

**AGRICULTURAL LAND BASE**

**MONITORING STUDY**

**(1991 - 1995)**

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## EXECUTIVE SUMMARY

The Agricultural Land Base Monitoring Study documents land use changes in rural Alberta. The study collects information regarding the quality and quantity of additions and deletions to the agricultural land base. The current study monitors changes from 1991 - 1995. This is the fifth in a series of studies which have monitored land use changes since 1976.

This study is the only one study in the series that has noted a net gain (20,400 acres) of agricultural land. This gain comes mostly from the sale of public lands. During this study period Public Lands adopted new policies (See Section 4.1). These policy changes prompted many leaseholders to convert their leases to sales. These sales reflect pent-up demand for purchasers to obtain title to land. Much of this land may have been under cultivation at the time of purchase. The majority of this activity occurred in the Peace Region along the fringe of the settled land base.

The two major land uses that remove agricultural land from the provincial land base are oil and gas activity and residential subdivisions. Combined these represent 86% of total deletions. The level of activity for both types of land use are expected to remain at elevated levels. However, these ongoing land base deletions have not appeared to decrease Alberta's overall agricultural production.

Approximately half of the land lost is defined as higher capability agricultural lands (CLI 1-3). Most of these losses occur within the more densely populated regions of the province. Almost two-thirds of all additions are lower capability lands (CLI 4-7) and are located along the fringe of the settle land base, primarily in northern Alberta. As the more productive land near urban centres continues to be used for other purposes, the overall quality of the agricultural land base in Alberta continues to change.

Alberta is expected to show net losses of agricultural land in the future. Public Land term sales are being phased out and overall sales of public land are decreasing. Oil and gas land related activity is at a twenty year high and residential subdivisions have been increasing since the mid-1980s. High demand for alternative land uses along with decreased additions will lead to greater farmland losses in the future.

There is considerable concern over country residential subdivision development. Increased development creates problems for incompatible land uses in rural areas. As urban residential developments move into rural farming areas, chances of nuisance complaints increases. This presents special challenges to the agricultural industry. The conflicts between agricultural producers and their non-farm and farm neighbours may ultimately limit Alberta's production capability more so than the actual acre loss of agricultural land.

Alberta's land base is subject to many competing urban, industrial, commercial and recreational pressures. It is important to continue collecting data in order to provide relevant information to facilitate good land use planning decisions. Proper planning is required to maximize benefits from all uses and keep land uses compatible. The Agricultural Land Base Monitoring Study will continue to be an important tool in assessing the impacts of these changing land use patterns.

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2. The Municipal Government Board of Alberta Municipal Affairs.
3. Alberta Environment Protection, Land Reclamation Division and Land Services Branch. Land Administration Branch, Environmental Protection.
4. Alberta Energy and Utilities Board.
5. Public Land Management Branch, Alberta Agriculture, Food and Rural Development

The authors would also like to extend our acknowledgments to the amazing work in data management and analysis that was provided by Keith Toogood of the Systems Development Division, Alberta Agriculture, Food and Rural Development. As well our thanks are given to Conservation and Development of Alberta Agriculture, Food and Rural Development for the use of their many maps.

## 1. INTRODUCTION

Alberta's agricultural land base is the source of a diverse and continually growing industry. It encompasses approximately one-third of the total provincial land area. The agricultural land base also provides a wide variety of social and economic opportunities across Alberta.

Perception of the land base status ranges widely. Some believe that the land base is being significantly eroded by commercial and residential developments while others believe that we have a virtually unlimited resource. The Agricultural Land Base Study was designed to periodically monitor changes across Alberta. The study records both additions and deletions to the land base in a given study period. This information is required for public debate and design of government policies. The study's objective is to quantify recent land use changes.

The Agricultural Land Base Monitoring Study assesses land use changes. The study's findings will help the department of Agriculture, Food and Rural Development identify and assess land use trends. This is fifth in a series of studies which include:

6. An Inventory of Changes in Alberta's Agricultural Land Base Between 1976 and 1980. Birch, A., 1982. Resource Economics Branch, Alberta Agriculture.
7. An Inventory of Change in Alberta's Agricultural Land Base, 1981. Woloshyn, P., 1983. Resource Economics Branch, Alberta Agriculture.
8. Agricultural Land Base Monitoring Study (1982-1985). Wehrhahn, R., 1986. Land Use Branch, Alberta Agriculture.
9. Agricultural Land Base Monitoring Study (1982-1985). Wright, C. and Pearson, M., 1993. Resource Planning Branch, Alberta Agriculture, Food and Rural Development.

Previous studies have shown a consistent loss of agricultural land. These losses may be significant in local areas but are quite small when set on a provincial scale. Recently, concern has been shown not only over the actual acres lost due to residential subdivisions, but also the potential for increased nuisance complaints and restrictions on agricultural intensification. Competition for the land base has increased as other uses, such as forestry developments, have moved into traditional agricultural areas. Ongoing monitoring will help the department to prepare policies that ensures balance between these competing land uses.

## 2. METHODS

The study examines changes to the agricultural land base between January 1, 1991 and December 31, 1995. An evaluation of data requirements was completed prior to initiating the study. Contacts were established with various agencies and arrangements were made to collect available data during 1997. Data was collected manually with the exception of a few agencies which forwarded printouts or computer tapes.

In order to accurately assess both historical and geographical trends, a broad range of data was collected. The following sections provide a brief overview of the key pieces of information required to complete the study:

- 1) A definition of the study area;
- 2) Selection of a land capability for agriculture;
- 3) Data collection; and
- 4) Data analysis.

### 2.1 Study Area

The study area includes lands within the settled region or "White Area" of the province (Figure 1). The "White Area" contains about 63 million acres or one-third of the province's total land base of 164 million acres. The following areas are specifically excluded from this study: Indian Reservations, Military Reserves, national and Provincial Parks, lands within incorporated urban boundaries and "Green Area" lands which the Department of Environmental Protection defines as forested lands not available for agricultural development, other than grazing. Approximately 51.5 million acres are controlled by Alberta farmers. Of this about 46 million acres is privately owned and 6 million acres are leased, under a variety of agricultural dispositions, from the government. Because the total acreage of government leased land rarely changes, leased lands are not included in the additions and deletions reported in this study.

### 2.2 Land Capability for Agriculture

The Canada Land Inventory (CLI) classification system for agriculture groups mineral soils into seven classes and one class for organic soils. CLI ranks soil according to its potential for producing a wide range of agricultural crops. CLI classes 1, 2 and 3 have the highest capabilities, the least limitations for most crops and are often defined as better agricultural land. Most of these






# Alberta

AGRICULTURE, FOOD AND RURAL DEVELOPMENT

FIGURE 1

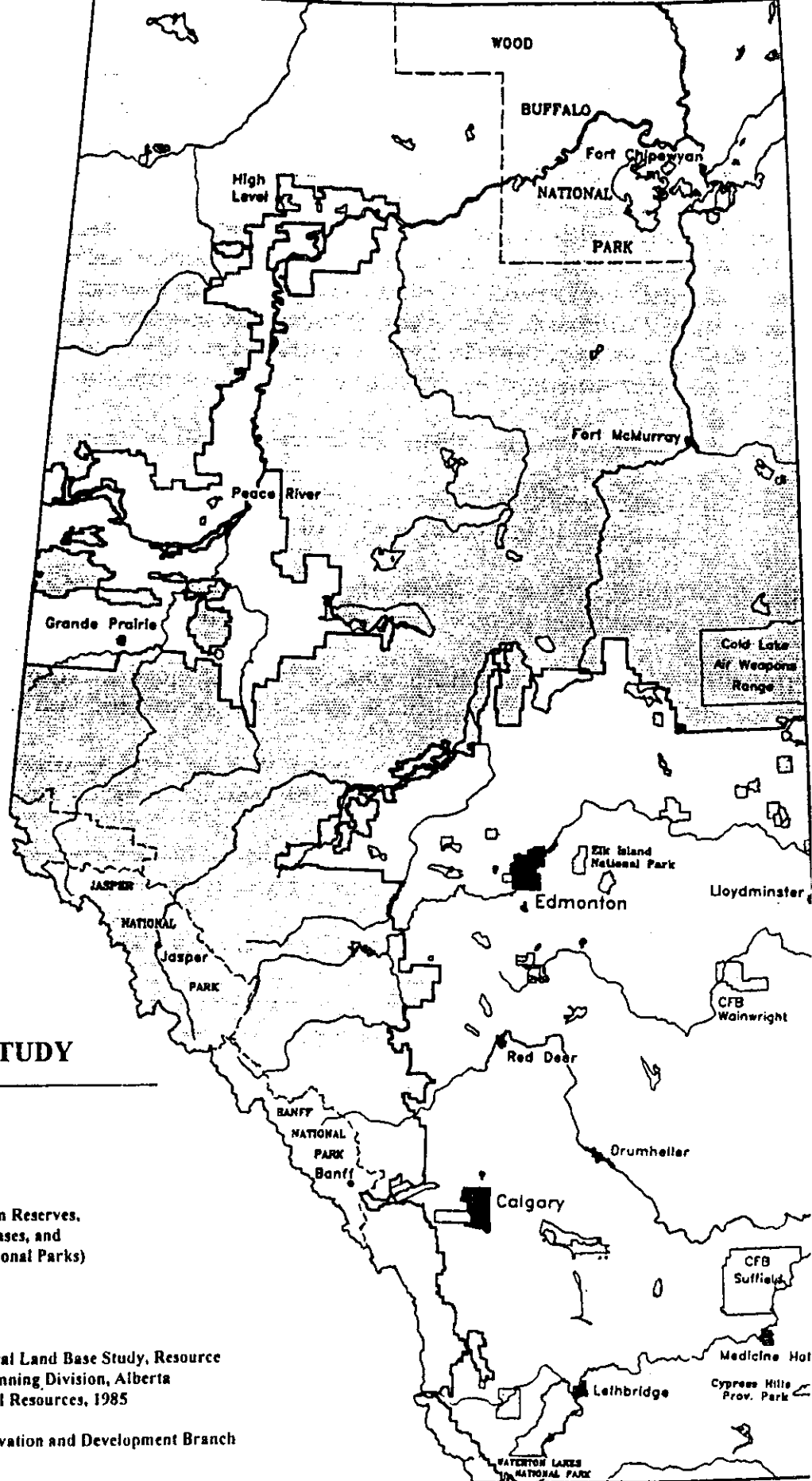
## LAND BASE MONITORING STUDY

### LEGEND

-  Study Area (White Area)
-  Excluded Area (Green Area, Indian Reserves, Canadian Forces bases, and Provincial and National Parks)
-  Urban Areas

Source: Agricultural Land Base Study, Resource Evaluation and Planning Division, Alberta Energy and Natural Resources, 1985

Compiled by Conservation and Development Branch



soils are used to produce annual cereal and specialty crops. Since much of this land is located near large urban centres, it is also used for intensive (livestock, horticulture, etc. ) production. CLI class 4 and 5 lands, are used primarily for mixed cropping, forage production and improved and unimproved grazing with domestic livestock. Much of Alberta's important livestock industry is located on CLI 4 and 5 soils. CLI class 6, 7 and Organic (0) soils have very low agricultural capability. Other soil ratings systems, agricultural land market values and municipal assessments, all closely reflect the CLI classification system for agricultural capability. A summary of the CLI classification system for agriculture is provided below:

#### Related for Agriculture

- CLI 1 - No significant limitation in use for crops: 2 million acres = 1% of Alberta's land base
- CLI 2 - Moderate limitations that restrict the range of crops or require moderate conservation practices: 10 million acres = 5% of Alberta's land base
- CLI 3 - Moderately severe limitations that restrict the range of crops or require special conservation practices: 16 million acres = 10% of Alberta's land base
- CLI 4 - Severe limitations that restrict the range of crops or require special conservation practices, or both: 25 million acres = 14% of surveyed land base
- CLI 5 - Very severe limitations that restrict their capability to producing perennial forage crops and improvement practices are feasible: 28 million acres = 17% of land base
- CLI 6 - Soils are only capable of producing perennial forage crops and improvement practices are not feasible: 9 million acres = 6% of surveyed land base
- CLI 7 - No capability for agriculture: 12 million acres = 7% of Alberta's land base

#### Not Related for Agriculture

Organic (0) - Soils that have over 12 inches of a peat surface (the average being between 3-4 feet): 13 million acres = 8% of Albert's land base

Lakes - 2 million acres = 1% of Alberta's land base

Parks/Urban - 5 million acres = 5% of Alberta's land base

Unclassified - 42 million acres = 26% of Alberta's land base

Albert Total Land Area = 164 million acres (100%)

## 2.3 Data Collection

A broad range of data must be collected in order to accurately determine historical and geographical trends. Both the quantity and quality of land being added to or removed from the agricultural land base were considered important. To ensure consistency the following information was collected for each inventoried parcel:

Location (Municipality)  
Legal Location (to the quarter section)  
Year  
Acreage Affected  
CLI Classification for Agriculture  
Current and Intended Use

Both temporary and permanent land use changes are documented. While oil and gas activity and resource extraction are considered “temporary” losses to the agricultural land base, these can be for a significant amount of time. Because of their important differences it was decided to identify these activities as “temporary” deletions when the activity occurs.

The agricultural Land Base Monitoring Study’s land conversion categories (including permanent (P) and temporary (T) changes are noted below:

### Additions (to the agricultural land base):

- a) Public Land Dispositions for agricultural sale (P)
- b) Reclamation of resource extraction sites (P)
- c) Abandoned oil and gas wells (P)
- d) Rural Annexations (P)

### Deletions (from the agricultural land base):

- a) Residential Subdivisions (P)
- b) Industrial/Commercial (P)
- c) Public Service/Utility (P)
- d) Urban Annexations (P)
- e) Oil and Gas Activity (T)
- f) Resource extraction (T)
- g) Other non-agricultural uses (P)

Table 1 provides more detailed information regarding the types of land use changes documented for this study. The data sources are listed, as well as a brief discussion of data limitations.

TABLE 1. CATEGORIES AND SOURCES OF LAND BASE ACTIVITIES

Activity	Source	Comments
<p><b>A. Additions to the Land Base</b></p> <p>1. Public Land Dispositions Leading to Sale</p> <p>a) Farm Development Sale (FDS)</p> <p>b) Public Land Sale (PLS)</p>	<p>Land Administration Branch, Land and Forest Services, Alberta Environmental Protection</p>	<p>Dispositions included in this study are sold for agricultural purposes and are considered to be a new and permanent land use change.</p> <p>Parcels greater than 20 acres smaller parcels were assumed to be sold for industrial purposes.</p> <p>Any remaining Farm Development Leases with option to purchase were not counted in this study as they will be eventually counted as FDS.</p> <p>CLI for agriculture was determined on a quarter section basis from CLI maps at a scale of 1:250 000.</p>
<p>2. Abandoned Wellsites</p>	<p>Alberta Energy and Utilities Board (EUB) and SIDMAP (Soil Inventory Database for Management and Planning)</p>	<p>It is estimated by EUB that abandoned wellsites are reclaimed within a 2-3 years of abandonment. The average wellsite size to be 4 acres.</p> <p>CLI classification was determined on a site-by-site basis where available using SIDMAP.</p>
<p>3. Reclamation</p> <p>a) Prairie Coal Mines</p> <p>b) In situ Oil Sands</p>	<p>Reclamation Division, Alberta Environmental Protection (AEP)</p>	<p>Although reported in previous studies, sand and gravel pit activities data is no longer collected by AEP as of January 1, 1991.</p> <p>CLI for agriculture for Prairie Coal Mines was determined on a quarter section basis from CLI maps at a scale of 1:250 000.</p>
<p>4. Rural Annexation</p>	<p>Local Authorities Board, Alberta Municipal Affairs</p>	<p>Land annexed from urban to rural areas, the assumption made that all land annexed was added on the day of annexation.</p>
<p><b>B. Deletions from the Land Base</b></p> <p>1. Oil and Gas Activity</p> <p>a) Oil and Gas Wells</p>	<p>Alberta Energy and Utilities Board (EUB)</p>	<p>Average wellsite size was estimated to be four acres.</p> <p>SIDMAP was used to determine the general boundary between the green and white areas as well as provide CLI classification.</p> <p>Plants and compressor stations were not counted in this study.</p>
<p>2. Urban Annexation</p>	<p>Municipal Government Board, Alberta Municipal Affairs</p>	<p>Gradual expansion of urban development onto annexed land is difficult to monitor on a provincial basis. The assumption was made that all land annexed by an urban centre was removed from agriculture on the day of annexation.</p>

Activity	Source	Comments
<p>Approved Subdivisions</p> <p>3. Residential Subdivisions</p> <ul style="list-style-type: none"> <li>a) Country Residential</li> <li>b) Other (boundary adjustment, hamlet expansion, conservation, etc.)</li> <li>c) Small farm holdings (20-40 acres)</li> </ul>	<p>Municipal Subdivision Approving Authorities including Counties, Municipal Districts, private consultants, Alberta Municipal Affairs</p>	<p>Subdivisions have been grouped according to intended use.</p> <p>Only subdivision parcels approved or endorsed by their respective authority were counted.</p> <p>Farmstead separations were counted as country residential rather than a separate category as many subdivision approving authorities do not differentiate between them.</p> <p>CLJ for agriculture was obtained from the subdivision files on a case-by-case basis or, when not available, SIDMAP.</p>
<p>4. Resource Extraction</p> <ul style="list-style-type: none"> <li>a) Prairie Coal Mines</li> <li>b) In situ Oil Sands</li> </ul>	<p>Reclamation Division, Alberta Environmental Protection (AEP)</p>	<p>CLJ for agriculture for Prairie Coal Mines and In situ Oil Sands activity was determined on a quarter section basis from 1:250 000 CLI maps.</p> <p>Reported in previous studies, sand and gravel pit activities data is no longer collected by AEP as of January 1, 1991.</p>
<p>5. Industrial/Commercial</p> <ul style="list-style-type: none"> <li>d) Industrial/commercial (business developments, communications towers)</li> <li>e) Private Recreational (golf course, riding stables, etc.)</li> <li>f) Mobile home park</li> </ul> <p>6. Public Service/Utility</p> <ul style="list-style-type: none"> <li>g) Public Service (church, school, cemetery, etc.)</li> <li>h) Public utilities (sewage lagoon, waste disposal, municipal wells)</li> <li>i) Wildlife refuge</li> </ul>	<p>Same as above</p>	<p>Subdivisions approved by local authorities for the described uses.</p>
<p>7. Transportation</p> <ul style="list-style-type: none"> <li>a) Local roads</li> <li>b) Secondary roads</li> <li>c) <u>Primary highways and interchange</u></li> </ul>	<p>Alberta Transportation and Utilities</p>	<p>Although reported in previous studies, this information was not available from Alberta Transportation and Utilities and was removed from this study.</p>

## 2.4 Data Analysis

The Statistical Applications Software (SAS) software products for mainframe and PC were used to manage data, provide cross-tabulations and perform frequency distributions. This package allows for reading many forms of data, easy information storage and retrieval, data modification and programming, statistical analysis and file handling.

Changes to the methodology and results previously reported include: the modification of land conversion categories to reflect those reported in the current study; soil classes listed as “undetermined” were identified on a case-by-case basis using CLI maps and soil Inventory Database for Management and Planning (SIDMAP); leased public lands were deleted; most oil and gas activities outside the Provincial White Zone were deleted.

### 3. RESULTS

The results of the study are presented under the following three sections:

- 3.1 Summary by Year
- 3.2 Summary by CLI Classification
- 3.3 Summary by Region

This presentation of the results allows the reader to develop a better understanding of land use changes on a regional, as well as provincial scale. Net gains and losses may be more significant in a regional context since rural populations, land use demands and soil quality vary considerably at this level.

#### 3.1 Summary by Year

Additions and deletions from January 1991 to December 1995 resulted in a total net gain of 20,400 acres. Years 1991-1994 recorded net gains in the agricultural land base while 1995 recorded a net loss of agricultural land.

**Table 2. Agricultural Land Use Changes By Year (1991 - 1995)**  
(‘000 Acres)

	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>Total</u>
<b>Additions</b>						
Public Land Dispositions (P)	36.9	27.0	35.8	50.0	26.3	176.0
Abandoned Wellsites (P)	4.7	6.7	6.1	5.7	5.7	28.9
Reclamation (P)	1.1	0.6	0.9	0.8	1.3	4.7
Rural Annexations (P)	0.1	0.2	0.0	0.0	0.2	0.5
<b>Total Additions</b>	<b>42.8</b>	<b>34.5</b>	<b>42.8</b>	<b>56.5</b>	<b>33.5</b>	<b>210.1</b>
<b>Deletions</b>						
Oil and Gas Activity (T)	13.0	13.6	26.4	31.9	27.5	112.4
Urban Annexation (P)	5.3	2.8	1.5	0.5	2.8	12.9
Residential Subdivisions (P)	8.0	9.9	10.4	10.6	11.8	50.7
Resource Extraction (T)	1.0	1.3	1.4	1.4	1.5	6.6
Industrial/Commercial (P)	1.1	0.7	1.2	1.1	0.7	4.8
Public Service/Utility (P)	0.4	0.6	0.5	0.4	0.4	2.3
<b>Total Deletions</b>	<b>28.8</b>	<b>28.9</b>	<b>41.4</b>	<b>45.9</b>	<b>44.7</b>	<b>189.7</b>
<b>NET CHANGE</b>	<b>14.0</b>	<b>5.6</b>	<b>1.4</b>	<b>10.6</b>	<b>-11.2</b>	<b>20.4</b>

Additions to the agricultural land base came primarily (84%) from public land sale dispositions. Abandoned wellsites and reclamation account for most remaining additions. The average additions over the five year period was 42,000 acres with a peak in 1994 of 56,500 acres. This peak is due to abundant Public Land leases with option to purchase being converted to sale agreements caused by policy change within the department (see Section 4.1).

Deletions were largely due to primarily oil and gas activities and secondarily to residential subdivisions. Combined, these two uses represent 86% of the total deletions during the 5 year period. The average loss per year in the study was 37,900 acres. Two categories, oil and gas activity and resource extraction, are considered temporary and will eventually be returned to agricultural production. Since temporary losses represent 66% of deletions, only 46% of deletions are considered permanent.

Subdivision losses increased each year peaking at 11,800 acres in 1995. Along with rising oil and gas activity, these two activities caused total deletions to continually increase each year from 28,800 acres in 1991 to 44,700 acres in 1995.

### 3.2 Summary by CLI

On a provincial scale, Canada Land Inventory (CLI) Classification for agriculture was determined to be the best alternative available to measure the comparative productive quality of agricultural land. Many municipalities use the municipal assessment system to rate land. These methods are not consistent across the province and therefore were not be used.

CLI classes have been grouped to provide a better interpretation of the land's capability for agricultural production. Land quality changes are then assessed by a comparative analysis of net gains and losses within each group. In the past, CLI classes 1-7 and 0 (organic) have been categorized into the following groups for planning purposes:

CLI 1, 2 and 3 = important cereal, oil seed and specialty croplands

CLI 4 and 5 = important forage and livestock producing lands

CLI 6, 7 and 0 = perennial and native grasses for grazing (referred to as non-arable lands).

Only CLI 1-3 land showed a net loss during this study period. CLI 4, 5, 6, 7 and 0 were added to the provincial land base. Most additions were from Public Land dispositions, while most of the losses were due to temporary oil and gas activities. The greatest amount of activity occurred in the CLI 4-5 category.



Almost half (48%) of additions were gained through CLI 4-5 Public Land dispositions, equalling 100,900 acres. Public Land dispositions also added 77,500 acres (or 36% of total additions) of CLI 1-3 lands.

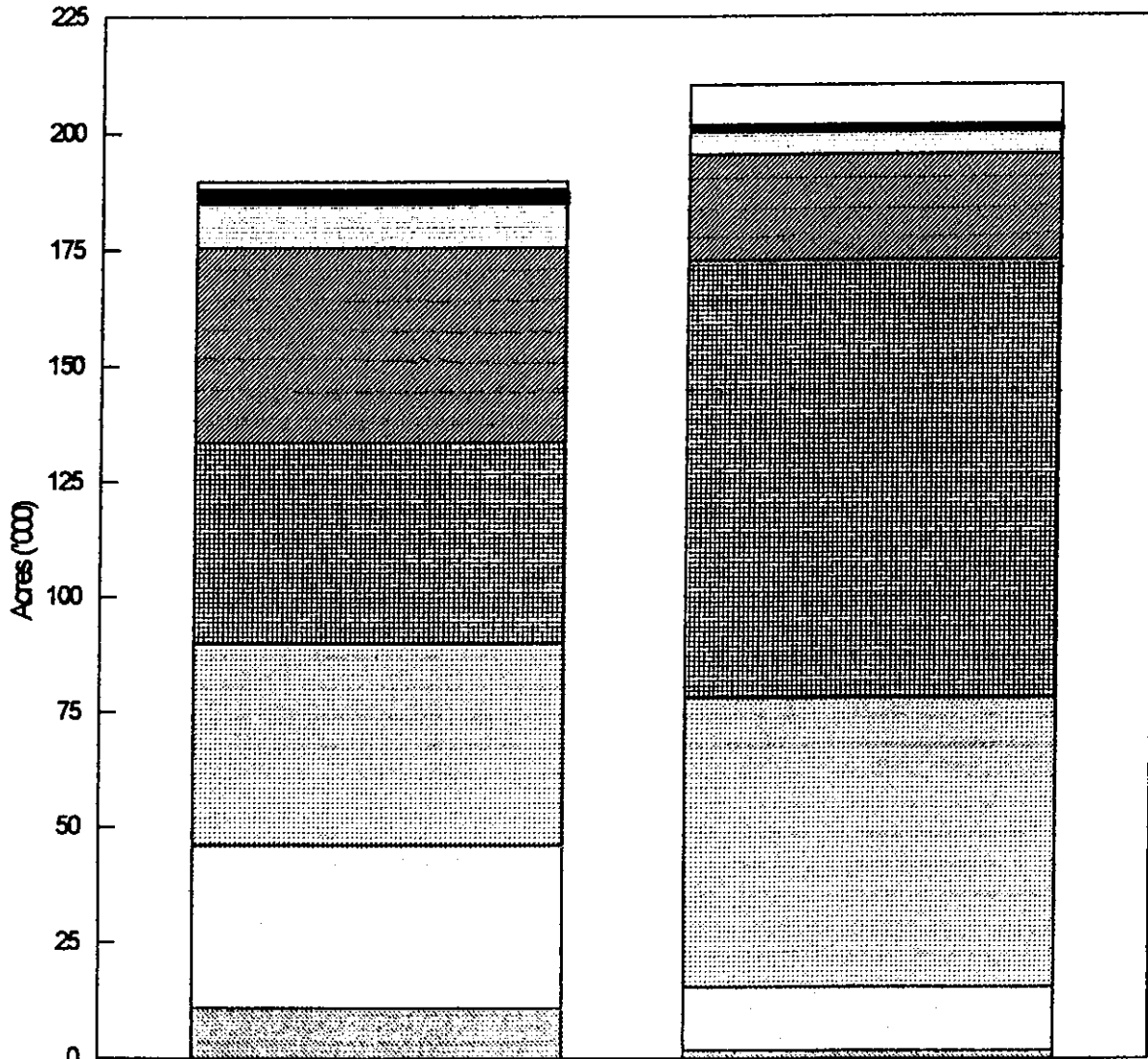
**Table 3. Agricultural Land Use Changes By CLI Classification (1991 - 1995)**  
(\*000 Acres)

	CLI 1,2 or 3 (Better)	CLI 4 or 5 (Marginal)	CLI 6,7 or 0 (Non-arable)	Total
<b>Additions</b>				
Public Land Dispositions (P)	64.3	100.9	10.7	175.9
Abandoned Wellsites (P)	11.9	14.1	2.8	28.8
Reclamation (P)	1.1	2.4	1.1	4.6
Rural Annexations (P)	0.2	0.3	0.0	0.5
				0.0
<b>Total Additions</b>	<b>77.5</b>	<b>117.7</b>	<b>14.6</b>	<b>209.8</b>
<b>(%)</b>	<b>36.9</b>	<b>56.1</b>	<b>7.0</b>	<b>100.0</b>
<b>Deletions</b>				
Oil and Gas Activity (T)	42.5	60.7	9.2	112.4
Urban Annexation (P)	10.9	1.9	0.0	12.8
Residential Subdivisions (P)	30.3	16.7	3.6	50.6
Resource Extraction (T)	2.8	3.4	0.4	6.6
Industrial/Commercial (P)	2.0	2.2	0.6	4.8
Public Service/Utility (P)	1.4	0.6	0.3	2.3
<b>Total Deletions</b>	<b>89.9</b>	<b>85.5</b>	<b>14.1</b>	<b>189.5</b>
<b>(%)</b>	<b>47.4</b>	<b>45.1</b>	<b>7.4</b>	<b>100.0</b>
<b>NET CHANGE</b>	<b>-12.4</b>	<b>32.2</b>	<b>0.5</b>	<b>20.3</b>

Deletions for CLI 1-3 (89,900 acres) and CLI 4-5 (85,500 acres) occur at similar rates. The largest contributor to deletions, in all CLI categories, is oil and gas activity. This removed 112,400 acres (59% of deletions) of agricultural land. Residential subdivision land use caused the second greatest loss of 50,600 acres (27% of deletions). Over half of this land lost to residential subdivisions was from CLI 1-3 category. The majority of these deletions occur in the Edmonton to Lethbridge corridor, which is situated on CLI 1-3 lands.

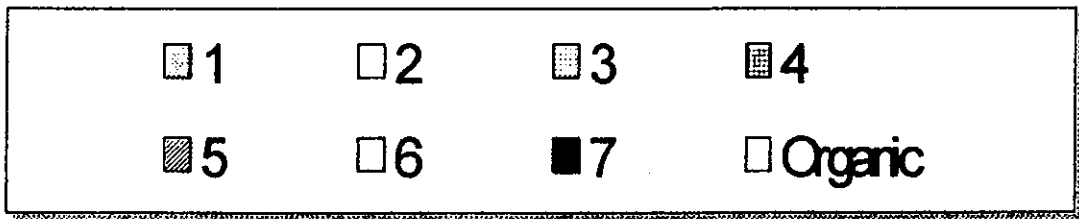
# Figure 2. Total Additions and Deletions by OLI Category

1991 - 1995



Deletions

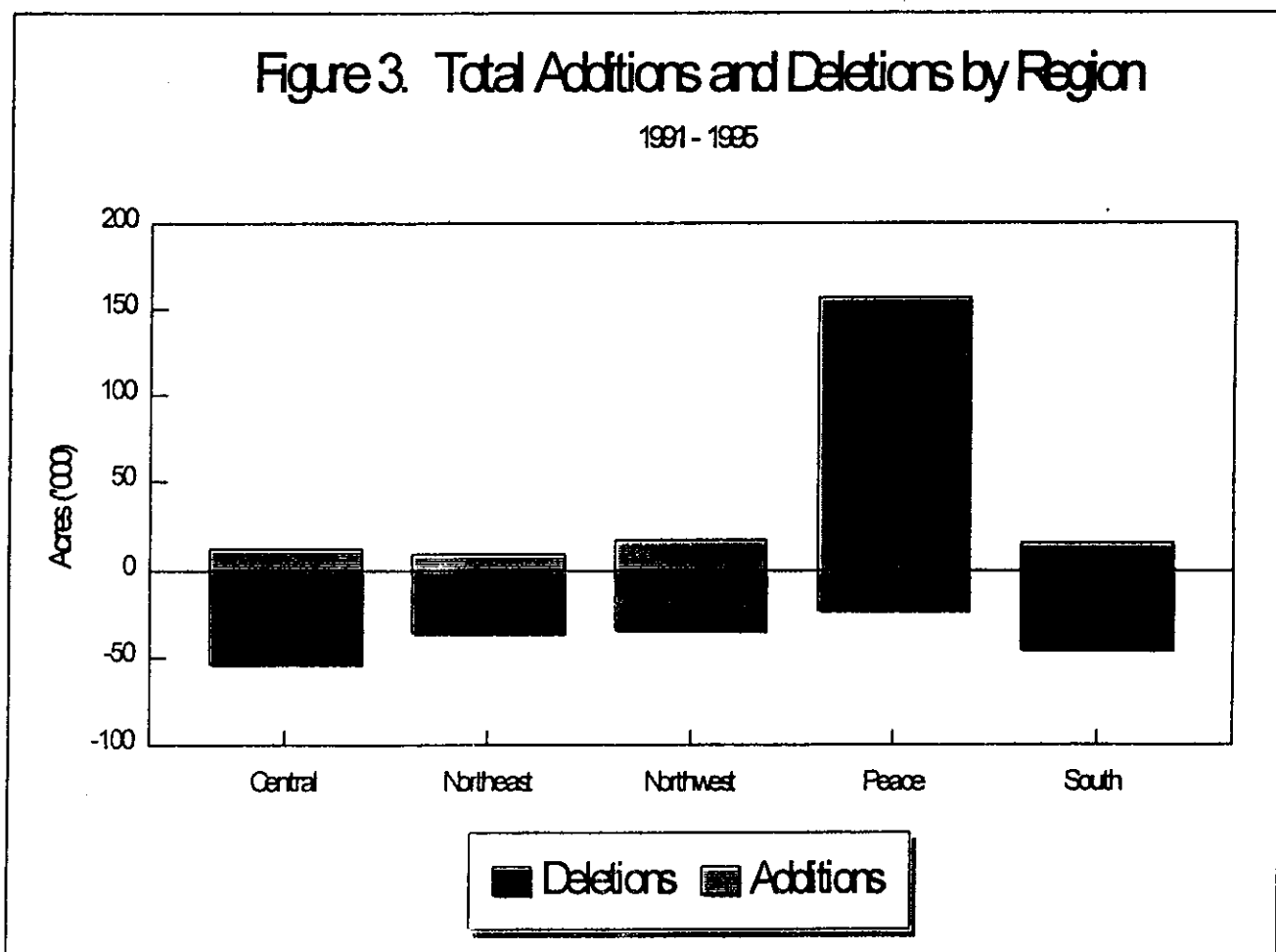
Additions



### 3.3 Summary by Regions

In order to isolate development trends, additions and deletions are organized according to AAFRD Regions. Previous studies reported regional data by the 11 regional planning areas. Since the regional planning areas no longer exist, all land planning decisions are now made by individual municipalities (municipalities may delegate this responsibility to a service agency).

The Central Region showed a loss of 40,300 acres, the largest in the province. This region had the highest urban annexation acreage of 4,100 acres (mostly due to Red Deer annexation) and the highest residential subdivision acreage of 15,500 acres in the province. These two factors were coupled with strong oil and gas activity in the region.

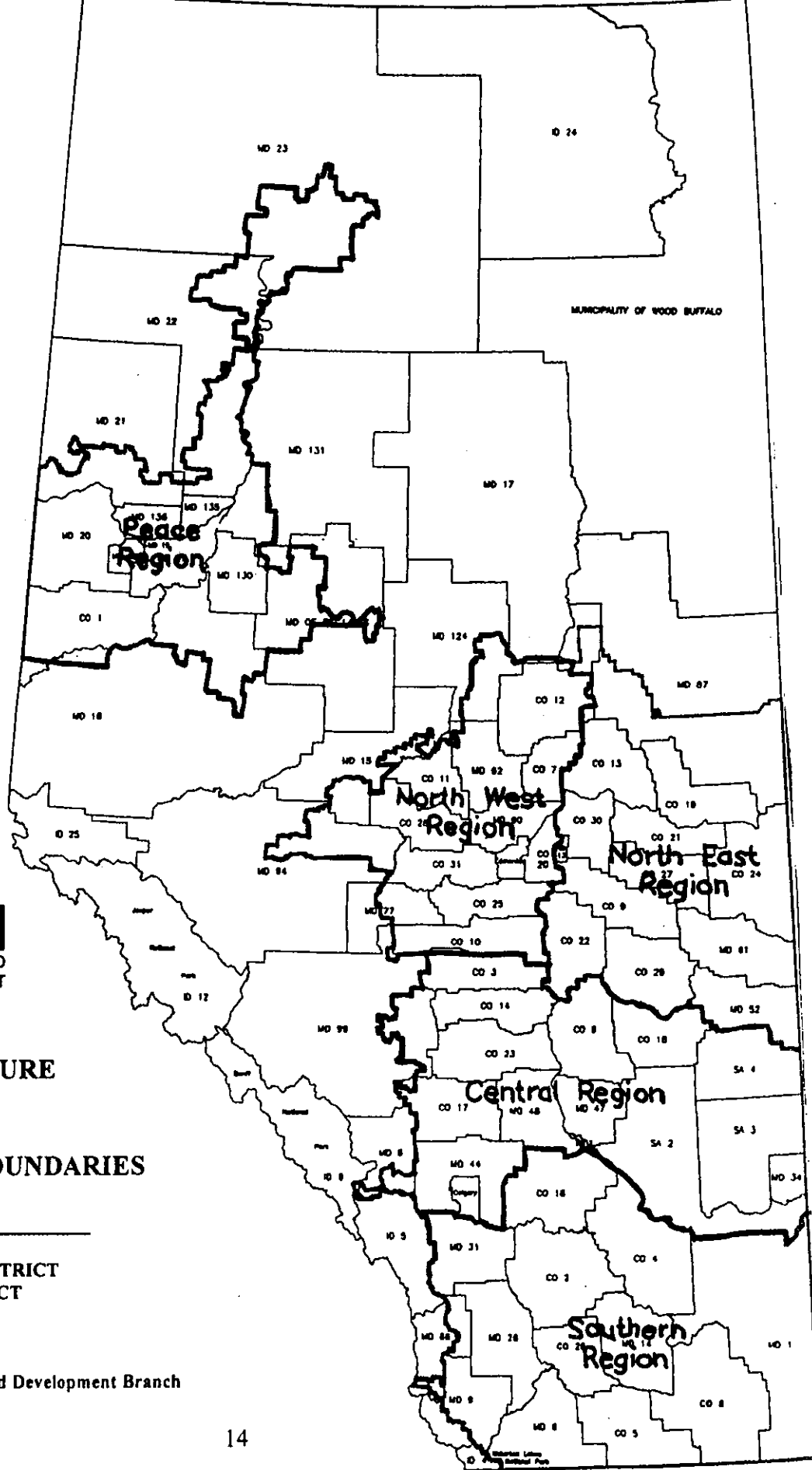




**FIGURE 4**  
**AAFRD AGRICULTURE**  
**REGIONS - 1997**  
**WITH**  
**MUNICIPALITY BOUNDARIES**

- LEGEND**
- CO - COUNTY
  - ID - IMPROVEMENT DISTRICT
  - MD - MUNICIPAL DISTRICT
  - SA - SPECIAL AREA

Compiled by: Conservation and Development Branch



The Peace Region showed the only net gain in the province of 155,700 acres, 98% from Public Land dispositions. This region also shows the lowest total deletions in the province. The Peace Region had the second lowest oil and gas activity of 12,900 acres along with the second lowest residential subdivision activity of 7,800 acres. This combined with highest amount of additions accounts for such a large net gain in this region.

**Table 4. Agricultural Land Use Changes by Region (1991 - 1995)**  
(‘000 Acres)

	<u>South</u>	<u>Central</u>	<u>Northeast</u>	<u>Northwest</u>	<u>Peace</u>	<u>Total</u>
<b>Additions</b>						
Public Land Dispositions (P)	10.6	0.8	0.9	9.9	153.8	176.0
Abandoned Wellsites (P)	5.3	8.6	7.5	5.4	1.9	28.7
Reclamation (P)	0.0	2.9	0.0	1.7	0.0	4.6
Rural Annexations (P)	0.0	0.0	0.1	0.4	0.0	0.5
<b>Total Additions</b>	<b>15.9</b>	<b>12.3</b>	<b>8.5</b>	<b>17.4</b>	<b>155.7</b>	<b>209.8</b>
(%)	7.6	5.9	4.1	8.3	74.2	100.0
<b>Deletions</b>						
Oil and Gas Activity (T)	29.8	27.9	29.4	12.4	12.9	112.3
Urban Annexation (P)	1.0	4.1	0.7	6.4	0.7	12.9
Residential Subdivisions (P)	11.9	15.5	5.3	10.2	7.8	50.7
Resource Extraction (T)	0.0	3.5	0.0	3.1	0.0	6.6
Industrial/Commercial (P)	1.3	1.1	0.6	1.4	0.4	4.8
Public Service/Utility (P)	0.5	0.6	0.1	0.5	0.6	2.3
<b>Total Deletions</b>	<b>44.5</b>	<b>52.6</b>	<b>36.1</b>	<b>34.0</b>	<b>22.4</b>	<b>189.6</b>
(%)	23.5	27.	19.0	17.9	11.8	100.0
<b>NET CHANGE</b>	<b>-28.6</b>	<b>-40.3</b>	<b>-27.6</b>	<b>-16.6</b>	<b>133.3</b>	<b>20.2</b>

The region containing Calgary (South Region) had much more activity than Edmonton's region (Northwest Region). During the study period both regions lost approximately 11,000 acres to residential subdivisions. However, the South Region saw over twice as much oil and gas activity equalling 29,800 acres, compared to 12,400 acres in the Northwest Region. Overall, the South Region saw a net loss of 28,600 acres while the Northwest Region saw a net loss of 16,600 acres.

## 4. TREND ANALYSIS

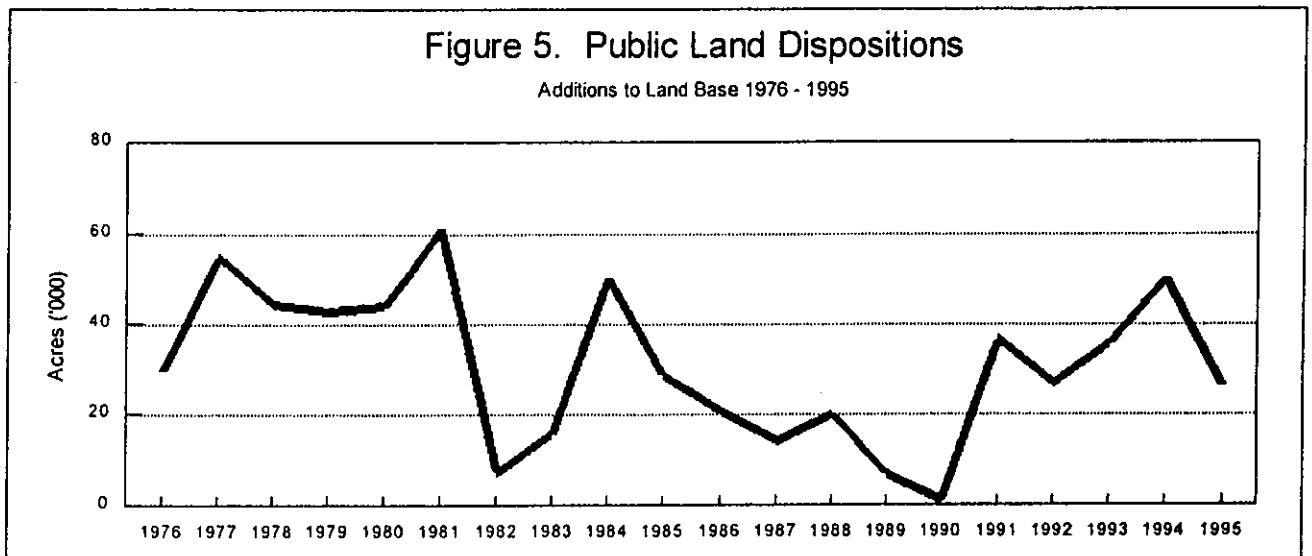
### 4.1 Public Land Dispositions

The most significant factor in this study were the Public Land dispositions.

In the early 1980's, the Alberta government actively encouraged agricultural expansion into previously undeveloped public lands in the Peace River Region. The bulk of agricultural sales at that time were issued as leases with a purchase to option and a new contract, a farm development sale, was issued for a term of ten or more years. These farm development sales are counted as new agricultural land (additions) in this and previous studies.

In the early 1990's Public Lands put into effect policy changes. After October, 1992, no new term sales on vacant public land were issued. In February, 1993, development conditions were waived for leases with a purchase option, and in September 1994, the issuance of term sales to the holders of leases with a purchase option was discontinued. As well, during this time period phasing out of government financing for land purchase occurred. These policy changes meant that most holders of leases with a option to purchase converted their leases to sales in 1993 and 1994 finalizing their purchase. These previous sale commitments appear to account for the large number of sales in this period. However, these represent land use decisions made a number of years earlier, and reflect pent-up demand for purchasers to obtain title to land that may have been in agricultural cultivation for some time.

The Peace Region accounts for 87% of all Public Land dispositions. Most of these are along the Region's fringe area.



# Alberta

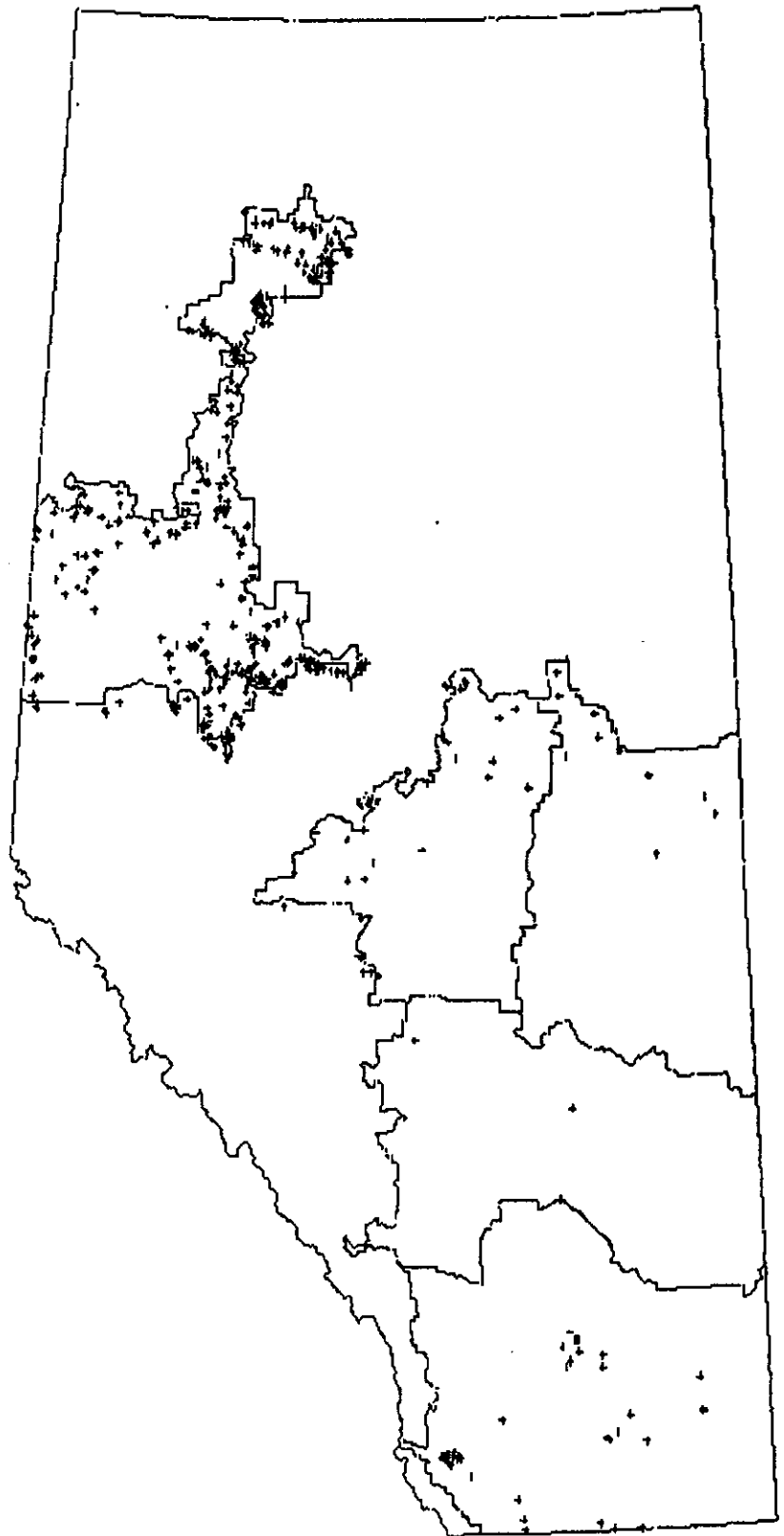
AGRICULTURE, FOOD AND  
RURAL DEVELOPMENT

FIGURE 6

## PUBLIC LAND DISPOSITIONS IN ALBERTA 1991 - 1995

### LEGEND

+ - ONE PUBLIC LAND  
SALE SITE  
(ACRES VARY)



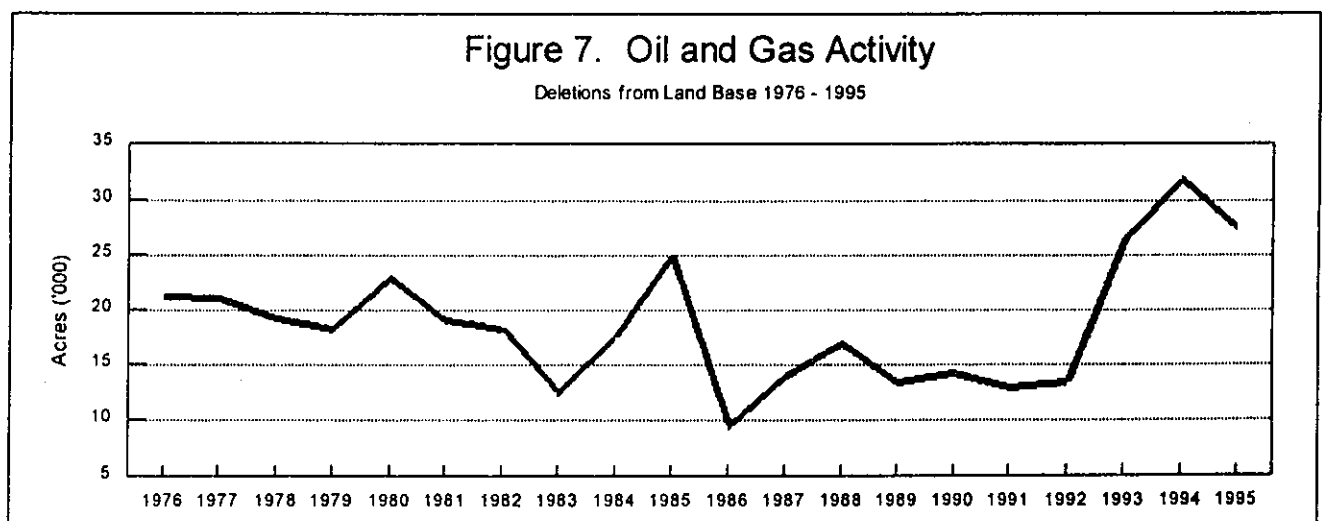
Sine the early 1990's, new sales of public land for agricultural purposes have been carried out by public auction. Current policy does not encourage large-scale agricultural expansion onto public land. Some sale of public land is still occurring but these are primarily isolated parcels in the agricultural fringes, which have developed access, are suitable for annual cropping, and are not required for other purposes. In 1995 Public Land dispositions were 26,300 acres, the lowest in our study and the only year to see a net loss of land in the study. It appears that Public Land dispositions were decreased by over 50% in 1996.

Figure 6 demonstrates the variation of public land dispositions over the past twenty years. Variations appear to be caused by demands for land from agricultural producers, availability of serviced land, government policies and competition for other uses, such as forestry. The peak in Public Land dispositions within this study is in 1994, however, it is followed by a large downward trend. The downward trend is expected to continue into the future. Public land dispositions can no longer offset the effects of increasing deletions. This will lead to future increases in net losses of agricultural land in the province. Refer to Appendix 6.1 for more information about Public Lands.

#### 4.2 Oil and Gas Activity

Oil and gas activity temporarily accounted for approximately 60% of total agricultural land deletions. During the time period of this study 112,400 acres were removed. Oil and gas activity increased throughout the study period. In 1991 removals equalled 13,000 acres and in 1995 removals equalled 27,500 acres. Oil and gas was the top deletion in each Region, each CLI category, and each year of the study. It is expected that oil and gas activity will continue to be a major source of agricultural land removed from production in the future.

Oil and gas activity is spread throughout the province, however, the majority of activity occurs in the South, Central and Northeast Regions. Although there is still activity in the Northwest and Peace Regions, it is not as concentrated.





Oil and gas is considered a temporary loss, as these lands will be eventually be reclaimed and made available for agricultural production. However, this study, and past studies, show that wellsites are not reclaimed as fast as they are developed. During this study a total of 28,700 acres were reclaimed while 112,300 acres were lost. This is at a 1:4 ratio, for every one acre returned from abandoned wellsites, four acres are lost to new drilling. In the long-term, it is expected that every acre temporarily removed from agriculture will be reclaimed.

Activity is not estimated to decrease within the next few years. Figure 7 demonstrates that we are at a 20 year high in oil and gas activity removals. Oil and gas will continue to be the largest factor to the removal of agricultural land.

#### 4.3 Country Residential Subdivisions

In the last study country residential subdivisions were identified as a future concern. The total loss from 1986 -1990 report increased by 13,500 acres in this study to a total of 50,700 acres.

The majority of these losses are near major cities in Alberta including Edmonton, Calgary and Red Deer. These areas are situated on prime agricultural land, acting as a major factor to the overall net loss of CLI 1-3 land.

Figure 8 shows where subdivision activity occurred in the Province. It appears that much of the concentrated subdivision activity near cities is due to acreage development, while the scattered subdivisions away from cities is due to farmstead separations.

**Alberta**  
AGRICULTURE, FOOD AND  
RURAL DEVELOPMENT

FIGURE 8

**COUNTRY RESIDENTIAL  
SUBDIVISIONS IN  
ALBERTA  
1991 - 1995**

**LEGEND**

+ - ONE SUBDIVISION

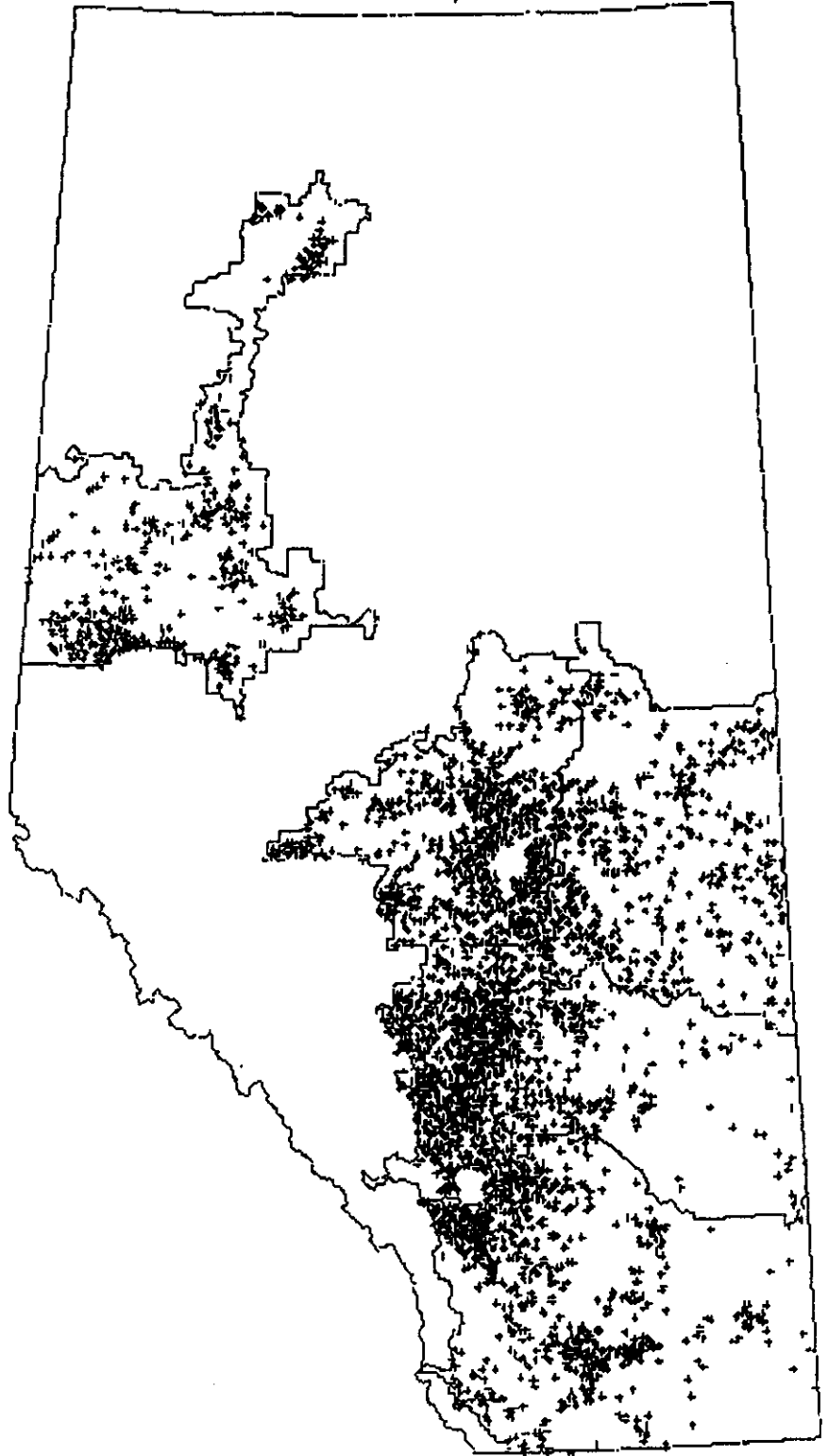
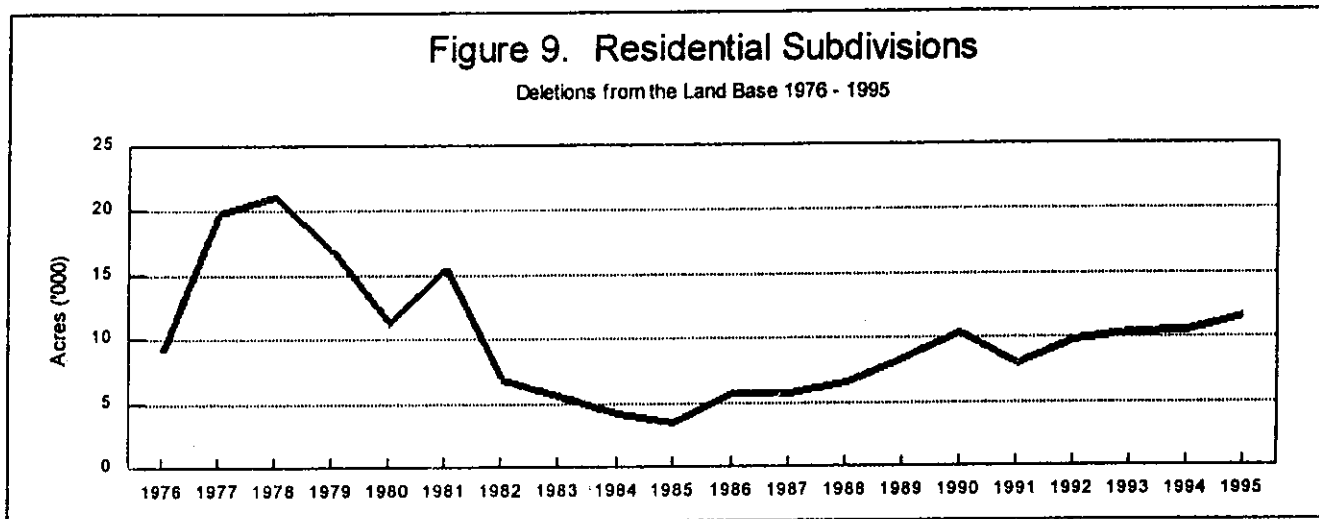


Figure 9 shows the trends of subdivisions over the past twenty years. Reaching a low in 1985, this activity has continually grown since. This may be attributed to many factors such as a stronger economy and technological advances that allows people to more easily work from their homes.



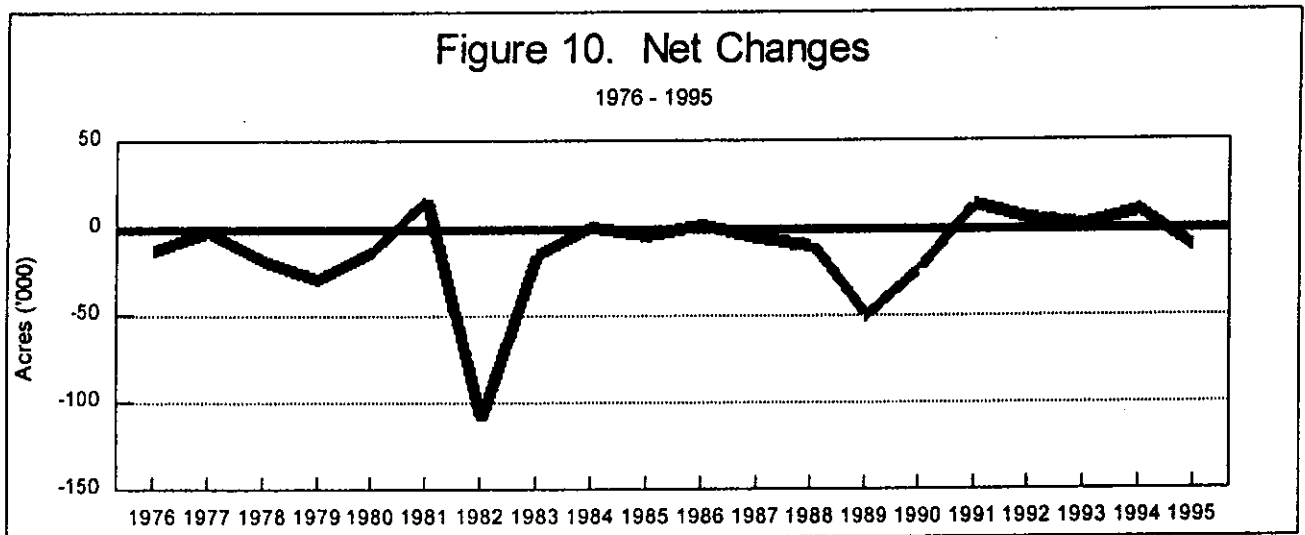
The increase in country residential subdivisions creates problems for incompatible land uses in rural areas. As urban-type developments move into rural farming areas chances of nuisance complaints increases. This presents special challenges to the agricultural industry. The conflicts between agricultural producers and their non-farm (and farm) neighbours may ultimately limit our production capability. People increasingly aware of environmental aspects are concerned with intensive livestock production, fertilizers and pesticides. Even new agricultural buildings, such as grain storage bins are opposed by some neighbours.

#### 4.4 Total Additions and Deletions

This study has shown an overall net gain of 22,400 acres of agricultural land. This gain is an extremely unusual and was caused by the Public Lands policy changes. Public Land dispositions are expected to decrease sharply during the 1996 - 2000 study years.

The major factors in agricultural land deletions are oil and gas activity along with country residential subdivisions. Both of these are on an upward trend. Oil and gas activity appears to be at a high and country residential subdivisions are continually increasing. This activity is not foreseen to slow down within the next few years.

The overall result will see future net losses of agricultural land for the province. Additions to the land base are decreasing while deletions are increasing. As shown in Figure 10 twenty years have had a net loss of agricultural land and it is likely that this will continue into the next years following this study.



## 5. CONCLUSIONS

### 5.1 1990-1995 Study

The Agricultural Land Base Monitoring Study examined additions and deletions to the agricultural land base from 1991-1995. During this period Alberta experienced a total net gain of approximately 20,400 acres of agricultural land.

The majority of additions were Public Land dispositions in the Peace Region. Most of these additions were CLI class 4-5 lands. Public Lands initiated policy changes during this study that led to faster conversion of agricultural leases with option to purchase which accounts for these large additions. Public Land dispositions are expected to decrease significantly over the next few years.

The majority of deletions were due to oil and gas activities. Oil and gas activity is high throughout the province and is anticipated to continue at this level. Though considered a temporary loss later to be reclaimed, reclamation is slow compared to new drilling. Oil and gas activity will continue to be a major use of the agricultural land base.

The second largest deletion was residential subdivisions occurring mainly along the Edmonton to Lethbridge corridor. The number of subdivisions has been continually risen since the mid-eighties using mainly CLI 1-3 soils. The loss of these acres to agriculture is important, but the implications of residential subdivisions in rural areas may have more impact on the industry than the actual acre loss. Normal, common practices such as applying pesticides or manure may become a source conflict. This effects the industry, and community, on a different scale than the loss of the land itself.

The overall quality of agricultural land is also changing slightly. The majority of losses were split between CLI 1-3 (47%) classes and CLI 4-5 (45%) classes while additions were mostly CLI 4-5 soils. At a very slow rate this will shift the overall land base quality to lower capabilities, and therefore may in the very long term reduce cropping options. Besides being in more limited supply, CLI 1-3 land hold more options as to what can be grown, making it a valued resource. Most prime land is already under cultivation in Alberta. Therefore, although limited, the bulk of future additions will remain to be CLI 4-5 lands.

## 5.2 Future Agricultural Land Base Monitoring Studies

The 1991-1995 Agricultural Land Base Monitoring Study is unique because it is the first Alberta study to show a net gain of agricultural land. This was mostly due to one-time policy changes made by Public Lands. The amount of additions are not expected to reach this level again.

The two major deletions, oil and gas and residential subdivisions, are on an upward trend. The future will see more activity in these areas, increasing deletions. This trend will no longer be balanced by Public Land Dispositions as it is expected that sales will decline sharply leading to future net losses of agricultural land.

Alberta holds a wealth of agricultural lands. Though future net losses of land are predicted, this will not likely significantly hinder agricultural production in the province. These losses will be minimal in comparison to the 51.5 million acres of land available to farmers in the province. There are also many options for increasing the productivity of the land base through more intensive management.

Alberta has many natural resources and competing land uses. Each resource and activity needs land to be developed. These include land for agriculture, oil and gas, and forestry. When handled properly each of these uses can be balanced, providing an optimum mix for Alberta. Careful planning and decision making by individuals, municipal and provincial governments is the key to maintaining Alberta's productive land base and ensuring a positive economic future.

## 6. APPENDIX

### 6.1 About Public Lands

Public land administered under the *Public Lands Act* is owned by the government of Alberta. Its use and allocation are outlined in the Act. Public land is divided into two categories - the White Area and Green Area, as shown in Figure 1.

The White Area (settled portion) consists of the populated central, southern, and Peace River areas of the province. The Green Area (forested portion) comprises most of northern Alberta as well as the mountain and foothills areas along the province's western boundary.

In the White Area, Public land is part of the agricultural landscape. It's managed for various uses including agriculture, recreation, soil and water conservation, and fish and wildlife habitat. Some parts of the province have large tracts of public land while other parts have very few scattered parcels.

Authority to use public land is granted through dispositions issued under the provisions of the *Public Lands Act*. A disposition is a land use contract that gives specific rights to a land or resource user (e.g. a lease, license or permit). Most of the public land in the White Area is under disposition or is otherwise committed. People who wish to use public land need to consult with the disposition holder and if required, submit a formal application. Suitable lands in the White Area can be sold, but, the amount of land sold is limited by existing commitments and established resource management practices.

In the Green Area, public land is managed for timber production, watershed, wildlife and fisheries, recreation and other uses. Agricultural use is limited to grazing where it's compatible with other uses. Grazing on public land in the Rocky Mountain Forest Reserve (headwaters of the North and South Saskatchewan Rivers) is administered under the *Forest Reserves Act*. The remainder of grazing in the Green Area is administered under the *Public Lands Act*. Land in the Green Area is typically not sold since one of the primary uses of the Green Area is for wood fibre production.

Historically, public land management was directed at satisfying the needs of homesteaders and other settlers. Today, land management practices and policies must address a greater variety of competing demands. These include recreation, agricultural uses, commercial uses and conservation of selected public land locations. Underlying these demands are a requirement to balance development and conservation of the land with long-term sustainability.

Appendix 6.2

Total Agricultural Land Use Changes by Year (1976 - 1995)

('000)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Total	
<b>Additions</b>																						
Public Land Dispositions	29.7	54.8	44.4	42.7	44.2	61.0	7.3	15.9	50.3	28.5	20.7	14.4	19.9	7.2	1.5	36.9	27.0	35.8	50.0	26.3		618.5
Abandoned Wellsites	0.4	0.2	3.3	4.5	5.1	4.6	3.9	3.2	4.7	4.8	3.8	4.9	6.3	4.5	4.0	4.7	6.7	6.1	5.7	5.7		87.1
Reclamation	0.2	0.3	0.5	0.6	0.4	0.6	0.9	0.8	1.1	0.6	0.6	0.8	0.7	0.6	0.6	1.1	0.6	0.9	0.8	1.3		14
<u>Rural Annexations</u>																0.1	0.2	0.0	0.0	0.2		0.5
Total Additions	30.3	55.3	48.2	47.8	49.7	66.2	12.1	19.9	56.1	33.9	25.1	20.1	26.9	12.3	6.1	42.7	34.3	42.8	56.5	33.3		719.6
<b>Deletions</b>																						
Oil and Gas Activity	21.3	21.1	19.4	18.4	22.9	19.1	18.4	12.6	17.6	25.0	9.6	14.1	17.0	13.5	14.3	13.0	13.6	26.4	31.9	27.5		376.7
Urban Annexation	7.0	8.4	17.8	34.7	23.0	8.6	92.1	12.7	29.7	5.6	3.6	1.1	8.8	37.8	0.7	5.3	2.8	1.5	0.5	2.8		304.5
Residential Subdivisions	9.2	19.9	21.2	16.9	11.3	15.6	7.0	5.6	4.3	3.5	5.8	5.8	6.7	8.5	10.4	8.0	9.9	10.4	10.6	11.8		202.4
Resource Extraction	2.7	2.6	2.9	2.9	3.1	2.9	2.6	2.4	2.6	2.6	2.7	3.0	2.8	2.3	3.0	1.0	1.3	1.4	1.4	1.5		47.7
Industrial/Commercial	2.1	4.1	3.4	2.8	2.3	2.9	1.2	1.1	0.8	0.6	0.6	0.9	0.8	0.6	1.0	1.1	0.7	1.2	1.1	0.7		30
<u>Public Service/Utility</u>	0.9	1.2	1.3	0.6	0.8	0.9	0.5	0.4	0.3	0.3	0.5	0.3	0.5	0.3		0.4	0.6	0.5	0.4	0.4		11.1
Total Deletions	43.2	57.3	66.0	76.3	63.4	50.0	121.8	34.8	55.3	37.6	22.8	25.2	36.6	63.0	29.4	28.8	28.9	41.4	45.9	44.7		972.4
<b>NET CHANGE</b>	-12.9	-2.0	-17.8	-28.5	-13.7	16.2	-109.7	-14.9	0.8	-3.7	2.3	-5.1	-9.7	-50.7	-23.3	13.9	5.4	1.4	10.6	-11.4		-253

Appendix 6.3

Total Agricultural Land Use Changes by CLI Class (1976 - 1995)

	1	2	3	4	5	6	7	0	Total
<b>Additions</b>									
Public Land Dispositions (P)	0.9	21.6	175.4	294.4	79.5	5.4	6.5	34.5	618.2
Abandoned Well sites (P)	3.8	14.2	19.1	22.9	18.4	5.6	1.3	0.7	86.0
Reclamation (P)	0.1	1.8	4.0	2.7	3.5	1.6	0.1	0.0	13.7
Rural Annexations (P)	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3
<b>Total Additions</b>	<b>5.0</b>	<b>37.7</b>	<b>198.5</b>	<b>320.0</b>	<b>101.4</b>	<b>12.6</b>	<b>7.9</b>	<b>35.2</b>	<b>718.2</b>
<b>Deletions</b>									
Oil and Gas Activity (T)	11.5	53.4	78.8	97.1	90.9	23.1	5.6	16.8	377.2
Urban Annexation (P)	37.9	88.0	76.2	45.6	29.6	13.9	4.3	8.9	304.4
Residential Subdivisions (P)	10.6	39.4	52.4	49.2	35.1	10.3	2.0	3.0	202.0
Resource Extraction (T)	1.1	5.6	12.5	9.1	13.8	4.8	0.5	0.5	47.9
Industrial/Commercial (P)	1.1	5.2	7.0	7.8	3.2	1.9	0.3	0.5	27.0
Public Service/Utility (P)	0.4	2.1	2.6	2.7	2.1	1.1	0.1	0.1	11.2
<b>Total Deletions</b>	<b>62.6</b>	<b>193.7</b>	<b>229.5</b>	<b>211.5</b>	<b>174.7</b>	<b>55.1</b>	<b>12.8</b>	<b>29.8</b>	<b>969.6</b>
<b>NET CHANGE</b>	<b>-57.6</b>	<b>-156.0</b>	<b>-31.0</b>	<b>108.5</b>	<b>-73.3</b>	<b>-42.5</b>	<b>-4.9</b>	<b>5.4</b>	<b>-251.4</b>