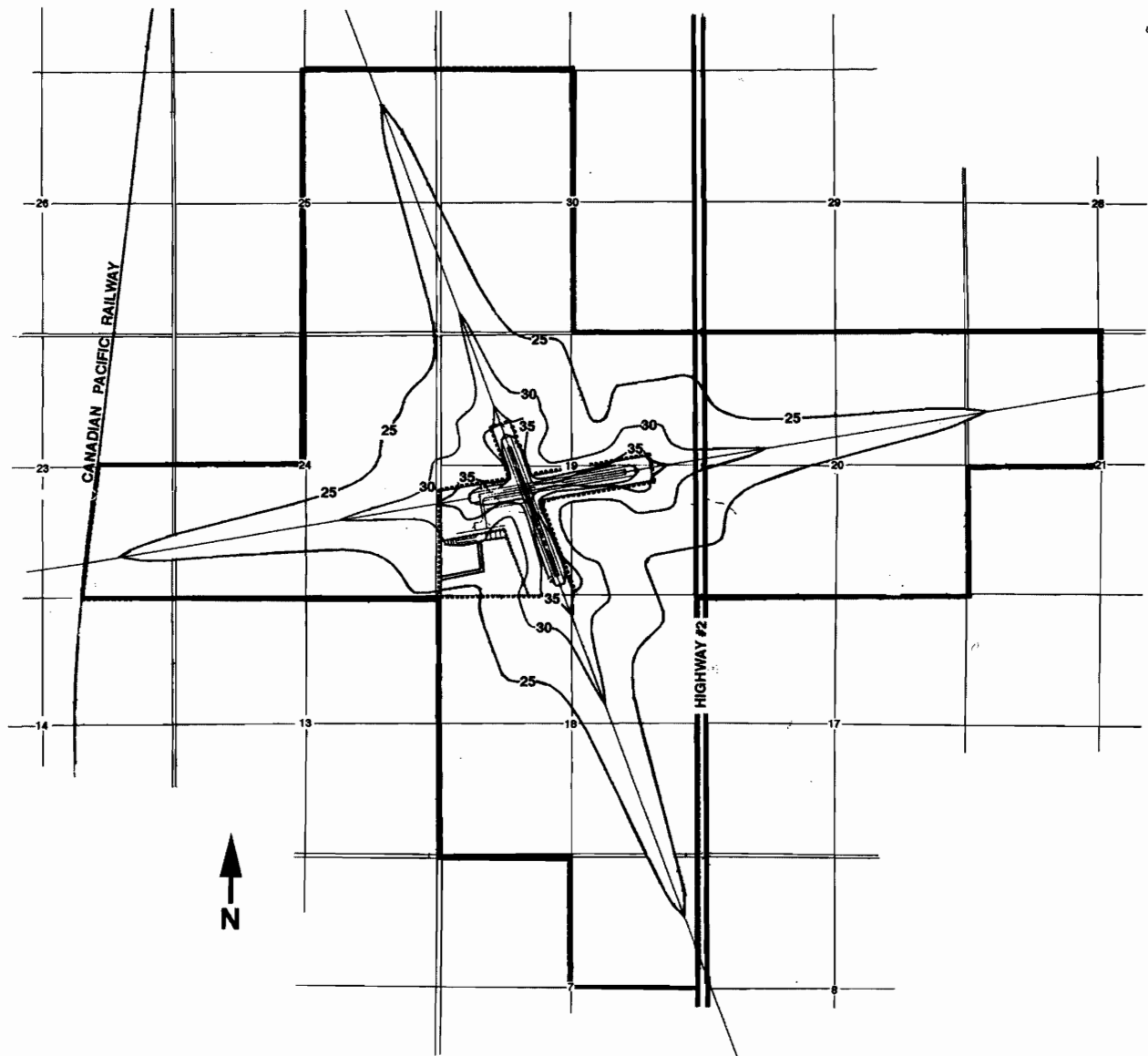


Direction of Flow

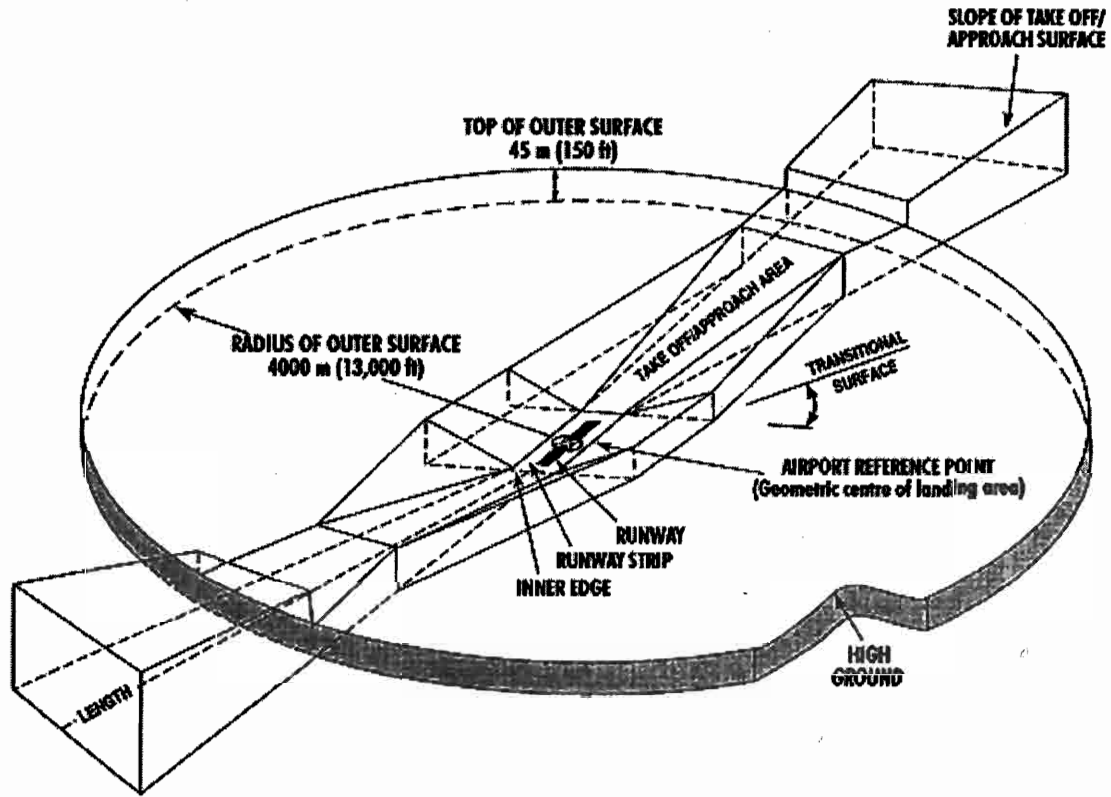


High Line

Figure 6
NOISE EXPOSURE FORECAST (N.E.F.)
RATINGS



Obstacle Limitation Surfaces



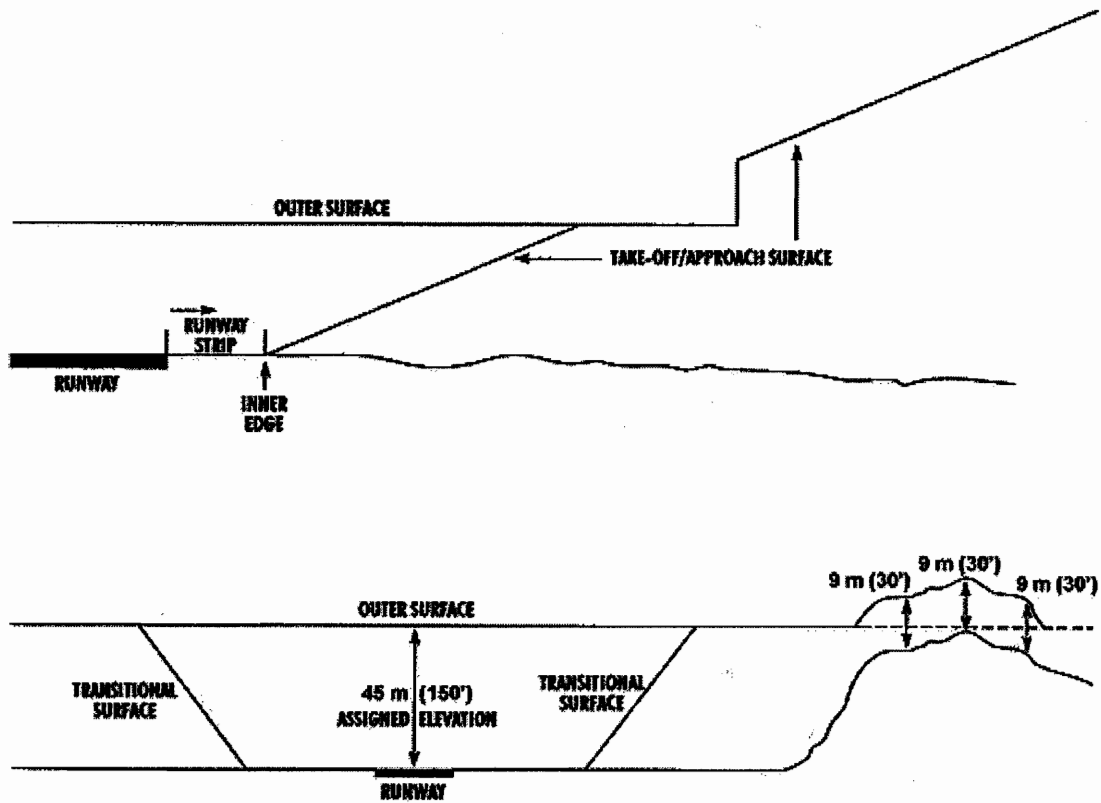
 [Feedback](#)

Last modified: December 04, 2000





Obstacle Limitation Surfaces (Side View)



[Feedback](#)

Last modified: December 04, 2000



Figure 9
Obstacle Limitation Surfaces for
Airport Lands

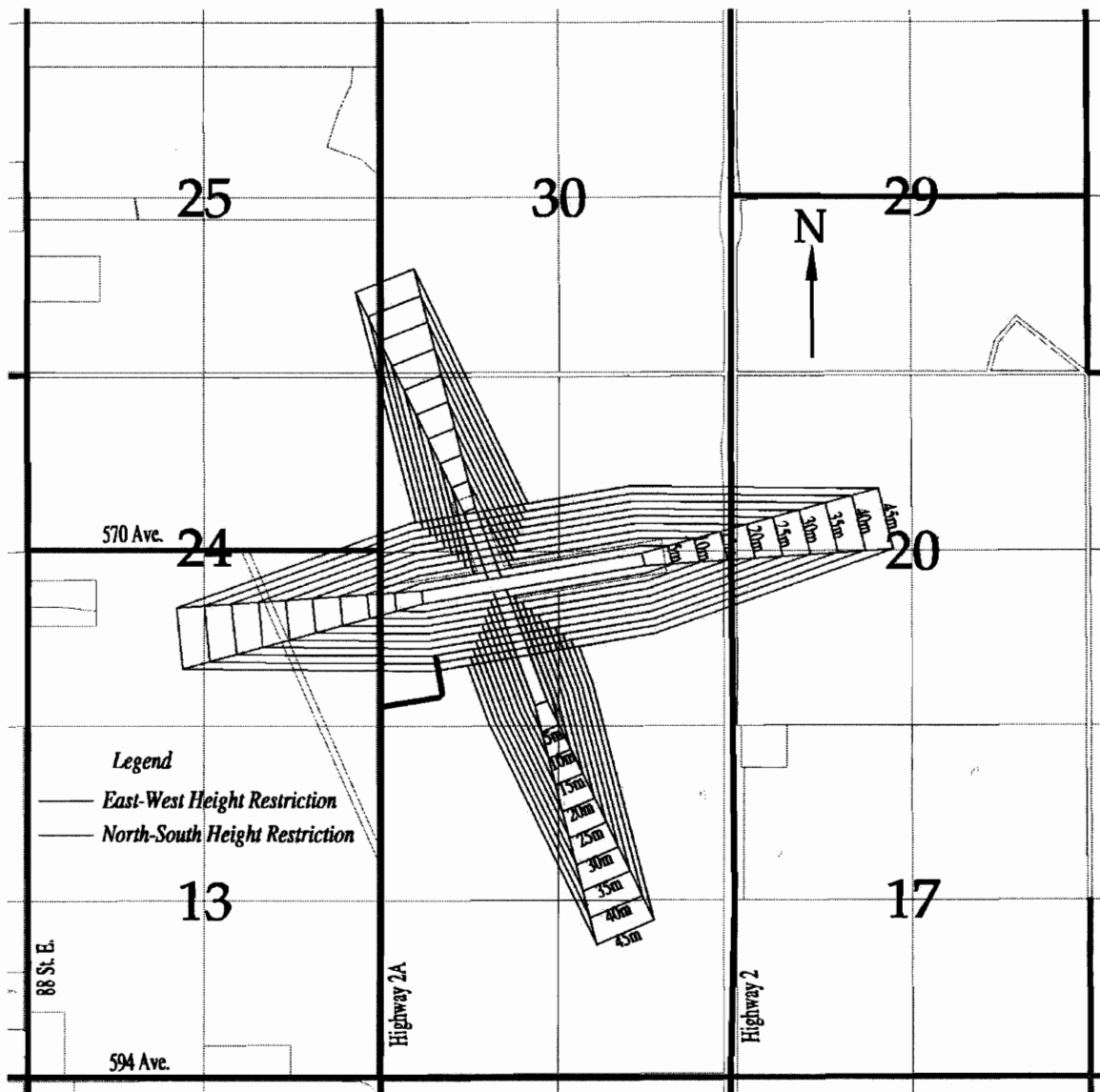


Figure 10
FUTURE DEVELOPMENT
CONCEPT PLAN MAP



Legend:

- Existing Development
- ABC - Proposed Development

A. L. T. A.

SOUTH ALBERTA LAND REGISTRATION DISTRICT

R E M O T E L A N D T I T L E S E A R C H

SEARCH DATE: 14/03/2001

S		
LINC	SHORT LEGAL	TITLE NUMBER
0016 489 651	8011027;OT	981 347 053

LEGAL DESCRIPTION

PLAN AIRPORT SITE 8011027

CONTAINING:

QUARTER SECTION	HECTARES MORE OR LESS	ACRES MORE OR LESS
NORTH EAST	0.885	2.18
NORTH WEST	3.21	7.92
SOUTH EAST	6.75	16.68
SOUTH WEST	52.7	130.23

EXCEPTING THEREOUT ALL MINES AND MINERALS

ATS REFERENCE: 4;28;18;19;NE

ATS REFERENCE: 4;28;18;19;NW

ATS REFERENCE: 4;28;18;19;SE

ATS REFERENCE: 4;28;18;19;SW

ESTATE: FEE SIMPLE

MUNICIPALITY: MUNICIPAL DISTRICT OF FOOTHILLS NO. 31

REFERENCE NUMBER: 801 139 961

REGISTRATION	DATE(DMY)	REGISTERED OWNER(S)		CONSIDERATION
		DOCUMENT TYPE	VALUE	
981 347 053	05/11/1998	TRANSFER OF LAND	\$450,000	SEE INSTRUMENT

OWNERS

THE TOWN OF HIGH RIVER.
OF 129-3 AVE SW
HIGH RIVER
ALBERTA T1V 1R9

AND
THE MUNICIPAL DISTRICT OF FOOTHILLS NO. 31.
OF BOX 5605, 309 MACLEOD TRAIL
HIGH RIVER
ALBERTA T1V 1M7
AS JOINT TENANTS

(CONTINUED)

ENCUMBRANCES, LIENS & INTERESTS

PAGE 2
981 347 053

REGISTRATION
NUMBER DATE (D/M/Y) PARTICULARS

831 109 566 16/06/1983 UTILITY RIGHT OF WAY
 GRANTEE - CANADIAN WESTERN NATURAL GAS COMPANY
 LIMITED.
 AS TO PORTION OR PLAN:8310342
 "SW 1/4"

TOTAL INSTRUMENTS: 001
YOUR FILE #: PLANNING

*END OF SEARCH *

SR# - J047279 /XLTMDOF1
TOTAL SR FEES: \$5.00

Appendix 2

Registered versus Certified aerodromes

Registered:

An aerodrome listed in the Canada Flight Supplement which is not certified as an airport. Registered aerodromes are not subject to an ongoing inspection program. Pilots intending to use these aerodromes should obtain current information from the owner/operator.

Certified:

An aerodrome for which an airport certificate is issued, requiring the operator to maintain and operate the site in accordance with applicable Transport Canada standards. Regular inspections are conducted by Transport Canada to confirm compliance.

Extract from the Canadian Aviation Regulations:

Issuance of Airport Certificate

302.01 (1) subject to subsection 6.71(1) of the Act, the Minister shall issue an airport certificate to an applicant authorising the applicant to operate an aerodrome as an airport if the airport operations manual, submitted pursuant to paragraph 302.02 (1)(b), is approved by the Minister pursuant to subsection (2) and

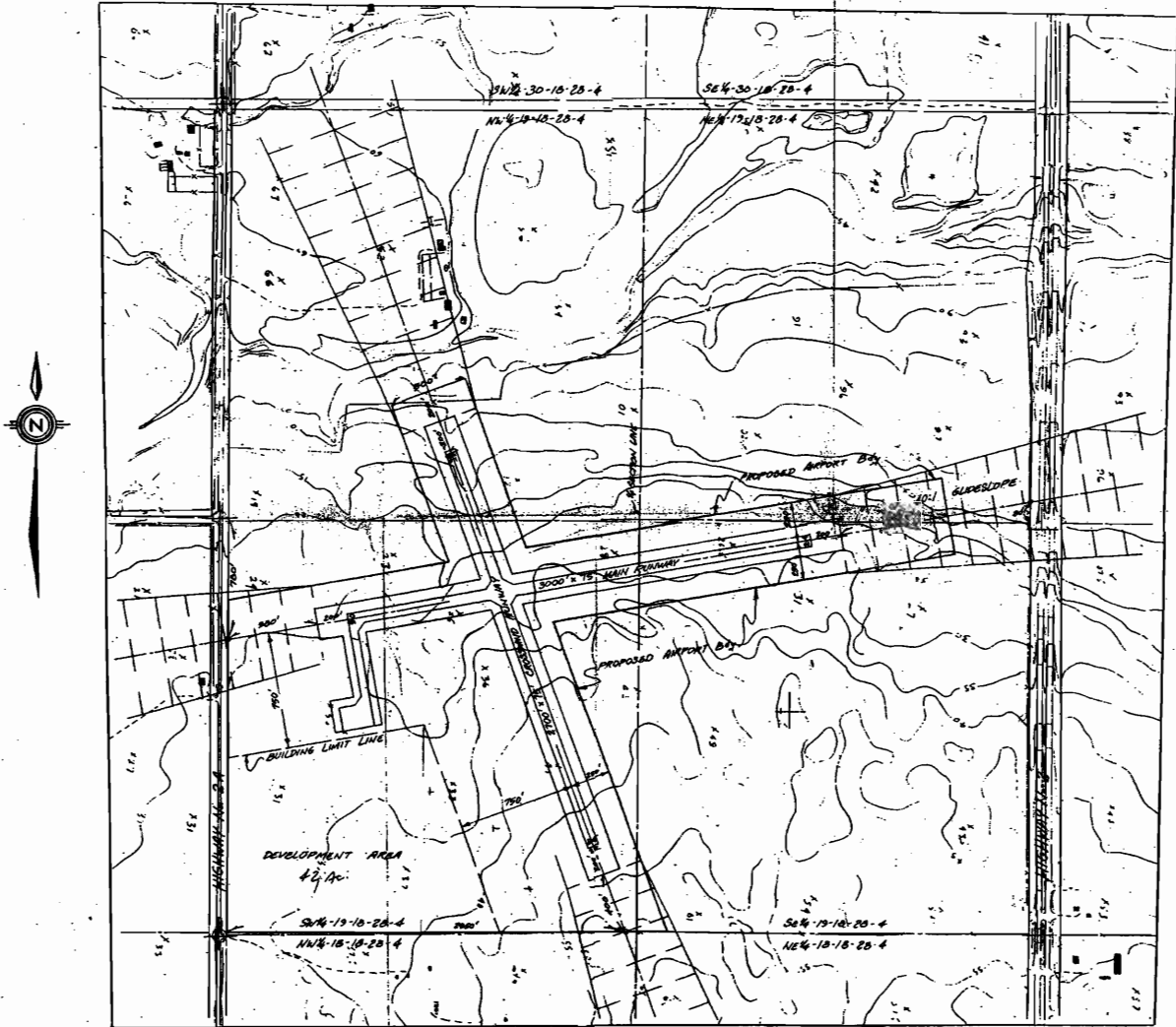
- (a) the standards set out in the aerodrome standards and recommended practices publications are met; or
- (b) on the basis of a aeronautical study, the minister determines that
 - (i) the level of safety at the aerodrome is equivalent to that provided for by the standards set out in the aerodrome standards and recommended practices publications, and
 - (ii) the issuance of the airport certificate is in the public interest and not detrimental to aviation safety.

Background

- Up until January 2nd, 1997 the High River airport was Certified.
- November 5, 1996 – Transport Canada sends information on the new requirements for Certified Aerodromes.
- Aerodromes may only be certified if they are:
 - a) located within the built-up area of the town
 - b) used by an air carrier for the purpose of a scheduled service for transport of passengers, and
 - c) the minister of Transport is of the opinion that meeting the requirements of certification would be in the public interest and would further safe operation of the aerodrome.
- January 2, 1997 – Transport Canada requested a voluntary surrender of the Aerodrome Certificate.

Certification versus Registration

- Certified Aerodromes must have an Operating Manual.
- Certified Aerodromes must comply with their Operating Manual or face serious regulatory and liability issues.
- At Certified Aerodromes the Operator must comply with the standards as set out in the aerodrome standards and recommended practices publications.
- There is concern for the aspect of liability for any certified aerodrome operator who does not meet the requirements of the law.
- A registered Aerodrome only has “Recommended Practices”
- As a Registered Aerodrome the High River Airport has always attempted to follow the recommendations of Transport Canada in order to demonstrate due diligence.
- It is no longer necessary to have an aerodrome certificate simply because the aerodrome is the location of a flight training unit.



ALLIANCE REG'D
 SEC 13-18-28-4 - 163 Ac.
 3000' x 75' MAIN RUNWAY 08-24
 2400' x 175' CROSSING RUNWAY 14-32

AP-99 HIGH RIVER AIRPORT			
DATE	SCALE	CONTOUR INT.	PHOTO DATE
AUGUST 8, 77	1" = 400'	5'	APRIL 15, 74

Appendix 4
Canadian Land Inventory (C.L.I.)
Soil Classification Description

Descriptive Legend

CLASS

Class 1: Soils in this class have no significant limitations in use for crops.

The soils are deep, are well to imperfectly drained, hold moisture well, and in the virgin state were well supplied with plant nutrients. They can be managed and cropped with little difficulty. Under good management they are moderately high to high in productivity for a wide range of field crops.

Class 2: Soils in this class have moderate limitations that restrict the range of crops or require moderate conservation practices.

The soils are deep and hold moisture well. The limitations are moderate and the soil can be managed and cropped with little difficulty. Under good management they are moderately high to high in productivity for a fairly wide range of crops.

Class 3: Soils in this class have moderately severe limitations that restrict the range of crops or require special conservation practices.

The limitations are more severe than for Class 2 soils. They affect one or more of the following practices: timing and ease of tillage; planting and harvesting; choice of crops; and methods of conservation. Under good management they are fair to moderately high in productivity for a fair range of crops.

Class 4: Soils in this class have severe limitations that restrict the range of crops or require special conservation practices, or both.

The limitations seriously affect one or more of the following practices: timing and ease of tillage; planting and harvesting; choice of crops; and methods of conservation. The soils are low to fair in productivity for a fair range of crops but may have high productivity for a special adapted crop.

Class 5: Soils in this class have very severe limitations that restrict their capability to producing perennial forage crops, and improvement practices are feasible.

The limitations are so severe that the soils are not capable of use for sustained production of annual field crops. The soils are capable of producing native or tame species of perennial forage plants, and may be improved by uses of farm machinery. The improvement practices may include clearing of bush, cultivation, seeding, fertilizing, or water control.

Class 6: Soils in this class are capable only of producing perennial forage crops, and improvement practices are not feasible.

The soils provide some sustained grazing for farm animals, but the limitations are so severe that improvement by use of farm machinery is impractical. The terrain may be unsuitable for the use of farm machinery, or the soils may not respond to improvement, or the grazing season may be very short.

SUBCLASS

Excepting Class 1, the classes are divided into subclasses on the basis of kinds of ^{limitation} ~~limitation~~.

Subclass C: Adverse climate – The main limitation is low temperature or low or poor distribution of rainfall during the cropping season, or a combination of these.

Subclass D: Undesirable soil structure and/or low permeability – The soils are difficult to till, absorb water slowly or the depth of the rooting zone is restricted.

Subclass E: Erosion damage – Past damage from erosion limits agricultural use of the land.

Subclass F: Fertility – Low natural fertility due to lack of available nutrients, high acidity or alkalinity, low exchange capacity, high levels of calcium carbonate or presence of toxic compounds.

Subclass I: Inundation – Flooding by streams or lakes limits agricultural use.

Subclass M: Moisture – A low moisture holding capacity, caused by adverse inherent soil characteristics, limits crop growth. (Not to be confused with climatic drought).

Subclass N: Salinity – The soils are adversely affected by soluble salts.

Subclass P: Stoniness – Stones interfere with tillage, planting, and harvesting.

Subclass R: Shallowness to solid bed rock – Solid bedrock is less than three feet from the surface.

Subclass S: Soil limitations – A combination of two or more subclasses D, F, M, and N.

Subclass T: Adverse topography – Either steepness or the pattern of slopes limits agricultural use.

Subclass W: Excess water – Excess water other than from flooding limits use of agriculture. The excess water may be due to poor drainage, a high water table, seepage or runoff from surrounding areas.

Subclass X: Minor cumulative limitations – Soils having a moderate limitation due to the cumulative effect of two or more adverse characteristics which individually would not affect the class rating. (This subclass is always used alone and only one class below the best possible in a climatic subregion).

CONVENTIONS

Large numerals denote capability classes.

Small numerals placed after the class numeral give the approximate proportion of the class out of a total of 10.

Letters placed after the class numerals denote the subclasses, i.e. limitations.

A. L. T. A.

SOUTH ALBERTA LAND REGISTRATION DISTRICT
R E M O T E L A N D T I T L E S E A R C H

SEARCH DATE: 01/10/2001

S		
LINC	SHORT LEGAL	TITLE NUMBER
0019 309 608	4;28;18;19;NW	961 219 558

LEGAL DESCRIPTION

MERIDIAN 4 RANGE 28 TOWNSHIP 18

SECTION 19

QUARTER NORTH WEST

CONTAINING 64.5 HECTARES (159.6 ACRES) MORE OR LESS

EXCEPTING THEREOUT:

PLAN	NUMBER	HECTARES	ACRES (MORE OR LESS)
------	--------	----------	----------------------

AIRPORT SITE	8011027	3.21	7.92
--------------	---------	------	------

EXCEPTING THEREOUT ALL MINES AND MINERALS

AND THE RIGHT TO WORK THE SAME

ESTATE: FEE SIMPLE

MUNICIPALITY: MUNICIPAL DISTRICT OF FOOTHILLS NO. 31

REFERENCE NUMBER: 961 064 232

REGISTERED OWNER(S)				
REGISTRATION	DATE(DMY)	DOCUMENT TYPE	VALUE	CONSIDERATION
961 219 558	20/09/1996	SEPARATION - LINCS		

OWNERS

PAUL BUTUK

AND

CAROL BUTUK

BOTH OF:

BOX 480

TURNER VALLEY

ALBERTA T0L 2A0

AS JOINT TENANTS

(CONTINUED)

ENCUMBRANCES, LIENS & INTERESTS

PAGE 2
961 219 558

REGISTRATION
NUMBER DATE (D/M/Y) PARTICULARS

961 051 803 11/03/1996 CAVEAT
 RE : EASEMENT
 CAVEATOR - THE TOWN OF HIGH RIVER.
 1500, 736-6 AVE.SW
 CALGARY
 ALBERTA T2P3T7
 AGENT - GARY HUDSON

TOTAL INSTRUMENTS: 001
YOUR FILE #: PLANNING

*END OF SEARCH *

SR# - J904891 /XLTMDOF1
TOTAL SR FEES: \$5.00

A. L. T. A.

SOUTH ALBERTA LAND REGISTRATION DISTRICT

R E M O T E L A N D T I T L E S E A R C H

SEARCH DATE: 01/10/2001

S

LINC	SHORT LEGAL	TITLE NUMBER
0019 309 624	4;28;18;19;SW	961 219 566

LEGAL DESCRIPTION

MERIDIAN 4 RANGE 28 TOWNSHIP 18
SECTION 19
QUARTER SOUTH WEST
CONTAINING 64.7 HECTARES (160 ACRES) MORE OR LESS
EXCEPTING THEREOUT:
PLAN NUMBER HECTARES ACRES (MORE OR LESS)
AIRPORT SITE 8011027 52.7 130.23
EXCEPTING THEREOUT ALL MINES AND MINERALS
AND THE RIGHT TO WORK THE SAME

ESTATE: FEE SIMPLE

MUNICIPALITY: MUNICIPAL DISTRICT OF FOOTHILLS NO. 31

REFERENCE NUMBER: 961 064 233

REGISTRATION	DATE (DMY)	REGISTERED OWNER(S) DOCUMENT TYPE	VALUE	CONSIDERATION
961 219 566	20/09/1996	SEPARATION - LINCS		

OWNERS

PAUL BUTUK
OF BOX 480
TURNER VALLEY
ALBERTA T0L 2A0

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
051 803	11/03/1996	CAVEAT

(CONTINUED)

ENCUMBRANCES, LIENS & INTERESTS

PAGE 2
961 219 566

REGISTRATION
NUMBER DATE (D/M/Y) PARTICULARS

RE : EASEMENT
CAVEATOR - THE TOWN OF HIGH RIVER.
1500, 736-6 AVE.SW
CALGARY
ALBERTA T2P3T7
AGENT - GARY HUDSON

TOTAL INSTRUMENTS: 001
YOUR FILE #: PLANNING

*END OF SEARCH *

SR# - J904851 /XLTMDOF1
TOTAL SR FEES: \$5.00

TRANSFER OF EASEMENT

The Town of High River, being Grantee of an easement pursuant to an Easement Agreement in writing dated the 3rd day of March, 1986 between itself as Grantee and J. K. Crang Ranches Ltd. as Grantor (the "Easement"), affecting portions of land described as:

The West 1/2 of Section 19 Township 18

Range 28 West of the 4th Meridian

as more particularly shown on a plan annexed to the Easement and forming part thereof, does hereby transfer to Her Majesty the Queen in Right of Alberta, all of its right, title and interest under the Easement and subject to all of the obligations imposed upon it as Grantee thereunder.

DATED at High River, in the Province of Alberta, this 26 day of March, 1997.

THE TOWN OF HIGH RIVER

Per:



Gary Hudson
Town Manager

TRANSFER OF CAVEAT

The Town of High River, the Caveator, under a caveat registered in the Land Titles Office for the South Alberta Land Registration District on the 11th day of March, 1996 as Instrument No. 961 051 803 affecting land described as follows:

The West 1/2 of Section 19 Township 18

Range 28 West of the 4th Meridian

does hereby transfer the caveat to Her Majesty the Queen in right of Alberta, together with all rights granted by the Land Titles Act to it as Caveator and subject to all liabilities imposed by the Land Titles Act on it as Caveator.

IN WITNESS WHEREOF the Town of High River has executed this transfer of caveat the 26 day of March, 1997.

THE TOWN OF HIGH RIVER

Per: *Gary R. Hudson*
Gary Hudson
Town Manager

NOTICE OF CHANGE OF ADDRESS FOR SERVICE

I, _____, agent for her Majesty the Queen in Right of Alberta, designate the following address as the place at which notices and proceedings relating to the caveat or the subject matter of the caveat may be served:

DATED this _____ day of _____, 1997.

Agent of Transferee

EASEMENT

MADE this 3rd day of March A.D., 1986 *CW*

BETWEEN:

J. K. CRANG RANCHES LTD. (hereinafter called "the Grantor")

OF THE FIRST PART

and

THE TOWN OF HIGH RIVER (hereinafter called "the Grantee")

OF THE SECOND PART

WHEREAS the Grantor is the register owner (or is entitled to become the registered owner under the Agreement for Sale or unregistered Transfer, or otherwise) of all that certain piece or parcel of land lying and being in the Province of Alberta and more particularly described as follows:

The North West Quarter of Section Nineteen (19) Township Eighteen (18) Range Twenty Eight (28) West of the Fourth Meridian containing 159.6 acres more or less EXCEPTING THEREOUT Airport on Plan 8011027 containing 7.92 acres more or less EXCEPTING THEREOUT all mines and minerals and the right to work the same

(hereinafter called "the said lands")

AND WHEREAS the Grantee desires to construct, maintain, operate, repair and/or replace and renew a pipeline and well for the supply of water, services and appurtenances necessarily incidental thereto (hereinafter called "the pipe line")

AND WHEREAS the Grantor has agreed to grant an Easement over, across, under and through a portion of the said lands outlined in red on the attached plan (hereinafter called "the land").

-2-

NOW THEREFORE THIS AGREEMENT WITNESSETH that, in consideration of the sum of Ten (\$10.00) Dollars paid by the Grantee to the Grantor (the receipt whereof the Grantor doth hereby acknowledge) and of the covenants, conditions and stipulations herein contained, the Grantor does and does hereby grant to the Grantee an easement over, across, under and through the said land, for the purpose of putting down, taking up, relaying, connecting, disconnecting, erecting, repairing, maintaining and operating the pipe line, well and appurtenances necessarily incidental thereto for as long as the Grantee shall require the land for the supply of services hereinbefore mentioned subject only to the following terms and conditions, namely:

1. The Grantor covenants and agrees:

- (a) That, upon the execution of these presents and at all times thereafter, the grantee, or any persons, firm or corporation acting on its behalf may enter upon and occupy the strip of land with its or their agents, servants, workmen and contractors and with or without vehicles machinery and equipment for the purposes aforesaid;
- (b) That he will not erect any buildings or structures or plant any trees or shrubs within, upon, over or under the strip of land, nor will he add to or reduce the cover over the said pipe line without consent of the Grantee;
- (c) That the Grantee, performing and observing the covenants and conditions herein contained, shall peaceably hold and enjoy all the rights, privileges, liberties and covenants hereby granted without any hindrance and interruption from the Grantor or any person or persons claiming by, through, under or in trust for

-3-

them or any person or persons whatsoever;

- (d) That the exact boundaries of the Easements will be determined by the Grantee's Alberta Land Surveyor, and compensation will be calculated according to the actual acreage taken at a net amount of One Thousand (\$1,000.00) Dollars per acre.

2. The Grantee Covenants and Agrees

- (a) That it will lay down, take up, relay, erect, connect, disconnect, maintain and operate the said pipe line and well in proper and workmanlike manner in accordance with good engineering practice;
- (b) That, where practicable, after the installation of the pipe line and well, it will level off the area affected by the said installation;
- (c) That it will not fence the land excepting those portions upon which appurtenances necessarily incidental to the operation of the said pipe line and well are situated and which the Grantee deems to require the protection of fencing. If at any time hereafter it shall be necessary for the Grantee or any person, firm or corporation acting on its behalf to move fences situate at each end of the land for the purpose of repairing the said pipe line and well, or otherwise, it will replace the said fences in the same position and in as good condition as the same were prior to their being moved;
- (d) That subject to the provisions of paragraph 1 (b) hereof, it will make compensation to the Grantor for any and all damage that may be suffered by the Grantor by reason of or in the course of construction, maintenance, operation and repair or replacement and renewal of the said pipe line, well and appurtenances necessarily incidental thereto. Specifically, the Grantee will

-4-

restore the lands as near as is practicable to their original state by keeping top soil separate from sub-soil in the excavation and backfilling procedure;

- (e) That the Grantee shall not be liable for any damage caused through interference by anyone other than the Grantee, its officers, agents or employees or persons acting under the authority of the Grantee, with any pipe lines or works of the Grantee laid or constructed on the land, including the twenty five feet in perpendicular width working easement;
- (f) The Grantor shall have the right of ingress and egress over the land but not so as to interfere in any manner with the use and occupation thereof by the Grantee;
- (g) Nothing herein contained shall be deemed to vest in the Grantee any right, title or interest in any mines or minerals in and under the land except only the parts thereof that are necessary to be dug, carried away or used in the construction, maintenance or repair of the pipeline and well or works of the Grantee.

3. Miscellaneous Covenants

- (a) That this agreement shall enure to the benefit of and be binding upon the respective heirs, executors, administrators, successors and assigns of the parties hereto;
- (b) That, wherever the singular or the masculine pronouns are used throughout this agreement, the same shall be construed as meaning the plural, the feminine or the neuter where the context or the parties so require;

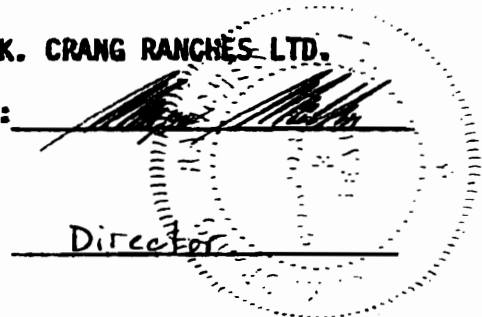
-5-

(c) That this agreement and the covenants herein contained are and shall be covenants running with the land.

IN WITNESS WHEREOF the parties hereto have hereunto affixed their respective corporate seals, duly attested to by their authorized officers, as of the day and year first above written.

J. K. CRANG RANCHES LTD.

Per: _____



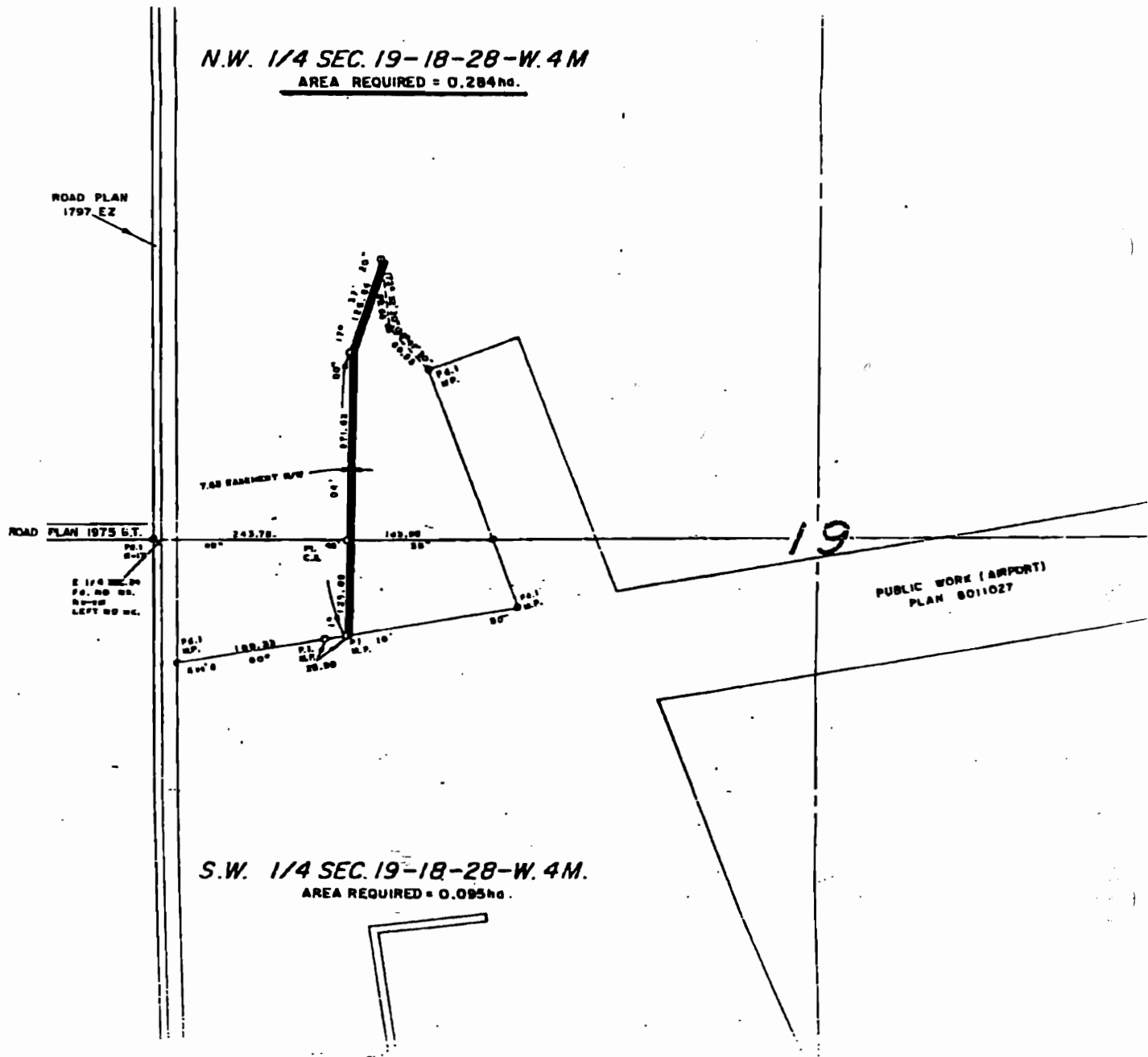
Director _____

THE TOWN OF HIGH RIVER

Per: _____

Allen D. [unclear]
Louise C. Dougherty

N.W. 1/4 SEC. 19-18-28-W. 4M
AREA REQUIRED = 0.284ac.



Caveat Forbidding Registration

Take Notice that the Town of High River
of High River in the Province of Alberta
(Occupation)
claims an interest under an agreement in writing dated the 3rd day of
March, 1986 between J.K. Crang Ranches Ltd. as Grantor and the
Caveator as Grantee pursuant to which the Grantor granted to the
Caveator an easement over, across, under and through that portion outlined
in red on a plan attached to the said agreement
in the land described as follows:

The West 1/2 of Section 19 Township 18
Range 28 West of the 4th Meridian

COMMUNITY OF
CADASTRAL

standing in the register in the name of J. K. Crang Ranches Ltd.

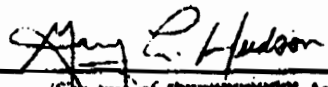
it forbids
: and ~~PROHIBS~~ the

registration of any person as transferee or owner of, or of any instrument affecting that estate
or interest, unless the certificate of title is expressed to be subject to my claim.

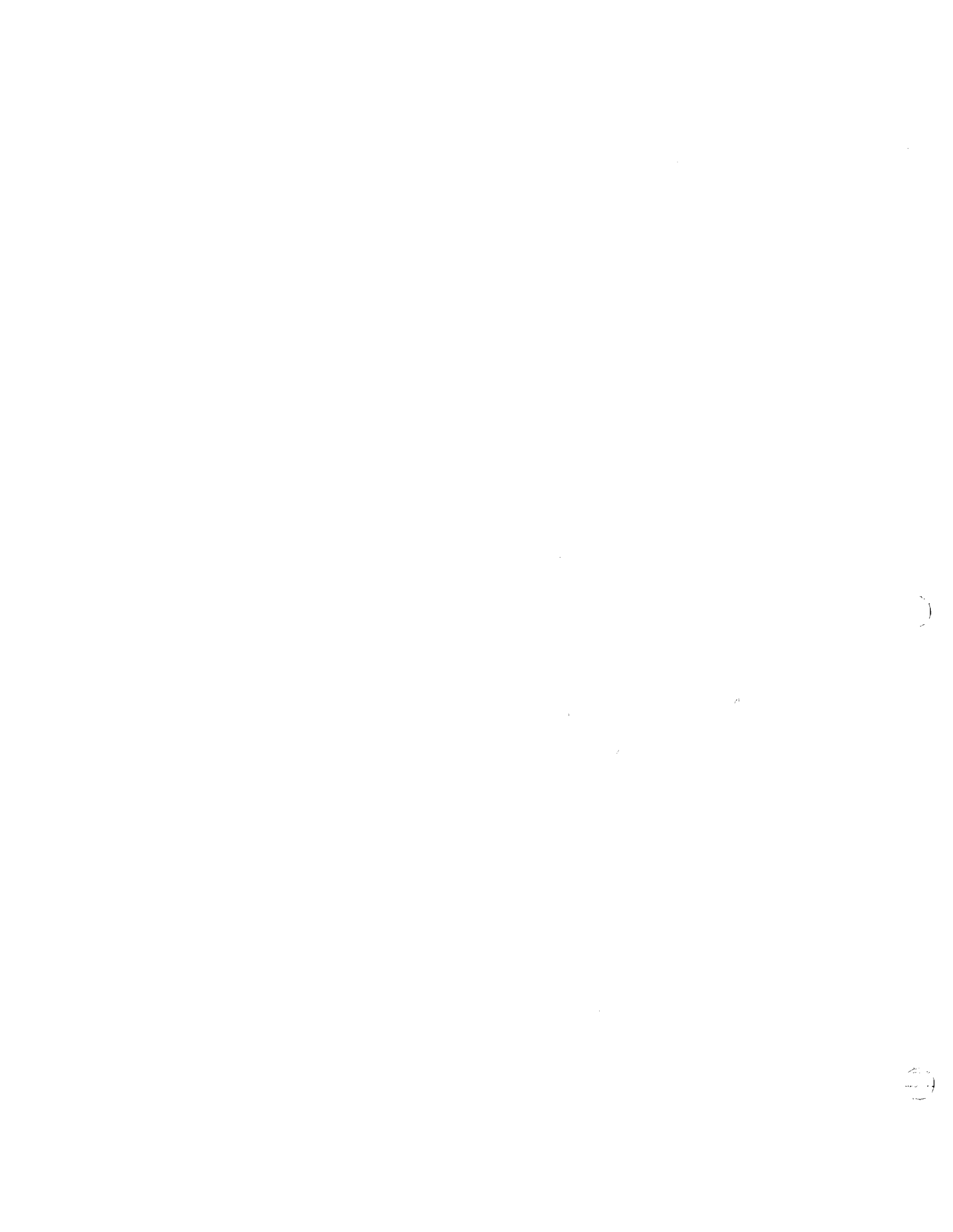
It designates
~~designates~~ the following address as the place at which notices and proceedings relating hereto
may be served: C/O Messrs. Fleming Kambeltz, Barristers and Solicitors,
81500, 736 - 6 Avenue SW
Calgary, Alberta T2P 3T7

In witness whereof I have hereunto subscribed my name this 5 day of March 1996

THE TOWN OF HIGH RIVER



Per: (Signature of ~~IBENBENBEN~~ Agent)
GARY HUDSON



Canada }
Province of Alberta }
To Wit: }
3. GARY HUDSON
of the Town of High River
in the Province of Alberta
Town Manager
(Occupation)
make oath and say as follows:

- 1. I am the agent for the above-named Caveator.
- 2. I believe that the said Caveator has a good and valid claim upon the said land and I say that this Caveat is not being filed for the purpose of delaying or embarrassing any person interested in or proposing to deal therewith.

Sworn before me at the Town
of High River
in the Province of Alberta
this 5 day of March
19 96

Gary Hudson
GARY HUDSON

A Commissioner for Oaths
in and for the Province of Alberta

Cindy Dupuis
CINDY DUPUIS
Commissioner for Oaths
Appointment Terminates January 30, 1997

961051803 REGISTERED 1996 03 11
CAVE - CAVEAT
DOC 1 OF 1 DRR#: 6892110 ADK/PBELSKY
LINC/S: 0019309608 0019309624

RE

Caveat

Hampshire Printing Ltd., Calgary

I certify that the within instrument is duly
Entered and Registered in the Land Titles
Office for the Alberta Land
Registration District of
Province of Alberta.

Registrar
A.E.R.D.

Registrar's File No

Canada }
Province of Alberta }
To Wit: }
3. _____
of the _____ of _____
in the Province of Alberta

(Occupation)
make oath and say as follows:

- I am the within Caveator.
- I believe that I have a good and valid claim upon the said land and I say that this Caveat is not being filed for the purpose of delaying or embarrassing any person interested in or proposing to deal therewith.

Sworn before me at the
of _____
in the Province of Alberta
this _____ day of _____
19 _____



WATER WELL DRILLING REPORT

THIS DATA MAY NOT BE FULLY CHECKED; THE PROVINCE DISCLAIMS ALL RESPONSIBILITY FOR ITS ACCURACY:

WELL I.D. **127518**

CONTRACTOR: NAME: GEOSERVE DRLG ADDRESS: LICENCE NO.: JOURNEYMAN NO.:		WELL OWNER: NAME: CRANG, J.K. RANCHES ADDRESS: 1311 BALDWIN CR SW, CALGARY POSTAL CODE: T2V 2B7		WELL LOCATION: IC# 00 ~ OR LSH SEC TWP RGE W. MER NW 19 018 28 W4 LOCATION VERIFICATION METHOD/ MAP LOCATION IN QUARTER: LOT: BLOCK: PLAN: WELL ELEV: 3359. Feet How obtain: ESTIMATED				
LITHO: Depth (Feet): Lithology: Ground to: 5 Sandy Clay 18 Gravel		DRILLING METHOD: ROTARY TYPE OF WORK: NEW WELL FLOWING WELL: RATE: GAS PRESENT: No OIL PRESENT: No DATE OF ABANDONMENT: MATERIAL USED: PROPOSED USE: DOMESTIC		PRODUCTION TEST: TEST DATE: September 8, 1975 START TIME: 1:00 Elapsed Time in Min:Sec Depth to Water Level During Pumping Depth to Water Level During Recovery WATER REMOVAL RATE DURING TEST: 7 Gal/Min TEST DURATION: 1 Hour 30 Minutes TESTING METHOD: UNKNOWN DEPTH OF PUMP/DRILL STEM: Feet WATER LEVEL AT END OF TEST: Feet NON-PUMPING (STATIC) WATER LEVEL: 6.0 FEET TOTAL DRAWDOWN: 6 Feet				
		WELL COMPLETION DATA: WELL FINISH: PERFORATED CASING/LINER TOTAL HOLE DEPTH: 18 Feet CASING TYPE: SIZE OD: Inch WALL THICKNESS: Inch BOTTOM AT: Feet PERFORATED CASING/LINER: TYPE: STEEL SIZE OD: 5.50 Inch WALL THICKNESS: Inch TOP AT: 0 Feet BOTTOM AT: 16 Feet PERFORATED FROM: 10 Feet TO: 15 Feet Feet TO: Feet Feet TO: Feet SIZE OF PERFORATIONS: Inch X Inch HOW PERFORATED: UNKNOWN SEAL TYPE: CUTTINGS INTERVAL TOP: 0 Feet TO: Feet GEOPHYSICAL LOG TAKEN: RETAINED ON FILE: SCREEN: MATERIAL: SIZE ID (CLEAR): Inch SLOT SIZE: Inch INTERVAL TOP: Feet TO: Feet Feet TO: Feet INSTALLATION METHOD: TOP FITTINGS: BOTTOM FITTINGS: PACK TYPE: GRAIN SIZE: AMOUNT: FITLESS ADAPTER TYPE: DROP PIPE TYPE: LENGTH: Feet DIAMETER: Inch ADDITIONAL PUMP INFORMATION:		RECOMMENDED PUMPING RATE: Gal/Min RECOMMENDED PUMP INTAKE AT: Feet TYPE OF PUMP INSTALLED: MODEL: H.P.:				
STARTED: COMPLETED: September 8, 1975 RECEIVED: October 14, 1975 ADDITIONAL TEST AND/OR PUMP DATA: CHEMISTRIES TAKEN/ HELD: DOCUMENTS HELD: 1 WELL OWNER'S ANTICIPATED WATER REQUIREMENTS PER DAY:		COMMENTS: DRILLER REPORTS MEDIUM HARD WATER (Maximum of 9 lines printed)						

**ALBERTA ENVIRONMENTAL PROTECTION
CHEMICAL ANALYSIS REPORT**

WELL NAME: HIGH RIVER AIRPORT WELL ID No: 241784 (PC record no: 9385)
 LOCATION: LSD SW SEC19 TWP 18 RG 28 M 4 SAMPLE No: 5475
 WELL DEPTH: 99.0 Ft WATER LEVEL: 19.00 Ft
 AQUIFER: LABORATORY: Vegreville
 SAMPLING DATE: 1979.05.29 TIME: : 0 PRINT DATE:

FIELD:	MG/L		MG/L
LABORATORY:	Analysis Date: 1979.06.26		
CONDUCTIVITY	3030	FLUORIDE	2.90
ION BALANCE	1.0000	PH	8.60
SiO2	5.90	TOTAL ALKALINITY	266.0
TDS	2074		
BICARBONATE	314	CALCIUM	44.0
CARBONATE	5.0	CHLORIDE	16.0
MAGNESIUM	11.0	NITRITE-N	0.050*
POTASSIUM	2.20	SODIUM	640.0
SULPHATE	1200.0	TOTAL HARDNESS	157
IRON	0.240		

* Indicates concentrations less than.

Only parameters with determined values are printed.

Temperature reported in Degree Centigrade. Conductivity Reported in microsiemens/cm, pH in pH units. Alkalinity and Hardness expressed as Calcium Carbonate. FE, VA, PB, AL, AG expressed as extractable. FE in field measurements and all remaining metals expressed as total.

EH - Oxidation-reduction potential	SAR - Sodium absorption ratio
DIC - Dissolved inorganic Carbon	COD - Chemical Oxygen demand
DOC - Dissolved organic Carbon	TN - Total particular Nitrogen
TDS - Total dissolved solids	TC - Total particular Carbon

NOTE: This data may not be fully checked.

The Province disclaims all responsibility for its accuracy

ALBERTA ENVIRONMENTAL PROTECTION
CHEMICAL ANALYSIS REPORT

WELL NAME: HAASE, R.E. WELL ID No:127519 (PC record no: 9384)
LOCATION: LSD NW SEC19 TWP 18 RG 28 M 4 SAMPLE No: 69-8843
WELL DEPTH: 50.0 Ft WATER LEVEL: 20.00 Ft
AQUIFER: LABORATORY: Vegreville
SAMPLING DATE: 1969.08.14 TIME: : 0 PRINT DATE:

FIELD:	MG/L		MG/L
LABORATORY:	Analysis Date: 1969.09.10		
FLUORIDE	0.11	TOTAL ALKALINITY	181.0
TDS	284		
CHLORIDE	4.0	NITRATE-N	0.000
NITRITE-N	0.000	SULPHATE	16.0
TOTAL HARDNESS	193		
IRON	0.080		

Remarks: IGNITION LOSS = 152 PPM.

* Indicates concentrations less than.

Only parameters with determined values are printed.

Temperature reported in Degree Centigrade. Conductivity Reported in microsiemens/cm, pH in pH units. Alkalinity and Hardness expressed as Calcium Carbonate. FE, VA, PB, AL, AG expressed as extractable.

FE in field measurements and all remaining metals expressed as total.

EH - Oxidation-reduction potential	SAR - Sodium absorption ratio
DIC - Dissolved inorganic Carbon	COD - Chemical Oxygen demand
DOC - Dissolved organic Carbon	TN - Total particular Nitrogen
TDS - Total dissolved solids	TC - Total particular Carbon

NOTE: This data may not be fully checked.

The Province disclaims all responsibility for its accuracy

SECTION 22.0.0 DIRECT CONTROL DISTRICT #5 (DC5)

22.1.0 PURPOSE AND INTENT

22.1.1 The purpose and intent of this District is to provide for the protection of the Airport from encroachment of uses that may have an effect on the operational safety of the airport facility and to allow Direct Control by the Council over development on the following lands:

In Township 18, Range 28, West 4 Meridian:
Section 19, Plan 8011027, Airport

22.2.0 LIST OF PERMITTED AND DISCRETIONARY USES

22.2.1 PERMITTED USES
Nil

22.2.2 DISCRETIONARY USES

- (a) In this list:
 - (i) "C" followed by a number, where it appears in one of the NEF area columns opposite a particular land use, means that the land use is conditionally allowed and is subject to the applicable special requirements as specified in Section 24.2.3;
 - (ii) "NA" where it appears in one of the NEF area columns in Table 1 opposite a particular land use, means that the land use is prohibited in the NEF area;
 - (iii) "NEF 25-Area" means the NEF area that lies between the 25 NEF Contour and the boundary of the Airport District;
 - (iv) "NEF 25-30 Area" means the NEF area that lies between the 25 NEF Contour and the 30 NEF Contour;
 - (v) "NEF 30-35 Area" and "NEF 35-40 Area" have like meaning to Section 24.2.2.(a)(iv);
 - (vi) "residential replacement or infill unit" means any new residential development that will replace a residential development that was demolished or destroyed, or is to be built on a Lot in a subdivision Plan registered under the Land Titles Act before the coming into force of this Bylaw;
 - (vii) "P" where it appears in one of the NEF area columns means that the use may be conditionally allowed without any special requirements.

USES

NOISE EXPOSURE FORECAST AREAS

	NEF 25 <u>AREA</u>	NEF 25-30 <u>AREA</u>	NEF 30-35 <u>AREA</u>	NEF 35-40 <u>AREA</u>	NEF 40+ <u>AREA</u>
Agricultural General	P	P	P	P	P
Feed Lots	P	NA	NA	NA	NA
Poultry & Hog Farms	P	C3	C3	C3	C3
Home Based Business Minor	P	P	P	P	P
Dwellings – detached single family P		C1	C1	C5	C5
Accessory Uses	P	P	P	P	P
Athletic Fields	P	P	P	C4	C4
Intensive Vegetation Operation	P	P	P	P	P
Excavations/Stockpiling of Soil	P				
Mobile Homes	P				
Airport	P	P	P	P	P
Aircraft Hangers	P	P	P	C2	C2
Flying Club	P	P	P	P	P
Aircraft Sales & Repairs	P	P	P	C2	C2
Aircraft Schools	P	P	P	C2	C2
Public Works	P	P	P	P	P

22.3.0

SPECIAL REQUIREMENTS

- C1 Construction shall conform to Central Mortgage and Housing Corporation standards for sound insulation for buildings situated in any NEF area other than the NEF 25 Area.
- C2 Private and general office area, reception areas and conference room areas construction shall conform to Central Mortgage and Housing Corporation standards for sound insulation for the appropriate NEF Area.
- C3 The development shall be covered completely.
- C4 The development shall not include structures for seating of spectators.
- C5 Replacement of buildings.

22.4.0

REQUIREMENTS

22.4.1

Standards of development shall be at the discretion of the Council.

22.5.0

MINIMUM REQUIREMENTS

- (a) Within 450 metres of the working area of an operating sanitary landfill, modified sanitary landfill, hazardous

- waste management facility or dry waste site,
- (b) Within 300 metres of the disposal area of an operating or non-operating sanitary landfill, modified sanitary landfill or dry waste site,
- (c) Within 450 metres of the disposal area of a non-operating hazardous waste management facility, or
- (d) Within 300 metres of the working area of an operating waste processing site, waste storage site, waste sorting station or waste transfer station.

22.5.1

Area of Lot:

- (a) Area shown on Certificate of Title; or
- (b) Area allowed for by Municipal Bylaw.

22.5.2

Front Yard Setback:

- (a) 5 m from a Internal Subdivision Road - Property Line;
- (b) 48 m from the center line of a Municipal Road;
- (c) 64 m from the center line of a Secondary Highway;
- (d) 40 m from a Primary Highway.

22.5.3

Side Yard Setback:

- (a) 30 m

22.5.4

Rear Yard Setback:

- (a) 30 m

22.6.0

MAXIMUM LIMITS

22.6.1

Number of Lots: 1

22.6.2

Building Height: 9 m (29.52 ft.) or such lesser height as may be determined having regard to flight and navigational aid equipment.

22.7.0

OTHER

22.7.1

Accessory Buildings related to intensive livestock, swine, and poultry operations and specialty uses shall be located in accordance with Alberta Health Regulations.

22.7.2

The use must not obstruct visibility by the emission of dust, smoke, water vapour, blowing garbage, or glare.

22.7.3

Garbage and waste must be stored in weatherproof and animal/bird proof containers properly screened (and be in a location easily accessible to containerized garbage pickup).

22.7.4

The use must not be a fire, explosive, or a radioactive

hazard.

22.7.5 The use must not produce electro-magnetic radiation likely to interfere with radio communications.

22.7.6 In determining whether a proposed land use meets the above conditions, the Development Officer may consult the Canada Department of Transport, Alberta infrastructure, and other competent authorities, and shall be guided by their opinions.

22.7.7 Definitions:

1. In this Regulation,
 - (a) **"airport"** means the High River Airport
 - (b) **"airport reference point elevation"** means the lowest threshold elevation point of the runway as shown on the map, Section 22.8.0;
 - (c) **"airport runway"** means the area of land within the airport that is used or intended to be used for the take-off and landing of aircraft;
 - (d) **"basic strip"** means a basic strip as described in Section 22.9.0;
 - (e) **"land use bylaw"** means the Land Use Bylaw for the Municipal District of Foothills No. 31; as amended from time to time;
 - (f) **"municipality"** means the Municipal District of Foothills No. 31;
 - (g) **"noise exposure forecast area"** or **"NEF Area"** means an area of land within the Protection Area that:
 - i is enclosed by the 40 NEF Contour,
 - ii lies between 2 NEF Contours, or
 - iii lies between the 25 NEF Contour and the boundary of the Protection Area, as shown on the map in Schedule 2;
 - (h) **"NEF Contour"** means a numbered contour as shown on the map in Section 22.8.0;
 - (i) **"outer surface"** means the outer surface as described in Section 22.9.0;
 - (j) **"transitional surface"** means a transitional surface as described in Section 22.9.0;

22.7.8

GENERAL

(1) This District applies only to a development or proposed development within the boundary of the area shown on the map in Section 22.8.0.

(2) All development within the Area requires a development permit.

(3) This District shall be administered by Council.

(4) The Council are not precluded from attaching any other conditions in accordance with the land use bylaw to a development permit.

(5) A development permit for an application within the District may only be issued if the proposed development conforms with the District and the Land Use Bylaw.

22.7.9

Height Limitations

(1) a development permit shall not be issued for a development in the Area if the highest point of the development will exceed in elevation at the location of that point any of the following surfaces that project immediately above the surface of the land at that location:

(a) the take-off / approach surfaces of the runway of the airport;

(b) the transitional surfaces of the runway of the airport;

(c) the outer surface

(2) The airport reference point elevation is deemed to be 1043.8 metres above sea level.

SECTION 22.8.0

AIRPORT AREA MAP

SECTION 22.9.0

HEIGHT LIMITATIONS

HIGH RIVER AIRPORT DIRECT CONTROL DISTRICT

Basic Strip

1. The basic strip associated with both airport runways is an area 60.0 metres in width and 1021.0 metres in length, for each runway the location of which is shown on the map in Section 22.8.0.

Take-Off/Approach Surfaces

2. There are take-off/approach surfaces associated with each end of the basic strip and in each case the surface is imaginary and consists of an inclined plane that:
 - (a) commences at and abuts the end of the basic strip
 - (b) rises at a slope ratio of 1:40 measured from the end of the basic strip
 - (c) diverges outward on each side as it rises, at a slope ratio of 1:10 measured from the respective projected lateral limits of the basic strip; and
 - (d) ends at its intersection with the outer surface.

Transitional Surfaces

3. There is a transitional surface associated with each lateral limit of the basic strip, and in each case the transitional surface is an imaginary surface consisting of an inclined plane that
 - (a) commences at and abuts the lateral limit of the basic strip,
 - (b) rises at a slope ratio of 1:7 measured from the lateral limit of the basic strip, and
 - (c) ends at its intersection with the outer surface of a take-off/approach surface.

Outer Surfaces

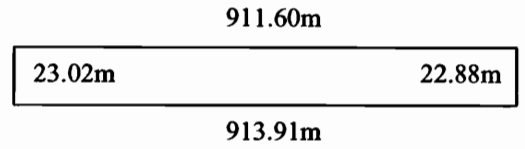
4. The outer surface of the Area is an imaginary surface consisting of a common plane established at a constant elevation of 45 metres above the airport reference point elevation and extending to the outer limits of the Area.

General

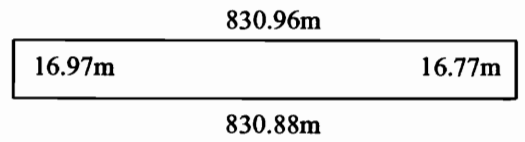
5. The area location of the take-off/approach surfaces and transitional surfaces are represented on the map shown in Section 22.8.0, but if any discrepancy exists between the description of the take-off/approach surfaces or transitional surfaces in this Schedule and their location on the map in Section 22.8.0, the description in this Section prevails.

CODE 2B NON-INSTRUMENT RUNWAY

East/West Runway 06/24 - Length = 913.91 meters
- Width = 23.02 meters



North/South Runway 14/32 - Length = 830.96 meters
- Width = 16.97 meters



10

1.2.3 Standard.— Wherever a colour is referred to in this Document, the specifications for that colour given in Appendix 1 shall apply.

the critical aeroplane characteristics for which the facility is provided. When applying TP 312, the aeroplanes which the aerodrome is intended to serve are first identified and then the two elements of the code.

1.3 REFERENCE CODE

Introductory Note.— The intent of the reference code is to provide a simple method for interrelating the numerous specifications concerning the characteristics of aerodromes so as to provide a series of aerodrome facilities that are suitable for the aeroplanes that are intended to operate at the aerodrome. The code is not intended to be used for determining runway length or pavement strength requirements. The code is composed of two elements which are related to the aeroplane performance characteristics and dimensions. Element 1 is a number based on the aeroplane reference field length and element 2 is a letter based on the aeroplane wing span and outer main gear wheel span. A particular specification is related to the more appropriate of the two elements of the code or to an appropriate combination of the two code elements. The code letter or number within an element selected for design proposes is related to

1.3.1 Standard.— An aerodrome reference code (code number and letter) which is selected for aerodrome planning purposes shall be determined in accordance with the characteristics of the aeroplane for which an aerodrome facility is intended.

1.3.2 Standard.— The aerodrome reference code numbers and letters shall have the meanings assigned to them in Table 1-1.

1.3.3 Standard.— The code number for element 1 shall be determined from Table 1-1, column 1, selecting the code number corresponding to the highest value of the aeroplane reference field lengths of the aeroplanes for which the runway is intended.

Note.— The determination of the aeroplane reference field length is solely for the selection of a code number and is not intended to influence the actual runway length provided.

Table 1-1. Aerodrome reference code (see 1.3.2 to 1.3.4)

Code element 1		Code element 2		
Code number	Aeroplane reference field length	Code letter	Wing span	Outer main gear wheel span ^a
	(1)		(2)	(3)
1	Less than 800 m	A	Up to but not including 15 m	up to but not including 4.5 m
2	800 m up to but not including 1200 m	B	15 m up to but not including 24 m	4.5 m up to but not including 6 m
3	1200 m up to but not including 1800 m	C	24 m up to but not including 36 m	6 m up to but not including 9 m
4	1800 m and over	D	36 m up to but not including 52 m	9 m up to but not including 14 m
		E	52 m up to but not including 65 m	9 m up to but not including 14 m

^a. Distance between the outside edges of the main gear wheels.

GENERAL

TP 312E

1.3.4 Standard.— The code letter for element 2 shall be determined from Table 1-1, column 3, by selecting the code letter which corresponds to the greatest wing span, or the greatest outer main gear wing span, whichever gives the more demanding code letter of the aeroplanes for which the facility is intended.

Note.— *Guidance to assist the appropriate authority in determining the aerodrome reference code is given in the ICAO Aerodrome Design Manual, Part 1 and 2.*

APPENDIX 1

Aeroplane Classification by Code Number and Letter

Aircraft Model	Code	Aeroplane Reference Field Length (m)	Wing Span (m)	Outer Main Gear Wheel Span (m)
1	2	3	4	5
Beaver DHC-2	1A	381	14.6	3.3
Turbo Beaver DHC-2T	1A	427	14.6	3.3
Beechcraft A24R	1A	603	10	3.9
Beechcraft A36	1A	670	10.2	2.9
Beechcraft 76	1A	430	11.6	3.3
Beechcraft B55	1A	457	11.5	2.9
Beechcraft B60	1A	793	12.0	3.4
Beechcraft B100	1A	579	14.0	4.3
Britten Norman Islander BN2A	1A	353	14.9	4.0
Cessna 152	1A	408	10.0	-
Cessna 172	1A	381	10.9	-
Cessna 180	1A	367	10.9	-
Cessna 185	1A	416	10.9	-
Cessna Stationair 6	1A	543	10.9	-
Cessna Turbo 6	1A	500	10.9	-
Cessna Stationair 7	1A	600	10.9	-
Cessna Turbo 7	1A	567	10.9	-
Cessna Skylane	1A	479	10.9	-
Cessna Turbo Skylane	1A	479	10.9	-
Cessna 310	1A	518	11.3	-
Cessna 310 Turbo	1A	507	11.3	-
Cessna Golden Eagle 421C	1A	708	12.5	-
Cessna Titan 404	1A	721	14.1	-
Beechcraft E18S	1B	753	15.0	3.9
Beechcraft B80	1B	427	15.3	4.3
Beechcraft C90	1B	488	15.3	4.3
Beechcraft 200	1B	579	16.6	5.6

EXTRACT FROM ICAO DOCUMENT 9157

Aircraft Model	Code	Aeroplane Reference Field Length (m)	Wing Span (m)	Outer Main Gear Wheel Span (m)
1	2	3	4	5
Otter DHC-3	1B	497	17.7	3.7
Short SC7-3/SC7-3A	1B	616	19.8	4.6
Twin Otter DH-6	1B	695	19.8	4.1
Dash 7 DHC-7	1C	689	28.4	7.8
Lear Jet 24F	2A	1 005	10.9	2.5
Lear Jet 28/29	2A	912	13.4	2.5
Short SD3-30	2B	1 106	22.8	4.6
NAMC YS-11	2D			
Hawker Siddley HS125-400	3A	1 646	14.3	3.3
Hawker Siddley HS125-600	3A	1 646	14.3	3.3
Hawker Siddley HS125-700	3A	1 768	14.3	3.3
Lear Jet 24D	3A	1 200	10.9	2.5
Lear Jet 35A/36A	3A	1 287/1 458	12.0	2.5
Lear Jet 54	3A	1 217	13.4	2.5
Lear Jet 55	3A	1 292	13.4	2.5
Canadair CL600	3B	1 310	18.8	3.6
Fokker F28-1 000	3B	1 646	23.6	5.8
F28-2 000	3B	1 646	23.6	5.8
Nord 262	3B	1 260	21.9	3.4
Antonov AN-24	3C	1 600	29.2	8.8
Convair 240	3C	1 301	28.0	8.4
Convair 440	3C	1 564	32.1	8.6
Convair 580	3C	1 341	32.1	8.6
Convair 600	3C	1 378	28.0	8.4
Convair 640	3C	1 570	32.1	8.6
DC-3	3C	1 204	28.8	5.8
DC-4	3C	1 542	35.8	8.5
DC-6A/6B	3C	1 375	35.8	8.5

23/1/91

No. 1

EXTRACT FROM ICAO DOCUMENT 9157

PLANNING FOR LANDS IN THE VICINITY OF AIRPORTS

Guidelines for Municipalities

Alberta Municipal Affairs has prepared these guidelines to assist municipalities in addressing their land use planning responsibilities for lands in the vicinity of airports.

Guideline #1 Incompatible Residential Development

Residential land use is considered incompatible with significant noise associated with the normal operation of an airport.

Either a standard residential development setback from the runway(s), or contours created by a noise exposure forecast model (suitable, in the opinion of the municipality, to its circumstance) may be used to determine areas which are unsuitable for residential development.

1) Standard Residential Development Setback

Runways less than 1200 metres

A standard setback from the runway(s) for residential development should be equivalent to 0.3 times the overall length of the runway, as measured perpendicularly from the centre line of the runway, and located within a distance equivalent to 1.0 times the overall length of the runway, as measured from the end of the runway and parallel to the runway centre line.

Runways of 1200 to 1800 metres

A standard setback from the runway(s) for residential development should be equivalent to 0.4 times the overall length of the runway, as measured perpendicularly from the center line of the runway, and located within a distance equivalent to 1.5 times the overall length of the runway as measured from the end of the runway and parallel to the runway centre line.

Runways greater than 1800 metres

A standard setback from the runway(s) for residential development should be equivalent to 0.5 times the overall length of the runway, as measured perpendicularly from the centre line of the runway, and located within a

distance equivalent to 2.5 times the overall length of the runway, as measured from the end of the runway and parallel to the runway centre line.

2) Noise Exposure Forecast (NEF) Model

Restrictions on residential development should be consistent with Transport Canada's (TC) publication entitled "Land Use in the Vicinity of Airports (TP1247)". This publication recommends that no residences be permitted inside the 30 NEF contour.

The NEF contours of an existing airport vicinity protection area (AVPA) may not accurately represent existing and future traffic volumes. Previous federal and provincial support to generate NEF contours is no longer available. The services of a planning consultant may be engaged to prepare new NEF contours.

Guideline #2 Other Incompatible Land Uses

Other land uses that attract and accommodate people for various periods of time are also considered to be incompatible with significant noise associated with the normal operations of an airport.

Either a standard development setback from the runway(s), or contours created by a noise exposure forecast model (suitable, in the opinion of the municipality, to its circumstance) may be used to determine areas which are unsuitable for noise sensitive development.

1) Standard Development Setback

A standard setback from the runway(s) for other incompatible land uses should be at least one-half the distances specified by the standard residential development setback (referred to in Guideline #1).

2) Noise Exposure Forecast Model

Other incompatible land uses should be restricted in accordance with TP 1247.

The NEF contours of an existing airport vicinity protection area (AVPA) may not accurately represent existing and future traffic volumes. Previous federal and provincial support to generate NEF contours is no longer available. The services of a planning consultant may be engaged to prepare new NEF contours.

Guideline #3 Height Limitations

The maximum height of buildings and other developments should be defined to avoid jeopardizing both the operation of the airport and adjacent land use activities.

Either the height limitations of an existing AVPA regulation may be applied or the services of a planning consultant engaged to properly apply the provisions of TP 1247.

Guideline #4 Protection of Electronic Facilities

The protection of existing electronic facilities and navigational aids from encroaching development will ensure continued airport operations.

Either the protection measures of an existing AVPA regulation may be applied or TC may be contacted for the review of all proposed developments in relation to existing electronic facilities and navigational aids.

Guideline #5 Bird Hazards

Particular species of birds in sufficient numbers may inhibit the normal operation of an airport. A restriction on land uses that may cause bird hazards will ensure continued airport operations.

Guideline #6 Smoke, Vapour, or Dust

Sufficient amounts of smoke, vapour or dust may inhibit the normal operation of an airport. A restriction on land uses that may cause these conditions will ensure continued airport operations.

CODE 2B NON-INSTRUMENT RUNWAY

Diagram 1: Development Setbacks

E/W Runway 06/24 – 913.91 meters

- 1) Establish the center line of the runway.
- 2) Residential setbacks:
 - From length side: setback = $0.3 \times \text{length of runway}$
= $0.3 \times 913.91 \text{ m}$
= 271.173 m perpendicularly from the centerline
 - From takeoff/landing end: setback = $1 \times \text{length of runway}$
= $1 \times 913.91 \text{ m}$
= 913.91 m
added to the centerline length
- 3) Development setbacks:
 - From length side: setback = $0.5 (0.3 \times \text{length of runway})$
= $0.5 (0.3 \times 913.91 \text{ m})$
= 137.0865 m perpendicularly from the centerline
 - From takeoff/landing end: setback = $0.5 (1 \times \text{length of runway})$
= $0.5 (1 \times 913.91 \text{ m})$
= 456.955 m
added to the centerline length

N/S Runway 14/32 – 830.96 meters

- 3) Establish the center line of the runway.
- 4) Residential setbacks:
 - From length side: setback = $0.3 \times \text{length of runway}$
= $0.3 \times 830.96 \text{ m}$
= 249.288 m perpendicularly from the centerline
 - From takeoff/landing end: setback = $1 \times \text{length of runway}$
= $1 \times 830.96 \text{ m}$
= 830.96 m
added to the centerline length
- 3) Development setbacks:
 - From length side: setback = $0.5 (0.3 \times \text{length of runway})$
= $0.5 (0.3 \times 830.96 \text{ m})$
= 124.644 m perpendicularly from the centerline
 - From takeoff/landing end: setback = $0.5 (1 \times \text{length of runway})$
= $0.5 (1 \times 830.96 \text{ m})$
= 415.48 m
added to the centerline length

APPENDIX 1

HEIGHT LIMITATIONS MAP

The Height Limitations Map of the AVPA regulation is developed utilizing the criteria for obstacle limitation surfaces defined in the Transport Canada document:

LAND USE IN THE VICINITY OF AIRPORTS

TP 1247E
Sixth Edition
June 1987

The three obstacle limitation surfaces defined in this document are:

- o take-off/approach surface
- o transitional surface
- o outer surface

These surfaces are illustrated in Figures 1 and 2 on page 2.

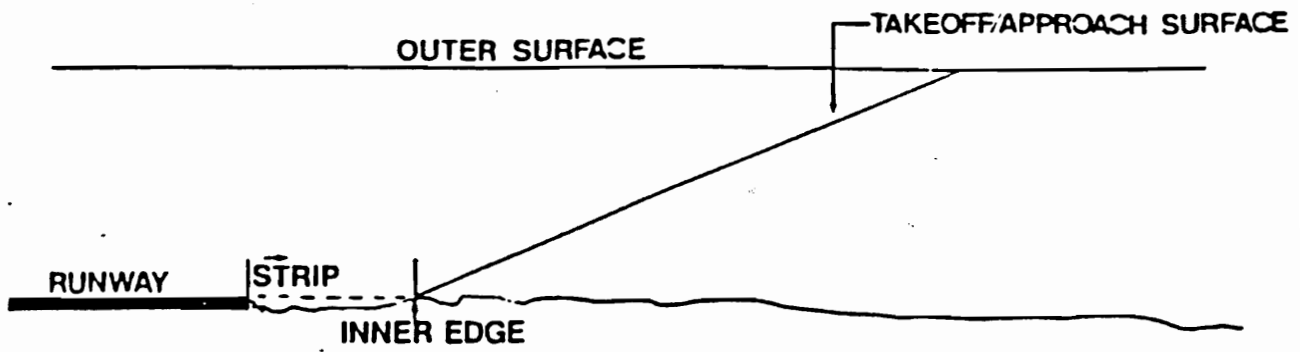


Figure 1

SIDE VIEW

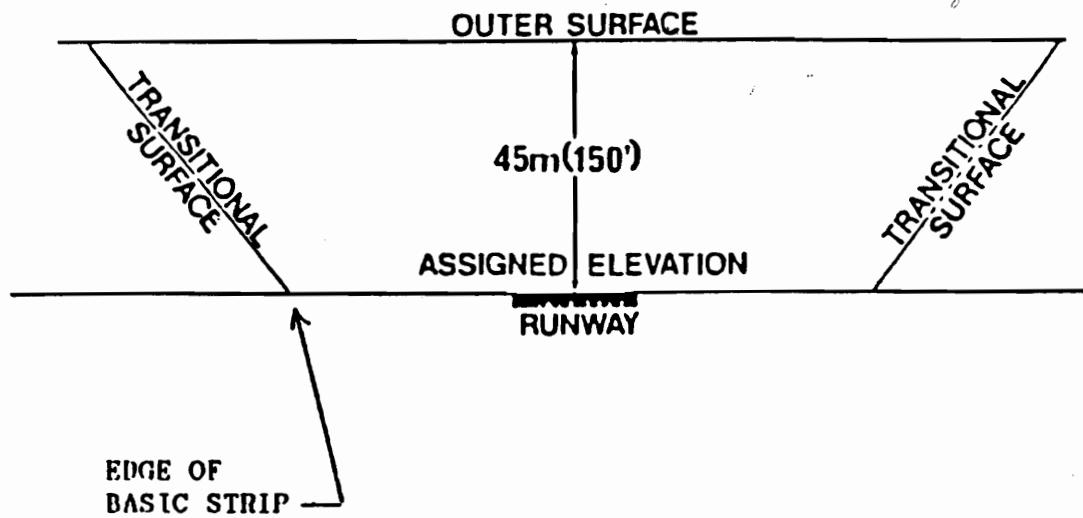


Figure 2

END VIEW

RUNWAY CLASSIFICATION

The protection criteria utilized for the take-off/approach and transitional surfaces vary according to the runway classifications.

The runway classifications are determined by the field length of the runway and the type of approach.

The process for determining a runway classification is as follows:

1. Identify runway code

<u>Code Number</u>	<u>Aeroplane Reference Field Length</u>
1	less than 800 m (2650')
②	800 m (2650') up to but not including 1200 m (4000')
3	1200 m (4000') up to but not including 1800 m (6000')
4	1800 m (6000') and over

2. Identify runway type

- o (P) - Precision approach
- o (NP) - Non-Precision approach
- o ①(NI) - Non-Instrument approach

Note: Generally speaking the following electronic facilities are associated with each runway type:

<u>Runway Type</u>	<u>Electronic Facility</u>
Precision	MLS - Microwave Landing System ILS - Instrument Landing System
Non-Precision	NDB - Non-Directional Beacon DME - Distance Measuring Equipment
Non-Instrument	None

PROTECTION CRITERIA

Take-off/Approach and Transitional Surfaces

The specific criteria required to develop the Height Limitations Map are the following:

- | | |
|-----------------------------|--|
| (a) Take-off/Approach slope | (Percent/Ratio) = 4% |
| (b) Divergence | (Percent) = 10% |
| (c) Transitional slope | (Percent/Ratio) (Federal: 20%, 1:5) M.D.: 14.3%, 1:7 |
| (d) Width of basic strip | (Metres/Feet) 30m (100') |
| (e) Inner edge | (Metres/Feet) 60m |

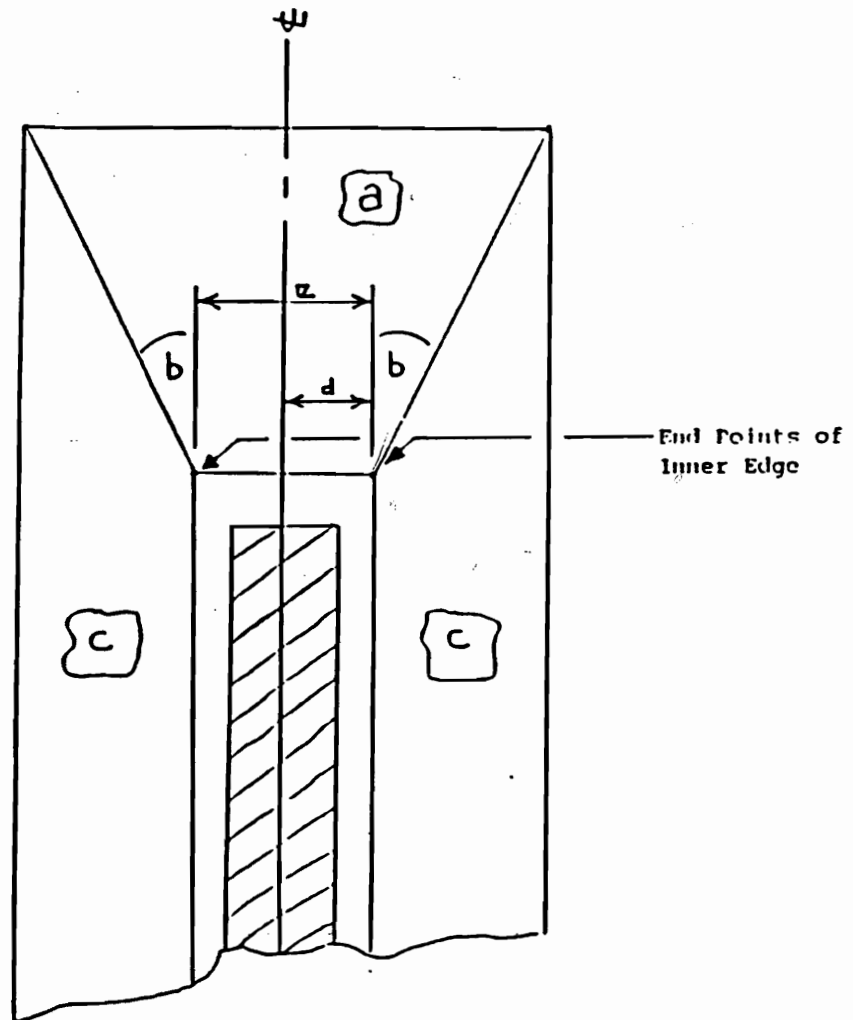


Figure 3

SURFACES

(a) Take-off/Approach slope

The take-off/approach slope is a surface extended outward at each end of the runway and intersects the transitional surface at the angle of divergence.

For purposes of the AVPA regulation, the take-off/approach slope is illustrated to a height of 45 m (where it intersects the outer surface) above the threshold elevation from which it is measured.

The following table provides the slope for each type of runway:

Type	Code	Take-off/Approach Slope
Precision (P)	1 and 2	2.5%
	3 and 4	2%
Non-Precision (NP)	1 and 2	3.33%
	3 and 4	2.5%
Non-Instrument (NI)	1	5%
	2	4%
	3 and 4	2.5%

(b) Divergence

Established to increase the width of take-off/approach surface outwards commencing at the corners of the basic strip from each end of the runway.

The following table provides the divergence for each type of runway:

Type	Code	Divergence
Precision (P)	1,2,3,4	15%
Non-Precision (NP)	1 and 2	10%
	3 and 4	15%
Non-Instrument (NI)	1,2,3,4	10%

(c) Transitional slope

The transitional slope is defined as a surface along the sides of the runway and intersects the take-off/approach surface at the angle of divergence.

For purposes of the AVPA regulation, the transitional slope is illustrated to a height of 45 m.

The following table provides the transitional slope required for each type of runway:

Type	Code	Transitional Slope
Precision (P)	1,2,3,4	14.3% (1:7)
Non-Precision (NP)	1,2,3,4	14.3% (1:7)
Non-Instrument (NI)	1 and 2	20% (1:5)
	3 and 4	14.3% (1:7)

M.D. Foothills, Land Use Bylaw
Direct control 10 uses 14.3% (1:7)

(d) Width of basic strip

The following table provides the required basic strip width for each type of runway:

Type	Code	Width of basic strip*
Precision (P)	1 and 2	75 m (250')
	3 and 4	150 m (500')
Non-Precision (NP)	1 and 2	45 m (150')
	3	75 m (250')
	4	150 m (500')
Non-Instrument (NI)	1 and 2	30 m (100')
	3	45 m (150')
	4	75 m (250')

* NOTE: Width of basic strip shall extend on each side of centreline of the runway. total = 60m, 200'

(e) Inner Edge

The inner edge is defined as the width perpendicular to the runway length at both ends of the basic strip. The length of the inner edge is dependent on the basic strip width and is equal to the width of the basic strip on each side of the centreline of the runway.

The inner edge is used as the inside edge for the take-off/approach surface with its end points establishing points where the angle of divergence commences. As well, its end points establishes the inside edge for the transitional surface. (See figure 3 on page 4)

Outer Surface

An outer surface is a plane established to protect aircrafts conducting a circling procedure into the airport.

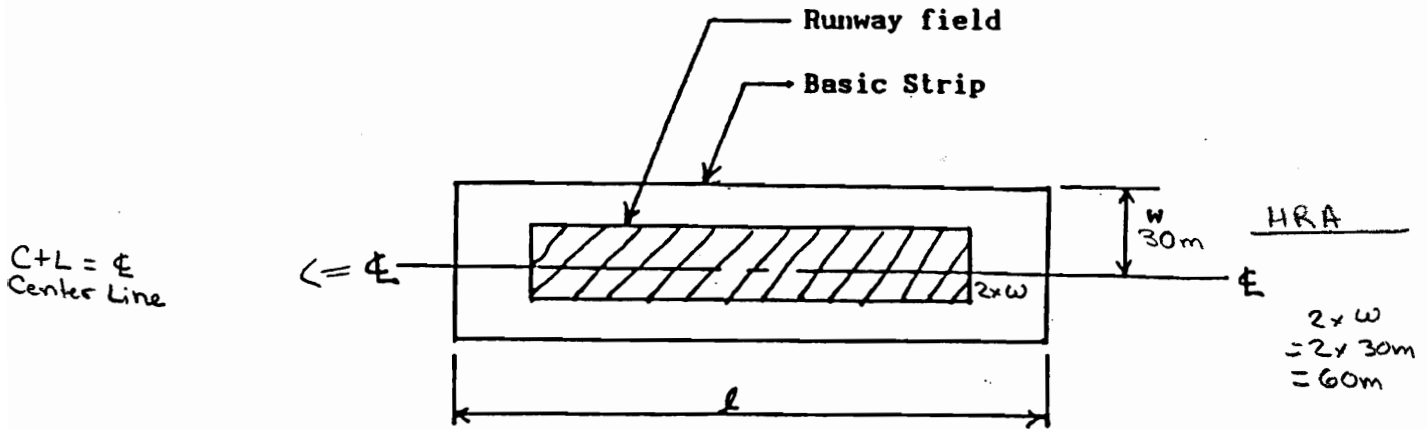
For purposes of the AVPA regulation, the outer surface serves as a cut-off point for the illustration of the take-off/approach and transitional surfaces.

The outer surface is established at 45 m above the airport reference elevation (in most cases, airport reference elevation = lowest threshold elevation).

As the outer surface is usually considered a recommended practice guideline by Transport Canada, a referral to the Department is required when a development proposal is deemed to contravene the outer surface.

HRA → Calculations for High River Airport
PROCESS FOR DEVELOPING THE HEIGHT LIMITATIONS MAP

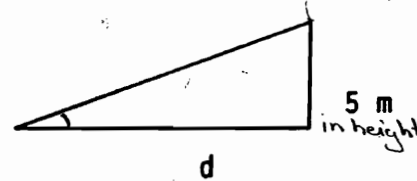
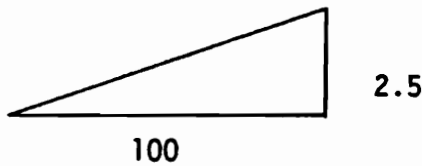
- o Establish basic strip length and basic strip width



1. Take-off/approach Slope

Step 1 Determine distance between 5 m interval contours using slope

eg. slope = 2.5% (1:40)



HRA

$$\frac{4}{100} = \frac{5m}{d}$$

$$d = 5m \times \frac{100}{4}$$

$$d = 125m / \text{per } 5m \text{ interval}$$

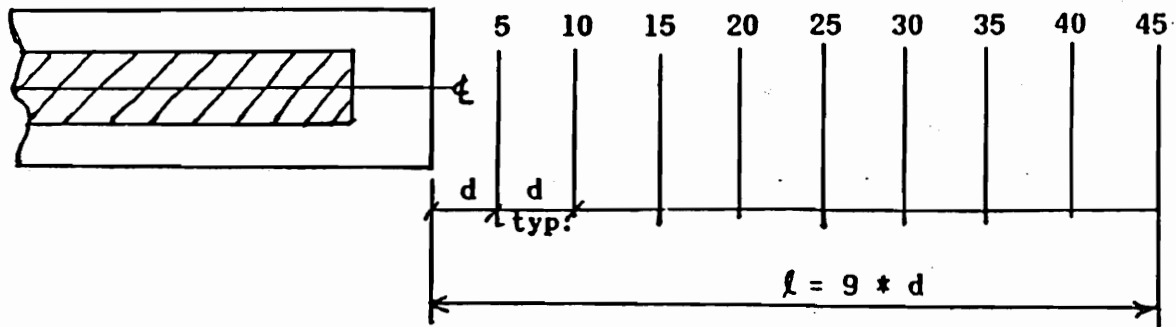
SLOPE = $\frac{\text{Rise}}{\text{SLOPE}}{\text{RUN}}$

$$\frac{2.5}{100} = \frac{5m}{d}$$

$$d = 5m \times \frac{100}{2.5}$$

$$d = 200m / 5m \text{ interval}$$

Step 2 Measure distances from both ends of the basic strip outward
 at 5 m intervals to 45 m interval.



125

$$d = 200 \text{ m} / 5 \text{ m interval}$$

@ 45 m interval:

$$l = 9 * d$$

$$l = 9 * 200$$

$$l = 1800 \text{ m}$$

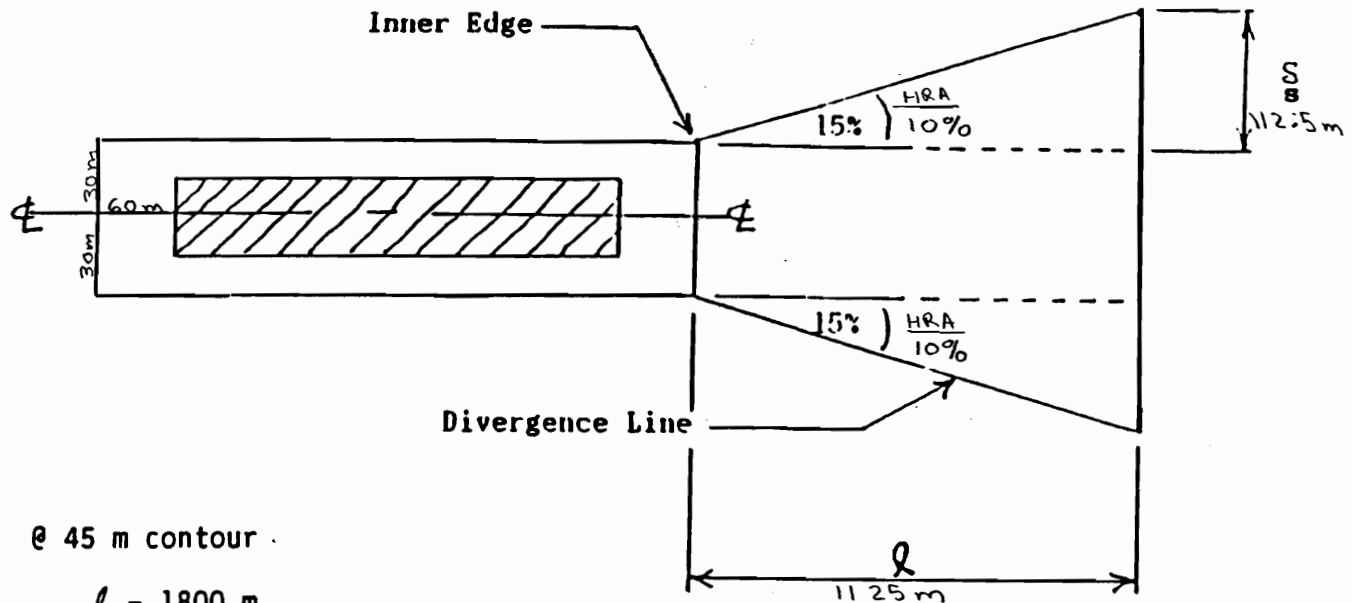
HRA

$$\begin{aligned} l &= 9 * d \\ &= 9 * 125 \text{ m} \\ &= 1125 \text{ m} \end{aligned}$$

2. Divergence

Step 1 Increase the width of the take-off/approach surface at the end points of the inner edge outwards from each end of the runway by 10% or 15% of length to 45 m interval.

eg. Divergence = 15%



@ 45 m contour .

$$l = 1800 \text{ m}$$

$$s = 0.15 * l$$

$$s = 0.15 * 1800 \text{ m}$$

$$s = 270 \text{ m}$$

HRA

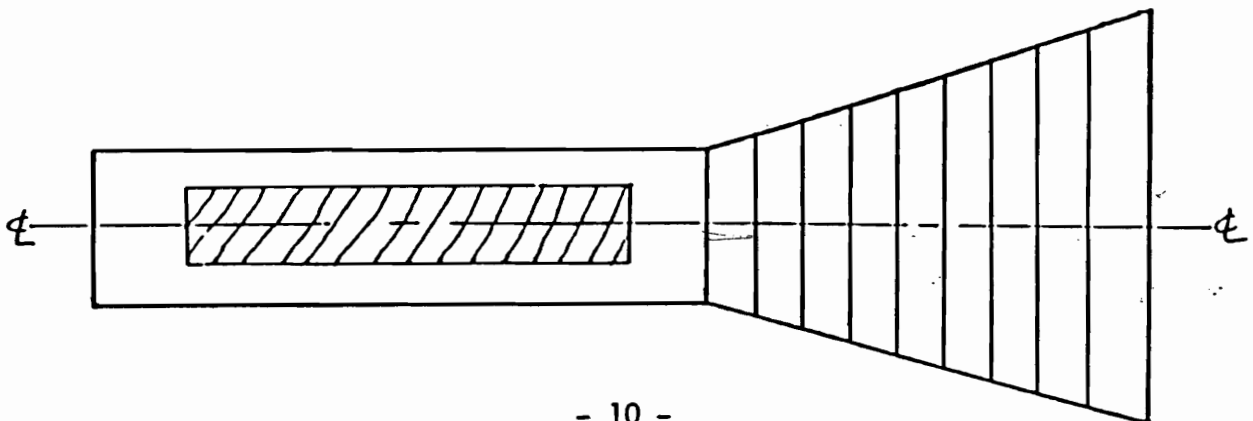
$$S = \text{Divergence} \times l$$

$$S = 10\% \times 1125 \text{ m}$$

$$S = 0.1 \times 1125 \text{ m}$$

$$S = 112.5 \text{ m}$$

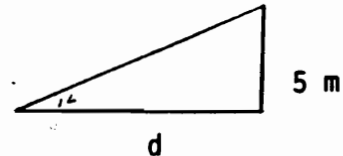
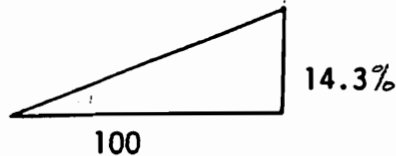
Step 2 Draw contour lines at ^{height} 5 m intervals to ^{height} 45 m contour parallel to inner edge within divergence lines.



3. Transitional Slope

Step 1 Determine distance between 5 m interval contours using slope 20% (1:5) or 14.3% (1:7).

HRA
eg. slope = 14.3% (1:7)



$$\text{SLOPE} = \frac{\text{RISE}}{\text{RUN}}$$

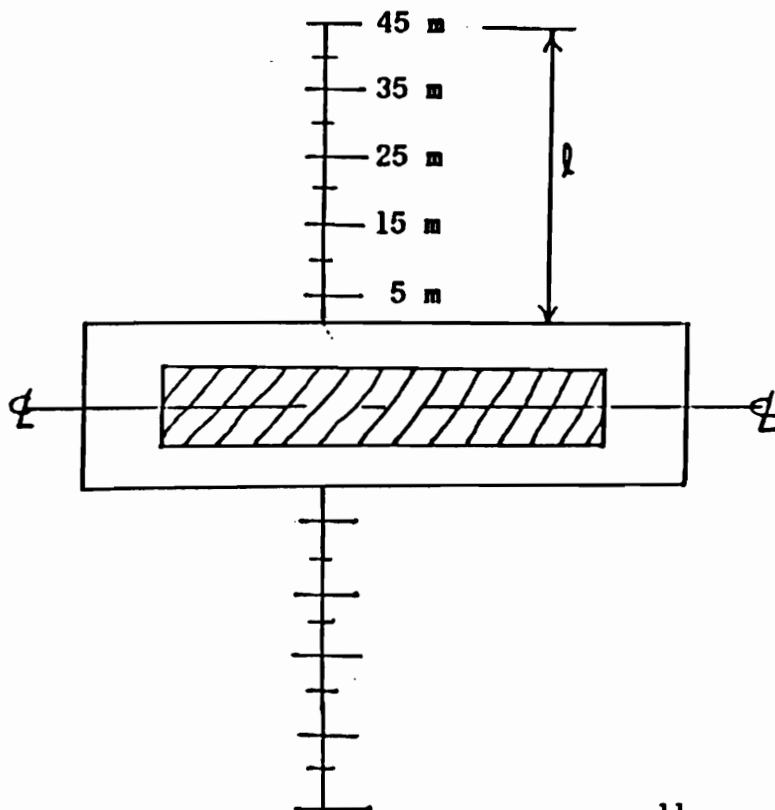
$$\frac{14.3}{100} = \frac{5 \text{ m}}{d}$$

$$d = 5 \text{ m} * \frac{100}{14.3}$$

$$d = 35 \text{ m} / 5 \text{ m interval}$$

(34.965 m / 5 m height interval)

Step 2 Measure distances from both sides of the runway outward at 5 m intervals to 45 m interval.



$$d = \frac{\text{HRA}}{5 \text{ m interval}}$$

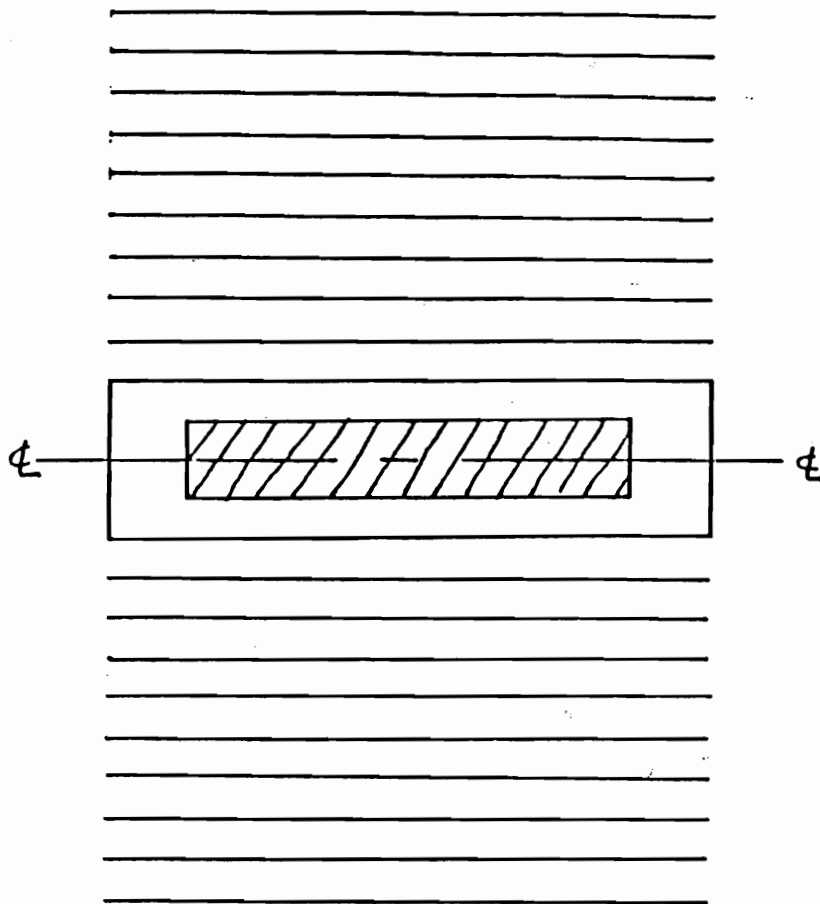
@ 45 m interval:

$$L = 9 * d$$

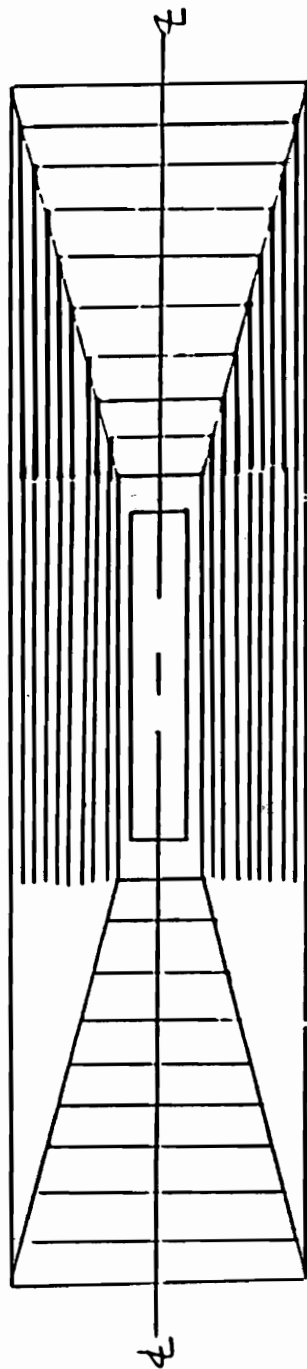
$$L = 9 * 35$$

$$L = 315 \text{ m}$$

Step 3 Draw contour lines at these distances parallel to centreline within the basic strip length.



Step 4 Draw linear contour lines to join transitional surface contours with take-off/approach surface contours.



RUNWAY CLASSIFICATION

RUNWAY CODE	TYPE	SLOPE	DIVERG	TRANSITIONAL SLOPE	INNER EDGE
1,2	Precision	2.5% (1:40)	15%	14.3% (1:7)	150 m
3,4	Precision	2% (1:50)	15%	14.3% (1:7)	300 m
1,2	Non-Precision	3.33% (1:30)	10%	14.3% (1:7)	90 m
3	Non-Precision	2.5% (1:40)	15%	14.3% (1:7)	150 m
4	Non-Precision	2.5% (1:40)	15%	14.3% (1:7)	300 m
1	Non-Instrument	5% (1:20)	10%	20% (1:5)	60 m
2	Non-Instrument	4% (1:25)	10%	20% (1:5)	60 m
3	Non-Instrument	2.5% (1:40)	10%	14.3% (1:7)	90 m
4	Non-Instrument	2.5% (1:40)	10%	14.3% (1:7)	150 m

Take-off/Approach Surface

NO.	DISTANCE BETWEEN 5 M CONTOURS	DISTANCE FROM END OF BASIC STRIP TO 45 M CONTOUR	WIDTH OF TAKE-OFF/APPROACH SURFACE @ 45 M CONTOURS
P1-2	200 m	1800 m	690 m
P3-4	250 m	2250 m	975 m
NP1-2	150 m	1350 m	360 m
NP3	200 m	1800 m	690 m
NP4	200 m	1800 m	840 m
NI1	100 m	900 m	240 m
NI2	125 m	1125 m	285 m
NI3	200 m	1800 m	450 m
NI4	200 m	1800 m	510 m

Transitional Surface

NO.	DISTANCE BETWEEN 5 M CONTOURS	DISTANCE FROM SIDE OF BASIC LENGTH TO 45 M CONTOUR
T1-2	25 m	225 m
T3-4	35 m	315 m

