

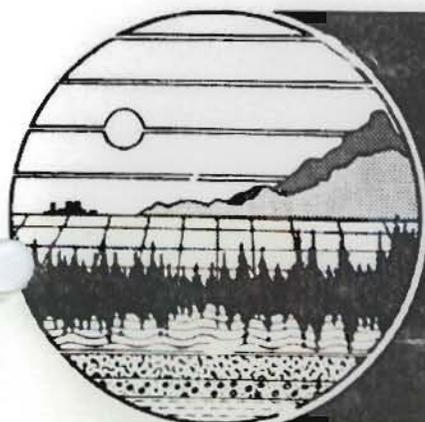
**AIRPHOTO INTERPRETATION
MANUAL:
LAND USE CLASSIFICATION
VOLUME 1**

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Environment
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Canada



**LANDS
DIRECTORATE**

**DIRECTION GÉNÉRALE
DES TERRES**

**AIRPHOTO INTERPRETATION
MANUAL:**

LAND USE CLASSIFICATION

Prepared for:

**Environment Canada
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Prepared by:

E. Ann Gallie

I.D. SYSTEMS LTD.
Environmental and Socio-Economic Consultants

Suite 500-455 Granville St.
Vancouver B.C. V6C 1V2
(604) 687-2188



A Division of IDG - The Interdisciplinary Group
Vancouver, Calgary, Edmonton, Lloydminster,
Saskatoon, Winnipeg, and Grand Forks, N.D.

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Volume II

Stereograms & Photographs

1. INTRODUCTION

This interpretation manual has been prepared as a reference and as a quality control guide. It is designed to assist users of the land use classification system recently¹⁰ developed for the Canada Land Use Monitoring Program (CLUMP) of the Lands Directorate, Environment Canada.

The Canada Land Use Monitoring Program is a relatively new federal program established in 1978. The objective of CLUMP is to monitor the amount, location and type of land use change in Canada at national and regional scales. Research is aimed at measuring present use as well as land capability and former use. This information then assists in the prediction of land use trends, and the evaluation of government programs which have an impact on land use, national land budgeting, and regional and resource planning¹¹.

An early task for CLUMP was the development of a land use classification system suitable for monitoring purposes. Existing systems were found to be inadequate, in part because they commonly mixed different attributes of land use. For example, the CLI classification system¹² defined classes by a mix of land cover, activity and texture. The CLUMP system, therefore, was designed to eliminate this and other problems, and includes the following features:

- Class definition does not require the mixing of different land attributes. It is represented by two pure systems, one for land cover and one for land activity.
- It is heirarchical.
- Coding permits easy computer manipulation.
- The system is flexible but comprehensive enough to meet a variety of user needs.
- It is possible to separate production activities such as the growing of crops, from site activities such as housing livestock.

The CLUMP system, as with previous systems is designed for application using low to medium altitude air photographs. A problem arises, however, from the fact that the verbal description of each class given in Lands Directorate Working Paper No. 17¹⁰ does not adequately convey the visual image of the class as it appears on airphotographs. This problem has existed since the 1960's when the CLI classification system was used. The lack of visual aids and descriptions in the CLI reference material resulted in each group across the country mapping slightly different classes and using slightly different visual images to represent each class. The Lands Directorate inherited the

problem when they used the CLI classification to update land use for 1976. A completely new group of interpreters were involved who did not know what visual cues had been used in the earlier mapping. Resulting inconsistencies contributed to problems in analysing land use change.

The potential for similar problems regarding consistency and interpretation accuracy exists for the new CLUMP classification system. The Lands Directorate recognized this problem but had not the resources to deal with it when the system was introduced. I.D. Systems Ltd. (IDS) also recognized the problem through involvement in CLUMP mapping and analysis projects. IDS therefore put forward an unsolicited proposal¹³ to the Department of Supply and Services (D.S.S.) to produce an airphoto-interpretation guide which would complement the most recent update of Lands Directorate Working Paper No. 17. D.S.S. provided support for the preparation of the manual because:

- the concept of the manual was very supportive of the Department of Environment's role in promoting efficient, effective and environmentally sound land and resource use patterns in Canada;
- the manual would greatly facilitate the use and adoption of the CLUMP classification system by consultants, provinces and municipalities and, therefore, would make the classification system more nationally acceptable;
- IDS has unique experience in mapping land use for CLUMP and in dealing with the problems to be solved; and
- IDS was able to gather a group of professionals from all parts of the country to work on the manual.

D.S.S. funded the majority of the work on the contract for the first year, and the Land Directorate funded the second year's work.

2. USING THE MANUAL

The manual has been structured after the land use classification system currently being used by CLUMP.¹⁰ The system is hierarchical, meaning that land use can be classified at a generalized level, or at progressively more detailed levels. For any particular project, the hierarchical level to be used is established according to the objectives of the study, and consequently varies from project to project. For maximum flexibility, therefore, descriptions are provided in the manual at the most detailed classification level. A user wishing to map at a more generalized level can always move up to the next, inclusive, less-detailed class.

The stereograms in Volume II which provide visual examples of most of the classes described are also interpreted at a detailed level. Wherever possible, each polygon includes only a single activity. This should reduce to a minimum confusion on the part of a user as to which features of an image refer to a particular class. The resulting polygons, however, frequently are smaller than CLUMP mapping conventions would allow, and a user should not mistake the manual as a guide for mapping practises.

In Section 3, Class Descriptions, the most important characteristics used to describe images are pattern, tone, and texture^{1,2,3} though shape, size and topographic characteristics are also addressed where appropriate. To reduce verbal ambiguity, a glossary of terms is included in Appendix I. It is strongly recommended that users familiarize themselves with the meaning of these terms before proceeding to the text.

Most CLUMP projects use black and white, panchromatic airphotos ranging in scale from 1:20,000 to 1:50,000. The manual text and stereograms have been developed to match these scales. In this context, "smaller scale" refers to scales closer to 1:50,000 and "larger scale" to 1:20,000. Images vary considerably with scale and this should be taken into consideration when reading the text. Equally, if the user is viewing photography outside this range, class descriptions included here may not apply.

Agricultural images vary with management practices and time of year. Although nothing can replace first hand knowledge of local agriculture when preparing interpretations, a crop calendar can act as a useful guide as to which crops will show separate and characteristic images, and which will show overlapping or similar images, at a given date of photography.^{3,4,5} Generalized crop calendars are included in Appendix II for each region of the country from which stereograms were selected. When viewing stereograms, it is recommended that the user refer to the appropriate calendar as it will assist in the recognition of classes.

Crop calendars can also be used to help select the optimum timing for photography given the crops to be identified. For best results, however, calendars should be prepared which are specific to climatic variations and local practises in the year in which airphotos are to be taken.

For the user's ease, the text and stereograms have been cross-referenced by activity (and sometimes cover) codes. In Section 3, Class Descriptions, each activity is described under its code number in the order in which it is found in the Land Use Classification System¹⁰. Following each class description a list of stereograms is included on which that class can be viewed. For example, under the description of A111 - Growing Grain (page 7), a list of stereograms is found which includes:

Wainfleet, Ont. (24 June 1982; 1:35,000) 1: most grain fields are tall and dark, ground cover complete.

This indicates that on stereogram B in Volume II, all polygons marked "1" are grain in the stage of growth described. In addition, when viewing the stereogram, a key is provided on the interpretation overlay as follows:

1. grain (A111/V120)

By listing the code number under which the class is described, it is hoped that the user will be able to move between text and stereogram with equal ease.

Occasionally, the user will note an entry as follows:

J. Beamsville, Ont. (1 July 1982; 1:35,000) **WD:** marina

In such cases, "WD" means "written directly" and indicates that the word "marina" and its class code "(R150)" are written directly on the interpretation overlay, usually with an arrow pointing to the image, rather than being listed in the key.

The manual has been bound in a 3-ring binder format to maintain flexibility and allow additions. Stereograms were selected to represent the widest possible range of activities and cover within the limitations of opportunity, budget and time, but some classes are not illustrated or described. It is hoped that additional stereograms and text will be developed over the next few years before the manual is finalized in a standard publishing format.

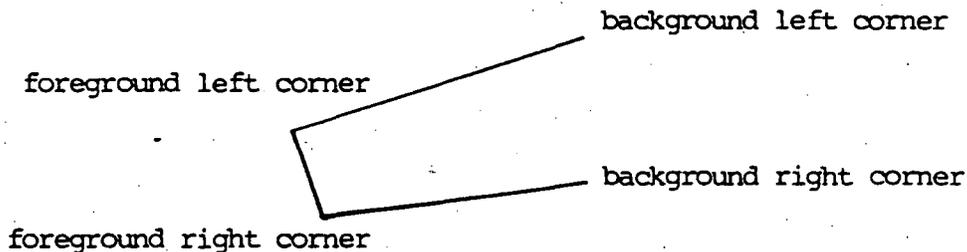
VIEWING THE STEREOGRAMS

The stereograms can be most easily viewed with a mirror stereoscope where the two airphotos lie flat. They can be viewed with pocket stereoscopes, but the photo which is rolled up for stereo viewing must be the photo without the overlay. In addition, text was developed using 3x magnification. If less magnification is used, some of the features described may not be visible.

When working on a stereogram, the interpretation overlay should be attached along one edge so that it lies flat on the airphoto. The stereogram and interpretation can then be viewed directly, but the overlay can be flipped out of the way if the user wants to view an image without it.

The ground-photograph-location overlay can also be attached to the airphoto along one edge, but viewing the stereogram with both overlays in place is not recommended. The user should either work with it flipped up except when referring to photographs, or leave it detached and just place it over the interpretation overlay when necessary.

The ground-photograph-location overlay records the location, direction and field of view of all accompanying pictures. Oblique pictures taken from the air are recorded as follows:



Direction of view is from foreground to background or in the direction of the open side. (Background corners may be short of their actual location if at the horizon).

Ground photographs are recorded as a "V", with the point of the "V" at the exact location from which the picture was taken. Direction of view is toward the open arms of the "V".

When working with an interpretation overlay, users may notice that some polygons have more than one symbol. Usually this will be self-explanatory. For example, a polygon with a large building surrounded by a field may have two symbols, one for poultry barns and another for pasture. But in some cases, the meaning of the two symbols should be merged. This occurs most frequently with either hay and pasture where both uses occur, or with hay or pasture and abandoned agricultural land where the hay or pasture may be idle.

Lastly, the user will notice that there is one stereogram (N:Windsor, N.S.) where the ground-photograph-location overlay fits on the other airphoto than the one on which the interpretation overlay fits.

A
F

3. CLASS DESCRIPTIONS

AI10 - GROWING ANNUALLY-TILLED CROPS

AI11/V120 - Growing Grain

Land used for growing grain in close rows or continuous cover. Included are all the small grains such as wheat, oats, barley, rye, buckwheat and millet, whether grown as a grain crop or for green manure.

Early in the season, spring-seeded fields cannot be distinguished from any other annually-tilled or newly-planted perennial crop or bare soil. The fields have a smooth texture and may be faintly lined in the direction of tillage. Tone is very light grey to white. In black soil zones, tone is darker.

As the crop begins to emerge and lengthen, tone darkens. At this stage, growth is often uneven and contrasting tones accentuate tillage or drainage patterns. In fields which are parallel-tilled, apparent rows may appear and a line of light and dark dots may be visible at both ends of the field where machinery has turned around. If seeding is at right-angles to the direction of ploughing or disking, a plaid or mesh pattern may appear.¹ Because much soil is still visible, the texture and pattern of young grains may be partly obscured by mottling caused by variations in soil moisture.¹

Young emerging grain can be confused with several other crops depending on timing. Early in spring, fall-planted grain looks similar to marsh hay and also to weedy fields tilled the previous fall. Early-planted spring grains usually emerge ahead of any other crop except new hay. Late-planted spring grains can be confused with early corn, though corn provides a harder image with more height in the dark rows.

As grains reach 20-40 cm¹ tone becomes dark grey to black. Texture is smooth and soft. Irregular light tonal patches may still be present due to uneven growth or seeding, or according to Colwell,¹ a concentration of straw from the previous year's crop. At this stage, grain is virtually identical to uncut improved hay crops. Hay and grain can sometimes be separated, however, by the less uniform tone or patchiness of grain. Hay may be taller than spring grains at this stage as well.

As grains ripen, their tone lightens until at full maturity, the tone is very light grey to white. Ripening usually does not occur evenly, and may again accentuate the original tillage pattern. Once a field is fully ripe, however, no pattern is visible. Fresh cut hayfields can also be light toned but are harder textured, and the patterns of ripening grain and cut hay are quite different.

Lodging may occur in all grains as they become tall. Colwell states that it is most conspicuous in oat fields where its fleecy texture contrasts sharply with the uniform texture of undisturbed grain.¹ In badly lodged fields, texture becomes moderately rough and hard. If this occurs at the same time that tonal variation is appearing due to uneven maturity, the field may look even rougher.

In tall grain fields, wind can create striking effects. Because the grain surface has changed or moved between airphoto pairs, an artificial height effect is created. This appears as a lighter-toned "shimmer" floating above the surface of the field. This effect also occurs on tall uncut hay fields.

Crops being swathed show distinct patterns of parallel or concentric lines. Swaths are light toned on a slightly darker background. Rapeseed swaths are almost identical but can sometimes be separated as they are slightly wider, fluffier and less even. Harvested grain fields (stubble fields) are light grey to white. Harvested or swathed grain fields can be confused with swathed or freshly harvested hay. Once hay fields have had time to regrow, however, their tone darkens which helps to identify them.

It is usually not possible to distinguish one grain type from another in monochrome, colour or colour-infrared photography.⁴ The methods and implements used to plant and harvest small grains are the same and result in similar patterns.³ In addition, the tonal range of spring-sown grains is limited, though oats is usually somewhat darker than other spring grains.² Barley ripens earlier than other grains but there is considerable overlap of maturity times.

Buckwheat is not frost-resistant and is often sown later than other grain crops, as is millet. Therefore, these two grains are commonly a stage or two behind other grains. Fall-seeded grains, which are usually 10-15 cm tall in spring, can usually be separated from most spring grains because they are further advanced.

- A: **St. Thomas de Carton, Que.** (17 June 1982; 1:20,000)
M,B: millet and buckwheat not showing; 3: oats with soil still showing through.
- B: **Wainfleet, Ont.** (24 June 1982; 1:35,000) 1: most grain fields are tall and dark, ground cover complete.
- C: **Petitcodiac, N.B.** (12 July 1982; 1:35,000) 1: grain well up but soil still showing through.
- D: **Lloydminster, Alta.** (28 July 1982; 1:30,000) 1: various fields of wheat, oats and barley with ground cover complete.

- F:** Wabamun Mines, Alta. (3 Sept.1982; 1:30,000) **2E:**
reclaimed mining planted to grain.
- H:** Rang-St. Charles, Que. (17 June 1982; 1:20,000) **M:**
millet barely showing through; **3:** tall fall rye being
ploughed under.
- J:** Beamsville, Ont. (1 July 1982; 1:35,000) **1:** ground
cover complete, some fields are lodged, some beginning
to show ripening pattern.
- K:** Fort Saskatchewan, Alta. (20 Aug.1982; 1:30,000) **1:**
various fields of wheat, oats and barley with barley
ripening.
- L:** Sherkston, Ont. (24 June 1982; 1:35,000) **1:** grain well
advanced or with some soil showing or with planting pattern
still obvious.
- M:** Trois Rivieres, Que. (17 June 1982; 1:20,000) **1:** grain
well-up but with soil still showing through.
- N:** Windsor, N.S. (19 May and 26 Sept.1982; 1:35,000) **2:**
one field of winter grain in early spring and in stubble
in fall.
- P:** Kelowna, B.C. (26 July 1982; 1:40,000) **1:** a few small
fields of ripening barley; one field lodged.
- Q:** Chilliwack, B.C. (22 June 1982; 1:40,000) **1:** ground
cover complete or with some soil still showing.

All2, All3/V112, V113 - **Growing Vegetables, Root Crops and Tubers.** Land used for growing annually-tilled vegetables and root crops in widely-spaced rows.

Early in the season, vegetable crops and root crops cannot be distinguished from other newly planted crops or bare soil. Tone is light grey to white (darker in dark soils). Fields are smooth and may be faintly lined in the direction of tillage. Mottling due to uneven soil moisture may be present. Irrigation patterns are common but not uniquely diagnostic.

As growth advances, the row pattern (which appears as fine dark lines on a light background and which may not be visible on any but the largest scales) gives way to medium or coarse texture¹ uniformly distributed over the field. Tone varies from dark grey to black. Colwell states that low spreading crops such as sugar beets, bush beans and peas acquire distinctive texture early in the growing season. Crops such as potatoes which are kept hilled may not acquire this texture and tone until much later.

The row pattern of vegetables and root crops generally appears earlier or later than that of corn but if stages overlap, these could be confused. The uniform dark texture can be confused with second or third year strawberries, but is darker and more uniform than pasture. On smaller-scale photos, vegetables may be confused with some forage crops, especially if these are lightly grazed.

Often associated clues are valuable in identifying vegetables and root crops. Potatoes and other root crops are often cultivated in very large fields on friable, porous and well-drained sands and loams.⁸ Potato farmsteads usually have a large potato barn (in Quebec, often a Quonset-shaped hut or "caveau") for storage of the harvest and a shed or barn for equipment storage.⁸ These, along with numerous potato collecting bins (often visible) should provide a good indication as to the use of adjacent fields.

Annually-tilled crops on organic soils are almost certainly vegetables (or potatoes in some areas). Fields are usually small, often long and thin and intensively farmed. Vegetables are commonly grown in a similarly intensive fashion on other soils as well, occasionally with many small plots fitted into a larger triangular or rectangular field. Vegetables grown in this fashion can only be confused with ornamental nurseries.

- A: **St. Thomas de Carton, Que.** (17 June 1982; 1:20,000)
P,V: potatoes and vegetables.
- G: **Abbotsford, B.C.** (22 June 1982; 1:40,000) 4: recently planted or barely showing.
- H: **Rang-St. Charles, Que.** (17 June 1982; 1:20,000)
P,V: potatoes and carrots indistinguishable from bare soil.

- J: Beamsville, Ont.** (1 July 1982; 1:35,000) 2: a few fields, some showing well-developed texture, others recently planted or barely showing.
- L: Sherkston, Ont.** (24 June 1982; 1:35,000) 2: intensive, mixed vegetables.
- P: Kelowna, B.C.** (26 July 1982; 1:40,000) 2: intensive, mixed vegetables.
- Q: Chilliwack, B.C.** (22 June 1982; 1:40,000) 2: vegetables cannot be separated from corn or bare soil; showing irrigation patterns.

All14/V116 - Growing Seed Crops (Rapeseed - Canola)

Land used to grow seed crops in widely-spaced rows.

Once rapeseed has established a continuous ground cover (by early July in prairie parkland), its image has a fine textured, distinctive, medium-grey tone of remarkable uniformity. No patterning is visible and the lack of textural or tonal change results in a flat, almost blank image. Too few examples were available to establish whether tone may change during flowering, but it seems that the unpatterned uniformity of rapeseed is identifiable whether the field is in flower or not. If during planting, gaps are left between machine passes, light-toned lines of soil may appear at 4-5m intervals depending on the width of equipment used. Only these latter fields are likely to be confused with any other crop.

As rapeseed matures, uneven ripening results in both lighter and darker grey tones which accentuate the original tillage pattern. Patterns are similar to ripening grains, but occasionally are like a very fine mesh screen and this may be diagnostic. Though rapeseed does not seem to ever reach as light a tone as ripe grains, it cannot be reliably separated from grain crops when both are fully mature.

Rapeseed swaths resemble grain swaths. It is sometimes possible to separate them, however, as rape swaths are slightly wider, fluffier and less even.

D: Lloydminster, Alta. (28 July 1982; 1:30,000) 3: rapeseed.

M: Trois Rivieres, Que. (17 June 1982; 1:20,000) 10: one very small field of soy beans.

A115/V117 Growing Leaf Crops (Tobacco)

Land used for growing tobacco in wide-spaced rows.

Tobacco is grown on well-drained sandy soils which are very fine textured and susceptible to wind erosion. Clibbon⁸ has indicated that in Quebec, tobacco is grown in a geometric pattern in a tobacco-rye rotation. Rye is seeded in the early fall immediately following the tobacco harvest. It grows quickly in spring and by early summer is dark grey to black toned with a soft, smooth texture. Light toned soil patches may still show through. In midsummer, the rye is ploughed under as green manure. A second growth then takes place and this is again ploughed under in fall or early spring before the field is planted to tobacco. The result of this rotation is a checkerboard effect in early summer when rye is black and the young tobacco fields are white. Contrast between fields will lessen as the tobacco grows and darkens, but will reappear in reverse when the rye is ploughed under if the tobacco is sufficiently advanced. The contrasting checkerboard may appear again in fall once the tobacco harvest is finished and the fields are ploughed. Once again the tobacco fields are white in contrast to the second-growth rye which is dark.

Other features associated with tobacco are also diagnostic. Tobacco farmsteads include one to several greenhouses where seedlings are raised, and clusters or rows of low buildings or (more commonly) high, frame square sheds for drying tobacco. Farms commonly have a dug-out or irrigation pond and often have windbreaks to reduce wind erosion.

All17/V1111 Growing Corn

Land which is used to grow corn in wide-spaced rows. Includes sweet and field corn, whether grown for vegetables, silage or grain.

Corn is generally difficult to recognize until at least 50 cm high. Prior to this, which in many areas is as late as mid-July, corn shows the same image as bare soil. It is smooth and light-toned, and shows faint lines reflecting the tillage pattern, usually parallel to the length of the field with a turning line across both ends. Early in the season, therefore, corn can be confused with any newly-planted crop. Corn is usually kept weed-free by periodic cultivation which keeps the image "clean". Since the dark tone of grain (and early vegetables) develops more quickly than corn, clean fields in early summer can only be confused with late vegetables, root crops, or clean fallow. Weedy corn is readily confused with weedy or corn-stubble fallow.

As corn begins to show on airphotos, dark grey to black streaks, rows and patches appear on the lighter toned soil. (Corn is always darker than soil, even in dark soil regions¹). The dark corn has a hard, focussed appearance, may show noticeable height, and rows may be discernable at larger scales. At this stage, corn can be confused with late vegetables, weedy or corn stubble fallow, and recently-cut hay. The concentric cutting patterns of hay, however, usually distinguish the latter.

As panicles emerge, Colwell indicates that the almost black tone of corn lightens to a medium grey. Rows are not visible but a striking, medium-rough, carpet-like texture is present (even in single photos) which persists as corn matures. Fully mature corn has drooping leaves, and the row pattern may be visible on larger scales. The height of corn is diagnostic, and frequently casts a visible shadow along the edge of fields or between cut and uncut parts of a field.¹

Harvested corn is light grey and faintly lined, reflecting the remnant corn stubble pattern. Weeds or soil moisture may cause mottling.

Field corn is often associated with hay and pasture because it is used for silage on dairy farms. It is normal to ensile corn on the farm on which it is grown as it is too bulky to truck and this results in a natural association of silos and corn.⁸

- B: Wainfleet, Ont.** (24 June 1982; 1:35,000) 2: corn not showing or just beginning to show.
- C: Petitcodiac, N.B.** (12 July 1982; 1:35,000) 2: corn beginning to show, easily confused with freshly cut hay.
- G: Abbotsford, B.C.** (22 June 1982; 1:40,000) 6: corn not showing.
- H: Rang-St. Charles, Que.** (17 June 1982; 1:20,000) C: corn indistinguishable from bare soil.
- J: Beamsville, Ont.** (1 July 1982; 1:35,000) 3: corn barely beginning to show.
- L: Sherkston, Ont.** (24 June 1982; 1:35,000) 3: corn not yet showing.
- M: Trois Rivieres, Que.** (17 June 1982; 1:20,000) 2: corn not showing.
- Q: Chilliwack, B.C.** (22 June 1982; 1:40,000) 3: corn not showing or just beginning to show.

Al20 - GROWING FORAGE CROPS AND GRAZING

Al20/V220, W220, W120 - Unimproved Hay and Grazing
Wild land used for hay or grazing.

Natural grasslands show no evidence of cultivation, usually are without sharply defined boundaries,¹ and show a light-grey, fine-textured image. If the grassland is in an early seral stage, bushes and trees may be invading, grading in from nearby woodlands. Such areas may be used for grazing but show no visible sign of it due to the low intensity of usage. In the field, fences and cattle-gates are clues but these are not usually visible on photoscales used in this manual. The difficulty, therefore, is to separate unused land from low-intensity grazing, and this can usually only be done through discussions with farmers or local agricultural representatives. If the intensity of grazing is higher, grassland will show texture and patterns typical of improved grazing (See Al22/V210 -Improved Grazing) and woodlands may show a marked lack of undergrowth if the canopy can be visually penetrated.

Wild hayland which has been cut in previous years will often show a slightly darker tone than untouched grassland and may show tonal stripes reflecting the cutting pattern. This does not mean with certainty, however, that the land is being used for hay in the year of photography, and only after cutting can the interpreter be sure that the land is not idle. Cut wild hay looks the same as freshly cut improved hay (see Al21/V210 - Improved Forage Crops) and other clues such as topographic location or "field" shape must be used to distinguish between them. Well-defined, typical, rectangular fields used for growing unimproved hay can be distinguished from older improved hayfields only by ground checking.

- C: Petitcodiac, N.B.** (12 July 1982; 1:35,000) 5: improved and unimproved grazing not separated.
- D: Lloydminster, Alta.** (28 July 1982; 1:30,000) 5: grazing along watercourses; 11: grazing in wooded areas.
- E: Wabamun, Alta.** (3 Sept. 1982; 1:30,000) 22: grazing in variety of covers.
- F: Wabamun Mines, Alta.** (3 Sept. 1982; 1:30,000) 7: wild hay and grazing.
- K: Fort Saskatchewan, Alta.** (20 Aug. 1982; 1:30,000) 6: wetlands possibly used for grazing.
- L: Sherkston, Ont.** (24 June 1982; 1:35,000) 7: improved and unimproved grazing not separated.
- N: Windsor, N.S.** (19 May and 26 Sept. 1982; 1:35,000) 4: early spring and fall images with improved and unimproved grazing not separated.
- P: Kelowna, B.C.** (26 July 1982; 1:40,000) 17: a few fields.

Al21/V210 - Growing Improved Forage Crops

Land used for growing grass and/or legume forage crops in long-term rotation with annually-tilled crops or which is replanted to forage crops every 3-5 years (approximately). Forage fields are sometimes pastured after the first or later cuts.

Hay (grass and/or legumes) is seeded either in fall or early spring. Growth is rapid and fields quickly show darker tones than most other newly-planted crops except grain. New hay closely resembles developing grain, showing similar planting patterns, tone and texture. (See Al11/V120 - Growing Grain).

Second year and older hayfields have variable images depending on species and age, but never show signs of seeding. Young weed-free fields have uniform, smooth, medium-grey to black images. In general grasses are lighter toned than legumes, with alfalfa and clover showing almost black tones. In mixed hayfields, legumes start to disappear after the first year or two, leaving lighter-toned patches of grass. Therefore in older fields, tone is mottled rather than uniform. Prior to cutting, hay can be confused with well-established grain fields. It can only be separated if the grain still shows light-toned soil patches and if the hay does not have light-toned patches resulting from previously cut or swathed hay.

Hay is usually cut at least twice each summer. Harvesting is done in numerous ways but all create distinctive patterns by which the crop can be identified. Cutting usually follows a concentric pattern which leaves light diagonal lines extending from field corners where machinery turns, to the field centre. Partially cut fields are dark toned in the centre with a clearly defined light-toned border. Cut hayfields are at first very light toned, and often reflectance is so great that cutting patterns are nearly "washed out" due to overexposure. Hay may be swathed prior to baling. Swaths are easily recognizable. Bales come in various sizes and appear as light or dark dots, often with noticeable height. Bales may be left scattered randomly in fields, stacked nearby in neat rows or stacks, or placed in open or closed hay barns. Often irregular trails are visible fanning out from the field entrance. These are created by equipment driving across the cut field to collect bales.

The first hay crop is commonly harvested at about the same time young corn is beginning to show on airphotos. The two images can be easily confused, especially at smaller scales where wash-out can mask subtle cutting patterns. (These images can also be confused with any field where bare soil dominates such as fallow or potatoes.) Hay fields quickly regrow and tone darkens again to medium or dark grey. The cutting pattern often remains visible, reflected in stripes of slightly different tones. Prior to the second cut (in B.C. there may be up to five cuts) hay is again similar to grain unless grain has begun to ripen. Hay cut in later summer or early fall cannot be separated from harvested grain until regrowth again darkens tone.

Hay fields are sometimes pastured after the first cut and it is hard to distinguish these fields from improved pasture.¹ In later years, hay fields become increasingly weedy, and the image gets rougher and more mottled. Such fields can be hard to distinguish from recently abandoned land, or improved pasture which is little grazed.

- A: St. Thomas de Caxton, Que. (17 June 1982; 1:20,000)
4: one very small field.
- B: Wainfleet, Ont. (24 June 1982; 1:35,000) 5: numerous fields, various stages.
- C: Petitcodiac, N.B. (12 July 1982; 1:35,000) 3: standing hay; 4: cut hay, easily confused with corn.
- D: Lloydminster, Alta. (28 July 1982; 1:30,000) 4: a few fields.
- E: Wabamun, Alta. (3 Sept. 1982; 1:30,000) 20: numerous fields, several in second cut.
- F: Wabamun Mines, Alta. (3 Sept. 1982; 1:30,000) 2D: reclaimed mining planted to hay, uncut and cut, swathed and baled; 5: second-cut and uncut fields.
- G: Abbotsford, B.C. (22 June 1982; 1:40,000) 5: unspecified hay or grazing.
- H: Rang-St. Charles, Que. (17 June 1982; 1:20,000) 5: a few fields of good hay; 7: one field of low quality or idle hay.
- J: Beausville, Ont. (12 July 1982; 1:35,000) 4: mostly good quality hay, several fields in first cut.
- K: Fort Saskatchewan, Alta. (20 Aug. 1982; 1:30,000)
3: several fields including some which have not been cut this year.
- L: Sherkston, Ont. (24 June 1982; 1:35,000) 6: various qualities, planting and cutting stages.
- M: Trois Rivieres, Que. (17 June 1982; 1:20,000) 3: mixed hay; 3L: legume hay; 4: weedy hay.
- N: Windsor, N.S. (19 May and 26 Sept. 1982; 1:35,000)
3: early spring and fall dyked hayland.
- P: Kelowna, B.C. (26 July 1982; 1:40,000) 3: variety of cut patterns and tones; grass being swathed for baling on one sod farm.
- Q: Chilliwack, B.C. (22 June 1982; 1:40,000) 4: many fields in various stages, not separated from improved grazing.

A122/V210 - Improved Grazing or Pasture

Land used for grazing, either in rotation with forage and annually-tilled crops, or which is permanently grazed but replanted to grass or legume species every 4-7 years (approx.)

Well-grazed pastures are readily recognizable. Texture, the key characteristic, is hard and uniformly medium rough. The image shows no height, and tone is medium grey. Tone lightens slightly as summer progresses and in many fields is mottled due to uneven use, weeds, flowering pasture plants and livestock droppings.¹

Diagnostic patterns include livestock trails radiating out from field entrances and along field margins, light-toned bare soil patches at field entrances and around watering, feeding and salting places, proximity to barns, holding pens, sheds, or woodlots (for shade), scattered trees and the presence of livestock. Livestock can be seen even at small scales because they move between airphoto pairs. This creates an odd height effect as though there were dots floating well above the field. If feed is brought in for livestock, fields may show several small white circles or doughnut-shapes where the soil has been exposed around the feed.

The less intensively a field is grazed, the more difficult it is to differentiate from hay. In recently replanted fields and in little used fields, tone is usually darker. Faint tonal stripes may indicate the original planting pattern or previous cutting. Some rough pastures are planted to grass in one direction and legumes in the other and will continue to show a plaid pattern for several years. As a pasture ages it will become weedier and small shrubs may even appear. Such fields, due for replanting, can be extremely hard to tell from abandoned agricultural land or unimproved grazing. In general texture is the best guide to separate hay and pasture even if a herd is visible. If a field is smooth, whether showing signs of cutting or not, it is probably best classed as hay. If texture is rougher, it should be classed as pasture.

- A: **St. Thomas de Carton, Que.** (17 June 1982; 1:20,000)
5: one field.
- B: **Wainfleet, Ont.** (24 June 1982; 1:35,000) 6: several fields.
- C: **Petitcodiac, N.B.** (12 July 1982; 1:35,000) 5: improved and unimproved grazing not separated.
- D: **Lloydminster, Alta.** (28 July 1982; 1:30,000) 5: several fields.
- E: **Wabamun, Alta.** (3 Sept. 1982; 1:30,000) 21: some fields recently replanted, others are older.

- G:** Abbotsford, B.C. (22 June 1983; 1:40,000) 5: unspecified hay and grazing.
- H:** Rang-St. Charles, Que. (17 June 1982; 1:20,000) 6: permanent pasture.
- J:** Beamsville, Ont. (1 July 1982; 1:35,000) 5: a few fields.
- K:** Fort Saskatchewan, Alta. (20 Aug. 1982; 1:30,000) 4: improved and unimproved grazing not separated.
- L:** Sherkston, Ont. (24 June 1982; 1:35,000) 7: improved and unimproved grazing not separated.
- M:** Trois Rivieres, Que. (17 June 1982; 1:20,000) 5: permanent and rotational pasture not separated.
- N:** Windsor, N.S. (19 May and 26 Sept. 1982; 1:35,000) 4: early spring and fall images.
- P:** Kelowna, B.C. (26 July 1982; 1:40,000) 4: large pastures mostly for horses.
- Q:** Chilliwack, B.C. (22 June 1982; 1:40,000) 4: many fields, not separated from improved hay.

AL30 - FRUIT, BERRY AND NUT PRODUCTION**Al31/W111, W211 - Tree Fruit Production (Orchards)**

Land used for growing tree fruits in a regularly spaced pattern.

Orchards are characterized by a grid pattern of small to moderate sized trees where trees are planted with as much space between trees within a row, as between rows. When newly planted, the grid pattern may not show. Such orchards can be confused with other newly-planted crops. More commonly, however, a grid of lines is visible or the young trees themselves are visible as a grid of small black dots. When mature, the crowns of trees may almost touch. The ground beneath is usually sodded and overall tone is black on medium grey.

Typical fruit tree orchards can only be confused with nut or holly production. Hazelnut (filbert) trees however, have smaller crowns, are planted closer together, contrast more noticeably with their background (usually bare soil) and as they mature, form an almost continuous canopy cover of black, medium-rough texture within which the original planting pattern almost disappears.

Traditionally, orchards are laid out in a grid pattern. With the advent of new varieties of dwarf trees, however, some orchards are being planted with trees much closer together within and between rows. As these orchards mature, the pattern shows as lines or rows, rather than a grid, with each row wide and slightly irregular. These orchards are difficult to separate from vineyards where rows are double. In double-rowed vineyards however, rows usually appear more regular, continuous and unbroken.

Orchards can usually be separated from pine and other tree plantations by topographic location, likelihood of occurrence, height and because other trees are usually planted closer together within rows, than between rows.

J: Beamsville, Ont. (1 July 1982; 1:35,000) 6: all variations.

**N: Windsor, N.S. (19 May and 26 Sept. 1982; 1:35,000)
5: early spring (leaf-off or leaves just emerging)
and fall (leaf-on).**

P: Kelowna, B.C. (26 July 1982; 1:40,000) 5: all variations.

AL32/W300 - Grape Production (Vineyards)
Land used for growing grapes.

Grapevines are replanted every 15-20 years in rows usually 2-3m apart⁶ and are grown along trellises. When first planted, trellises are often not in place and the white smooth image cannot be distinguished from any newly planted crop. As vines develop, fine dark uniform lines appear, the height of which is noticeable at larger scales. The ground is usually kept bare in vineyards, and the black-toned vines contrast strongly with light-tone bare soil. As vineyards age, less and less soil shows through and the image becomes increasingly dark. Rows remain clearly discernible, however, in all but the youngest plantings. At small scales (less than 1:40,000), the fine lines are harder to distinguish and a uniform, carpet-like texture may be more useful for identification.

Vineyards are occasionally grown in double rows. This results in wider lines spaced farther apart. Such vineyards are easily confused with dwarf fruit tree orchards, but can usually be separated by the continuity and regularity of the vine rows.

Vineyards cannot be separated from raspberries. Row spacing, width, height and tone are similar. The localization of both grape and raspberry cultivation, however, usually precludes confusion.

Corn and other row crops are unlikely to be confused with vineyards due to wider spacing between vine rows and other differences in images.

J: Beamsville, Ont. (1 July 1982; 1:35,000) 7: all variations.

P: Kelowna, B.C. (26 July 1982; 1:40,000) 6: all variations.

Al33 - Berry Production
Land used for growing berries.

Raspberries (Al33/W212) are grown from canes supported on trellises, and are replanted approximately every 10 years. When first planted, their image cannot be separated from other newly-planted crops. As canes develop, fine dark uniform lines appear, the height of which is noticeable at larger scales. The ground is usually kept bare beneath them, and the black-toned bushes contrast strongly with the light-toned bare soil. As raspberry fields get older, less and less soil shows through and the image becomes increasingly dark. Rows remain discernible, however, in all but the youngest plantings. At small scales (less than 1:40,000) the fine lines are harder to distinguish and a uniform, carpet-like texture may be more useful for identification.

In all important aspects, raspberries are similar to vineyards. The localization of both grape and raspberry cultivation, however, usually precludes confusion.

Strawberries (Al33/V110 or V400) are grown in rows and are replanted every 3-5 years. In their first year, they are difficult to identify and probably cannot be separated from vegetables or rootcrops until mid to late summer when individual characteristics are most fully developed. Young strawberry fields frequently show irrigation patterns, but as vegetables are also irrigated, this characteristic cannot be used for identification.

From early spring, unmulched second-year and older strawberries show a medium-smooth, soft, fleecy texture and faint linear pattern in the direction of planting. Tone varies depending on moisture content of the soil, but most often is light to medium-grey. This image is very similar to improved permanent pasture. Strawberries look slightly softer and fleecier, and show no signs of grazing such as livestock trails. The fields are often small, or if larger, are separated into smaller sections by dirt roads which show as straight, slightly-irregular, white lines.

In some regions, strawberries are mulched with straw between rows. In mulched fields at scales around 1:20,000, berry rows appear dark in sharp contrast with the white lines of straw. Row spacing is 1-1.5m which is noticeably finer than raspberries and rows show no height. If berry rows are discontinuous, the linear pattern may be replaced by a medium-rough texture of contrasting tones. Older fields become weedy and the straw mulch is less or not at all visible. Older fields are medium to dark grey and have a medium-smooth texture. The road access pattern is noticeable and at larger scales, pickers may be visible during harvest-time.

High bush blueberries (Al33/W212) have a dark-grey to black tone and a rough, hard texture. Bushes are planted in a grid pattern but as plants mature the rows in one direction seem to dominate. The rows remain visible even at scales of 1:40,000. Young plantings could be confused with young hazelnut orchards, but individual bushes are

smaller and spaced much closer together. The grid pattern separates blueberries from raspberries which are uniformly linear. Blueberries are commonly grown on organic soils.

- A: St. Thomas de Caxton, Que. (17 June 1982; 1:20,000)
2: first year and mulched strawberries; WD: two very small raspberry patches.
- C: Petitcodiac, N.B. (12 July 1982; 1:35,000) WD: small field of strawberries.
- G: Abbotsford, B.C. (22 June 1982; 1:40,000) 1: wide variety of raspberries; 2: first year and unmulched strawberries; 3: blueberries.
- H: Rang-St. Charles, Que. (17 June 1982; 1:20,000) 4: newly planted and mulched strawberries.
- L: Sherkston, Ont. (24 June 1982; 1:35,000) B: unmulched strawberries; 9: one small raspberry patch.
- M: Trois Rivieres, Que. (17 June 1982; 1:20,000) 6: raspberries; 7: mulched strawberries.
- Q: Chilliwack, B.C. (22 June 1982; 1:40,000) 5: raspberries.

A135/W111,W211 - **Nut Production**
Land used for growing nuts.

Hazelnut (filbert) orchards are planted in either a grid pattern or with more space between rows than between trees within rows. Individual trees have a dark grey to black tone and young plantings contrast sharply with the usually light-toned, bare-soil background. As hazelnut orchards mature, individual tree crowns touch and the canopy completely closes. This reduces shadowing and the image, which was previously rough and black, becomes medium-rough and dark-grey.

Hazelnuts are immediately recognized as orchards. They can usually be separated from fruit tree orchards by locality and by their smaller crowns, close-spaced planting pattern and the continuity of canopy cover where mature.

Q: **Chilliwack, B.C.** (22 June 1982; 1:40,000) 6: hazelnuts.

Al40/W210 - GROWING ORNAMENTAL SHRUBS AND TREES

Land on which the activity is the growing of ornamental trees, shrubs and vines which will be transplanted. Does not include possible associated greenhouse part of a nursery operation.

Ornamental nurseries are recognized by pattern and to a lesser extent, field size. The fields, which are usually not extensive, are divided into smaller tidy plots, rows or strips with each subsection planted in different species. Tone, texture and height vary between and even within subsections. Nurseries which raise mostly trees may be hard to recognize where the trees are small. The image is dominated by bare soil and is white, smooth and inseparable from newly planted crops or fallow. Nurseries are frequently, but not necessarily, associated with greenhouses.

Ornamental nurseries can be confused with intensive vegetable production and with large, private vegetable gardens. Private gardens are usually smaller and associated with a house or farmstead. Intensive vegetable farming is usually more uniform within subsections than are nurseries.

- G: Abbotsford, B.C. (22 June 1982; 1:40,000) 20: one nursery.
- J: Beamsville, Ont. (1 July 1982; 1:35,000) 8: could also be growing grape and tree fruit nursery stock (Al34).
- K: Fort Saskatchewan, Alta. (20 Aug. 1982; 1:30,000) 15: large tree nursery.
- L: Sherkston, Ont. (24 June 1982; 1:35,000) 10: large nursery.
- N: Windsor, N.S. (19 May and 26 Sept. 1982; 1:35,000) 7: spring and fall images.
- P: Kelowna, B.C. (26 July 1982; 1:40,000) 7: could also be growing grape and tree fruit nursery stock (Al34).
- Q: Chilliwack, B.C. (22 June 1982; 1:40,000) 7: both newly planted and well established nurseries.

A150/V210 - SOD PRODUCTION

Land on which the activity is the growing of lawn grasses for transplant.

Sod is usually grown in large fields on flat, level ground. It is kept weed-free and mowed. Where established, its image is smooth and medium-grey and does not change significantly during the season. At most times the mowing pattern can be seen. Mowing may result in parallel tonal stripes, but more often, sod is mowed in perpendicular directions with each mowing, and this results in a plaid pattern. Sod can be confused with short hay but the remnant cutting pattern of hay is usually concentric. If sod is unused and allowed to grow a hay crop, the tonal mowing pattern remains but the image softens as grass gets longer.

Sod cutting is very diagnostic. Cutting results in light-grey to white, wide stripes whose tone in black soil zones is quite different than fallow or disturbed soil. Often small bits of dark sod are missed between the wide cutting stripes or at the ends. At larger scales, sod pallets and work vehicles are frequently visible.

Sod being reestablished after cutting is smooth but mottled and shows no signs of mowing. Often vehicle trails remain visible on reestablishing sod where trucks were driven during cutting.

On most sod farms, all three of the above images are present at any given time.

K: Fort Saskatchewan, Alta. (20 Aug. 1982; 1:30,000)
10: large sod farm.

P: Kelowna, B.C. (26 July 1982; 1:40,000) 8: one typical sod farm, one with grass being swathed for baling.

A160 - AGRICULTURAL RESEARCH

This includes all land on which the activity is agricultural research such as experimental farms.

Experimental farms can be recognized by the intensity and quality of farming and by the accompanying association of buildings. Crops being grown are usually the same as those in the surrounding area but are grown in smaller, more intensively used fields using the best farming practises. Only in regions where farming is naturally intensive is it difficult to recognize the extent of an experimental farm. The "farmstead" area, however, is unmistakable. There are usually several dwellings instead of one, and numerous large barns, greenhouses, holding pens and other agricultural buildings. Often there is a mixture of large poultry and livestock barns, which is uncommon in normal farming. In addition, there is usually at least one multi-level, flat-roofed building typical of institutions.

J: Beamsville, Ont. (1 July 1982; 1:35,000) 9.

A170/W300 - HOP PRODUCTION

Land used for growing hops.

Hop fields are large and have a permanent grid of poles and trellis wires which is about 6m tall. While the vines are still small, the image is light-grey and has an extremely uniform, carpet-like texture which is slightly fuzzy or unfocussed. The grid pattern is not visible, and only faint parallel lines at the pole spacing of 4-5m are visible. Although irrigation may cause marked tonal changes, the uniformity, texture, and extent of hop fields is quite unique.

As vines grow and mature, tone darkens and is less uniform. The grid pattern becomes quite clearly defined. The image maintains, however, an unfocussed texture which presumably is a result of the variety of heights being observed. At this stage also, the image is unlikely to be confused with other crops.

Q: Chilliwack, B.C. (22 June 1982; 1:40,000) 8.

A190 - OTHER PRODUCTIVE LAND AGRICULTURAL ACTIVITIES

Includes all land where the activities are related to the productive capability of land and which are agricultural in nature but which are not included in the previous classes. Fallow and plowed fields are included in this class where it is unknown what future use will be made of them.

Fallow and freshly ploughed fields (A190/X220) may have a variety of appearances. If the bare soil has been recently tilled and is weed-free, fallow fields have the smoothest of all images. Moisture gradations across the surface of the field may make it almost "satiny" as though the field were glowing. This effect is most striking in dark-soil regions.

If fallow fields are being tilled, there may be marked contrast between the drier, lighter-toned parts of the field and the darker, moister parts just turned over. Sometimes farmers trace quite striking patterns while tilling a fallow field.

As fallow fields become weedy, tone darkens and texture becomes rougher. In darker soil zones, weedy fallow fields are black and medium rough. Elsewhere, tone remains light but darker streaks and patches appear. Weedy fallow fields are extremely difficult to separate from annual crops beginning to show on airphotos and from asparagus. Irrigation may be one of the only reliable clues for separating fallow fields as they are never irrigated.

Following a corn crop, fields are sometimes fallowed. The weed and trash cover creates a distinctive pattern of contrasting light and dark stripes and lines, reflecting the original tillage pattern. In some corn stubble fallow, however, this pattern is subdued. These fields cannot be separated from new corn until the new corn begins to show its own dark tone and texture.

Asparagus' (A190/W212) image is dominated by bare soil as the rows are planted up to 1.5m apart and the rather lacy fronds seem to allow considerable light reflectance from the soil. If the fields are young and weed-free, the asparagus rows barely show even at 1:20,000 and the overall image is light grey and uniformly finely textured. On older fields, the larger plants are more obvious and show as very fine rows of dark spots and lines (at 1:20,000). These fields appear two toned, white and black, rather than light grey, although at smaller scales this distinction would certainly be lost. If the fields are weedy, the weeds show as dark spots and patches randomly distributed.

Asparagus shows on airphotos before annual crops do and can be distinguished early in the year. As annuals develop, however, their images will be, at least briefly, similar to asparagus. In addition, asparagus can be confused with weedy fallow although the latter is usually less uniform.

- A: St. Thomas de Caxton, Que. (17 June 1982; 1:20,000)
BS: bare soil; 6: asparagus; 10: weedy fallow.
- B: Wainfleet, Ont. (24 June 1982; 1:35,000) 3: corn stubble fallow; 4: bare soil.
- C: Petitcodiac, N.B. (12 July 1982; 1:35,000) 6: one small fallow field.
- D: Lloydminster, Alta. (28 July 1982; 1:30,000) 2: large fallow fields, some being reploughed.
- E: Wabamun, Alta. (3 Sept. 1982; 1:30,000) 19: two fallow fields.
- H: Rang-St. Charles, Que. (17 June 1982; 1:20,000) BS: bare soil planted to annual crops; 2: asparagus.
- J: Beamsville, Ont. (1 July 1982; 1:30,000) 10: several fallow fields with one north of highway being reploughed, and several bare soil fields with some being irrigated indicating vegetables.
- K: Fort Saskatchewan, Alta. (20 Aug. 1982; 1:30,000)
2: several large fallow fields.
- L: Sherkston, Ont. (24 June 1982; 1:35,000) 4: many corn stubble fallow fields; 5: several bare soil fields.
- M: Trois Rivieres, Que. (17 June 1982; 1:20,000) 9: one very weedy fallow field.
- N: Windsor, N.S. (19 May and 26 Sept. 1982; 1:35,000)
1: tilled fields in early spring and same fields in fall in variety of covers.
- P: Kelowna, B.C. (26 July 1982; 1:40,000) 20: a few small fields.

A200 - AGRICULTURAL SITE ACTIVITIES

Includes all agricultural activities which use land as a site and not as a production medium.

Taken separately, farmstead features are frequently unreliable as indicators of types of farming because farmers may change the basis of operation without corresponding changes in the outward appearance of buildings. Nevertheless, the association of all site features and crop types can be used as a guide to type of farming.

A210 - Housing Animals

All land on which the activity is the provision of shelter for animals or the indoor raising of animals.

Livestock barns (A211) include all buildings used to shelter or raise dairy cows, hogs, beef cattle, sheep or horses. Livestock barns may be large with hip roof or gothic arch roof, with a low peaked roof, may be low, long and wide with or without roof ventilators, or may consist of numerous small buildings as on a hog farm. If there are several livestock barns on a farmstead, the buildings are usually separate or joined at right angles. Livestock barns usually show irregular patches of worn bare soil at barn entrances, leading to adjacent areas which show signs of heavy grazing and usage. Manure piles may be visible at larger scales. Horse barns show less sign of wear at entrances than dairy or cattle barns. Crop types associated with livestock barns include hay, pasture, corn and smaller amounts of grain.

Poultry barns (A212) are one or two story buildings which are usually longer and thinner than livestock barns. They may occur singly but more often occur in groups of 3 or more, arranged separately but side-by-side and parallel. The low peaked roof may have ventilators or these may be placed along the sides of the building. Each barn will have feed hoppers placed either at one end of the barn or spaced regularly along the length of the barn. Hoppers are often visible on airphotos as small white circular dots. Poultry barns may show signs of wear at barn ends where trucking equipment has been driven in, but such wear patches are usually more regular than those associated with livestock barns and lead to roads rather than holding areas. Poultry barns are usually surrounded by unrelated agricultural fields such as raspberries, corn or pasture. When surrounded by pasture, care must be taken to distinguish poultry from livestock barns.

Barns used for raising fur-bearers (A213) are low, long and extremely narrow in relation to length. They usually occur in clusters of up to 10 or more, set close together and parallel but usually not actually joined. Fur farms are often on idle land or amongst unrelated crop types such as raspberries.

- A: St. Thomas de Caxton, Que. (17 June 1982; 1:20,000)
8: poultry barns.
- D: Lloydminster, Alta. (28 July 1982; 1:30,000)
7: poultry farmstead.
- G: Abbotsford, B.C. (22 June 1982; 1:40,000) 7: many
various poultry barns; 8: one horse farm and a few
cattle farms; 9: various fur barns.
- J: Beamsville, Ont. (1 July 1982; 1:35,000) 11: poultry
barns.
- K: Fort Saskatchewan, Alta. (20 Aug. 1982; 1:30,000)
7: cattle sheds on livestock farmsteads; 13: horse
barns.
- L: Sherkston, Ont. (24 June 1982; 1:35,000) 11: poultry
barns.
- M: Trois Rivieres, Que. (17 June 1982; 1:20,000)
WD: poultry barns.
- P: Kelowna, B.C. (26 July 1982; 1:40,000) 9: horse
barns.
- Q: Chilliwack, B.C. (22 June 1982; 1:40,000) 9: dairy
barns; 10: poultry barns; 11: one small fur farm.

A220 - Outside Animal Feeding and Holding Areas

Includes land on which the activity is the feeding and holding of animals in a confined, open-air area. Where feeding takes place, the land in the holding area is not the source of food. Includes feedlot areas as well as confined holding areas near barns. Shipping corrals are also included as are non-commercial horse-training tracks.

Livestock (excluding horses) feeding and holding areas (A221) may be adjacent to livestock barns or removed from them. Fences around such areas are often wooden and visible on airphotos as lines of noticeable height. Long low shelters may be visible as may feeding and watering bins. Holding areas adjacent to barns and continuously used feedlots usually show signs of heavy usage with bare soil exposed. Sometimes cattle may be visible. Feedlots used only in winter and shipping corrals are frequently distant from farmsteads and show little sign of wear or usage during summer. Shipping corrals appear as small fenced areas adjacent to roads (or trails) usually subdivided into many smaller confined pens.

Horse holding and training areas (A223) are almost always near livestock barns and a farmstead. Fences are always wooden and are often visible on airphotos as lines of noticeable height. Although horse paddocks usually show much less wear than cattle holding areas, trails often show along fence lines. In a series of adjacent paddocks this tends to accentuate the fence line which appears as a dark line of unworn vegetation between two light lines of worn and exposed soil. Horse farms usually have a series of different size paddocks with larger paddocks farther from the farmstead. At some point it becomes difficult to know whether larger paddocks should be classed as holding areas or pastures.

Horse farms frequently have training tracks which may simply be a more or less oval track worn in a pasture or which may look like commercial race tracks but lacking stands, parking etc. Within a well-developed track, the land may be used for hay or may be set up for jumping.

Horse farms are frequently accompanied by very large, wide buildings or indoor riding arenas which may also have a commercial/recreational usage. In addition, the dwelling on a horse farm is often more urban than on many farms and the surroundings are more often landscaped.

B: Wainfleet, Ont. (24 June 1982; 1:35,000) **WD:** horse paddocks.

D: Lloydminster, Alta. (28 July 1982; 1:30,000) **6:** cattle feeding and holding areas.

G: Abbotsford, B.C. (22 June 1982; 1:40,000) **10:** horse paddocks and training track.

- K: Fort Saskatchewan, Alta.** (20 Aug. 1982; 1:30,000)
13: horse paddocks; 7: cattle feeding and holding areas.
- N: Windsor, N.S.** (19 May and 26 Sept. 1982; 1:35,000)
11: horse training track.
- P: Kelowna, B.C.** (26 July 1982; 1:40,000) 9: horse paddocks
and training track.
- Q: Chilliwack, B.C.** (22 June 1982; 1:40,000) 9: holding
areas on dairy farmsteads; 12: horse paddocks.

A230 - Storing Crops

Includes all land used for storing grain, forage, fruit, vegetables and rootcrops whether enclosed or open.

Storing grain and forage (A231) takes many forms. Hay may be stored in stacks of bales near fields (covered with plastic or open), in open or covered loose haystacks, in open barns (no walls) which cannot be distinguished from closed barns on airphotos, in closed barns used exclusively for storing forage or also used for livestock, and as silage in vertical, cylindrical silos or horizontal silos cut into hillsides. Granaries appear as series of small square buildings or short round silos usually in rows, clusters or semi-circles either on farmsteads or along field margins. Noncommercial feedmills are used to store and also chop or grind grain for feeding to cattle. Feedmills are composed of a series of grain hoppers connected to an overhead piping system. Corn and hay cribs appear as long, parallel-sided, open but tall structures on farmsteads. Corn piles appear as wide mounds near feeding areas. Most of these features are easily recognized though at smaller scales some may be difficult to see. Vertical silos are often recognized by their shadow.

Storing vegetables, fruit and rootcrops (A232) often takes place away from the farm near urban areas where it is indistinguishable from many manufacturing and commercial activities. Potatoes are stored on the farm in many areas of Canada. Storage buildings are large, with a low-peaked roof or may be shaped like Quonset huts (half cylinders) known as caveau in Quebec. Fruit packing houses and cold storage facilities also come under this category. As with many agricultural site activities, storage facilities are recognized in part by the overall association of site features and crops grown nearby.

- D: Lloydminster, Alta. (28 July 1982; 1:30,000) 6: granaries on livestock farmsteads; 7: granaries and feedmill at poultry farmstead; 8: granaries and feedmill; WD: horizontal silos.
- E: Wabamun, Alta. (3 Sept. 1982; 1:30,000) 13: hay bales stored on idle field; WD: hay bales.
- H: Rang-St. Charles, Que. (17 June 1982; 1:20,000) 9: potato storage.
- K: Fort Saskatchewan, Alta. (20 Aug. 1982; 1:30,000) 7: granaries on livestock farmsteads.
- Q: Chilliwack, B.C. (22 June 1982; 1:40,000) 9: dairy barns; WD: open hay barns and hay crib.

A240 - Growing Plants in Greenhouses

Includes all land which has greenhouses for growing vegetables, flowers or ornamental plants, and for starting plants such as vegetables and tobacco for transplant.

Greenhouses are medium to large, narrow structures occurring singly or in units of 2 or more. Greenhouses usually are either rounded, half-cylinder, plastic-covered structures set parallel to each other but separately, or are fibreglass or glass buildings with low-peaked roofs built in a series joined together. Often reflectance from greenhouses is so great that individual units cannot be recognized and the structure looks like one large, white, flat-roofed building. Frequently where several greenhouses are found, some may be lacking structural cover. If these are visible at all on airphotos, they will look like abandoned buildings or building foundations.

Greenhouses are often not related to the surrounding land use and activity should be confirmed in the field. Greenhouses occurring on tobacco farms can safely be assumed to be used for tobacco seedlings (A243).

- G: Abbotsford, B.C.** (22 June 1982; 1:40,000) 11: one highly reflective set of greenhouses.
- J: Beamsville, Ont.** (1 July 1982; 1:35,000) 12: numerous greenhouses.
- N: Windsor, N.S.** (19 May and 26 Sept. 1982; 1:35,000)
8: florist greenhouses.
- Q: Chilliwack, B.C.** (22 June 1982; 1:40,000) 13: several greenhouses.

A260 - Tobacco Curing and Packing

Includes all land on which the activity is the curing or packing of tobacco including kilns and packing barns.

Tobacco kilns or sechoirs used to be high, virtually square (7 x 7m) frame buildings usually found in clusters of 4 to 12 located close to the farm dwelling.⁸ Modern drying sheds are constructed of steel with forced-air ventilation systems. They are low, about 10 x 20m in size and also occur in clusters or rows on the farmstead.

As with many agricultural site activities, tobacco kilns are recognized in part by the overall association of site features and crops grown on the farm. To assist in identification, read about tobacco (A115/V117 - Growing Leaf Crops).

A270 - Mushroom Growing

Includes all land on which the activity is growing mushrooms.

Mushroom houses are usually low, light-tight structures which are difficult to separate on airphotos from agricultural barns or commercial/manufacturing buildings. Compost/manure piles are often found nearby and if scale allows recognition, this feature in combination with the lack of livestock characteristics may assist in identifying activity.

J: Beamsville, Ont. (1 July 1982; 1:35,000) 13.

A290 - Other

Includes all land which is not covered by A210-A280 classes, but which is used for agricultural site activities. Included are temporary storage of farm wastes, agricultural research buildings, etc.

Agricultural research buildings have been described under A160 - Agricultural Research.

F000 - FORESTRY ACTIVITIES

All land on which activity is related to the use of trees, excluding agricultural or recreational use of treed land.

F100 - Productive Land Forestry Activities

Includes all forestry activities which use land as a producing medium. Includes land which is being actively cut, is designated for cutting, for producing new trees for transplant or is being restocked for forestry purposes. Does not include forested land on which only recreation and/or wildlife activities occur, nor does it include land which has the potential for forestry but is not designated for that purpose.

Forest activities are often not visible on airphotos nor on the ground. The decision as to whether woodland should be classed as no perceived activity (N000) or forestry (F100) usually depends on other sources. Some activities are recognizable, however, and these are described below.

Land being clear-cut logged (F110) is usually very obvious. Clear cutting creates sharp-edged, regular or irregular-shaped blocks of medium-grey, rough texture which contrast strikingly with uncut, dark forested areas. Because of height differences between the cut and uncut edge, a shadow is usually obvious and recent cutting can be identified even on single photos.

Land being selectively logged is less obvious, though logging roads and central landing sites can usually be identified. In addition, skid trails or lines of disturbed soil may be visible radiating out from landing sites, a pattern which looks somewhat like a grouping of spiders hiding in the woods. This pattern often remains visible for years and may indicate that a woodland is used for forestry rather than no perceived activity.

Forestry management activities (F170) are various and include slash burning, scarification and planting. Recently scarified land looks like it has been coarsely ploughed and shows parallel or concentric lines at a regular spacing. Trees reestablish following these lines and dark rows of trees continue to show against contrasting, unvegetated light-toned soil for several years. Once cover is complete, the remnant pattern of scarification shows in the spacing of tree crowns. Tree planting may only be obvious once the trees themselves are big enough to be seen and if planted in a regular pattern. Trees planted in rows are usually spaced closer within rows than between rows. Planting patterns remain visible to maturity.

Regularly planted trees may not necessarily indicate forestry activity. Plantations are also made with no intention of harvesting, to stop erosion or for aesthetic, recreation or wildlife reasons. Plantation activity must usually be determined from other sources.

Land used for growing Christmas trees (F150) is difficult to recognize. When young, the fields are hard to separate from pasture or abandoned agricultural land. As trees get larger and the planting pattern emerges, only ground checks can separate Christmas trees from any other conifer plantation. If trees are selectively harvested, the original planting pattern may almost entirely disappear. On the ground, Christmas tree plantations can be identified if they show clear signs of pruning.

G: Abbotsford, B.C. (22 June 1982; 1:40,000) **12:** Christmas trees.

Q: Chilliwack, B.C. (22 June 1982; 1:40,000) **14:** mature trees planted in rows.

F200 - Forestry Site Activities

All forestry activities which use land as a site rather than a production medium.

Gierman has stated that log storage areas (F213) are recognized by piles of logs or firewood in mounds or stacks concentrated in one area. If the operation is large, woodcutting and hauling equipment may be visible, though buildings may or may not be present. Usually freshly bulldozed roads lead away from the site.⁹

Fire towers (F221) are visible on even small scale airphotos. They are usually found on top of the highest hill in the area in a small clearing. Their most noticeable, though not diagnostic feature, may be the road leading up to them.

G
E
R

G000 - WILDLIFE AND FISHERIES RELATED ACTIVITIES

Includes all land where activities related to wildlife or fish occur. Most are not visible on airphotos or on the ground and can only be obtained from other sources.

G200 - Wildlife and Fisheries Related Site Activities

Includes wildlife and fisheries related activities which use land as a site rather than as a production medium.

Fish hatcheries (G222) are usually adjacent to streams though they may be supplied with well water and are then less readily recognized on airphotos. They characteristically have several small rectangular ponds or circular open tanks, and are accompanied by one to several small to medium sized, flat-roofed buildings. Parking may be limited or quite extensive, and the surrounding property is often landscaped. Especially in B.C., fish hatcheries are frequently associated with fish passageways and dams. Hatcheries can be confused with sewage lagoons but are usually smaller, lack the visible signs of aeration common on lagoons, and always have dark-toned, sediment-free water.

Many types of fish passageways (G223) can be recognized on airphotos. They occur at obstructions in rivers, either natural or manmade, and appear like a partial weir, series of open boxes or constructed chute along and around the obstruction.

Fishing-boat storage and tie-up, and fish net storage and drying (G229) commonly occur together. Nets are usually not visible but boats are obvious even at small scales. The tie-up areas look like recreational marinas but can usually be separated by the larger size of fishing boats and a less orderly pattern of tying-up. If scale allows, the style of boat itself will separate fishing vessels from yachts.

E100 - SURFACE EXTRACTION

This includes all surface extraction activities.

E110 - Extraction of Rock or Consolidated Material

Includes surface extraction of consolidated material.

Quarries (E111, E112) have steep or vertical sides that may be stepped and usually have flat bottoms. An access road should lead to all levels, and trucks, drills and blasting equipment are often visible. Within the quarry or nearby, there may be piles of crushed material as well as crushing equipment. In older sections, pools of water may be present, but usually very little vegetation of any kind is visible. Quarries are usually light toned and overexposure may wash out details. The steep and often deep walls cast dark, well-defined shadows.

Quarries can be confused with sand and gravel pits. Quarries, however, are usually deeper, steeper-sided, and occur in bedrock rather than overburden. Knowledge of local, near-surface geology can be helpful in distinguishing between the two.

Open pit mines (E113, E114, E115) are usually unmistakable. They are very deep, often circular and have access roads which spiral down to all levels. The pit is often so deep that much of it is in shadow and tone is frequently dark. Nearby there are usually large quantities of unconsolidated material, and adjacent to the pit, are mine buildings including equipment for crushing and handling extracted material, mine management buildings and often a refinery. Tailings ponds of considerable size may also be nearby.

Strip mining (E115), most commonly of coal, is used to extract shallow ores. As with most mines, the scale of production is diagnostic. In strip mining, overburden is removed and piled behind the active mining front. Ore is extracted from a long, deep trench that usually runs the full width of the advancing front. Trucks are often visible on the trench access roads and very large shovels, cranes or drag-lines are visible at all times within or along the trench. Disturbed material is often dark toned, especially if mixed with coal. Land in front of the trench usually shows signs of clearing and topsoil removal.

B: Wainfleet, Ont. (24 June 1982; 1:35,000) 7: limestone quarry.

C: Wabamun Mines, Alta. (3 Sept. 1982; 1:30,000) 1: coal strip mine.

J: Beamsville, Ont. (1 July 1982; 1:35,000) 14: limestone quarry.

E120 - Extraction of Sand, Gravel and Clay

This includes all unconsolidated materials, other than peat and topsoil, which is extracted from the surface.

Sand and gravel pits (E121) have sloped sides which are not usually as steep as quarry walls except where actively being worked. Usually some slumping is visible. Sand and gravel pits are white toned and overexposure may wash out details. However, trucks and grading/sorting equipment can often be distinguished, and conical piles of sorted materials are very common. In older parts of a pit, grass and shrub cover may invade and dark toned areas appear.

Sand and gravel pits are usually near the surface in overburden or may be simply cut into the sides of hills. Access in such cases is directly onto the pit floor. Pits range in size from very small, backyard pits to major and extensive pits.

Sand and gravel pits can be confused with quarries. Pits, however, are usually shallower, less steeply sided, more likely to have some vegetation, less likely to have pools of water and are in overburden rather than bedrock. A knowledge of local near surface geology can be helpful in distinguishing the two.

D: Lloydminster, Alta. (28 July 1982; 1:30,000) 13: one small gravel pit.

G: Abbotsford, B.C. (22 June 1982; 1:40,000) 13: numerous sand and gravel pits.

N: Windsor, N.S. (19 May and 26 Sept. 1982; 1:35,000) 9: two gravel pits.

P: Kelowna, B.C. (26 July 1982; 1:40,000) 10: two gravel pits.

E130 - Peat Extraction

Includes all land on which activity is the extraction of peat.

Peat develops in low lying areas with standing water. It eventually fills the entire depression and water may or may not be visible. As peat bogs age, there is a steady progression of shrubs and trees which establish on them. These grade progressively in height from older outside areas of the bog to the centre in a very characteristic pattern. Peat-filled depressions are very dark toned, and become darker as shrubs and trees develop.

Where peat is being mined, strips of peat are cleared of other vegetation and allowed to dry. As the surface dries, the strips are vacuumed and peat removed. The pattern of peat removal is distinctive, creating large squares with parallel, wide strips within them. Drainage ditches are visible surrounding and through the mined areas. Mined areas are slightly darker toned than unmined areas.

Associated buildings for handling and bagging peat are often large, long and thin. They are not built on the bog but nearby where foundation conditions are better.

B: Wainfleet, Ont. (24 June 1982; 1:35,000) WD.

E140 - Topsoil Removal

Land on which the activity is topsoil removal. This activity may occur alone or before other activities such as building or other extractive activities.

Gierman⁹ has stated that topsoil is usually bulldozed into high parallel rows prior to removal. Fields from which topsoil is being removed show a light-toned bare surface. If left undisturbed for any length of time, vegetation will recover the area, though topsoil piles will still be visible.⁹ In some farming areas, manure piles may be confused with topsoil which has been left and is revegetating. In areas where unbroken land is being cleared, topsoil piles can be confused with brush piles being readied for burning.

E300 - EXTRACTION SITE ACTIVITIES

All land on which site activities related to extraction take place but not including the processing of extracted material.

E310 - Pumping

Includes pumping of gas, oil, water and soluble minerals.

Pumping on oil and gas fields takes place usually in a loose grid pattern which is visible because of the connecting road system and bare soil areas around the pumps. In agricultural regions, the grid of pumps is set up to minimize impact on farming practices. Access roads follow or are parallel to field boundaries and the disturbed area around pumps is minimized. On wild land, access roads and connecting pipelines are more likely to follow a radiating pattern than a square grid. The pump itself is hard to distinguish at smaller scales but is often accompanied by a storage tank which is visible as a small white or black dot which casts a noticeable shadow.

D: Lloydminster, Alta. (28 July 1982; 1:30,000) 9: oil pumps.

E320 - Transporting and Holding of Wastes and Tailings
Includes the transporting and holding of wastes and tailings from extraction activities.

Tailings ponds are usually adjacent to a mine. They are formed either by draining a natural depression or constructing an enclosed area behind long, low, wide berms. They are usually filled with water which is often sediment laden and medium grey. Older ponds may be partially filled with solids and starting to revegetate. If ore is refined on site, tailings ponds may also be used for disposal of processing wastes (M600).

Solid wastes are disposed of in large dumps or tips which may be contained by berms or natural topography. Tips are usually adjacent to mines and their surface is often dotted with small conical, dump-truck piles or may show signs of recent bulldozing. Bulldozing leaves stripes in a variety of tones radiating out in an irregular fan-shaped pattern.

B: Wainfleet, Ont. (24 June 1982; 1:35,000) **WD:** canal tailings.

E: Wabamun, Alta. (3 Sept. 1982; 1:30,000) **1:** ash lagoons also used for waste water from mining (see **F:** Wabamun Mines).

E330 - Handling of Extracted Material

Includes all site activities such as crushing, washing, screening, etc. of extracted material.

Handling and processing facilities are often found together. Handling facilities include crushing, sorting and washing equipment associated with quarries and sand and gravel pits, the rather ordinary buildings associated with peat mining, and the various and usually large-scale buildings and structures associated with mines. In surface mines, site activities can be deduced from the associated pit or cut. Underground mines must be recognized solely from site activities. The most characteristic feature of underground mine sites is the headframe, a very tall, usually large square building situated over the access shaft which houses the shaft hoist equipment. Other structures are less diagnostic but the variety of features in combination with a little local knowledge usually allows identification.

B: Wainfleet, Ont. (24 June 1982; 1:35,000) 8: peat plant.

D: Lloydminster, Alta. (28 July 1982; 1:30,000) 10: oil handling.

R100 - LAND DEPENDENT RECREATIONAL ACTIVITIES

Includes all recreational activities which cover relatively large areas and usually are dependent on the natural capability of the land for that activity. Parks are included if their natural conditions are the source of recreation.

R110 - Golfing and Associated Activities

Includes all land on which golfing and associated activities take place, including site activities such as the clubhouse and maintenance buildings.

Golf courses are recognized by their distinctive pattern. The fairways, which frequently show lengthwise tonal mowing patterns, are elongated but not straight. Their boundaries are defined by borders of trees. At one end, the green shows as a lighter grey circle against the medium grey of the fairway. Nearby, small, white, kidney-shaped sand traps can usually be discerned. Few roads are present, and the main access road usually leads to a parking lot and large building (the clubhouse).

Golf courses can be overlooked by interpreters if there are few trees to separate and define the fairways. When unrecognized, they are usually mistaken for improved hay.

- L: **Sherkston, Ont.** (24 June 1982; 1:35,000) 12: large golf course.
- P: **Kelowna, B.C.** (26 July 1982; 1:40,000) 11: three courses, one with few trees outlining fairways.
- Q: **Chilliwack, B.C.** (22 June 1982; 1:40,000) 15: portion of course on edge of photo.

RI20 - Skiing and Associated Activities

Includes all land used for downhill or cross-country skiing as well as associated site activities.

Downhill skiing can be recognized by its distinctive pattern. Ski runs appear as wide, wavy swaths cleared of trees which start from one or more common points near or at the top of a steep slope, diverge but basically run downslope, and then coalesce again at the bottom of the slope. There is usually parking and one or more buildings at the bottom of the slope. From this general area, one or more straight, narrow swaths runs upslope to a small building at the point where the ski runs begin. On larger scale airphotos, the supports and cable of ski lifts can be discerned along the straight cuts.

On wooded slopes, ski runs cannot be mistaken, but on bare slopes they can be overlooked. In the latter case, the best feature for recognition is the straight line of the ski lift. Once noticed, other features separate activity from transmission lines, which is the only activity with which it could be confused.

Cross-country skiing is discussed with the following section:

RI30 - Trail Using Activities.

R130 - Trail Using Activities

Includes all land where trail using activities (excluding skiing) occur.

Trails by their very nature are extensive, dispersed and hard to recognize. In wooded areas they may be totally hidden, though on open land they show as lighter toned lines, seldom straight, which lead across country. Unlike livestock trails, they do not peter out in mid-field and are usually narrower and better defined.

Trail using activities are usually inferred from associated features. In parks, forestry reserves and other wild land where no activity is apparent, parking lots beside small buildings often indicate the start of trails. Visible trails originating from horse farms usually are used for riding. Motorcycles and dirt bikes frequently use abandoned gravel pits. They quickly erode vegetation along paths and the white-toned trails are usually quite obvious.

B: Wainfleet, Ont. (24 June 1982; 1:35,000) 18: multi-use trails.

**K: Fort Saskatchewan, Alta. (20 Aug. 1982; 1:30,000)
WD: riding trail.**

R140 - Viewing of Nature, Historical and Archeological Sites
Includes all land where the activity is the viewing of nature, historical and archeological sites.

Scenic viewpoints usually occur on topographic highs or adjacent to waterfalls, have vehicle access and often are found along highways. Small or medium parking lots are usually the only other clue to activity.

Historical parks can usually be recognized by their careful layout of paths and landscaping. If the park surrounds a fort or tower, the fortifications themselves are usually identifiable. In addition, historical parks are usually associated with medium to large parking lots. Historical parks can be confused with cemeteries if the parks do not contain large buildings. Cemeteries, however, are almost never associated with such large parking lots.

R150 - Land Activities Related to Water

Includes all land activities associated with water recreation.

Beaches, which appear white or light grey, docks, piers and marinas are readily recognizable. Yacht clubs and dryland boat storage are recognized by association with a marina. Marinas can be confused with fishing boat tie-ups, and clubhouses and other facilities with fish unloading and processing facilities. The size, shape and style of boats will usually separate the two, however, as will other features such as parking, landscaping, and the presence of trucks versus cars.

Heavily used beaches are often groomed in fall or spring. This creates tonal stripes and other patterns which could confuse interpreters. Such beaches are usually backed by extensive parking, small concession and washroom facilities, and extensive picnic areas. A square of tiny white dots is surprisingly often visible in the water marking the "safe" swimming area.

- B: Wainfleet, Ont. (24 June 1982; 1:35,000) WD: public beach and marinas.
- E: Wabamun, Alta. (3 Sept. 1982; 1:30,000) 16B: beach and docks for boating.
- J: Beamsville, Ont. (1 July 1982; 1:35,000) WD: marina.
- L: Sherkston, Ont. (24 June 1982; 1:35,000) 13: public beach.
- Q: Chilliwack, B.C. (22 June 1982; 1:40,000) 16: boat access points.

R160 - Recreational Hunting and Fishing

Includes all land on which the activity is recreational hunting and fishing.

This activity is not usually recognized on airphotos. Certain clues can sometimes be seen, however, which tip off the interpreter that outside information is required. In salmon rivers on both the east and west coasts, faint trails may be visible along the shoreline. In larger rivers, road access ending at the river in a boat launch is a good clue, as are landing spots on islands with irregular trails radiating away from them.

Hunting and fishing camps and trout ponds are usually easier to recognize. Camps typically are remote and composed of many small buildings. Trout ponds are found along streams where water quality can be expected to be good (not downstream from urban areas) and have several small ponds created by small dams or weirs. The ponds will have docks and punts on them and will be associated with large or small parking areas and one or several buildings.

Q: Chilliwack, B.C. (22 June 1882; 1:40,000) 16: shoreline trails.

R170 - Recreational Open Space

Includes any open space which is used for recreation but with no particular recreational activity indicated.

City parks are usually easy to recognize. Most have been modified by man and the landscaping and laid-out paths are obvious. Trees are more varied and scattered than in a natural forest.⁹

This class also includes the wild part of natural parks where no other recreational activities are perceived. The extent of this class, or boundary of a wild park, can only be discerned from other information, although on occasion, a narrow cut-line can be seen along a park boundary.

Large landscaped areas near buildings or surrounding industries are also included. Any evidence of sports activities automatically places parks into R210 - Outdoor Recreational and Cultural Sites.

B: Wainfleet, Ont. (24 June 1982; 1:35,000) WD: urban park.

N: Windsor, N.S. (19 May and 26 Sept. 1982; 1:35,000)
WD: urban park.

R200 - INDOOR AND OUTDOOR RECREATIONAL AND CULTURAL SITE ACTIVITIES

Includes all recreational and cultural activities that occur on man-made sites and are not dependent on the natural capability of the land for that activity.

R210 - Outdoor Recreational and Cultural Site Activities.

Zoos, gamefarms (R211), botanical gardens, arboretums, and similar displays (R212) share many common characteristics. They have large parking lots, limited number of access points, few roads, roads irregularly laid out and not in a standard grid pattern, an assortment of large or small buildings and structures some of which may be quite unusual, and landscaped areas at least around the buildings and main entrance.

Amphitheatres and drive-in theatres (R213) both have fan shaped images. Drive-in theatres are larger and flat, and the large, vertical screen at the apex of the fan is visible either itself or because of the shadow it casts. The large, concave oval of stadiums is unmistakable. Commercial racetracks are differentiated from training tracks by the presence of stands and parking. Racetracks are common at fairgrounds where the assortment of unusually large-span buildings, small buildings and grass or paved parking lots is diagnostic. Amusement parks (and fairgrounds during fairs) are distinguished by an assortment of ride structures such as ferris wheels, roller coasters, etc. which cannot be overlooked. Go-cart tracks show as small areas with a continuous loop of sinuous road. Miniature golf can be recognized by the dense pattern of circles, loops and other shapes packed into a small landscaped area.

Baseball fields (R214) show as fan-shaped, grassed areas with a small and often hard to discern diamond pattern at the apex of the fan. Baseball fields in the corner of square fields and other playing fields (soccer, football, etc.) are harder to recognize. They look like recreational open space unless the outline of the field, field markings or goals can be seen. Rifle ranges are occasionally associated with gravelpits where the steep walls act as backdrops. In other cases, mounds of earth or constructed walls are used. Often there is a marked set of firing lines in a fan shape or grid pattern arranged in front of the backdrop. Archery ranges are similar but have no backdrops, and target butts may or may not be present.

-Provincial and federal campgrounds (R216) are very distinctive. They show a looped pattern of roads, usually without dead ends, with numerous short branches or driveways at regular intervals. The pattern is almost like an open zipper. The campsites are usually set in treed areas, and the high quality of access and maintenance is usually detectable. Overflow campgrounds in parks are usually

set in cleared areas, even in old borrow pits or construction sites. Campsites are densely packed and because the area is clear, washroom facilities may be visible. Private campsites are variable. When active, the overall pattern of trailers and tents presents a rough-textured image of many tones which is odd enough to encourage the interpreter to check other sources.

Other camps such as religious, YMCA or private camps are often hard to recognize, especially in cottage areas. Docks are often larger than individuals would have and if the buildings are visible through the trees, the size, clustering, and number of buildings should provide a clue.

- A: **St. Thomas de Caxton, Que.** (17 June 1982; 1:20,000)
7: playground.
- B: **Wainfleet, Ont.** (24 June 1982; 1:35,000) 10: campground;
WD: Baseball and playing fields.
- E: **Wabamun, Alta.** (3 Sept. 1982; 1:30,000) 16A: provincial
campgrounds and overflow campground.
- J: **Beamsville, Ont.** (1 July 1982; 1:35,000) WD: tennis
courts, playing fields, go-cart track, miniature golf course
and tourist trailer park.
- L: **Sherkston, Ont.** (24 June 1982; 1:35,000) 14: campground
and tourist trailer park.
- N: **Windsor, N.S.** (19 May and 26 Sept. 1982; 1:35,000)
WD: playing fields, baseball fields, soccer field, tennis
courts, fairgrounds.
- P: **Kelowna, B.C.** (26 July 1982; 1:40,000) 12: rifle range;
13: equestrian centre.
- Q: **Chilliwack, B.C.** (22 June 1982; 1:40,000) 17: baseball
field.

R220 - Indoor Recreational and Cultural Site Activities.

Live theatres, movie theatres, auditoriums, exhibition and exposition halls, art galleries, museums, planetariums and libraries (R221) and arenas, skating and curling rinks, indoor tennis bubbles, indoor swimming pools, bowling alleys, gymnasiums etc. (R222) are all distinguished by large size. In urban areas, they often cannot be separated from commercial, manufacturing or institutional activities. Occasionally, large size, location in an area not zoned for manufacturing, and the surrounding landscaping will separate this class from all but institutional uses.

- B: Wainfleet, Ont.** (24 June 1982; 1:35,000) **WD:** arena.
- E: Wabamun, Alta.** (3 Sept. 1982; 1:30,000) **WD:** arena.
- N: Windsor, N.S.** (19 May and 26 Sept. 1982; 1:35,000)
WD: fairgrounds, museum.
- P: Kelowna, B.C.** (26 July 1982; 1:40,000) **13:** equestrian centre.

D

H

DOOO - DWELLING ACTIVITIES

Dwelling is a site activity. It includes all land where dwelling occurs as a permanent, temporary, or seasonal activity.

Single family homes including houses and trailers and low and high rise multiple dwellings (D110) are familiar enough to most interpreters to be recognized if scale allows. In rural areas where dwelling and agricultural activities are mixed, rural residences which are not part of farmsteads can be separated because they usually have smaller and fewer secondary buildings, are more likely to have horses if they have any livestock, show lower order agricultural practices on associated lands, and appear to have smaller properties than expected on a farm. In addition, purely residential properties are more likely to have a swimming pool or tennis courts.

High rise dwellings can be confused with commercial activities. Layout and surrounding parking areas may provide a clue. In addition, the two activities are usually concentrated in different urban zones.

Permanent and seasonal uses can be inseparable in areas near urban centres. Cottages (D121) are usually smaller but can only be identified with confidence in remote areas and if they occur on lakes. (Many very small rural houses set away from lakes are permanently occupied.)

Work Camps (D122) are usually obvious. They occur in remote areas, near logging or construction sites and are made up of numerous closely-set, large trailers. A central cook house is often constructed from several trailers fixed together. Work camps and permanent trailer parks are not likely to be confused. Trailer parks (D110) are usually located on the edge of urban areas, have a geometric layout with car access to each trailer, and show signs of personal improvement around the trailers such as trees, gardens, lawns and front porches or other additions. These same characteristics, as well as size of trailers, separate permanent trailer parks from recreational trailer parks.

Residences and dormitories (D210) are usually characterized by large size, and association with institutional activities. Non-institutional residences in this class are probably not separable from permanent residential use.

Motels (D220) are usually large long buildings, frequently adjacent to highways and major roads, which are fronted by parking and backed by a recreational area including a swimming pool. Motels usually cannot be separated from the commercial buildings which often surround them.

- B: Wainfleet, Ont.** (24 June 1982; 1:35,000) **WD:** permanent trailer park, motel, apartment block and urban core; **11:** permanent housing mixed with cottages; **12:** undifferentiated homes and farmsteads.
- D: Lloydminster, Alta.** (28 July 1982; 1:30,000) **6,7:** homes on farmsteads; **14:** home.
- E: Wabamun, Alta.** (3 Sept. 1982; 1:30,000) **9:** housing development; **10:** urban core; **11:** cottages and homes; **15:** rural homes; **16:** park staff quarters; **25:** farmsteads.
- F: Wabamun Mines, Alta.** (3 Sept. 1982; 1:30,000) **8:** permanent country homes mixed with minor agricultural activities.
- G: Abbotsford, B.C.** (22 June 1982; 1:40,000) **23:** undifferentiated homes and farmsteads.
- H: Rang-St. Charles, Que.** (17 June 1982; 1:20,000) **13:** cottages; **14:** permanent homes.
- J: Beamsville, Ont.** (1 July 1982; 1:35,000) **WD:** motel.
- K: Fort Saskatchewan, Alta.** (20 Aug. 1982; 1:30,000) **7:** farmsteads; **12:** rural homes with minor agricultural activities.
- L: Sherkston, Ont.** (24 June 1982; 1:35,000) **15:** permanent homes and cottages; **16:** undifferentiated homes and farmsteads.
- P: Kelowna, B.C.** (26 July 1982; 1:40,000) **14:** permanent trailer parks.
- Q: Chilliwack, B.C.** (22 June 1982; 1:40,000) **18:** trailer park; **19:** undifferentiated homes and farmsteads.

H100 - TRANSPORTING ACTIVITIES

Includes all land on which the activity is transportation of goods, people, electricity or water.

H110, H120 - Transporting by Road and Rail

Most items in this class are familiar to interpreters and readily recognizable. Roads (H110) and railways (H120) can be separated by several features. Railways follow more gentle curves and except where roads cross them, never have right angle junctions. They are often elevated slightly and may show parallel light and dark lines within the narrow linear image. Roads frequently have a strip of development on each side of them whereas railways are usually associated with development at specific sites. In more remote areas, occasional developments along roads such as weigh stations are easily recognized by the semi-circular driveway leading off and back onto the highway. In addition, trains or vehicles are often visible.

Highway maintenance yards (H116) can be readily distinguished if they have domed, beehive-shaped storage sheds for sand and salt. There are usually two of these accompanied by a small to medium sized, flat-roofed building, parking and some construction equipment and ploughs.

Railyards (H122, H124) are characterized by a single line which branches into many parallel lines and then reforms into a single line. Railyards occasionally have a circular or semicircular, large building amongst the many buildings near or over the rail lines.

- B: Wainfleet, Ont.** (24 June 1982; 1:35,000) **WD:** parking and railway.
- E: Wabamun, Alta.** (3 Sept. 1982; 1:30,000) **5:** roads and highway; **6:** railway; **16D:** parking.
- F: Wabamun Mines, Alta.** (3 Sept. 1982; 1:30,000) **3:** highway.
- J: Beamsville, Ont.** (1 July 1982; 1:35,000) **15:** highway; **WD:** fine parallel lines showing along railway.
- K: Fort Saskatchewan, Alta.** (20 Aug. 1982; 1:30,000) **WD:** highway.
- M: Trois Rivieres, Que.** (17 June 1982; 1:20,000) **WD:** railway.
- N: Windsor, N.S.** (19 May and 26 Sept. 1982; 1:35,000) **WD:** parking.

H130 - Transporting by Air

Large airports are identified easily by long, straight runways and the presence of airplanes and hangers. If there is more than one runway, they are never parallel and are often laid out in a triangle. Small airports however, can be easily overlooked. The short straight grass runway is sometimes not visible at all and may be included in the hay or pasture cover which surrounds it. Long buildings with unusual geometric patterns painted on the roof, or the presence of small planes, are diagnostic. Small planes however, which look like small white crosses, can be easily missed.

B: Wainfleet, Ont. (24 June 1982; 1:35,000) **WD:** grass airstrip.

F: Wabamun Mines, Alta. (3 Sept. 1982; 1:30,000) **WD:** grass airfield.

G: Abbotsford, B.C. (22 June 1982; 1:40,000) **14,15:** small international airport.

H140 - Transporting of and by Water

Canals (H140) are separated from natural watercourses by their obviously man-made, straight layout. Canals used for transporting goods and ships have associated locks, wharfs and industries which are readily recognizable. Ships are frequently visible in the canals. Canals used for transporting water (cooling water intakes, hydro intakes) have no such associated features, but always lead to large buildings, structures, or developments which themselves are usually recognizable.

B: Wainfleet, Ont. (24 June 1982; 1:35,000) 13: Welland Canal.

E: Wabamun, Alta. (3 Sept. 1982; 1:30,000) 7: cooling water intake and outlet canals.

H150, H160 - Transporting by Pipeline and Transporting Electricity

Buried pipelines (H150) and electrical transmission lines (H160) are often difficult to see. In wooded areas, a straight cleared corridor indicates the presence of one or the other. Major transmission lines are usually visible. The cables show as faint white lines especially over water where they contrast with water's darker tone. The towers themselves are often most easily spotted by their shadows. Smaller lines may not be visible, however, though it is always worth examining the airphotos on the next flight line because often a line which is not visible in the northern half of a stereo pair, may be visible in the southern half due to the change in angle of light reflection.

A transmission corridor can be identified, therefore, if a transmission line can be seen. If no line is visible, however, the activity of the corridor cannot be decided with certainty. Other map sources will often clarify the problem.

In agricultural and other cleared areas, other non-structural activities occur over and under pipelines and transmission lines respectively. In such cases, both types of transmission may be overlooked. Occasionally pipelines can be discerned as faint, straight, linear features due to differential drainage and compaction of soils. Transmission towers on improved or annually tilled agricultural land may be defined by dark-toned weeds and grasses around their bases.

Switch yards (H162) are usually small. They are light toned and show a cross-hatched pattern created by shadows from the open structures. The structures themselves may be hard to see.

- B: Wainfleet, Ont. (24 June 1982; 1:35,000) WD: small transformer station.
- E: Wabamun, Alta. (3 Sept. 1982; 1:30,000) 3: transmission lines and corridors, compare with same on F: Wabamun Mines Alta.; 4: switchyard.
- F: Wabamun Mines, Alta. (3 Sept. 1982; 1:30,000) WD: transmission lines, compare visibility of same with E: Wabamun, Alta.
- H: Rang St. Charles, Que. (17 June 1982; 1:20,000) 11: transmission corridor; 12: gas pipeline being laid.
- P: Kelowna, B.C. (26 July 1982; 1:40,000) WD: small transformer station.

H200 - COMMUNICATION ACTIVITIES

Includes land where activity is the transferring of information.

Communication towers are easily overlooked on airphotos. The open structures themselves are hard to see, though they may cast a noticeable shadow. The base of towers may show in contrasting tone to the surroundings, especially on agricultural land. Tall towers look like a faint white "V" on stereo pairs with one arm of the "V" on one photo, and the other arm on the other photo. Communication facilities are often associated with Department of National Defence (DND) land and are often located in clearings on topographic highs.

K: Fort Saskatchewan, Alta. (20 Aug. 1982; 1:30,000)
11: towers on DND land.

P: Kelowna, B.C. (26 July 1982; 1:40,000) **WD:** radio towers.

M
C
J
P

M000 - MANUFACTURING AND STORAGE ACTIVITIES

All land where physical conversion of materials takes place through processing or combination with other materials, to improve or preserve its usefulness. Also includes land used for storing but excludes agricultural site storage activities.

Most manufacturing and storing activities are identifiable as such by the layout and size of the buildings, parking areas, access to grounds and railway connections, and outside storage. Certain classes such as energy generation (M100) are easily recognizable in more detail because of the structures and buildings themselves (penstocks and dams for hydroelectricity (M130); very large domes for atomic plants (M150)). Raw materials processing (M200) is often recognizable at the third level if either the raw material or finished product is stored outside (logs or huge wood-chip piles at pulp and paper mills (M280); logs and lumber at lumber mills (M280)) or by other associations (open pit mine adjacent to ore refinery (M250); numerous oil or gas storage tanks adjacent to oil refinery (M260); limestone quarry adjacent to cement plant (M240)).

Processing processed goods (M300) and assembling products (M400) are less distinctive and can seldom be recognized in more detail without outside information. These classes can be confused with commercial activities and in fact, the two often occur together. Vehicle storage (M520) is also difficult to separate from commercial activities.

Treating and disposal of wastes (M600) is generally easy to identify. Liquid wastes (M610) are held and treated in lagoons. Lagoons have constructed berm walls often in a square rectangle subdivided into several sections. Commonly each section is filled with water of a different tone. Lagoon aeration looks like a grid of white irregular dots, spots or patches and movement of the surface water may create an artificial height effect when viewed in stereo. The type of waste being treated can often be inferred from associated or nearby activities.

Landfills (M630) can be confused with gravel pits and land in transition. The image is light-toned and shows signs of bulldozing and disturbed soil. Junk yards and car wreckers typically show a pattern composed of densely packed, multi-toned dots which is quite distinctive.

B: Wainfleet, Ont. (24 June 1982; 1:35,000) **WD:** flour, starch and food processing, nickel refinery, steel plant, oil storage, construction equipment storage, gravel storage, sewage treatment, sanitary landfill, and small dump.

D: Lloydminster, Alta. (28 July 1982; 1:30,000) **10:** oil processing plant; **9:** oil storage.

- E: Wabamun, Alta.** (3 Sept. 1982; 1:30,000) 1: ash lagoons;
2: thermal power plant and coal storage; 8: lumber mill and
storage; 14: clean fill disposal; 16C: park workshop;
18: sewage lagoon.
- F: Wabamun Mines, Alta.** (3 Sept. 1982; 1:30,000) 4: sewage
lagoon.
- G: Abbotsford, B.C.** (22 June 1982; 1:40,000) 16: cannery;
WD: very small junkyard.
- J: Beamsville, Ont.** (1 July 1982; 1:35,000) WD: cannery.
- N: Windsor, N.S.** (19 May and 26 Sept. 1982; 1:35,000) WD: oil
storage in tanks; sewage lagoon.
- P: Kelowna, B.C.** (26 July 1982; 1:40,000) WD: car wrecker.
- Q: Chilliwack, B.C.** (22 June 1982; 1:40,000) 20: hops
processing.

C000 - Commercial Activities

Land on which the activity is buying and selling of merchandise.

Commercial activities take place in buildings of all sizes and shapes and are often inseparable from manufacturing and storing activities. They usually have large parking lots with numerous road access points and a minimum of landscaped area.

B: Wainfleet, Ont. (24 June 1982; 1:35,000) WD: shopping mall.

J: Beamsville, Ont. (1 July 1982; 1:35,000) WD: fruit stalls.

N: Windsor, N.S. (19 May and 26 Sept. 1982; 1:35,000)
WD: shopping mall.

J000 - Providing Institutional Services

Includes all land providing government or private institutional services.

Institutional buildings (J100, J300, J400, J700), excluding those used for protective and custodial services and churches, are typically large, flat-roofed and multi-storied with numerous wings and roof levels, set on large, well-landscaped properties.

Schools, colleges and universities (J300) are associated with playing fields and other sport facilities. In schools, these may be small and fields may show considerable sign of wear (light patches of bare soil). Schools also typically have small parking lots, though colleges and universities typically have very large lots.

Mental health facilities (J400) and many jails (J230) are associated with agricultural activities. Such combinations are usually recognizable because of the typical institutional buildings and size and scale of agricultural facilities. They could only be confused with agricultural research stations.

Maximum security jails (J230) are surrounded by tall walls and guard towers which are unmistakable. There are usually some recreational facilities within the fenced area such as baseball fields.

Department of National Defence (J240) land frequently has an unusual enough image to encourage interpreters to check other sources. There are commonly many and various communication facilities. The land may be farmed or left untouched. In wooded areas there are often clearings which may contain rifle ranges, grenade ranges, bunkers and other buildings shielded by earth berms, or other unusual facilities.

Churches (J610) are built in many forms but almost always have some style of steeple or spire. This may not be visible directly but often casts a visible shadow.

Cemeteries (J620), which may or may not be associated with churches, often show a symmetrical and elaborately landscaped image. They can only be confused with certain parks or botanical gardens. Occasionally the pattern of grave stones is visible on larger scale photography.

B: Wainfleet, Ont. (24 June 1982; 1:35,000) **WD:** school and cemetery.

E: Wamaman, Alta. (3 Sept. 1982; 1:30,000) **WD:** school.

G: Abbotsford, B.C. (22 June 1982; 1:40,000) **18:** school.

- J:** Beamsville, Ont. (1 July 1982; 1:35,000) 16: gravestone pattern is visible in cemetery; **WD:** spire in church shadow.
- K:** Fort Saskatchewan, Alta. (20 Aug. 1982; 1:30,000) 9: maximum security jail; 11: DND land; 14: school; 16: provincial hospital.
- N:** Windsor, N.S. (19 May and 26 Sept. 1982; 1:35,000) 10: cemetery; **WD:** hospital.
- P:** Kelowna, B.C. (26 July 1982; 1:40,000) **WD:** small cemetery.
- Q:** Chilliwack, B.C. (22 June 1982; 1:40,000) 21: several schools.

P000 - OTHER

P200 - **Flood Control and Drainage Activities**
All large drainage ditches, floodways, and dykes.

Dykes appear as long raised berms which follow shorelines. Sometimes they have a road on top of them. Drainage ditches in agricultural areas are frequently redug and cleared.

N: Windsor, N.S. (19 May and 26 Sept. 1982; 1:35,000)

WD: sluice gate, dam, dykes and drainage ditches.

Q: Chilliwack, B.C. (22 June 1982; 1:40,000) WD: road on dyke.

B

N

B000 - UNUSED, IDLE OR ABANDONED LAND

Land on which there is no present activity, but which shows signs of a previous and discontinued activity.

B100 - Former Agricultural Activities

Abandoned agricultural land initially looks like a weedy hayfield or pasture and can only be differentiated on the ground by the presence of woody shrubs. In later years, shrub and tree growths become increasingly obvious until eventually all sign of agricultural use is hidden. Shrub and tree growths often invade a field along old tillage lines. This may create a linear pattern which in later years looks as though the trees had been planted. Often the last remaining sign of previous agricultural use is remnant drainage ditches.

Abandoned orchards (B130) are often hard to separate on airphotos from active orchards. Tree crowns are larger and the grid pattern begins to break down as trees die and are cut out. It is often necessary, however, to check carefully that new trees have not been planted in the gaps and are simply not yet visible.

Abandoned vineyards (B130) maintain their typical, active, linear image even after the vines themselves have almost disappeared. Perhaps the most reliable characteristics of abandonment are a change in the background tone from bare white soil to a medium or dark grey tone, and the appearance of shrubs or small trees within the vineyard.

Although raspberry patches share the visual characteristics of vineyards when active, once they are abandoned, their image changes radically. All signs of rows disappear, the tone changes from black or dark grey to light grey, and an unfocussed, carpet-like texture is visible which is similar to pasture or unmulched strawberries.

- A: **St. Thomas de Caxton, Que.** (17 June 1982; 1:20,000) 9: idle fields, some reverting to scrub and forest, some to urban uses.
- B: **Wainfleet, Ont.** (24 June 1982; 1:35,000) 14: variety of abandoned fields.
- G: **Abbotsford, B.C.** (22 June 1982; 1:40,000) 17: idle raspberries.
- H: **Rang-St. Charles, Que.** (17 June 1982; 1:20,000) 7: one field of idle or weedy hay; 8: abandoned fields with shrubs and tree growth well advanced.
- J: **Beamsville, Ont.** (1 July 1982; 1:35,000) 17: abandoned vines orchards and fields.

- K:** Fort Saskatchewan, Alta. (20 Aug. 1982; 1:30,000) 5: fields abandoned after highway construction.
- L:** Sherkston, Ont. (24 June 1982; 1:35,000) 18: fields reverting to scrub.
- M:** Trois Rivieres, Que. (17 June 1982; 1:20,000) 8: idled fields reverting to scrub.
- N:** Windsor, N.S. (19 May and 26 Sept. 1982; 1:35,000) 6: weedy or idle hay and idle orchard in early spring and fall.
- P:** Kelowna, B.C. (26 July 1982; 1:40,000) 19: a few small abandoned orchards, one idle vegetable farm.
- Q:** Chilliwack, B.C. (22 June 1982; 1:40,000) 22: abandoned raspberries.

B300 - Former Extraction Activities

Abandoned sand and gravel pits continue to look active on airphotos long after mining has stopped. Although vegetation cover begins to develop quickly, patches of bare ground remain where topsoil is lacking or drainage excessive. These bare areas are highly reflective and often "wash-out" the darker tones of vegetative cover. In addition, many former pits are used by dirt bikes for trail riding. Trail bikes disturb surface soils, increasing reflectivity and chance of overexposure. Unused pits usually have no mining equipment in or near them, but this may be an unreliable indicator as old equipment and cars are frequently abandoned in idle pits. Such machinery is usually imbedded in shrub and tree growth, however, and this may be discernible on airphotos.

Abandoned quarries revegetate more slowly than gravel pits. Quarries are deep and in less pervious material than pits. Most require pumping to keep them dry enough to work, and when they are abandoned, quickly flood. Bodies of water in suspiciously man-made shapes, surrounded by patchy, early-seral growth stages and bare rock and soil can safely be assumed to be former quarries. Trail bike paths may be visible on land surrounding the flooded quarry and overgrown piles of crushed rock may be found nearby.

Previously, strip mines were not required to reclaim mined lands. Unreclaimed land is unmistakable. Topography consists of rows of large conical piles of various, but usually light-toned, material. Vegetation is usually found only around the base of piles as the tops are excessively drained and lacking nutrients. Small and medium sized bodies of water may be located throughout the area. (Placer mined valleys also have a similar appearance, though topography is more like massive worm castings than rows of conical piles).

Reclaimed land is recontoured and planted to agricultural crops or natural vegetation. Reclaimed land can only be recognized as former mining if it is obviously associated with active and on-growing mining, or where the topography can be closely examined, as in agricultural areas. In such areas, faint remnant rows can be seen as low rounded ridges. Once cover is established this would probably be indiscernible. Whereas some marshy areas may be present, no open water bodies remain.

B: Wainfleet, Ont. (24 June 1982; 1:35,000) 15: abandoned quarry;
WD: abandoned pit in tailings.

F: Wabamun Mines, Alta. (3 Sept. 1982; 1:30,000) 2: reclaimed
and unreclaimed strip mine.

G: Abbotsford, B.C. (22 June 1982; 1:40,000) 21: abandoned
gravel pit.

H: Rang-St. Charles, Que. (17 June 1982; 1:20,000) 10: abandoned
sand pit.

L: Sherkston, Ont. (24 June 1982; 1:35,000) WD: one small
abandoned quarry.

P: Kelowna, B.C. (26 July 1982; 1:40,000) 18: idle gravel pit.

B400, B500, B600, B700, B800, B900 - Former Recreational, Dwelling, Transportation and Communication, Manufacturing and Storage, Commercial and Institutional Activities.

Most of these former activities are recognized by totally or partly torn down buildings. Early signs of abandonment are difficult to recognize. Abandoned campsites can occasionally be detected if other nearby campsites are active, yet the campsite in question shows no sign of any usage. Abandoned roads and railways usually show as overgrown rights-of-way.

E: Wabamun, Alta. (3 Sept. 1982; 1:30,000) 17: idle campground.

L: Sherkston, Ont. (24 June 1982; 1:35,000) 17: unused grass airfield.

NOOO - NO PERCEIVED ACTIVITY

Includes all land on which there is no perceived activity as determined from any and all data sources used in mapping. Also there could be no visible evidence of former activities.

Gierman states that this class should not show any signs of previous or present use and that most areas in this class are in some type of natural vegetation cover.⁹

- B: Wainfleet, Ont.** (24 June 1982; 1:35,000) 16: woodlots and scrub.
- D: Lloydminster, Alta.** (28 July 1982; 1:30,000) 11: no perceived activity, or possibly grazing.
- E: Wabamun, Alta.** (3 Sept. 1982; 1:30,000) 23: wetlands; 24: wooded uplands.
- G: Abbotsford, B.C.** (22 June 1982; 1:40,000) 22: woodlots, scrub and meadows.
- H: Rang-St. Charles, Que.** (17 June 1982; 1:20,000) 15: woods and wetland.
- J: Beamsville, Ont.** (1 July 1982; 1:35,000) 18: woods and unclassified uses.
- K: Fort Saskatchewan, Alta.** (20 Aug. 1982; 1:30,000) 6: wetlands; 8: woodlots.
- L: Sherkston, Ont.** (24 June 1982; 1:35,000) 19: woodlots and scrub.
- N: Windsor, N.S.** (19 May and 26 Sept. 1982; 1:35,000) WD: tidal mud flats.

L

1000 - LAND IN TRANSITION

Includes all land on which there is evidence that at some future date there may be an activity. The emphasis here is on the may because the future activity may never proceed.

Land in transition may show little or no sign of what the future activity will be, but should show signs of active disturbance such as clearing or bulldozing. Or it may show clearly the activity towards which it is progressing, such as the appearance of roads, installation of services (gas, water, electricity) and definition of lots in housing developments.

Because of the range of activities to which land can be changing, land in transition shows a great variety of images. When being cleared, land shows a medium-rough, dark texture and may show squiggly, light-toned paths. Windrows or piles of debris may be bulldozed up prior to burning. If stumps are being pulled, random spots and patches of light-toned soil will be apparent. Cutlines often define the boundaries of an area in transition or a future road grid. In housing developments, white newly constructed roads often stand out against dark undisturbed forest. In cleared areas, bulldozed and recontoured land is light-toned but often patchy. Land in transition is often found mixed in with dwelling and other urban activities.

- B: Wainfleet, Ont.** (24 June 1982; 1:35,000) 17: industrial park development; **WD:** park under construction and clean landfill for construction.
- D: Lloydminster, Alta.** (28 July 1982; 1:30,000) 12: recently cleared land with brush piles.
- E: Wabamun, Alta.** (3 Sept. 1982; 1:30,000) 12: urban development.
- F: Wabamun Mines, Alta.** (3 Sept. 1982; 1:30,000) 8: lots under development within rural residential area; **2C:** mined land being reclaimed for possible agricultural use.
- H: Rang-St. Charles, Que.** (17 June 1982; 1:20,000) 12: transition to gas pipeline; 16: land being cleared.
- L: Sherkston, Ont.** (24 June 1982; 1:35,000) 20: bulldozed and disturbed ground.
- P: Kelowna, B.C.** (26 July 1982; 1:40,000) 15: one field bulldozed, some in transition to housing development, and some stalled during transition to housing development.

4. LAND COVER INDEX

Many covers are either readily recognizable (such as trees or buildings) or are identified in part through recognition of ongoing activity. For this reason, separate class descriptions have not been included for cover types in the present manual. Users may find as they work with the manual that cover descriptions would aid learning, especially where cover alone is being mapped or in areas where activity is mostly "No Perceived Activity (N000)". Should this prove to be the case, the Manual can be readily expanded by adding new stereograms and cover class descriptions.

For the present, however, since activity is recognized in part by cover, and cover by activity, indirect descriptions of many cover classes (especially for agriculture) are included under their associated activity. The following index provides a guide for these classes.

Cover	Activities
V110 <u>Annual Row Crops</u>	
V111 Corn	A117
V112 Vegetables	A112/A113
V113 Root Crops & Tubers	A112/A113
V116 Rapeseed	A114
V117 Tobacco	A115
V120 <u>Annual Close Grown Crops</u>	
V121 Wheat	A111
V122 Oats	A111
V123 Barley	A111
V124 Buckwheat	A111
V125 Millet	A111
V126 Mixed Grain	A111
V210 <u>Improved Grasses & Legumes</u>	A121, A122, A150, R110, H130
V220 Unimproved Grasses, Reeds, Sedges	A120, B100, B300, N000
V300 Mosses, Lichens	E130, N000
V400 Other Non-Woody Plants	A133, N000
W110 Mature, Regular Spaced Trees	F100
W111 Fruit and Nut Trees	A131, A135
W120 Mature Irregular Spaced Trees	A120, F100, R170, N000
W210 Reg.Sp., Small Trees Bushes Shrubs	A140
W211 Small and Dwarf Trees	A131, A135
W212 Shrubs and Bushes	A133, A190
W220 Irreg.Sp., Small Trees Shrubs, Bushes	A120, F100, E130, B100, B300, N000
W300 Vines	A132, A170
X100 Denuded Rock Surfaces	
X120 Man-Made	E110, B300

Cover	Activities
X200 Denuded Unconsolidated Surfaces X210 Natural X220 Man-Made	R150,N000 A190,E110,E120,E140,B300, L000
Y100 Constructed Structures Y110 Buildings Y120 Other Structures	A210,A240,A260,A270,E330, R210,R220,D000,H110/ H120,M000,C000,J000 A230,A240,E310,E330,R210, D000,H150/H160,H200, M000,J000,P000
Y200 Constructed Surfaces Y210 Hard Y220 Unconsolidated	H110/H120,H130,M000,C000 E320,M000,L000
Z200 Liquid Z210 Streams, Rivers, Canals Z220 Ponds, Lakes, Reservoirs	H140,P000 G200,E320,R160,M000,B300

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APPENDIX I

GLOSSARY

GLOSSARY OF TERMS

Carpet-Like is largely self-descriptive. It indicates a uniform arrangement of medium rough texture and a lack of pattern.

Concentric describes a pattern of lines or stripes produced by working a field in a circular or spiral fashion equidistant to the perimeter. It is also described as a finger print pattern.

Farmstead is a grouping of agricultural site activities and farm residence. For example, a livestock farmstead might include the following:

- a permanent home (D111)
- livestock barns (A211)
- livestock feeding and holding areas (A221)
- storing forage and grain (A231)

Focus is a feature of texture and describes how solid a feature appears. It varies from:

- hard or focussed to
- soft, unfocussed or fuzzy.

Hard: see Focus.

Irrigation patterns - Irrigation creates dark patterns on lighter backgrounds. These may be circular and large, appear as rows of small circles which overlap to a greater or lesser degree, look like stretched coils or show simply as graded darkening of tone from one side of a field to the other. Occasionally, water sprays themselves are visible.

Lined describes parallel, fine or close spaced rows.

Lodging refers to patches of grain which have been knocked down by wind or rain.

Mottling or mottled describes an irregular arrangement of confluent blotches of colour or tone.

Parallel describes a pattern of lines or stripes produced by working a field parallel to the sides.

Pattern describes the spatial arrangement of clearly-visible, constituent parts.

Plaid-like describes a pattern resulting from two sets of lines or stripes at right angles to each other. It is usually the result of seeding at right angles to the direction of ploughing or disking.

Shimmer describes an insubstantial or faint diffused light.

Soft: see Focus.

Striped describes parallel rows of noticeable width.

Texture describes the way a feature would feel if its 3-dimensional image could be touched. Texture results from the arrangement of small, consistent parts and varies from:

- coarse or rough to
- medium rough or medium smooth, to
- smooth or fine.

At large scales, texture looks rougher than at smaller scales and this should be considered when reading the text. In addition, at large scales, patterns may be visible which fade into texture at smaller scales.

Tillage includes all activities that break the soil surface including ploughing, harrowing, disking, planting and cultivating¹.

Tone describes the colour of a feature. Tone varies from

- black to
- dark grey to
- medium grey to
- light grey to
- white.

Tone is the least reliable image characteristic and can vary with soil moisture, sky conditions and differences in camera equipment².

Trash is the residue from a previous year's crop.

Wide-spaced rows are spaced from 0.5 to 1.5 m apart.

APPENDIX II
AGRICULTURAL CALENDARS

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Table 1: CROP CALENDAR FOR ATLANTIC REGION (Nova Scotia & New Brunswick)

MONTH	CROP	Tree fruits	Winter Grain (wheat & rye)	Spring Grain (oats and barley)	Silage Corn	Upland Hay	Marsh Hay	Potatoes
NOV-DEC		Trees leafless; ground fully or partly snow covered.	Ground fully or partly snow covered.	Ground fully or partly snow covered.	Ground fully or partly snow covered.	Ground fully or partly snow covered.	Ground fully or partly snow covered.	Ground fully or partly snow covered.
JAN			As snow melts, patchy dark tones show against bare soil.	As snow melts, may be bare soil or stubble.	As snow melts, may be bare soil or stubble.	As snow melts; image is dark; greening and growth begin.	As snow melts, image is patchy, light and dark toned.	Seed bed preparation; planting as soon as frost is out of ground; bare soil image persists at least to mid-June when plants are 35-45 cm tall, and may persist longer; date when mature image develops is unknown.
		Buds begin expanding.		Seedbed preparation and planting; bare soil image.	Seedbed preparation and planting; bare soil image.			
MAY		Leafing begins.		Emergence; dark tones against tillage pattern, larger dark patches develop.	Emergence and early growth; bare soil image persists.		Greening and growth begin later than upland hay; tone darkens.	
		Flowering.	Some soil showing or ground cover complete.			First cut; cut fields are light-toned, darkening with time.		
JUN		Full foliage; in young orchards, between-row spaces are cultivated or herbicided; in mature orchards, sprays are let in grass and cut 3-4 times per season.	Grain heads appear and tone slowly lightens as ripening proceeds.	Some soil showing or ground cover complete.	Corn begins to show dark streaks and patches.		First (and only) cut; cut fields are light-toned darkening with time.	
JUL			Grain heads appear and tone slowly lightens as ripening proceeds.		Canopy closes; distinctive tone and texture develop; tone lightens to medium grey as crop matures.	Second cut; cut fields are light-toned, darkening with time.		
AUG		Harvesting of fruit.	Harvesting; fields ripe or in stubble.	Harvesting; fields ripe or in stubble; harvested fields may be left in stubble; ploughed or planted to winter grain.		Fields may be left until next season, pastured, ploughed or planted to winter grain.	Fields may be left until next season, pastured, ploughed or planted to winter grain.	Harvesting early varieties.
			Last of harvesting; seedbed preparation and planting with image like bare soil.		Harvesting; fields are medium grey, or in stubble; ploughed or planted to winter grain.			Harvesting late varieties; fields mature or bare soil or planted to winter grain for green manure.
SEPT								
OCT		Leaf-fall.	Grain may begin to show as patchy dark tones on bare soil.					

Table 2: CROP CALENDAR FOR QUEBEC (Irris Rivieres Area)

MONTH	CROP	Spring Grain (oats and barley)	Spring Green Manure (millet and buckwheat)	Potatoes	Corn	Winter Green Manure (rye or grasses)	Tobacco	Strawberries	Forage Crops
NOV-DEC		Ground fully or partly snow covered.	Ground fully or partly snow covered.	Ground fully or partly snow covered; as snow melts, may be bare soil or dark, second growth, green manure.	Ground fully or partly snow covered; as snow melts, may be bare soil or stubble.	Ground fully or partly snow covered; as snow melts, patchy dark tones show against bare soil.	Ground fully or partly snow covered; as snow melts, may be bare soil or dark, second growth, green manure.	Ground fully or partly snow covered; as snow melts, may be bare soil, established strawberries or dark, second growth, green manure.	Ground fully or partly snow covered.
JAN		As snow melts, may be bare soil or stubble.	As snow melts, may be bare soil or green manure about to be ploughed under.	Seed bed preparation planting as soon as frost is out of ground; bare soil image persists at least to mid-June when plants are 30-45 cm tall, and may persist longer; date when mature image develops is unknown.	Seedbed preparation and planting; bare soil image.		Fields ploughed in preparation for seedlings; bare soil image.		As snow melts, image is dark; greening and growth begin.
MAY		Planting; bare soil image.						New plantings; straw removed from est. plants; new planting like bare soil till unknown date; est. plants dark toned.	The grasses and legumes are seeded.
		Emergence; dark tones suggest tillage pattern, larger dark patches develop.	Planting; bare soil image.		Emergence and early growth; bare soil image persists for silage corn.	Some soil showing or ground cover complete; dark tone persists or lightens as crop matures.	Seedlings transplanted; bare soil image.		
JUN		Some soil showing or ground cover complete.	Late grains start to show.						First cut begins; cut fields are light-toned darkening with time; alfalfa is cut 3-4 times per season; grasses and other legumes may be pastured after first cut, or have second cut beginning in August.
JUL		Grainheads appear and tone lightens as ripening proceeds.	Buckwheat ploughed under and second crop regrows.		Silage corn shows dark streaks and patches.		Tobacco image matures.	Established plants harvested.	
		Barley harvest.	Millet ploughed under; may be replanted for fall or spring ploughing.		Sweet corn harvested; silage corn develops distinctive tone and texture; tone lightens to medium grey as crop matures.	Crop ploughed under and second crop regrows.		Old fields ploughed under and probably seeded to millet to be turned under in fall or early spring.	
AUG		Oats harvest; fields may be left in stubble, ploughed or planted to winter green manure crop.	Buckwheat ploughed under; may be left bare or planted to winter green manure.	Harvesting early varieties.			Harvesting; leaves picked over 3-6 week period.		
SEPT						Next year's crop planted.			Fields may be left until next season or ploughed.
				Harvesting late varieties; fields mature or bare soil or planted to winter green manure crop.		Second growth is ploughed under in fall or early next spring.			
OCT					Silage corn harvested after two hard frosts; distillery corn left as late as mid-Nov.		Ploughed and planted to winter green manure crop (rye); rye may show before snowfall.		

Table 3: CROP CALENDAR FOR ONTARIO (Niagara Region)

MONTH	CROP	Tree Fruits	Grapes	Winter Grain (wheat)*	Spring Grain (oats and barley)	Corn	Forage Crops	Soybeans
NOV-DEC		Trees leafless; ground fully or partly snow covered.	Vines leafless; ground fully or partly snow covered; pruning from mid-February to end of April.	Ground fully or partly snow covered.	Ground fully or partly snow covered; as snow melts, usually bare soil but may be stubble.	Ground fully or partly snow covered; as snow melts, usually bare soil but may be stubble.	Ground fully or partly snow covered.	Ground fully or partly snow covered.
APR		Leafing begins.		As snow melts, patchy dark tones show against bare soil.	Planted as soon as ground can be worked.		As snow melts, image is dark; greening and growth begins.	As snow melts, usually bare soil but may be stubble.
MAY		Flowering.	Leafing begins.		Emergence; dark tones suggest tillage pattern, this larger dark patches develop.	Planting; bare soil image.	New grasses and legumes are seeded.	
		Full foliage.		Some soil showing or ground cover complete.		Emergence and early growth; bare soil image persists.		Planting; bare soil image.
JUN			Full foliage.	Grainheads appear; tone lightens as ripening proceeds.	Some soil showing or ground cover complete.		First cut on established fields; cut fields are light toned darkening with time; alfalfa is cut 3 times per season; new hay is first cut beginning end of June; grasses and other legumes may be pastured or have second cut beginning in August.	Bare soil image persists at least to early or mid-July; date when mature image develops is unknown.
JUL		Cherry harvest.		Harvesting; fields ripe or in stubble.	Grainheads appear; tone lightens as ripening proceeds.	Corn begins to show dark streaks and patches.		
		Peach harvest.		Fields ploughed or in stubble.		Canopy closes; corn develops distinctive tone and texture; tone lightens to medium grey as crop matures.		
AUG		Plum and pear harvest.			Harvesting; fields ripe or in stubble.			
		Apple harvest.		Planting; bare soil image.	Fields usually ploughed but may be left in stubble.		Fields may be left until next season or ploughed.	
SEPT			Grape harvest.			Silage corn harvested mid-September or; corn for grain harvested in this; harvested fields usually ploughed but may be left in stubble.**		Harvest.
OCT		Leaf-fall.	Leaf-fall.	Wheat begins to show as patchy dark tones against bare soil.				Fields usually ploughed but may be left in stubble.

* Fall of 1981 was wet and little wheat was planted. A severe winter and wet spring meant wheat survived poorly. Ontario stereograms from 1982 (R,J,I) have no wheat recorded.
 ** Due to wet fall in 1981, many fields were left in stubble. A wet spring in 1982 resulted in many stubble fields being left fallow. Ontario stereograms from 1982 (D,L) show a large amount of corn stubble fallow.

Table 4: CROP CALENDAR FOR CENTRAL ALBERTA

MONTH	CROP	Spring Grain (wheat, oats and barley)	Rapeseed/Canola	Forage Crops	Fallow
NOV-MAR		Ground fully snow covered.	Ground fully snow covered.	Ground fully snow covered.	Ground fully snow covered.
APR		As snow melts, stubble or bare soil.	As snow melts, stubble or bare soil.	As snow melts, image is dark; greening and growth begin.	As snow melts, usually stubble; weed growth develops with time.
MAY	} Barley Planted into stubble if erosion or moisture is a problem. } Wheat Planted into stubble if erosion or moisture is a problem. } Oats Planted into stubble if erosion or moisture is a problem.	Emergence; darker tones develop over dark toned soils.	Emergence; date when ground cover is complete is unknown.		
JUN					
JUL		Some soil showing a ground cover complete.	Flowering; tone uniform medium grey.	First cut on established fields; new fields cut towards the end of July; cut fields are light toned darkening with time; second growth may be pastured; grasses harvested for seed.	Tilled; bare soil image may develop some weed growth prior to being retilled.
AUG		Grainheads appear; tone lightens as ripening proceeds.	Pod development; tone uniform medium grey.		
SEPT		Harvesting; fields ripe, swathed or in stubble; harvested fields often left in stubble over winter.	Maturing; tone lightens and tillage pattern appears.	Second cut; cut fields are light toned darkening with time. Clover harvested for seed.	
OCT				Alfalfa harvested for seed.	

Table 5: CROP CALENDAR FOR BRITISH COLUMBIA (Lower Mainland)

MONTH	CROP	Strawberries	Raspberries	Forage Crops	Vegetables	Corn	Spring Grain (oats and barley)		
NOV-DEC		Ground partly snow covered; ground may be bare soil or established plants.	Ground partly snow covered; canes are pruned; by end of Mar. green shoots showing.	Ground partly snow covered; exposed ground in dark vegetative cover.	Ground partly snow covered; exposed ground bare soil, stubble or winter killed oats.	Ground partly snow covered; exposed ground either bare soil or stubble.	Ground partly snow covered; exposed ground may be bare soil or stubble.		
JAN			Leafing up.	New grasses and legumes seeded in spring or fall; bare soil image.	Planting of peas.				
FEB									
MAR		New fields planted; bare soil image persists till unknown date.	Full foliage; early varieties blooming.		Planting of beans and brassica* seedlings begins.	Silage corn planted in early May; soon, corn plantings stage red; bare soil image.	Planting; bare soil image.		
APR				First cut; cut fields are light toned darkening with time; later growth may be pastured.	Mature dark images beside new plantings; harvest of some brassica begins.		Emergence; dark tones aspect tillage pattern, larger dark patches develop.		
MAY						Silage corn shows dark streaks and patches.	Some soil showing or ground cover complete.		
JUN		Established plants harvested.	Harvesting.	Second cut; cut fields are light toned darkening with time; later growth may be pastured.	Brassica planted for late harvest.	Silage corn develops distinctive tone and texture; tone lightens to medium grey as crop matures.	Grainheads appear; tone lightens as ripening proceeds.		
JUL		Old fields are ploughed under; may be planted to brassica* for fall crop, oats or rye for green manure cover crop, or left bare.	Fruiting canes begin dying off.		Harvest of peas, beans and brassica.		Fields ripe; tone very light.		
AUG				Third cut; cut fields are light-toned darkening with time; fields may be ploughed and reseeded in fall or spring.	Brassica harvest continues into Nov; harvested fields ploughed as weather permits through winter.	Silage corn harvested before frost; fields usually left in stubble till spring.	Harvesting; fields ripe or in stubble.		
SEPT							Fields disked and left rough or planted to fall rye (green manure) or winter wheat.		
OCT			Pruning begins.						

*brassica includes broccoli, cauliflower, brussels sprouts and cabbage.

Table 6: CROP CALENDAR FOR BRITISH COLUMBIA (Kelowna Region)

MONTH	CROP	Tree Fruits	Grapes	Vegetables & Roots Crops	Forage Crops
NOV-MAR		Trees leafless; ground fully or partly snow covered.	Leaf-fall in early Nov; vines leafless over winter; ground fully or partly snow covered; vines are cut back during winter and into April.	Ground fully or partly snow covered; as snow melts, bare soil.	Ground fully or partly snow covered; as snow melts, ground in dark vegetative cover.
APR		Leafing begins.		Cabbage and onions seeded.	Greening and growth begin; new grasses and legumes seeded in spring or fall.
MAY		Flowering. Full foliage.	Leafing begins.	Potatoes seeded. Cauliflower and broccoli seeded. Onions and peppers transplanted.	
JUN			Full foliage.	Images maturing.	First cut; cut fields are light toned darkening with time; later growth may be pastured.
JUL		Cherry harvest.	Flowering.	Cabbage and onion harvest begins.	Second cut; cut fields are light toned darkening with time; later growth may be pastured.
AUG		Pear harvest.		Harvest of other varieties begins.	
SEPT		Apple harvest; pear leaves turning colour.		Potato and onion fields ploughed.	Third cut; cut fields are light toned darkening with time; fields may be left to next season or ploughed and reseeded in fall or spring.
OCT		Cherry and apple leaves turning colour. Leaf-fall.	Grape harvest.	Other varieties ploughed.	

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- S -		
Sand pit , abandoned	E120(E121) B300	45, see also 44 76
Scarification	F100(F170)	40
Scenic viewpoints	R140	54
Schools	J000(J300)	71
Seed crops	A114	11
Sewage lagoons	M000(M610)	68, see also 43
Silos	A230(A231)	35
Skiing, crosscountry , downhill	R120, R130 R120	52,53 52
Slash burning	F100(F170)	40
Sod	A150	26
Soy beans	A114	11
Stadiums	R210(R213), R220	58,60
Storage, crop , former , non-agriculture , vehicles	A230 B100 M000 M000(M520)	35 74 68 68
Strawberries	A133	22
Strip mines , abandoned	E110(E115) B300	44 76

Subject	Activity Listing	Page
Switchyards, electric	H160(H162)	66
Surface extraction	E100	44
<hr/>		
- T -		
Tailing ponds	E320	49
	M000(M600)	68
Tips	E320	49
Tobacco	A115	12
, curing and packing	A260	37
Topsoil removal	E140	47
Trailers	D000(D110, D122), R210(R216)	61 58
Trailer park	D000(D110, D122), R210(R216)	61 58
Trail-using activities	RL30	53
Transformer stations	H160(H162)	66
Transmission corridor	H160	66
Transmission lines	H160	66
Transportation by air	H130	64
rail	H120	63
road	H110	63
water	H140	65
Transportation of		
electricity	H160	66
goods	H100	63
people	H100	63
water	H140	65
Tree planting	F100(F170)	40
<hr/>		
- U -		
Universities	J000(J300)	71
Unused land	B000	74

Subject	Activity Listing	Page
- V -		
Vegetables	A112, A113	9, see also 13, 22,25
, storage	A230(A232)	35
Vehicle storage	M000(M520)	68
Vineyards	A132	21, see also 20,22
, abandoned	B100(B130)	74
- W -		
Waste, disposal	M000(M600)	68
, holding	E320	49
, liquid	M000(M610)	68
, solid	E320, M000(M630)	49,68
, transporting	E320	49
, treatment	M000(M600)	68
Wheat	A111	6
Work camps	D000(D122)	61
- Z -		
Zoos	R210(R211)	58

AIRPHOTO INTERPRETATION
MANUAL:
LAND USE CLASSIFICATION
VOLUME 2



Environment
Canada

Environnement
Canada



**LANDS
DIRECTORATE**

**DIRECTION GÉNÉRALE
DES TERRES**

-A-

A

St. Thomas de Caxton, Québec

Location: NTS 1:50,000 Map Sheet Trois Rivières 31 I/7
Photo Centre for A26023 -85 ≈ Lat 46° 22';
Long 72° 46'

Date of Airphotography: 17 June 1982

Scale of Airphotography: 1:20,000

Ordering Information: National Air Photo Library
615 Booth St., Ottawa, K1A 0E9

A26023 - 84,85

Description: Sample illustrates annually - tilled crops
early in the year, first year and mulched
strawberries, asparagus and fallow.

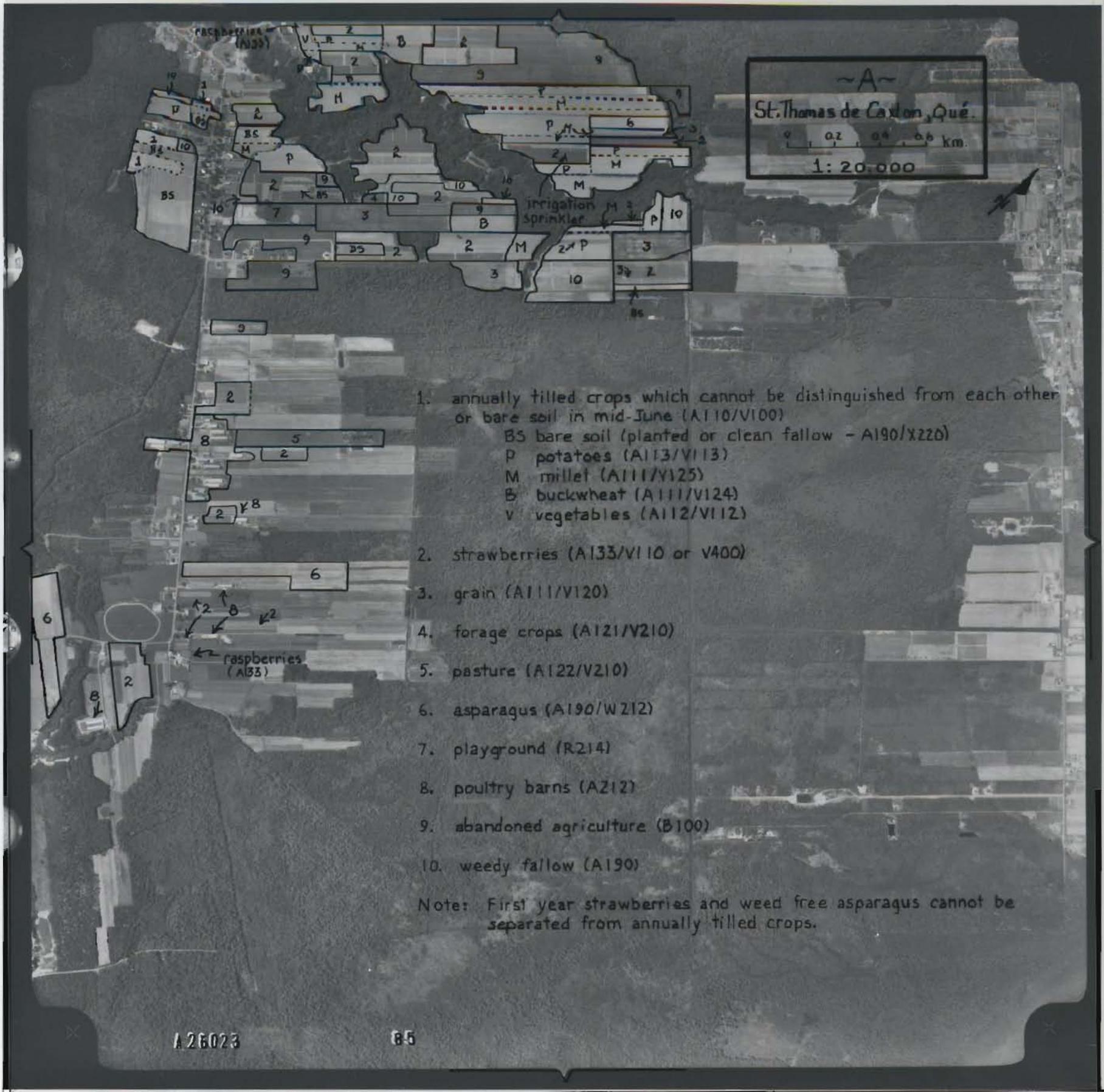
Activity and Cover Classes:

A110	W212
A111	V100
A112	V110
A113	V112
A121	V113
A122	V120
A133	V124
A190	V125
A212	V210
R214	V400
B100	X220



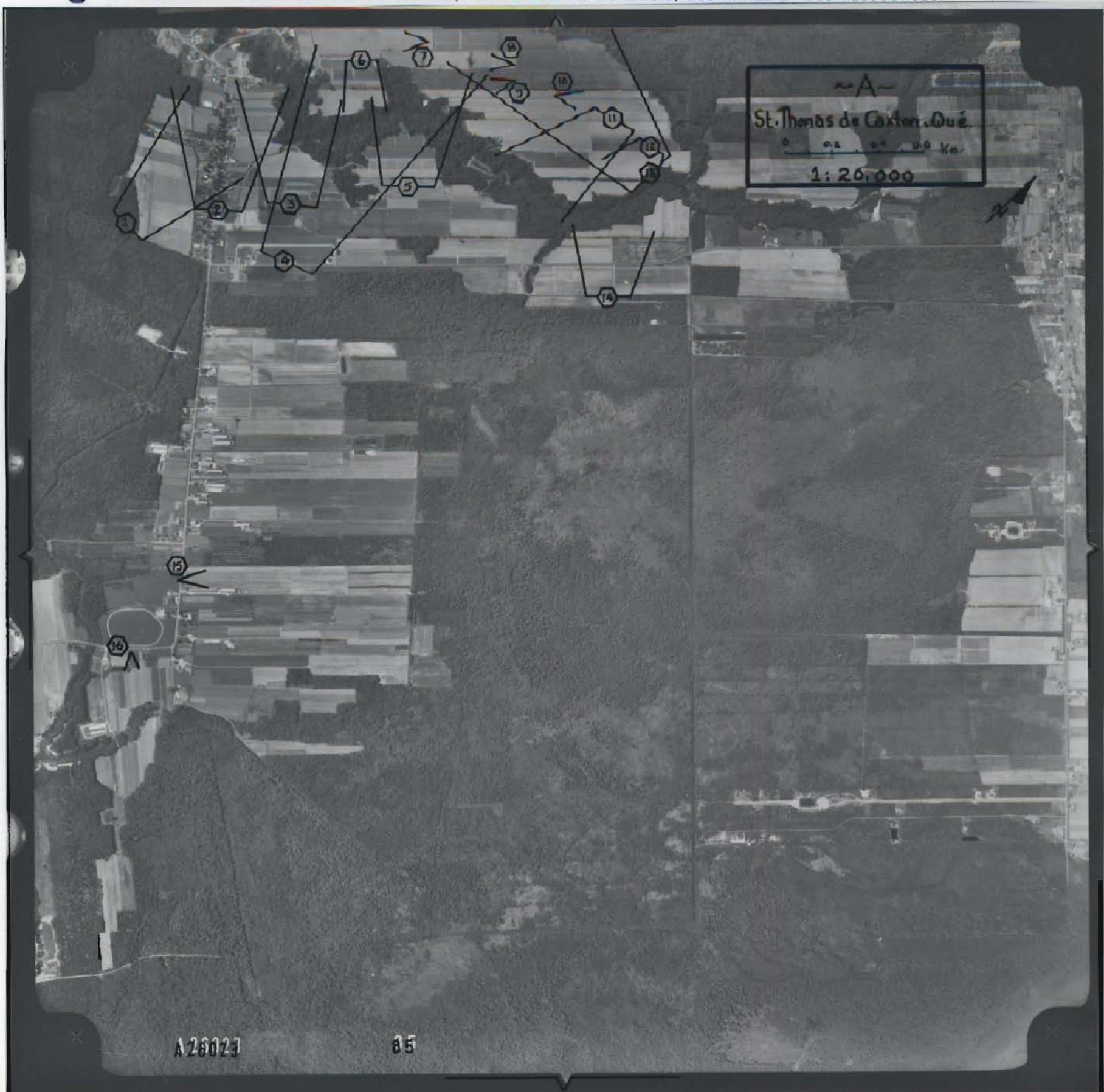
A 26023

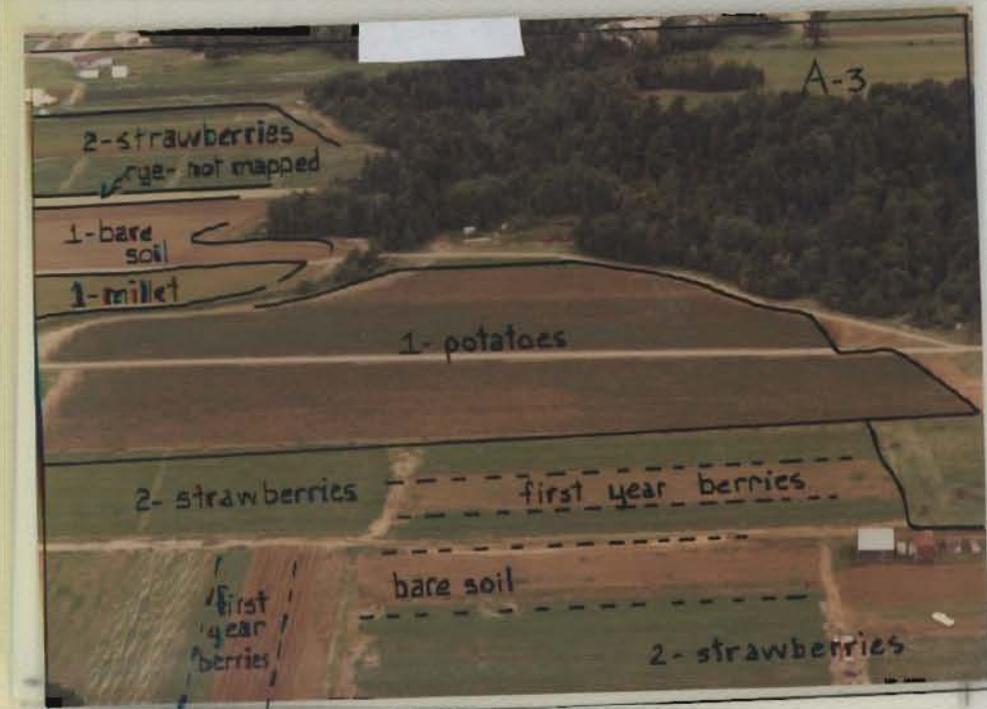
84



A 26023

85





A-5

third year berries

2- strawberries

second year berries

strip of millet
not mapped

first year berries

potatoes - not mapped

10- weedy fallow

A-6

1- millet

1- potatoes

fallow - not mapped

2- strawberries

third year berries getting
very weedy

A-7

1- buckwheat

A-8

2- second year strawberries

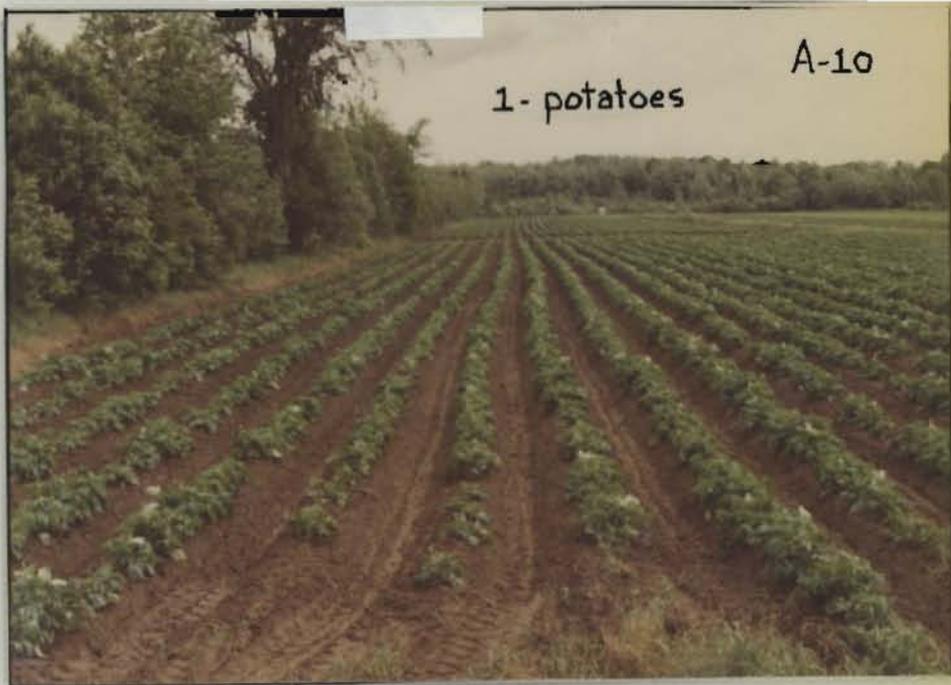
A-9

abandoned hay field



A-10

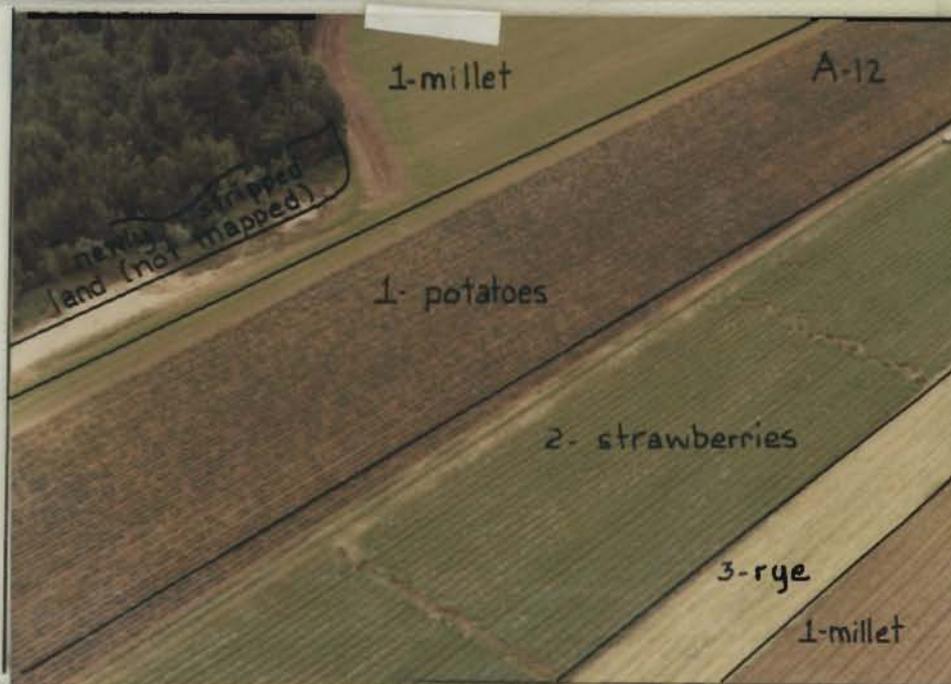
1- potatoes

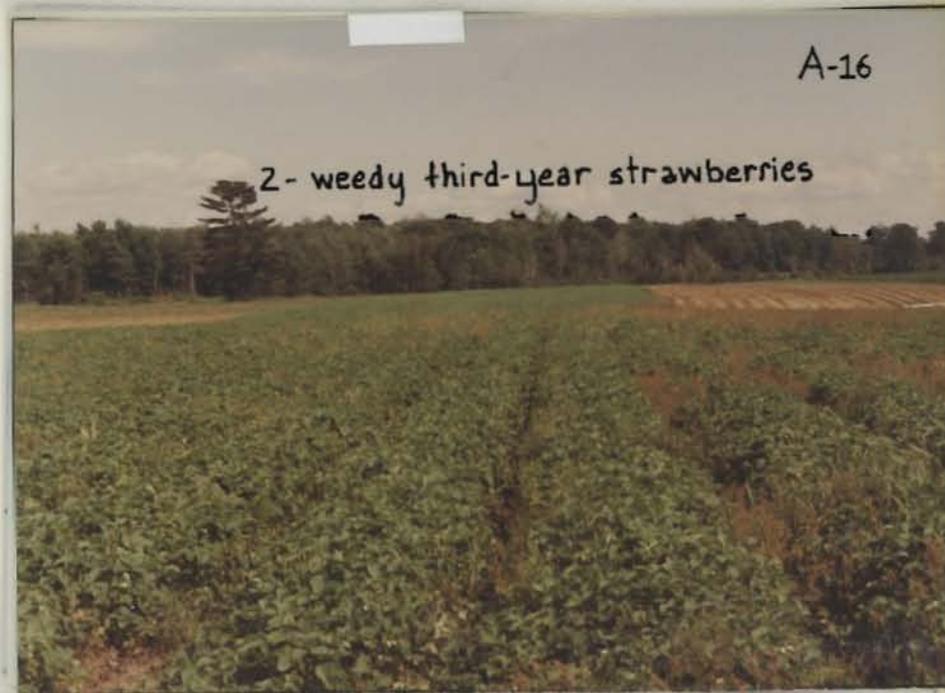
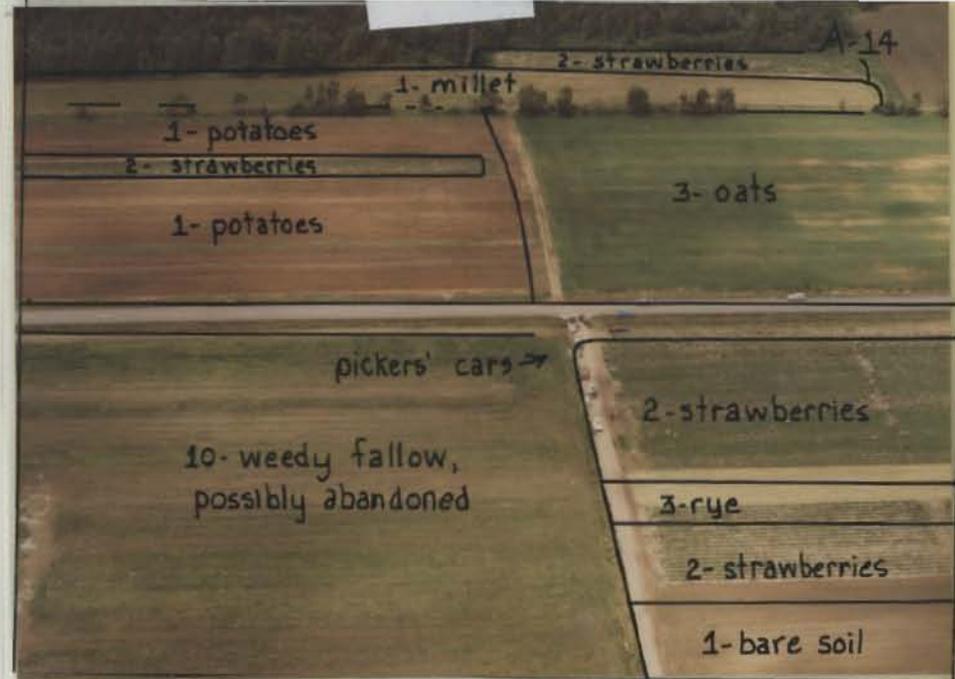
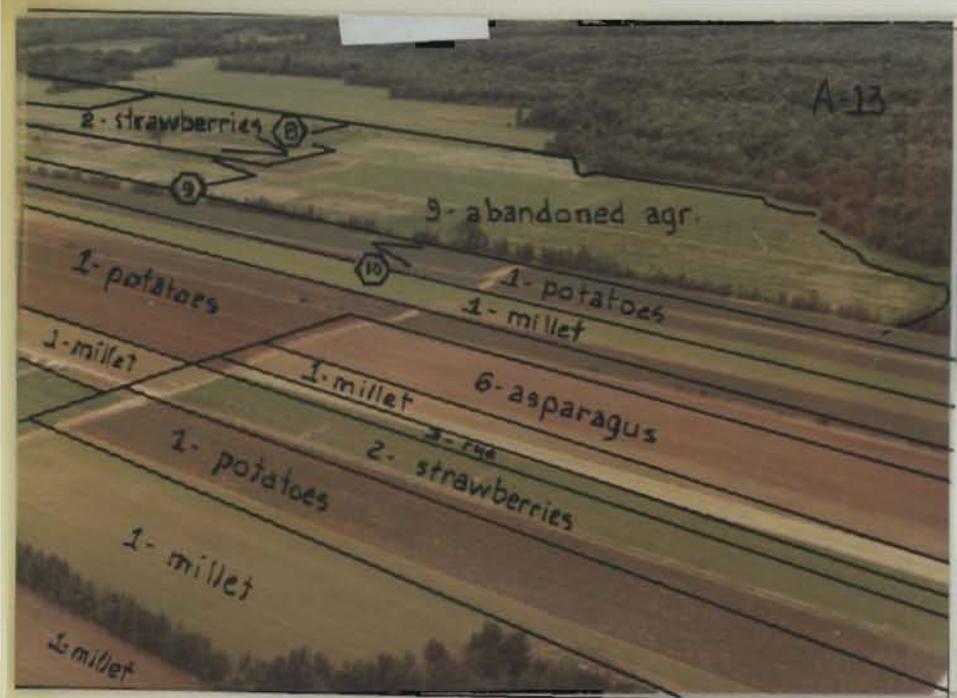


A-11



A-12





-B-

B

Wainfleet, Ontario

Location: NTS 1:50,000 Map Sheet 30 L/14
Photo Centre for A26035 -7 \approx Lat 42°54';
Long 79°17'

Date of Airphotography: 24 June 1982

Scale of Airphotography: 1:35,000

Ordering Information: National Air Photo Library
615 Booth St., Ottawa, K1A 0E9

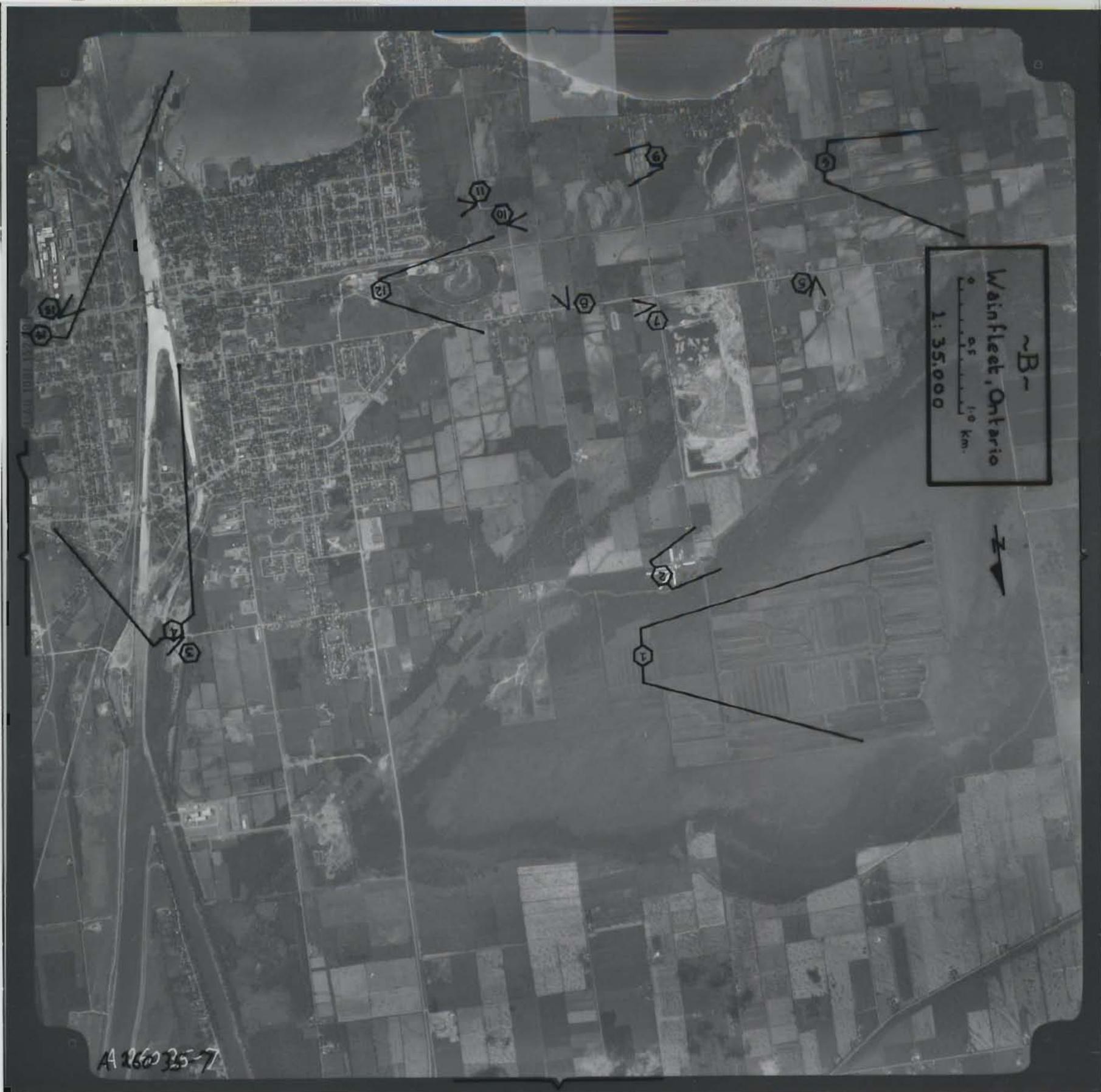
A26035 - 6,7,8

Description: Sample illustrates corn, grain, hay and pasture; active and abandoned quarries, and peat mining. Other classes included the Welland Canal and several manufacturing and storage classes.

Activity and Cover Classes:

A111	R150	B121	M550	W120
A117	R152	B134	M611	W220
A121	R170	B138	M631	V111
A122	R214	B140	C000	V120
A190	R216	B162	J310	V210
A200	R220	M220	J620	V220
A223	D100	M250	B100	V310
V111	D110	M310	B300	Z212
L130	P112	M360	N000	
P330	P220	M511	L000	
R130	B11E	M522		





A 26035-7



A 260 35-7



UAG 1061 152.09

A-26035-8

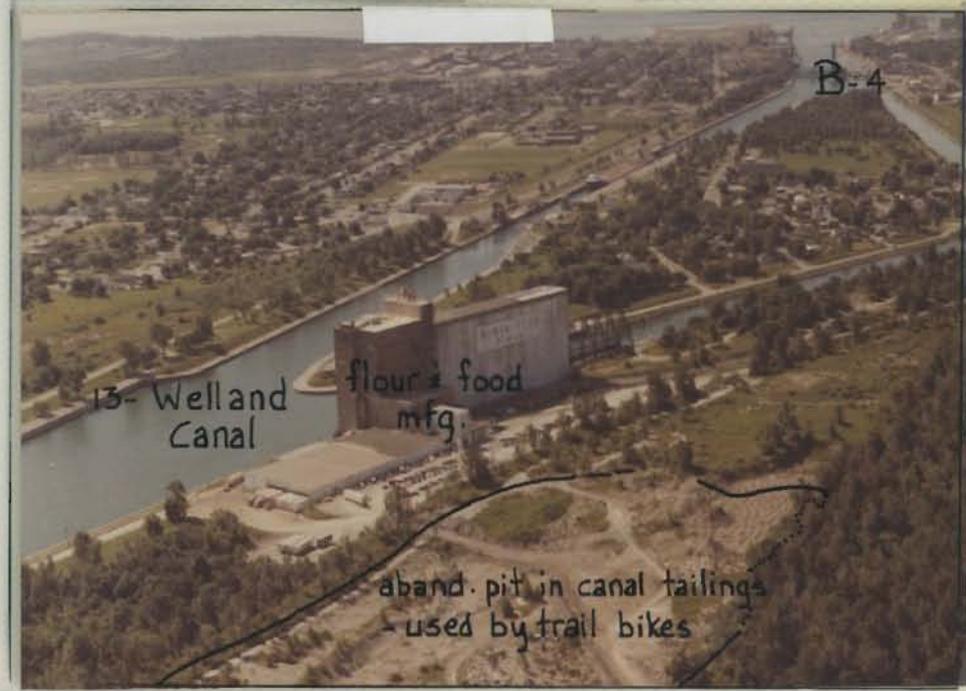
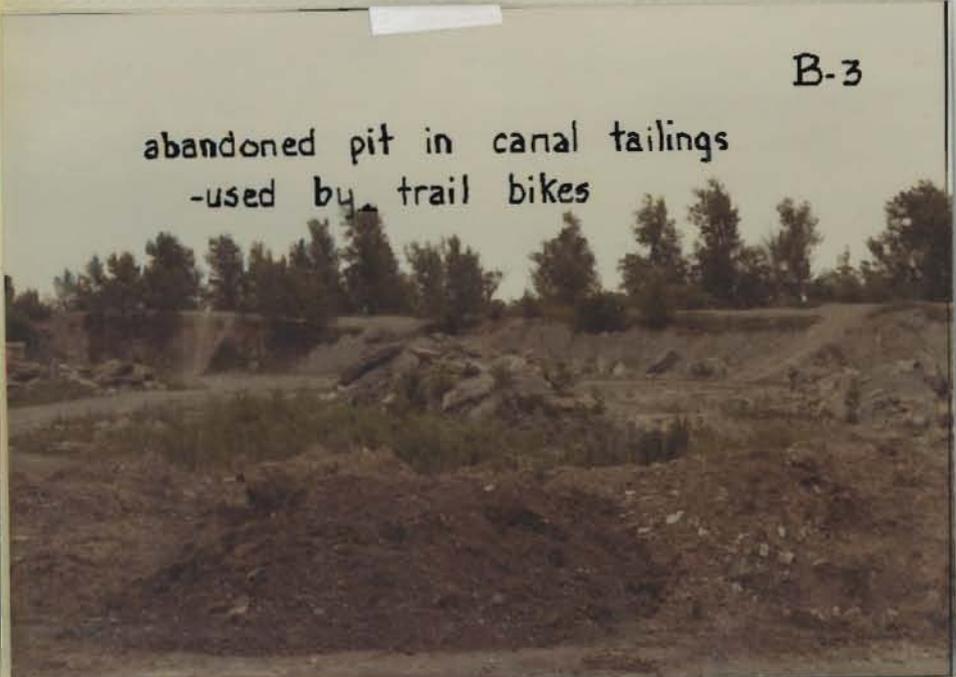
peat mining

B-1



abandoned pit in canal tailings
-used by trail bikes

B-3



5 - swathed hay

B-5

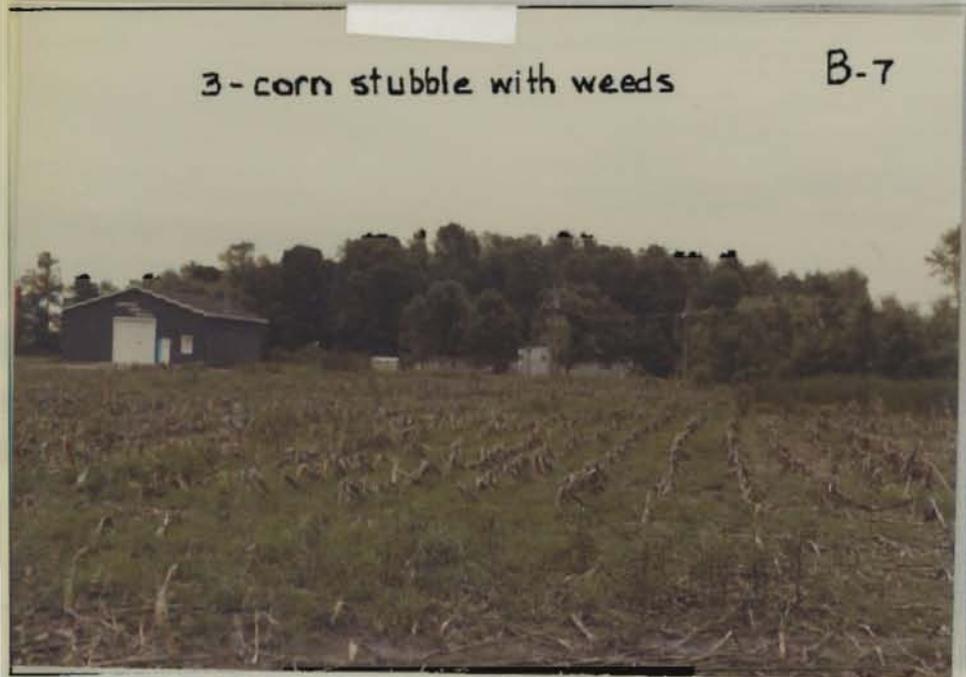


B-6



3 - corn stubble with weeds

B-7



B-8



6 - pasture



15 - abandoned quarry

permanent trailer pk.

10 - campground and tourist trailer park

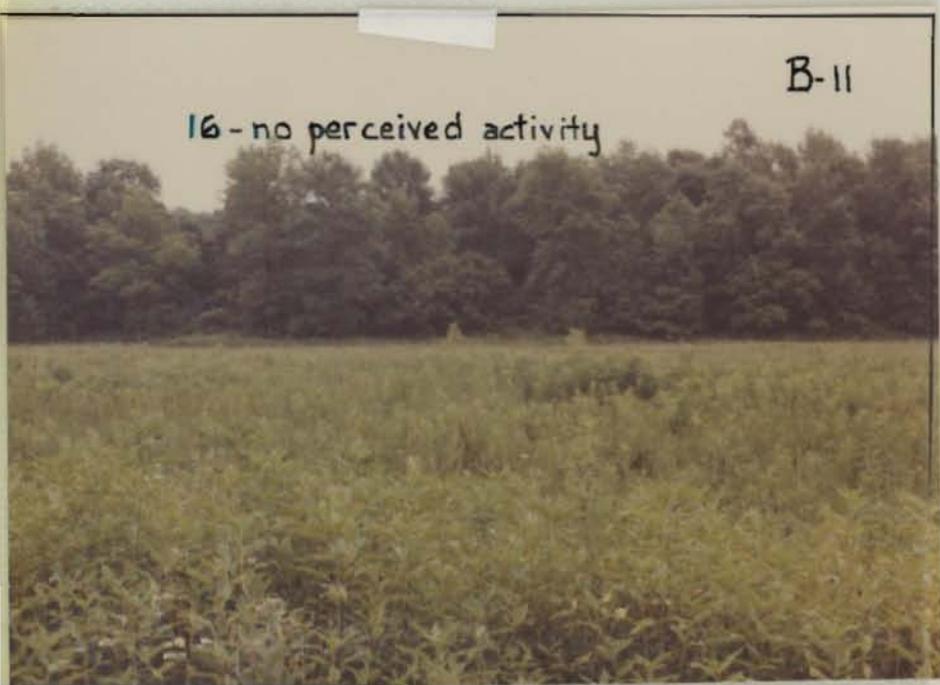
14 - abandoned agriculture

B-9



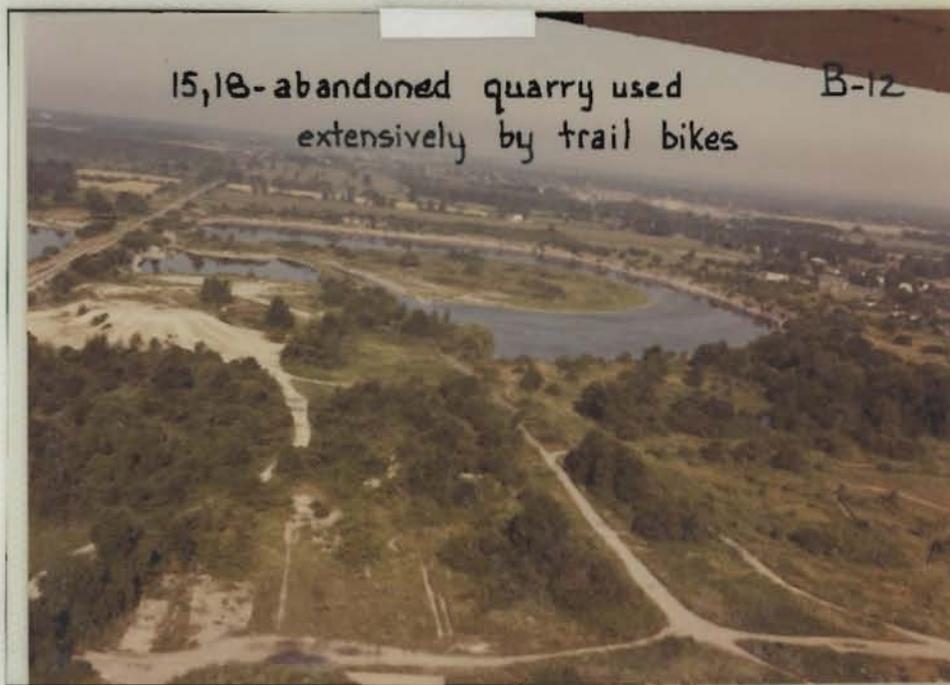
1 - barley

B-10



16 - no perceived activity

B-11



15, 18 - abandoned quarry used extensively by trail bikes

B-12

transformer station

B-13



Inco Nickel Refinery

B-14



-C-

Petitcodiac, N.B.

Location: NTS 1:50,000 Map Sheet Petitcodiac 21H/14
Photo Centre for 82023 -91 ≈ Lat 45°55';
Long 69°18'

Date of Airphotography: 12 July 1982

Scale of Airphotography: 1:35,000

Ordering Information: Maritime Resource Management Service
(MRMS)
Box 310, Amherst, N.S., B4H 3Z5
82023 - 91,92

Description: Sample illustrates hay during first cut,
corn, grain and pasture.

Activity and Cover Classes:

A111	V111
A117	V120
A121	X220
A122	
A133	
A190	

~C~
Petitcodiac, N.B.

0 0.5 1.0 Km

1: 35,000



3

4

2

1

82023

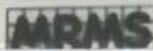
91

UNAS 1032 15158

19 0 1 8



MARITIME RESOURCE MANAGEMENT SERVICE - MRMS INC., AMHERST, N.S.



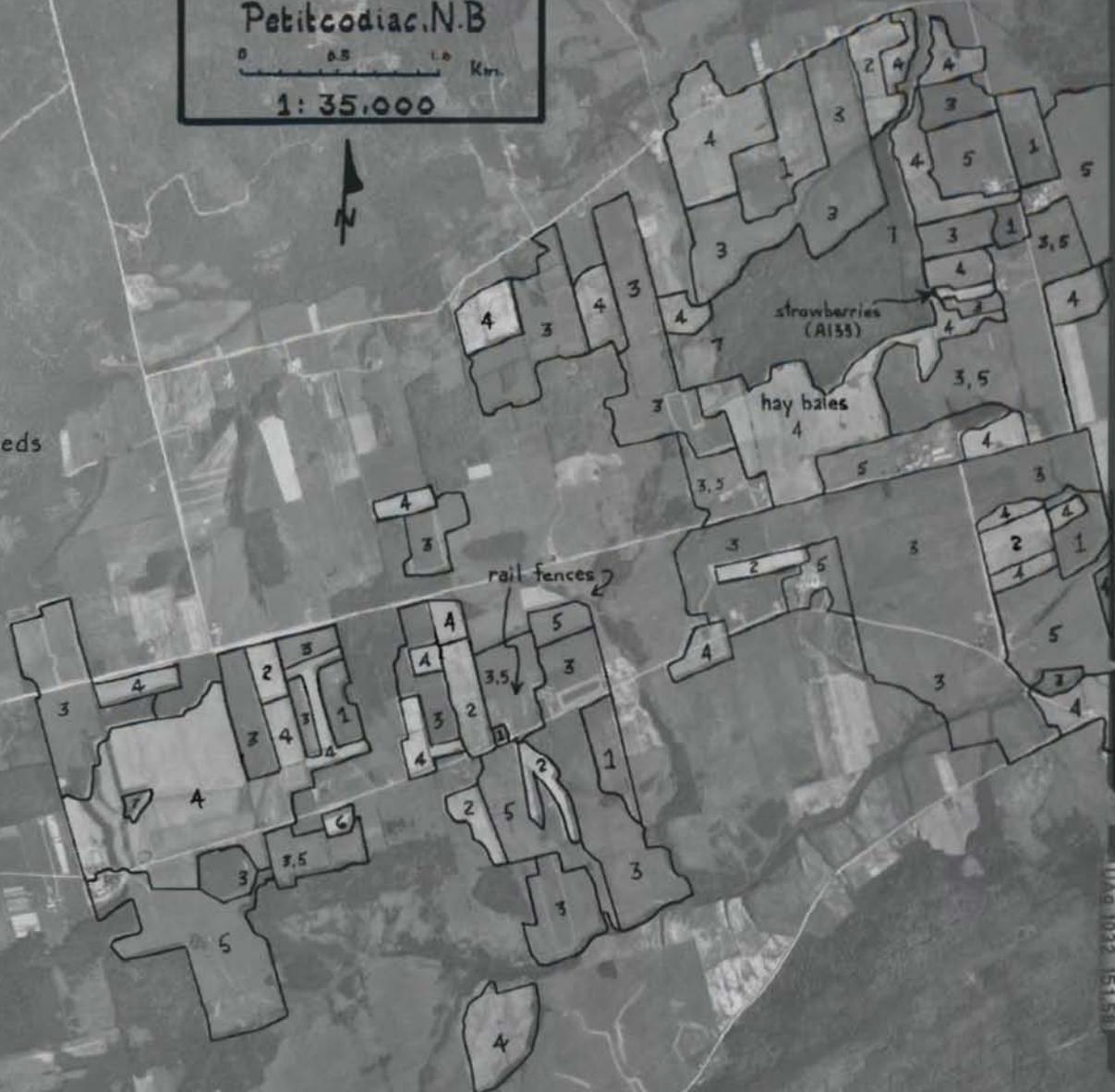
~C~
Petitcodiac.N.B

0 0.5 1.0 Km.

1: 35,000



1. grain (A111/V120)
2. corn (A117/V111)
3. standing hay (A121)
4. cut hay (A121)
5. pasture (A122)
6. fallow - bare soil and weeds (A190/X220)
7. unclassified



821023

91

15158

15158



MARITIME RESOURCE MANAGEMENT SERVICE - MRMS INC., AMHERST, N.S.

MRMS



82023

92

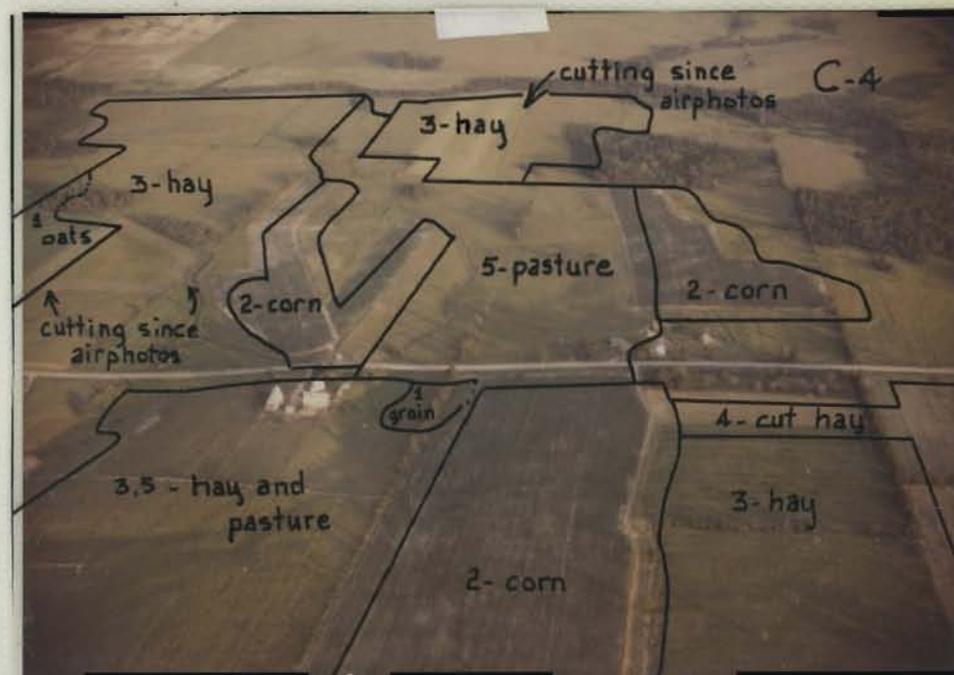
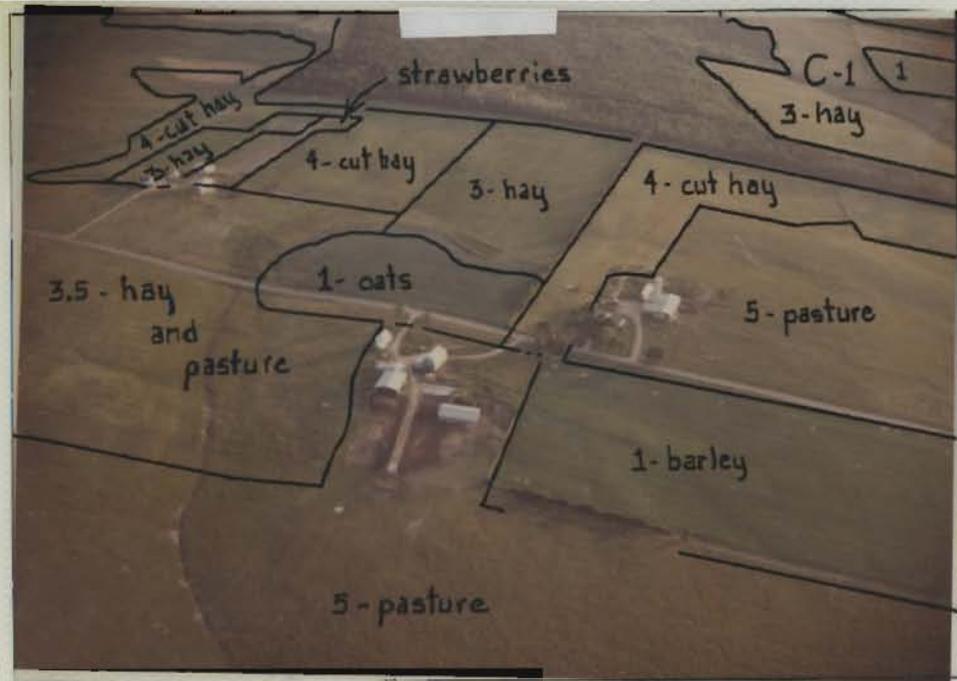
UAG 1032 151.58

19 0 1 6



MARITIME RESOURCE MANAGEMENT SERVICE - MRMS INC., AMHERST, N.S.

MRMS



-D-

D

Lloydminster, Alta.

Location: NTS 1:50,000 Map Sheet 73E/8
Photo Centre for LN-34-AS-2629-188 Lat 53° 25';
Long 110° 17'

Date of Airphotography: 28 July 1982

Scale of Airphotography: 1:30,000

Ordering Information: Alberta Map and Air Photo Distribution
Centre, Alberta Energy and Natural
Resources
2nd floor West, North Tower,
Petroleum Plaza
9945-108 St., Edmonton, Alta T5K 2G6

LN 34 AS 2629 - 187,188

Description: Sample illustrates grain, fallow and rapeseed
as well as an oil field and pumps.

Activity and Cover Classes:

A111	D110	V116
A114	M260	V120
A121	M511	V121
A122	M000	V122
A190	I000	V123
A212		V200
A221		V210
A231		X220
E120		
E211		
E312		
F330		

73E9

53:25

1:30,000

82-07-28



UAG 25
15218



82-88 P

LN 34 AS

2629 187

~D~
Lloydminster, Alta.

0 0.5 1.0 km.

1:30,000



1. grain crops which cannot be consistently differentiated (A111/V120)
W - wheat (V121)
O - oats (V122)
B - barley (V123)
2. fallow (A190/X220)
3. rapeseed/canola (A114/V116)
4. improved forage crops (A121/V210)
5. grazing (A122/V200)
6. livestock farmstead (A221, A231, D110)
7. poultry farmstead (A212, A231, D110)
8. feedmill and grain storage (A231)
9. oil wells (E211, E312) and storage (M511)
10. oil handling and processing facility (M260, E330)
11. no perceived activity (N000) or grazing (A122)
12. recently cleared land and brush piles (L000)
13. sand and gravel pit (E120), local use only
14. residence (D110)

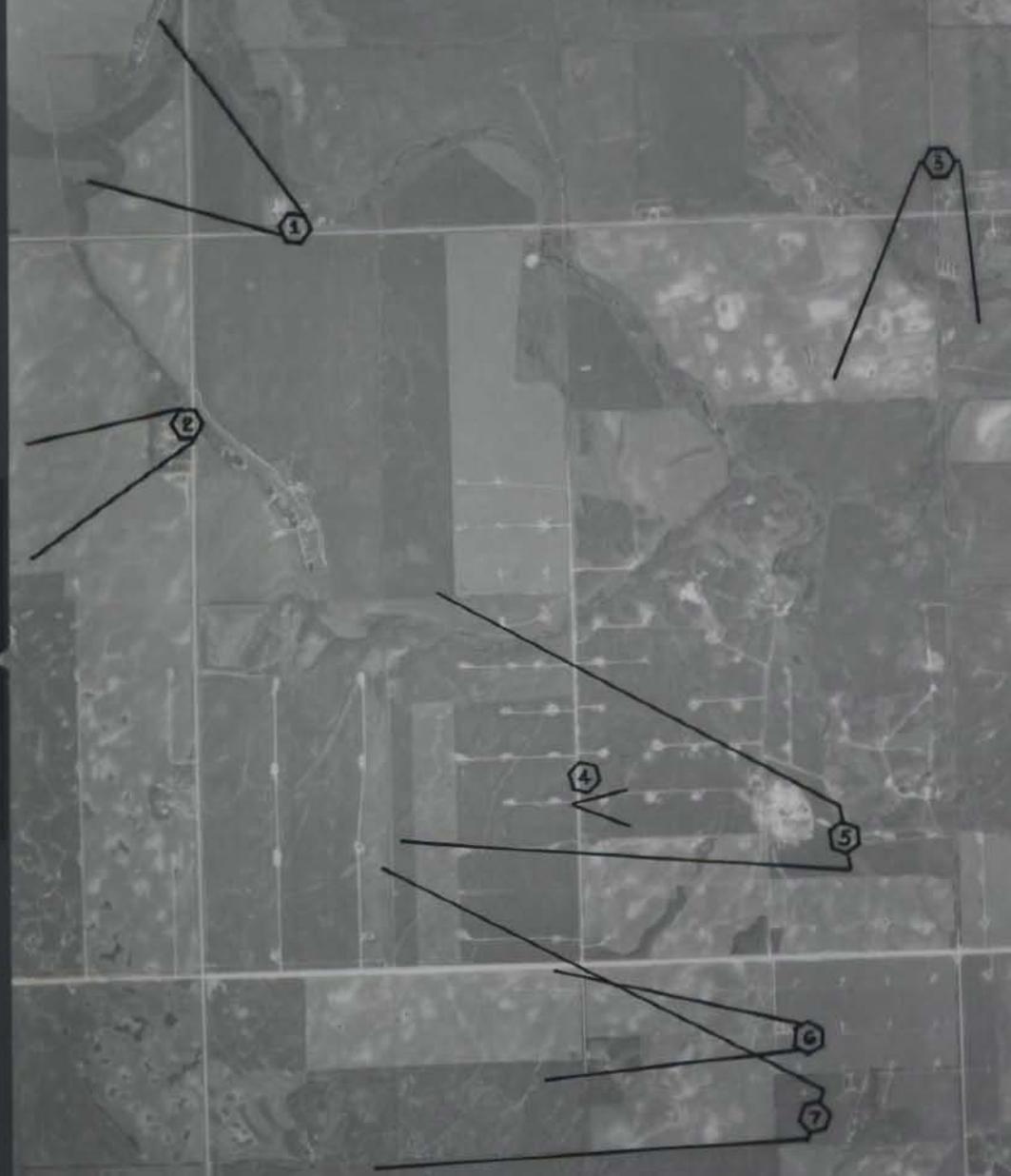
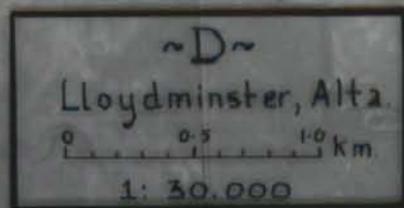
Note: Not all oil wells are marked.

T3E9

53:25

1:30,000

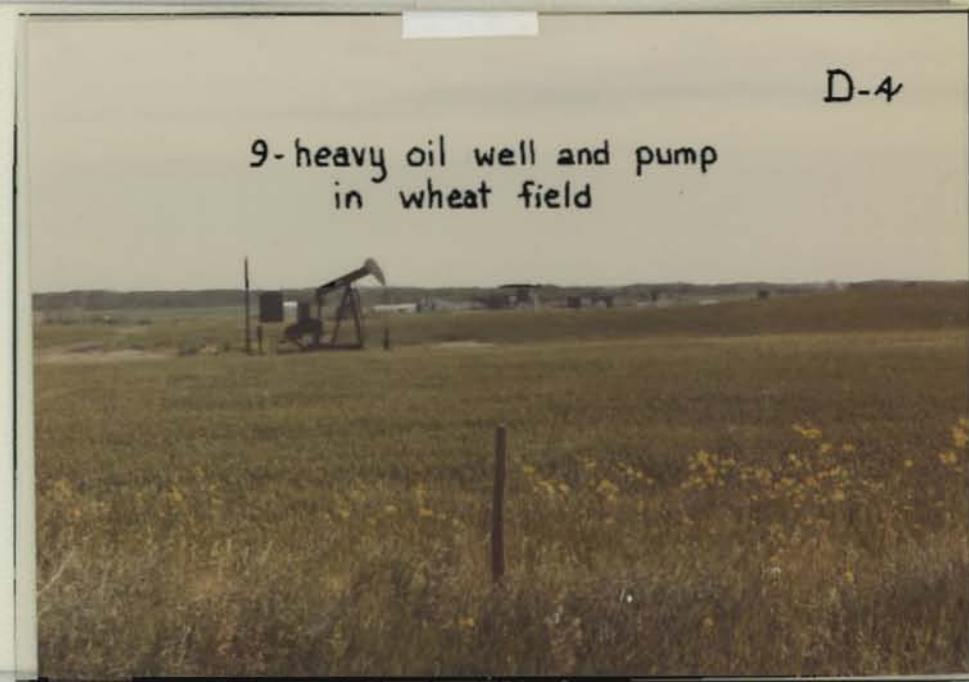
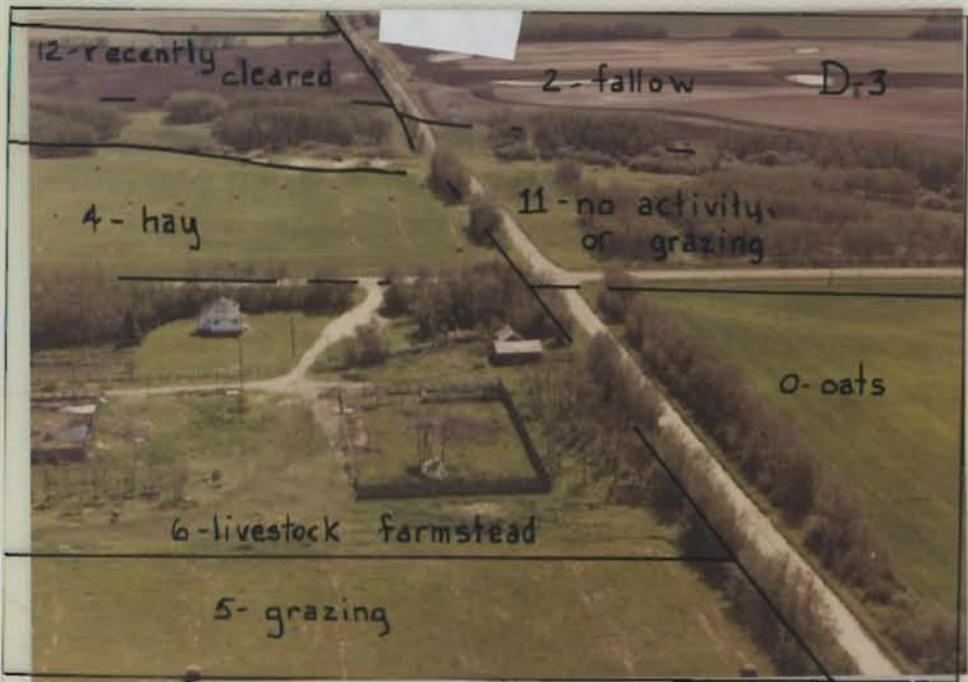
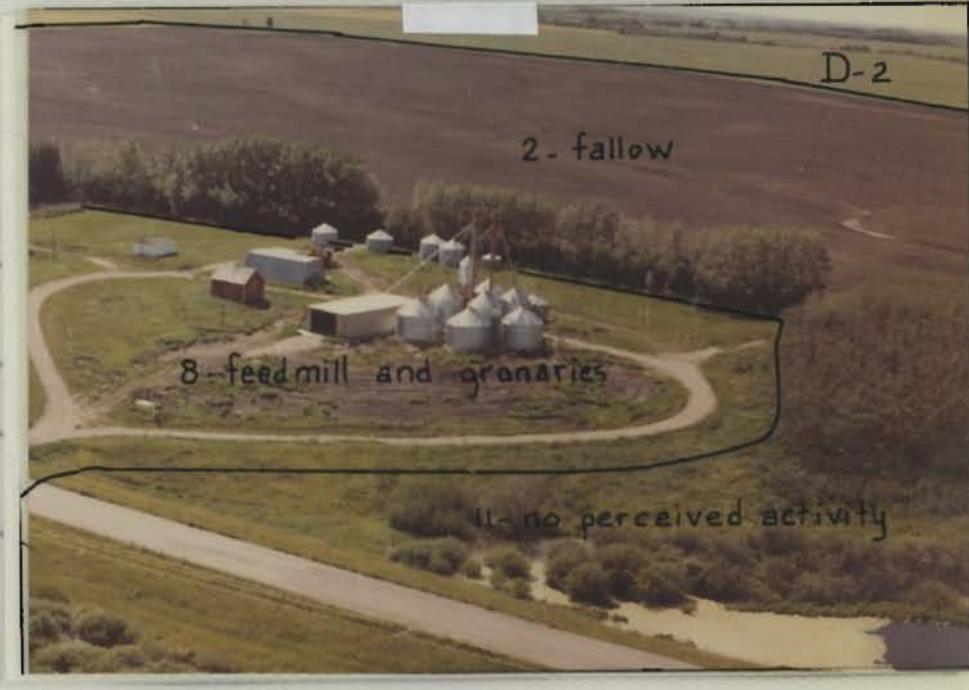
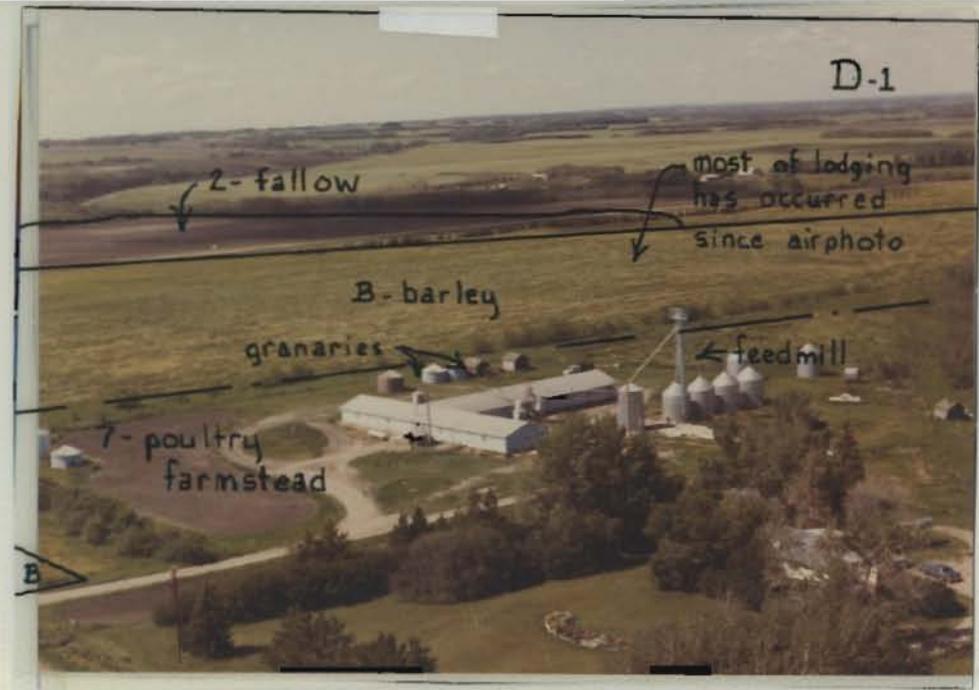
82-07-28



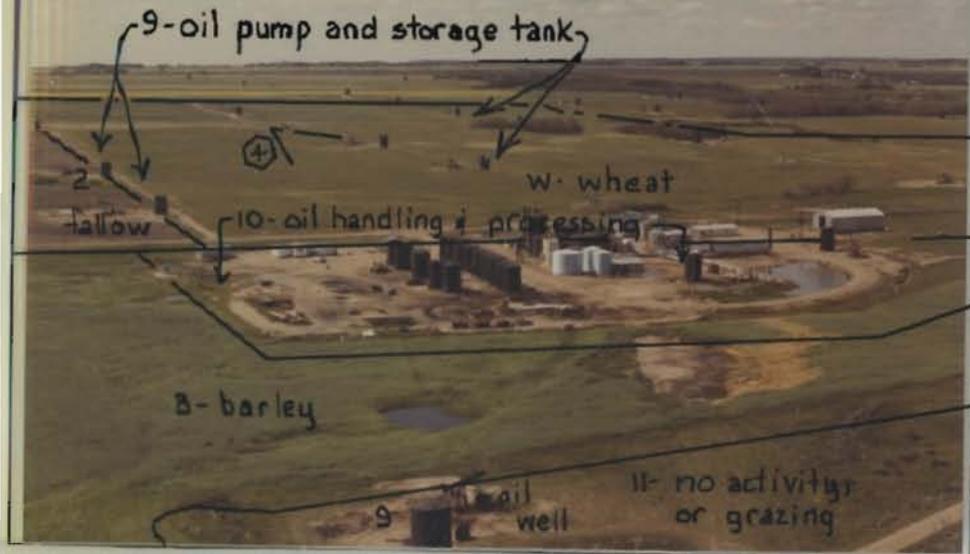
82-88 P

LN 34 AS

2629 188



D-5

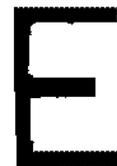


D-6



D-7





Wabamun, Alta.

Location: NTS 1:50,000 Map Sheet Onoway P3G/9
Photo Centre for LN 37-AS-2648-315 Lat. 53° 33';
Long 114° 27'

Date of Airphotography: 3 September 1982

Scale of Airphotography: 1:30,000

Ordering Information: Alberta Map and Air Photo Distribution
Centre, Alberta Energy and Natural
Resources
2nd floor West, North Tower,
Petroleum Plaza
9945-108 St., Edmonton, Alta T5K 2C6

LN 37-AS-2648 - 314,315,316

Description: Sample illustrates thermal power plant and ash
lagoons, provincial park, and improved and
unimproved hay and grazing.

Activity and Cover Classes:

A121	H140	W120
A122	D161	V210
A190	H162	V220
A200	H140	X220
A231	N280	Y100
R322	M550	Y110
R100	L611	Y122
R151	M632	Z212
R152	R639	
R216	M900	
R222	J310	
P100	B400	
L110	N000	
H113	L000	
H118		
H121		

83G9

53.30

1:30,000

82-09-03

18 0 3 0

UAG 1048 153.26

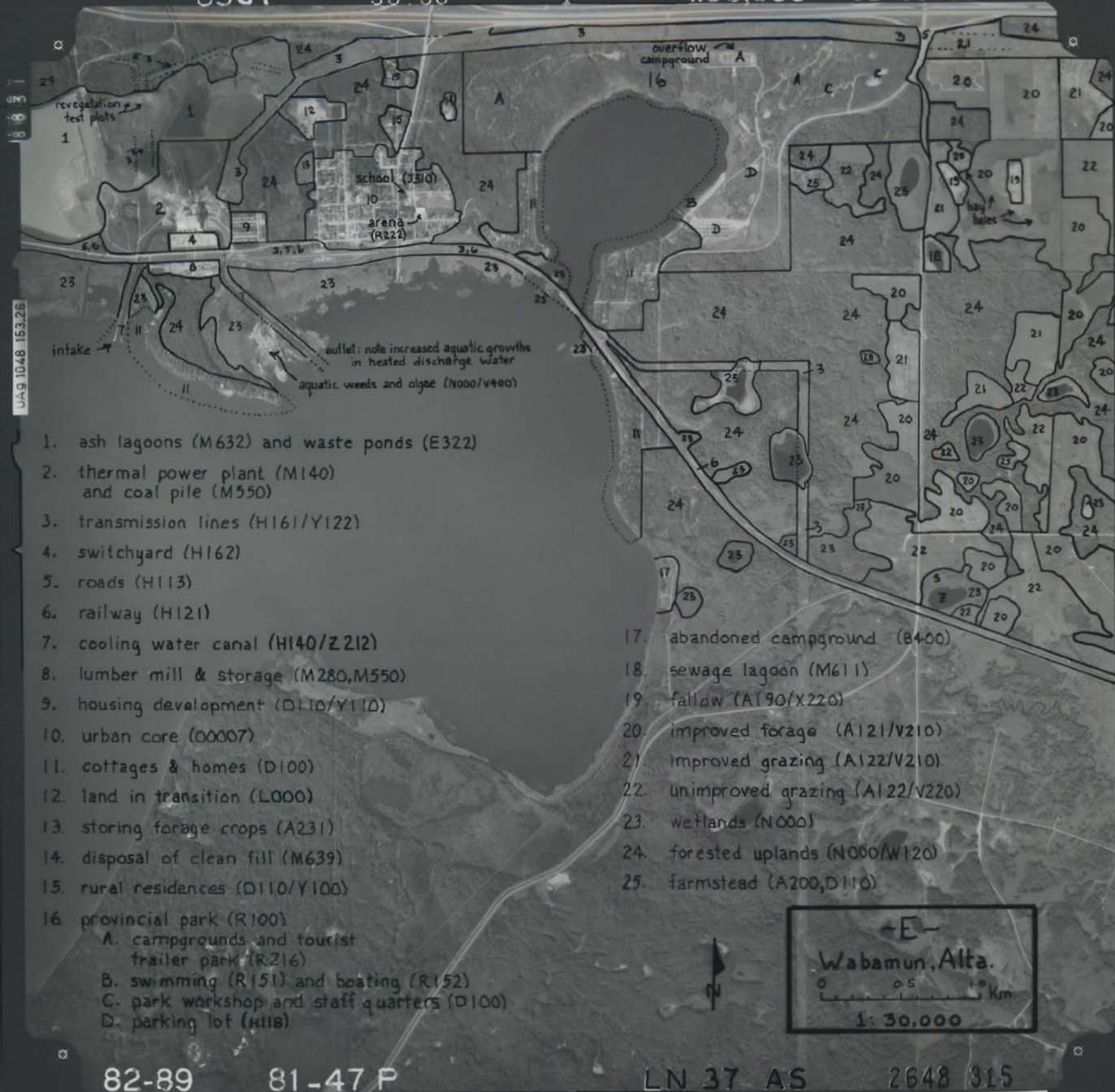
82-89

81-47 P

LN 37 AS

2648 314





83G9 -- 53 30

1:30,000

82-09-03

UAG 1048 153.26



82-89

81-47 P

LN 37 AS

2648 315

~E~
Wabamun, Alta.
0 0.5 1.0 km
1:30,000

8369

53 30

1:30,000

82-09-03

18 0 3 2

JAG 1048 153.26

82-89

81-47 P

LN 37 AS

2648 316



E-1

1- ash lagoons

reveg. test plots

1- ash lagoons

E-2

2- thermal power plant

3- trans. lines

2- coal pile

4- switchyard

E-3

2- thermal power plant

4- switchyard

5-6 road and rail

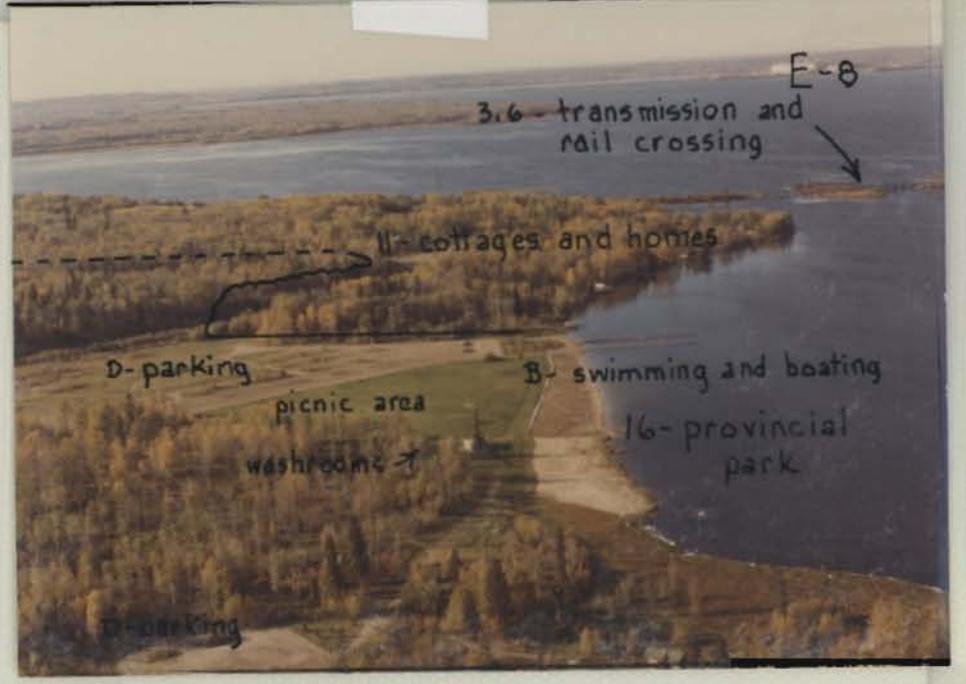
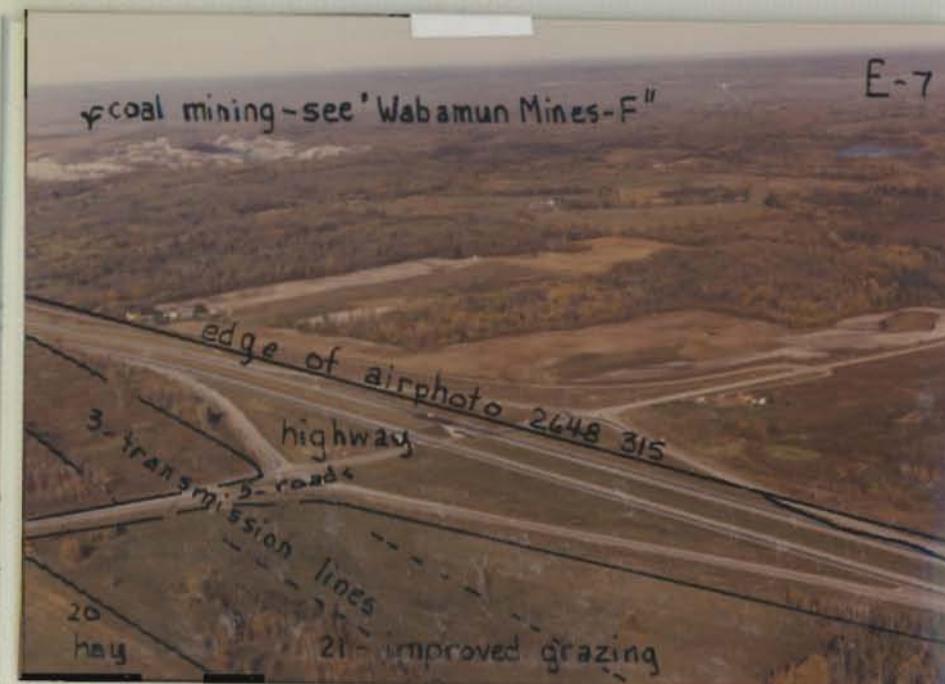
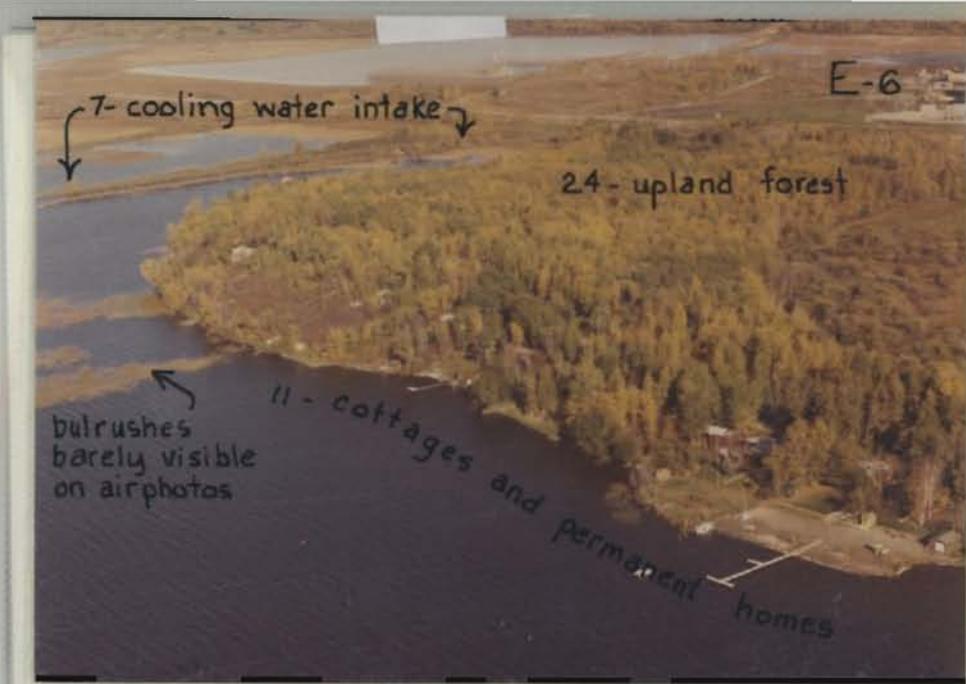
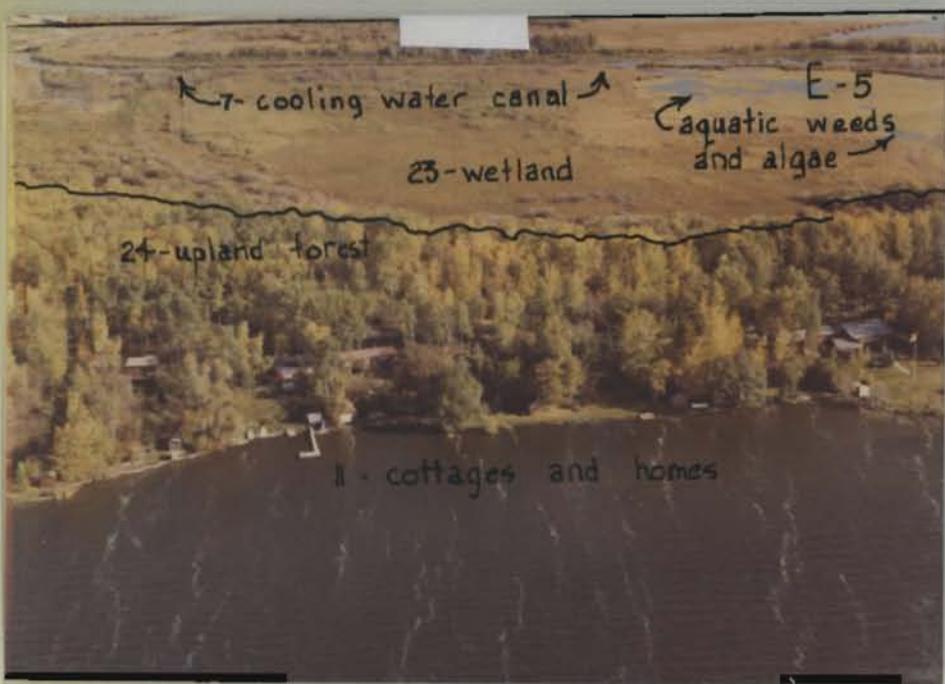
8- lumber mill and storage

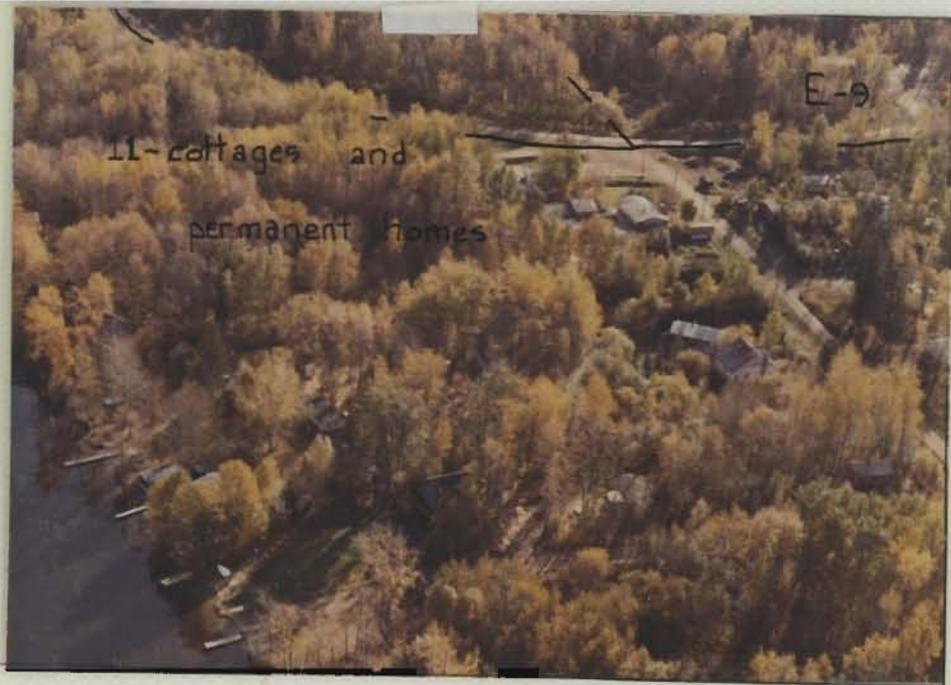
24- upland forest

23- wetland

E-4

1- cooling water canal





E-9

11 - cottages and
permanent homes



E-10

17 - abandoned campground

buildings in disrepair

-F-

F

Wabamun Mines, Alta.

Location: NTS 1:50,000 Map Sheet Onoway 83G/9
Photo Centre for LN-38-AS-2649-081 ≈ Lat 53° 35';
Long 114° 28'

Date of Airphotography: 3 September 1982

Scale of Airphotography: 1:30,000

Ordering Information: Alberta Map and Air Photo Distribution
Centre, Alberta Energy and Natural
Resources
2nd floor West, North Tower,
Petroleum Plaza
9945-108 St., Edmonton, Alta T5K 2G6

LN 38 AS 2649 - 80,81

Description: Sample illustrates strip mining and reclaimed
and unreclaimed land. Other classes include
rural residential homes and a sewage lagoon.

Activity and Cover Classes:

A000	W120
A121	W220
A122	V120
E115	V210
E110	V220
E111	X220
H134	
H161	
N611	
C300	
I000	

83G 10

53 35

1:30,000

82-09-03



UAG 1048 153.26

8 9 1 9

82-89

81-47 P

LN 38 AS

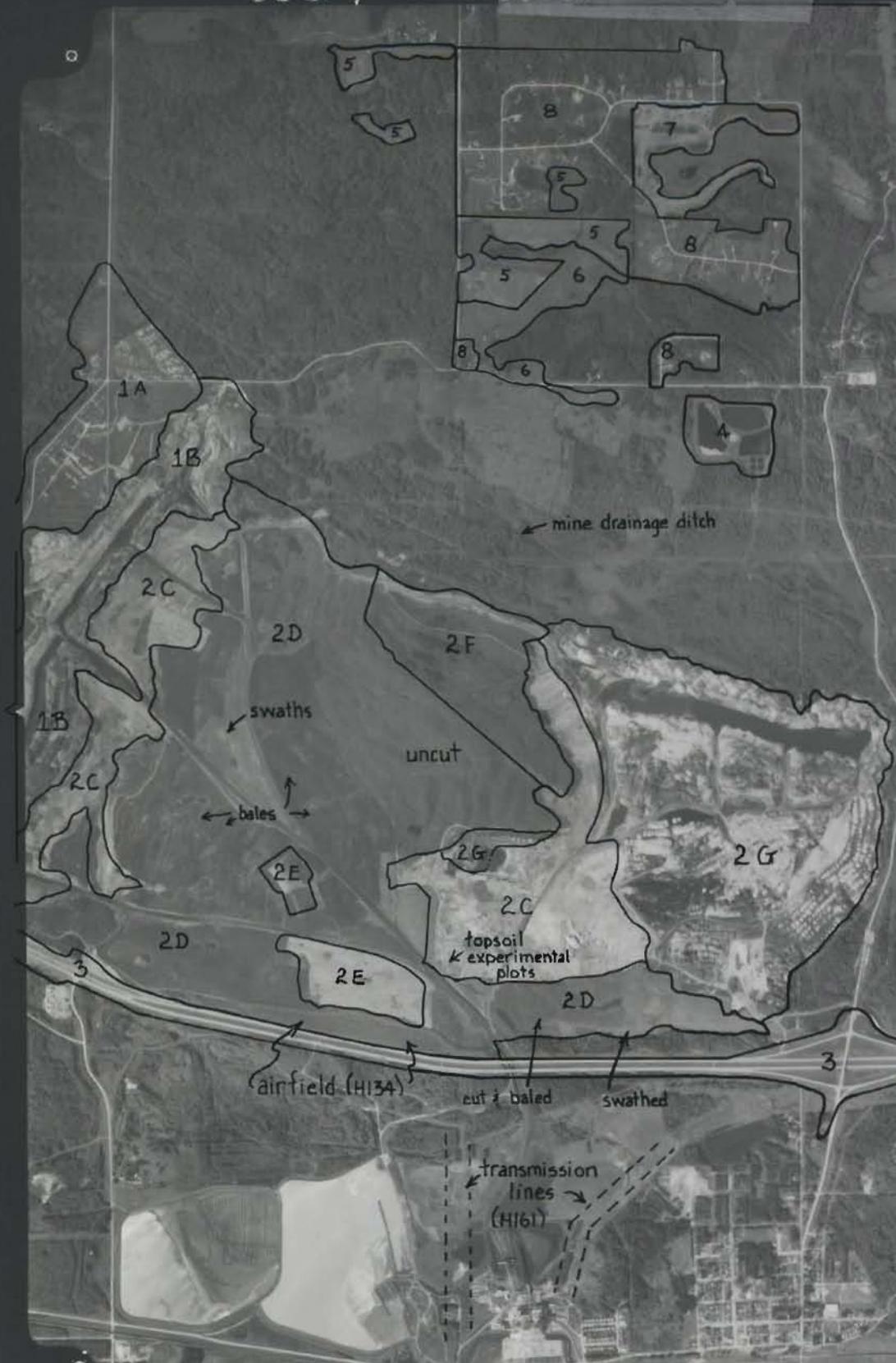
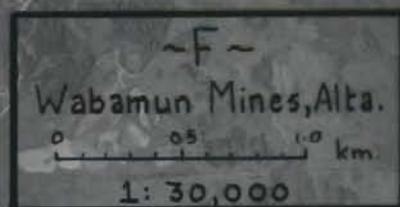
2649 080

83G 9

53 35

1:30,000

82-09-03



1. Active coal mining (E115)
A - land being cleared for mining
B - active extraction
2. Former coal mining (B300)
C - land being recontoured, bare soil (X220)
D - reclaimed land planted with forage crops (V210)
E - reclaimed land planted with grain (V120)
F - reclaimed land planted with native vegetation (V220, W220, W120)
G - unreclaimed land and gravel stockpiles (X220, V220, W220)
3. Limited access expressway (H111)
4. Sewage lagoon (M611)
5. Improved forage crops (A121/V210)
6. Grazing (A122/V220)
7. Unimproved forage crops (A121/V220)
8. Rural residential dwellings (D110) associated with minor agricultural activities (A000) and land in transition (L000).

UA9 1048 15328

09 1 0

82-89

81-47 P

LN 38 AS

2649 081

82-89

81-27P

LN 38 AS

2649 081

~F~
 Wabamun Mines, Alta.
 0 0.5 1.0 km
 1:30,000



83G 9

53 35

1:30,000

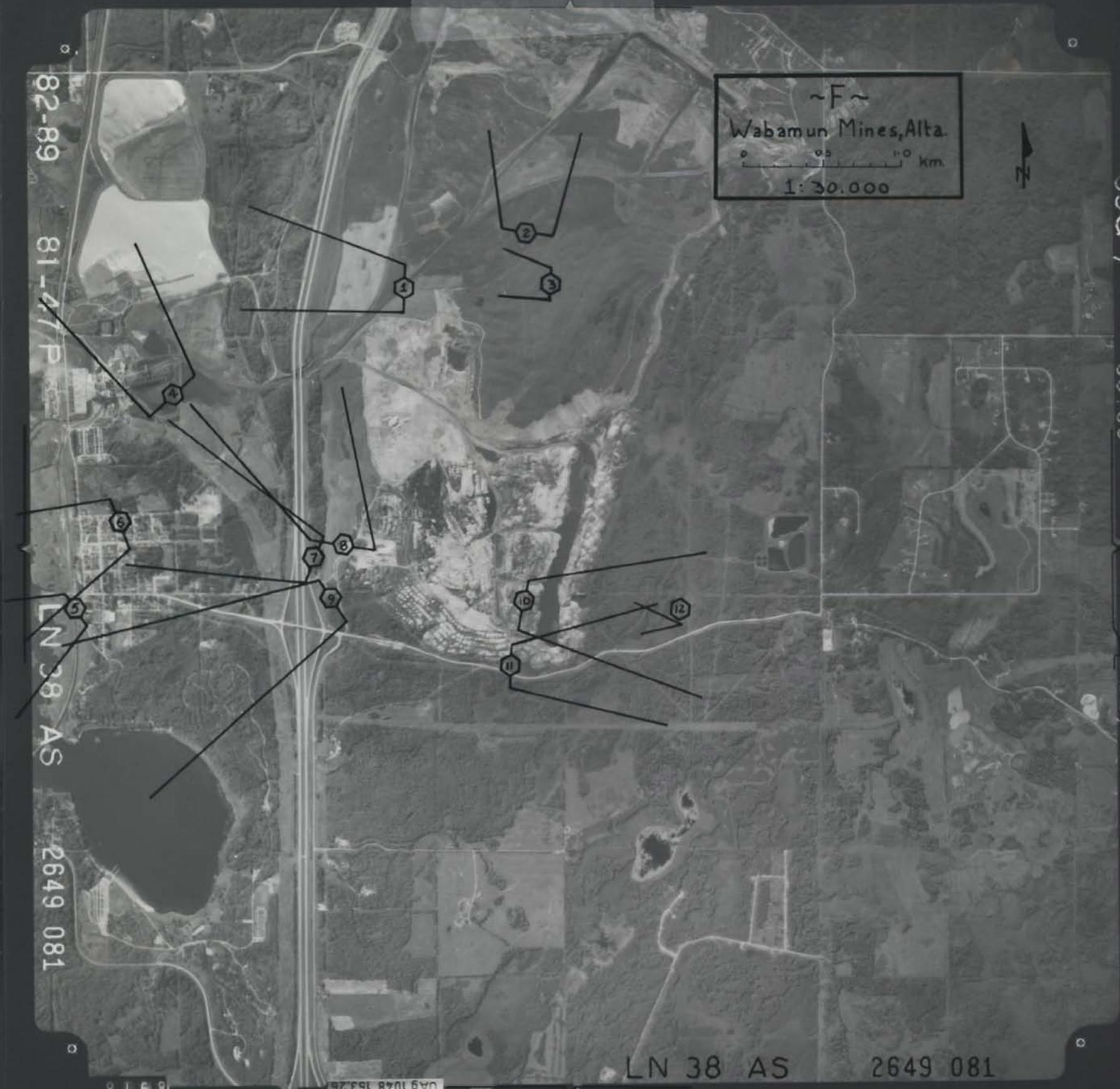
82-09-03

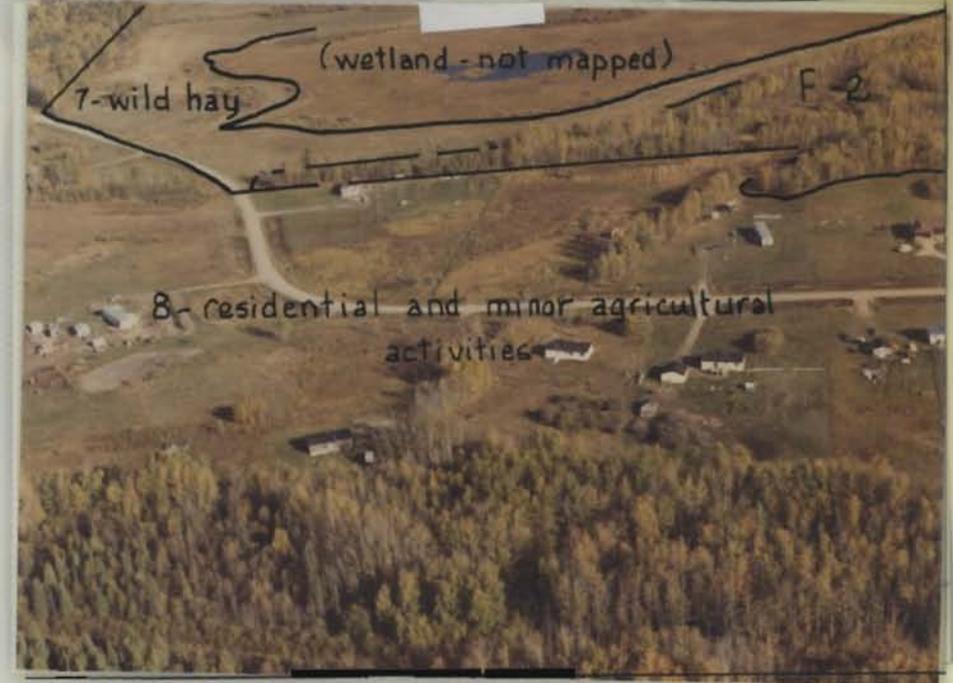
LN 38 AS

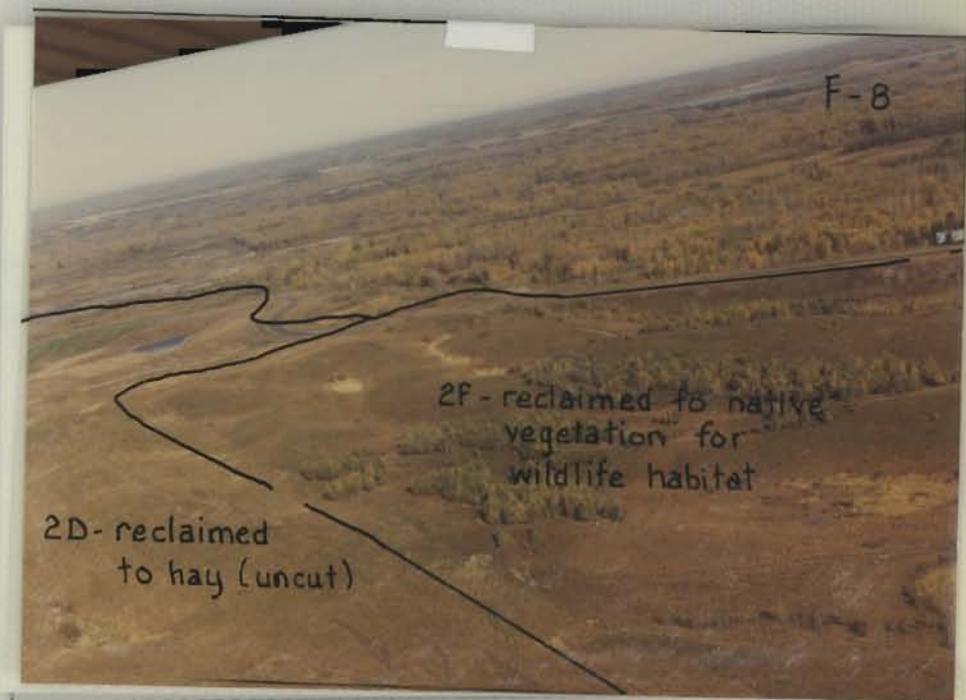
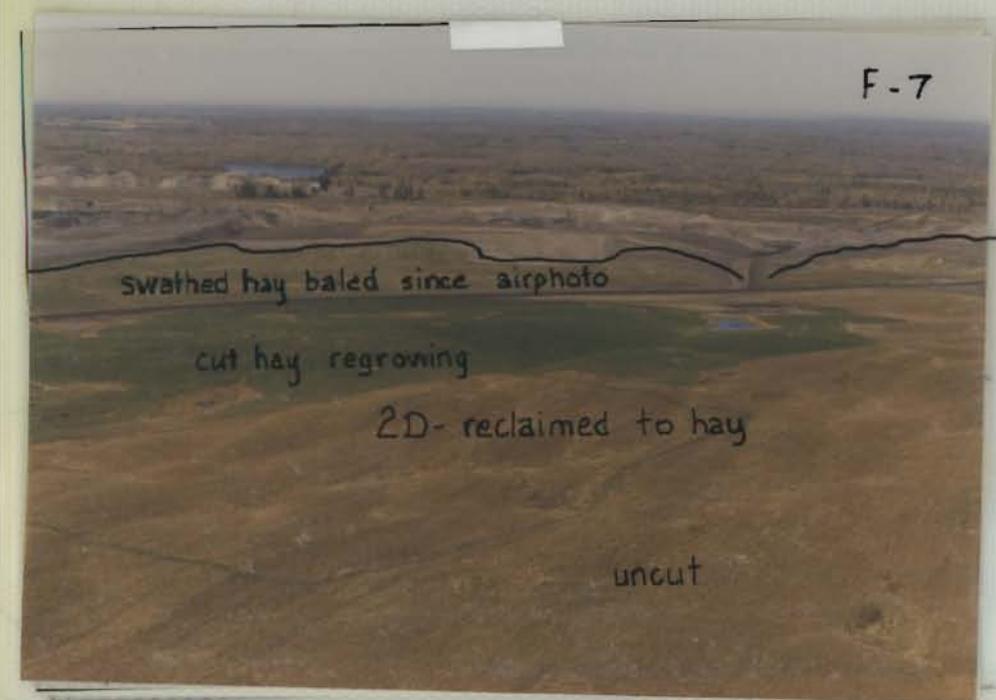
2649 081

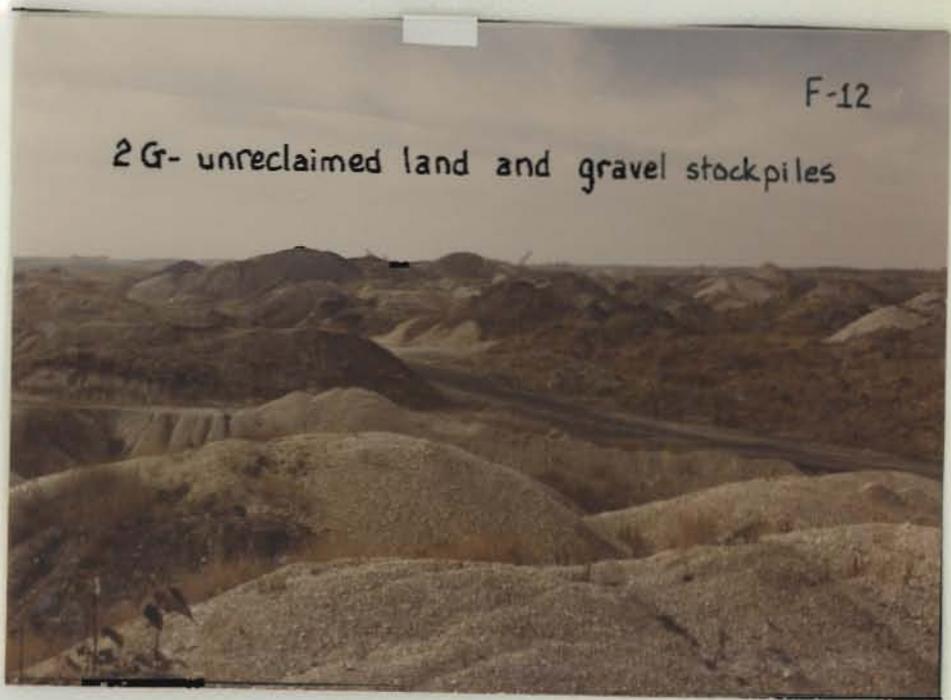
UAG 1048 153.25

8 9 1 6









-G-

G

Abbotsford, B.C.

Location: NTS 1:25,000 Map Sheets Abbotsford 92G/1C
and Aldergrove 92G/1D
Photo Centre for BR82041 1.2-29 \approx Lat 49°02';
Long 122°24'

Date of Airphotography: 22 June 1982

Scale of Airphotography: 1:40,000

Ordering Information: Burnett Resource Surveys Ltd.
2973 Lake City Way
Burnaby, B.C. V5A 3A1
(604) 420-2600

BR82041 1.2- 28, 29, 30

Description: Sample illustrates berries, early vegetables,
poultry and fur farms. Other classes include
gravel pits, an airport and a horse farm.

Activity and Cover Classes:

A112	A290	J310	W120
A117	F150	B100	W210
A120	E121	D300	W212
A133	D110	M000	W220
A140	H133		V110
A200	H135		V111
A211	H136		V112
A212	H137		V200
A213	H138		V210
A223	M220		V220
A240	M633		V400
			Y210

1202G
Ling 500

B182041 L2-28

1. raspberries (A133/W212)
2. strawberries (A133/V110 or V400)
3. blueberries (A133/W212)
4. vegetables (A112/V112)
5. pasture and/or hay (A120/V200)
6. corn (A117/V111)
7. poultry barns (A212) frequently surrounded by pasture, small hayfields or unused land.
8. livestock farms (A211)
9. fur farms (A213)
10. horse paddocks and training area (A223)
11. greenhouses (A240)
12. Christmas tree production (F150)
13. sand and gravel pits (E121)
14. airport runways and surrounding grass (H133/Y210, V210)
15. airport terminal, hangars and associated activities (H135, H136, H137, H138)
16. cannery or food packers (M220)
17. idle and neglected raspberries (B100)
18. school (J310)
19. egg hatchery (A290)
20. ornamental nursery (A140/W210)
21. abandoned gravel pit (B300)
22. no perceived activity (N000) including woodlots (W120), scrub (W220) and meadows (V220)
23. undifferentiated farmsteads (A200), residences (D110) and associated lands.



~G~
 Abbotsford, B.C.
 0 0.5 1.0 km
 1:40,000

BRB7041 12-29

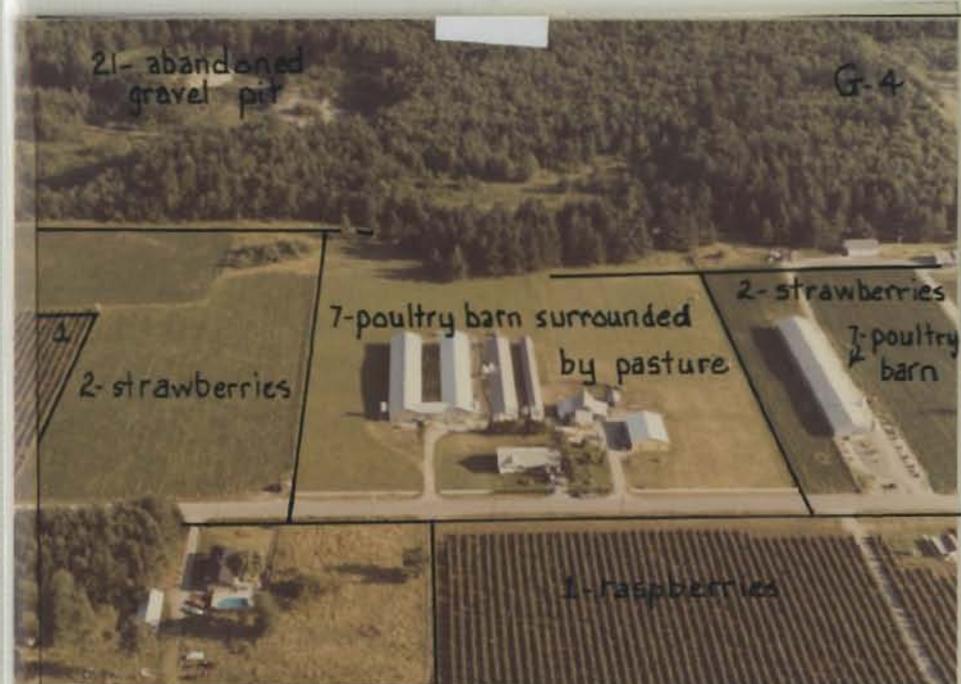
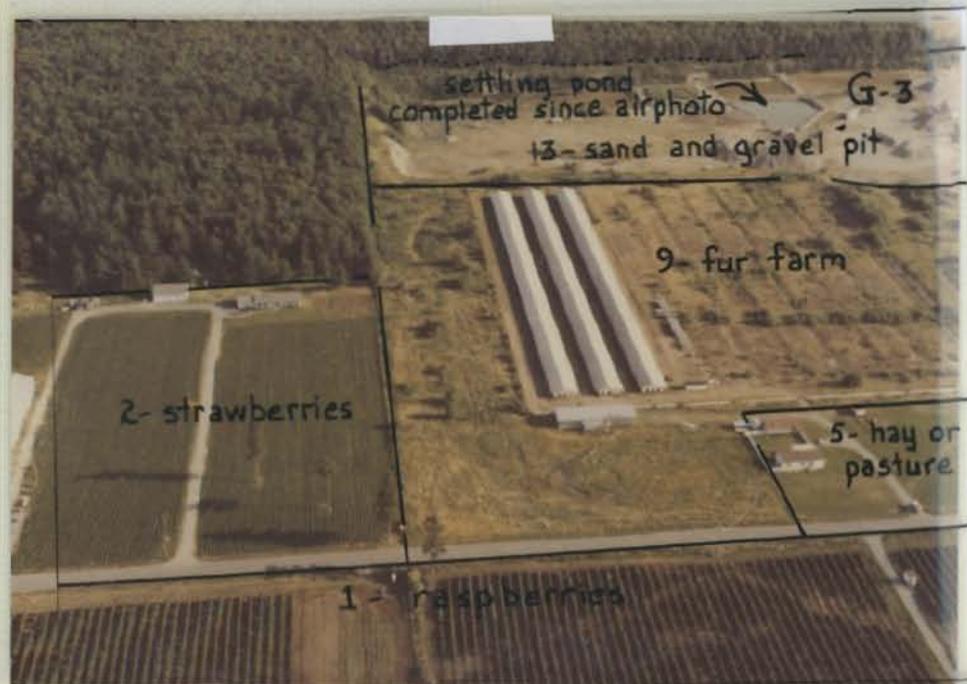
~G~
Abbotsford, B.C.
0 0.5 1.0 km.
1:40,000

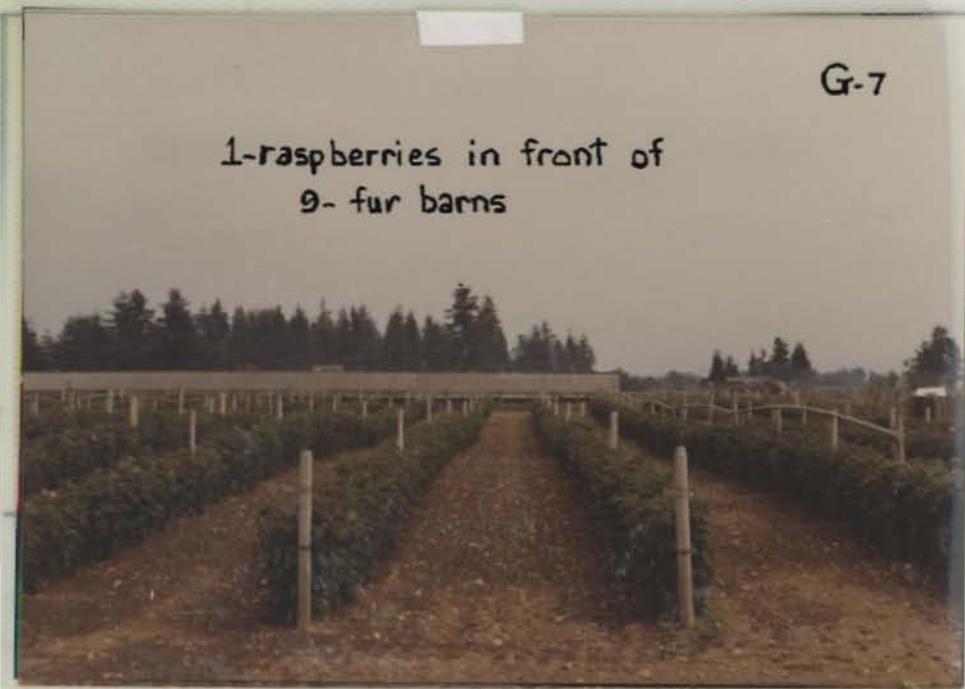
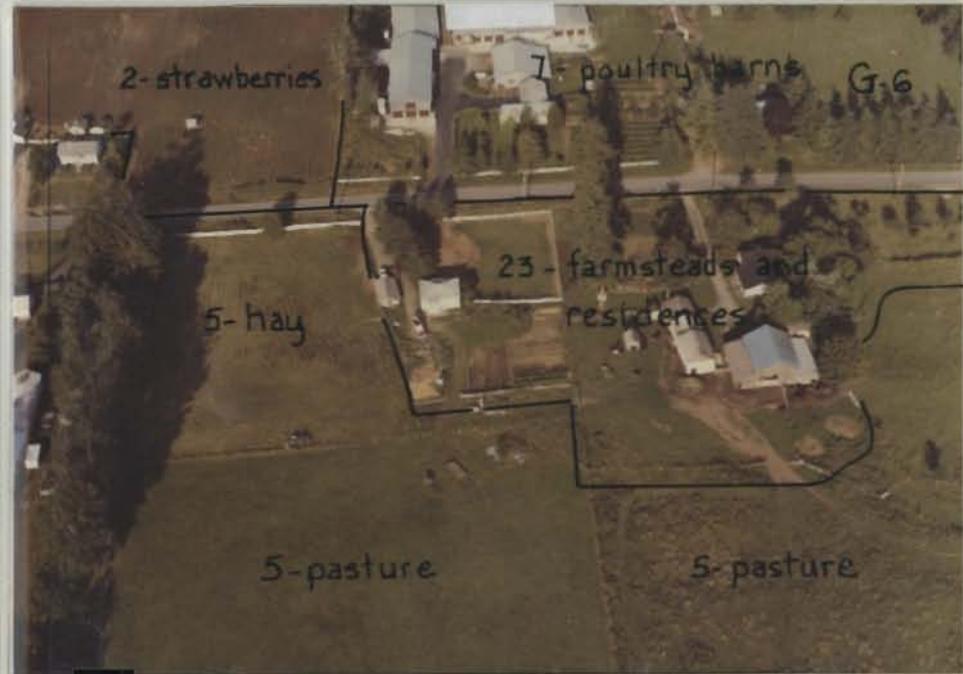
BRB20-411 LR-29

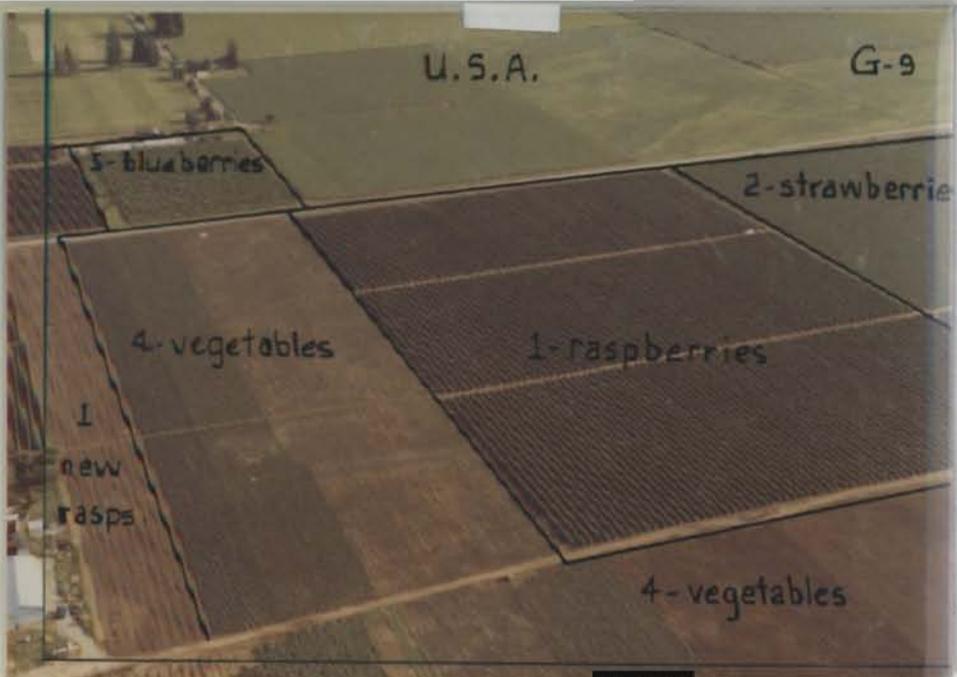




DL82041 L2-30









-H-

H

Rang St. Charles, Que.

Location: NTS 1:50,000 Map Sheet Trois Rivieres 311/7
Photo Centre for A26023-65 Lat 46 20';
Long 72 41'

Date of Airphotography: 17 June 1982

Scale of Airphotography: 1:20,000

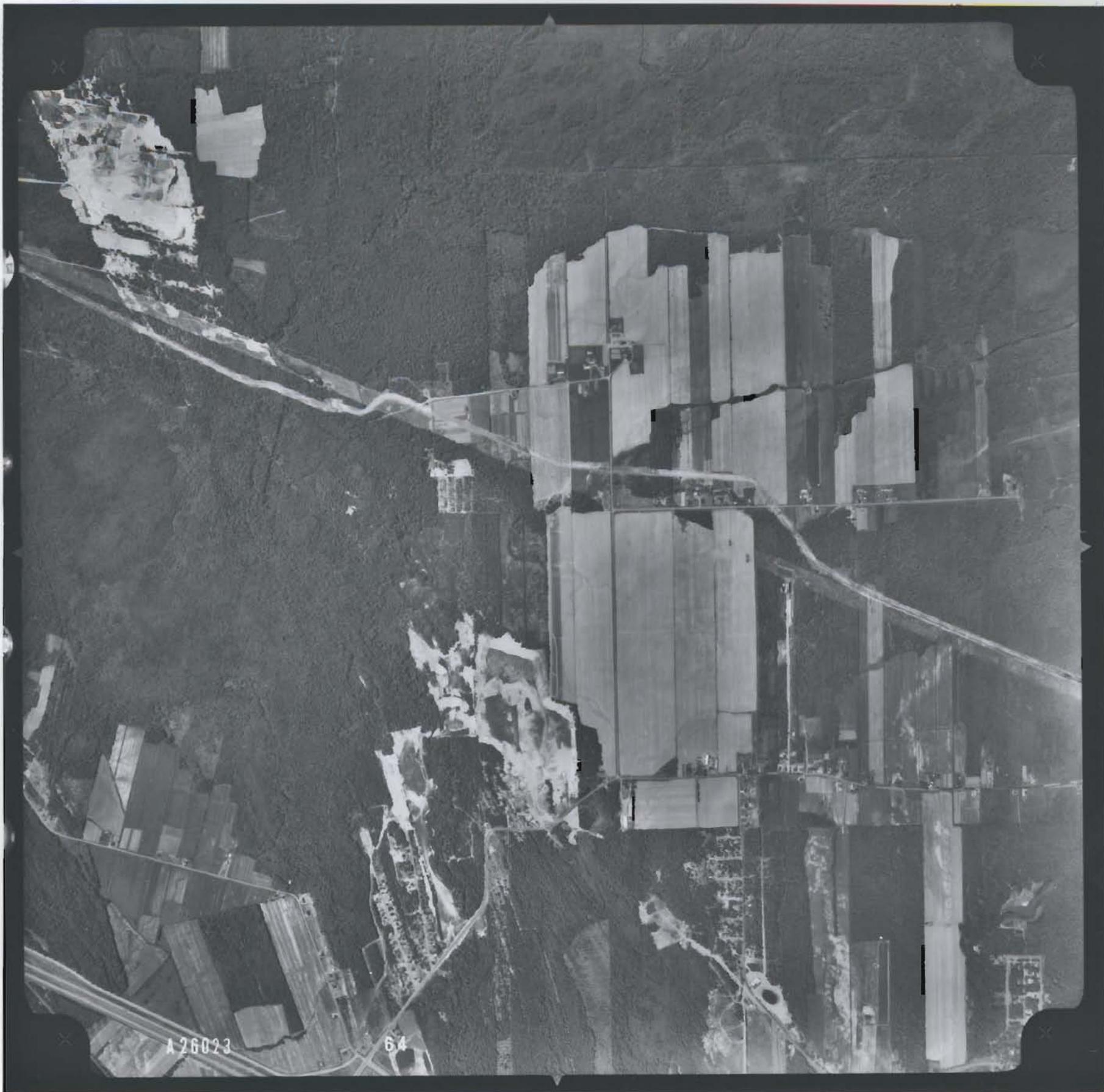
Ordering Information: National Air Photo Library
615 Booth St.,
Ottawa, Ont. K1A 0R9

A26023 - 64,65

Description: Sample illustrates annually tilled crops early
in the year, as well as characteristics of
potato farming. Other classes include
asparagus, strawberries, transmission lines,
pipeline, former agriculture and a former
sand pit.

Activity and Cover Classes:

A110	B121	W120
A111	B151	W212
A113	B161	V100
A117	B100	V110
A121	B300	V111
A122	N000	V113
A133	L000	V125
A190		V127
A232		V210
A250		V220
D111		V400
		X220



A 26023

64

~H~
 Rang St. Charles, Qué
 0 0.2 0.4 0.6 km
 1:20,000

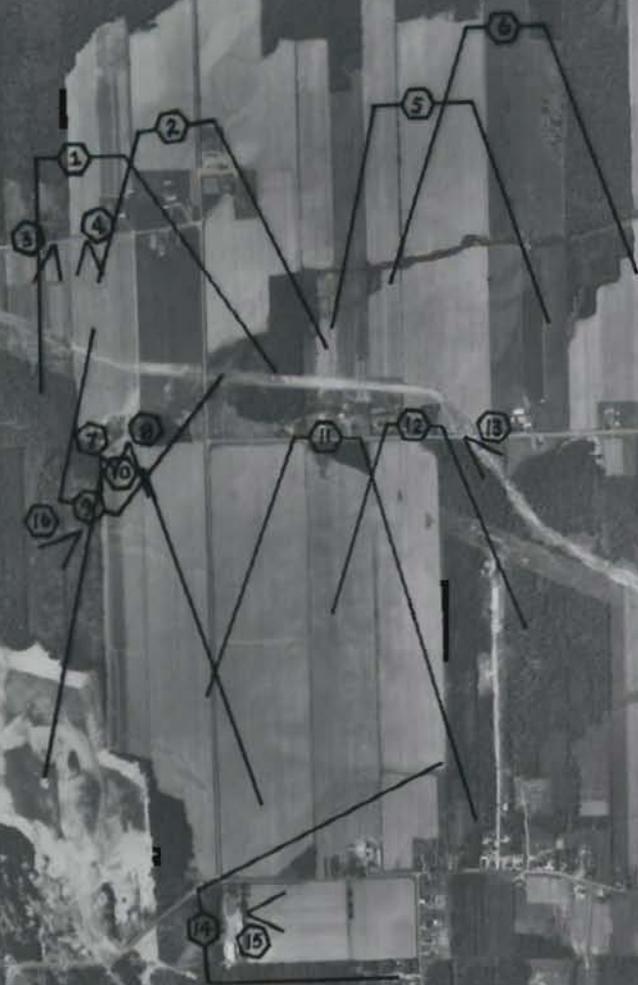


1. Annually tilled crops which cannot be separated from each other or bare soil in mid-June (A110/V100)
 BS - bare soil (planted or clean fallow - A190/X220)
 P - potatoes (A113/V113)
 V - carrots (A113/V113)
 M - millet (A111/V125)
 C - corn (A117/V111)
2. asparagus (A190/W212)
3. fall rye (A111/V127)
4. strawberries (A133/V110 or V400)
5. forage crops (A121/V210)
6. pasture (A122/V210) often associated with farmsteads (A200)
7. unused agricultural land (B100/V220) or low quality hay (A121/V220)
8. abandoned agriculture (B100)
9. potato farmstead (A232, A250)
10. abandoned sand pit (B300)
11. transmission line and corridor (H161)
12. land in transition (L000) to gas pipeline. (H151)
13. cottages (D121)
14. permanent residences (D111)
15. no perceived activity (N000) - woodlands (W120) and wetlands (V220)
16. recently cleared land (L000)

AA 210123

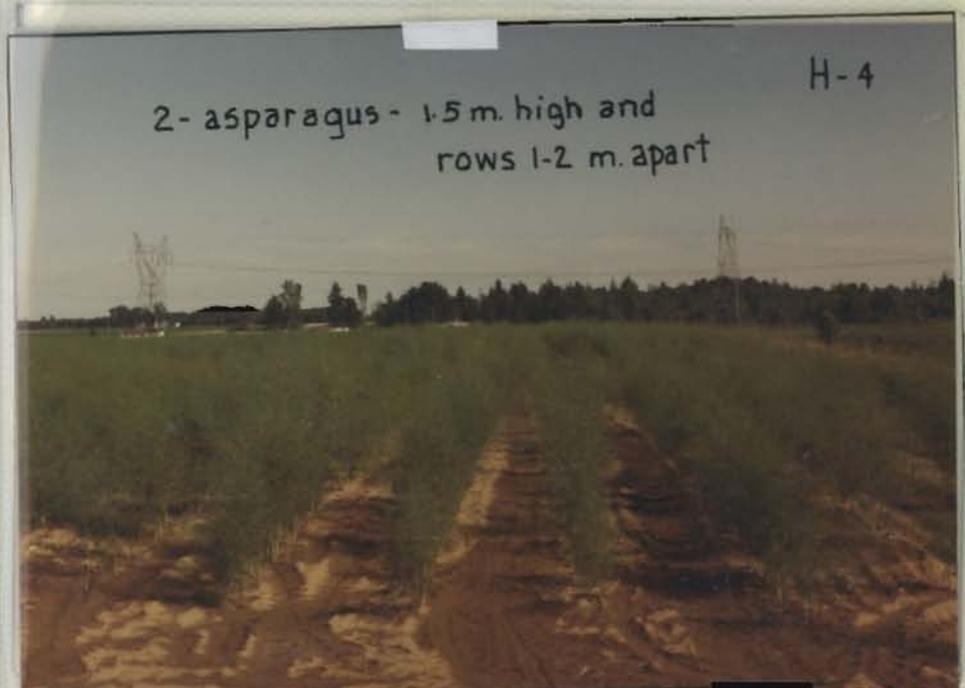
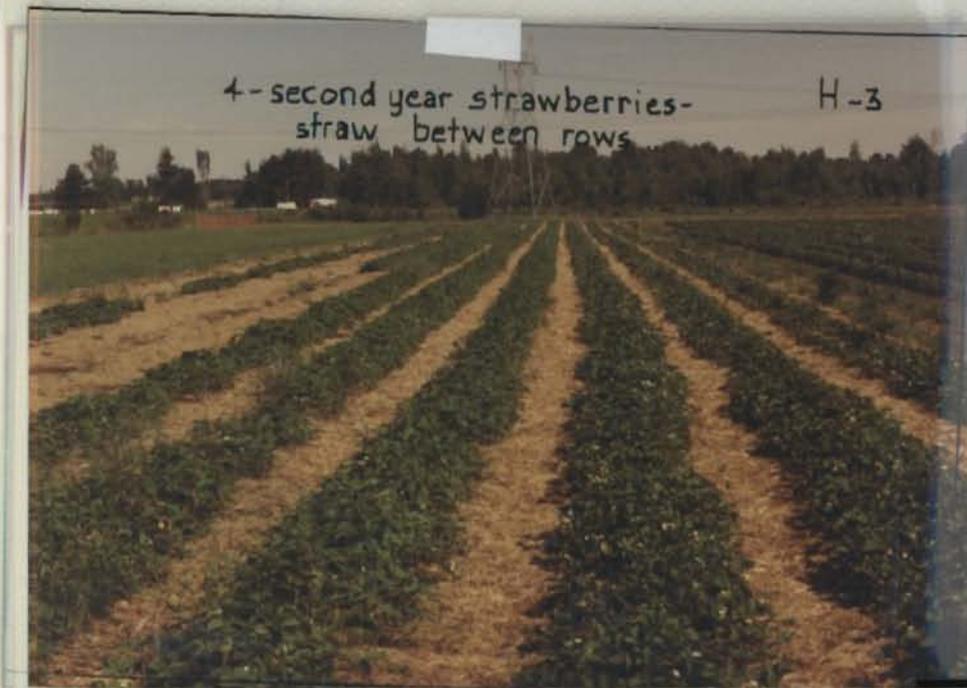
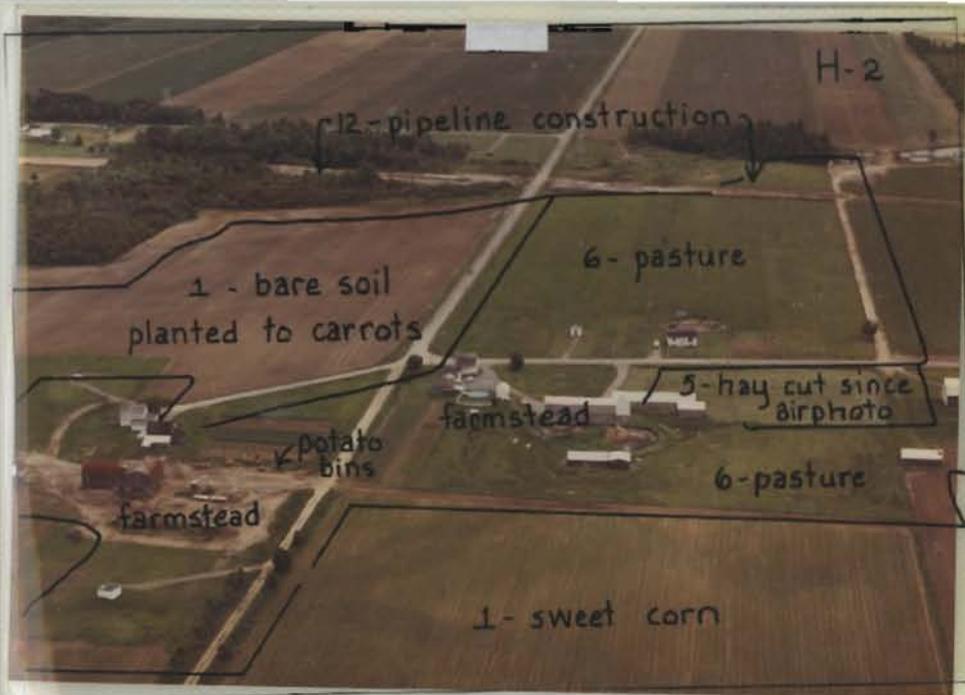
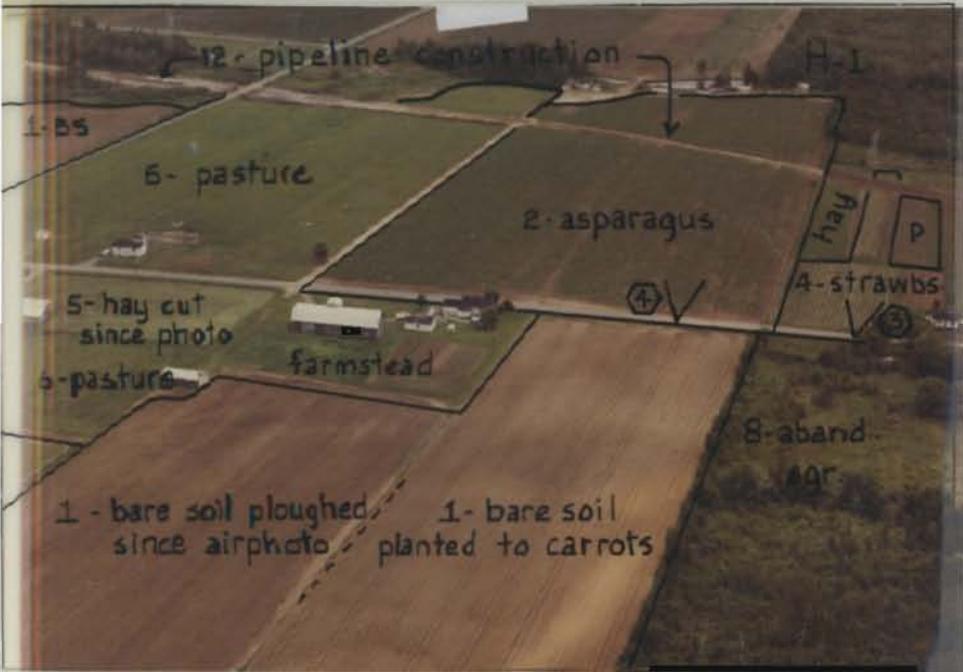
65

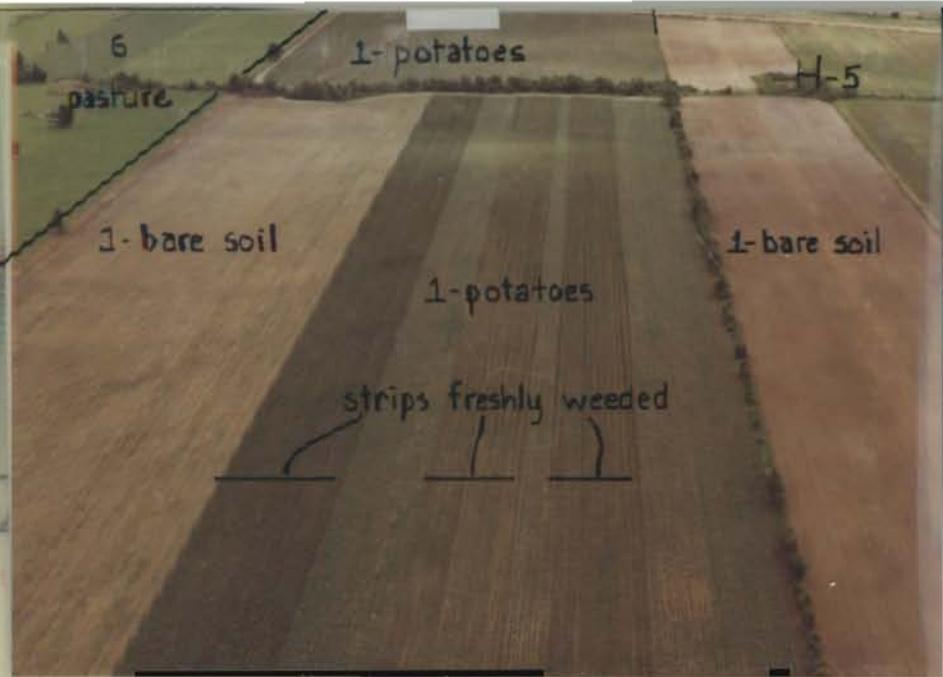
~H~
Rang St Charles, Qué
0 01 02 03 Km
1:20,000

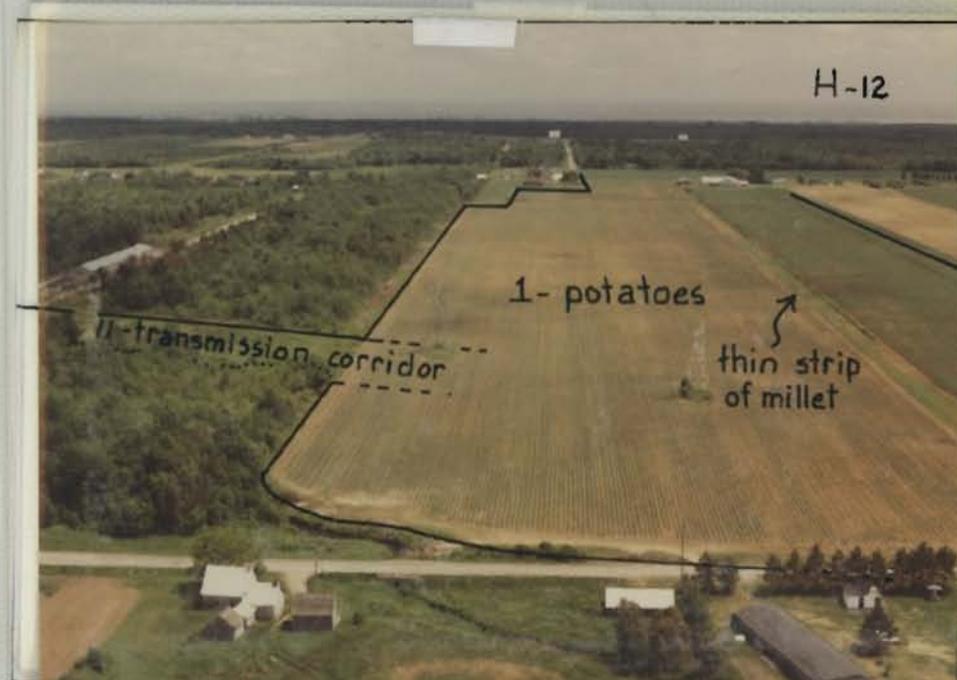
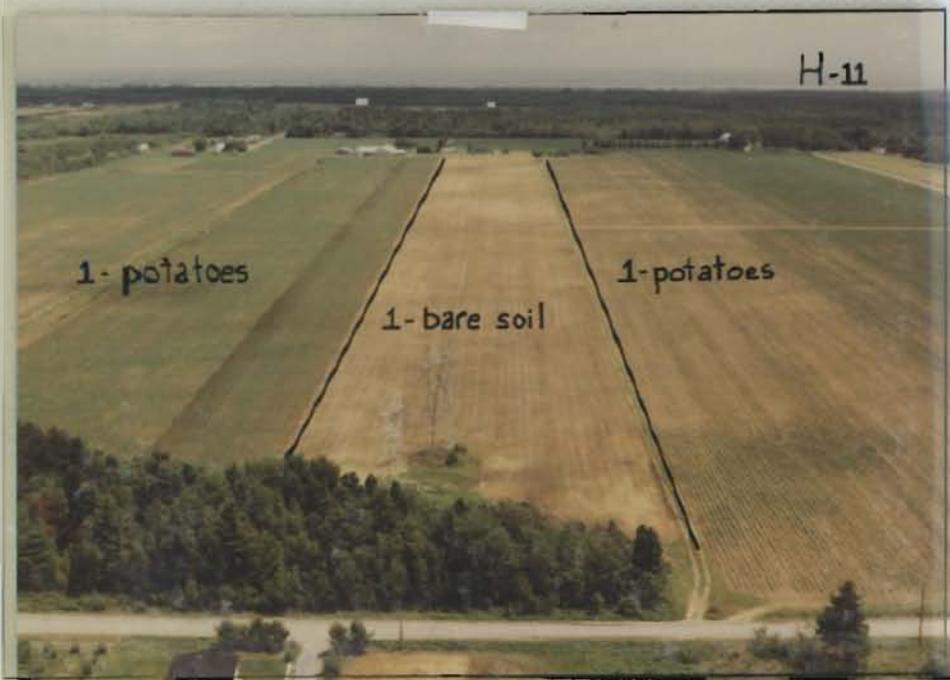


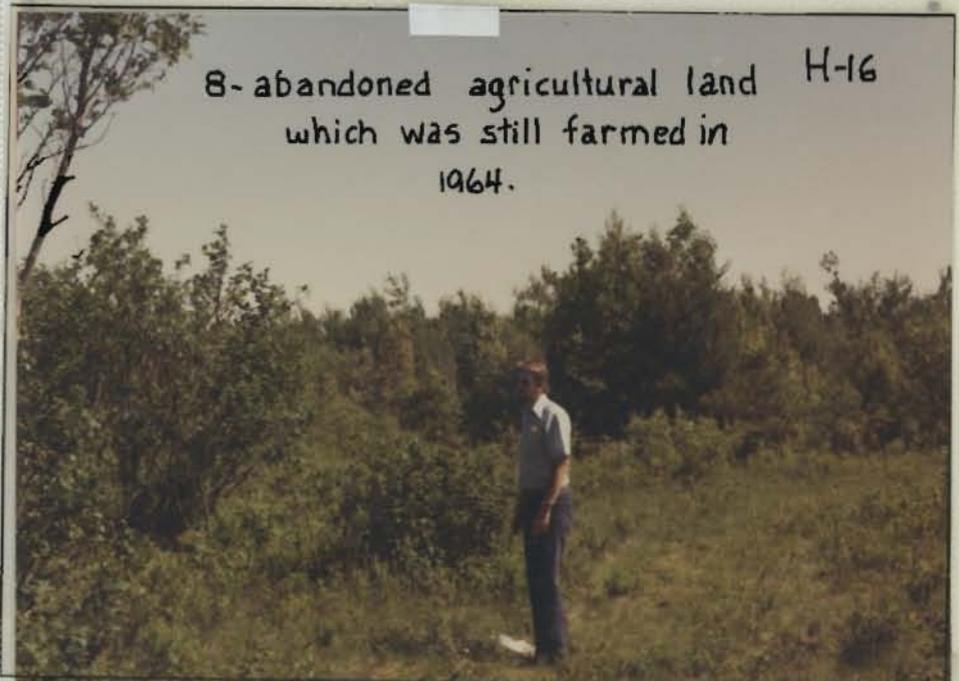
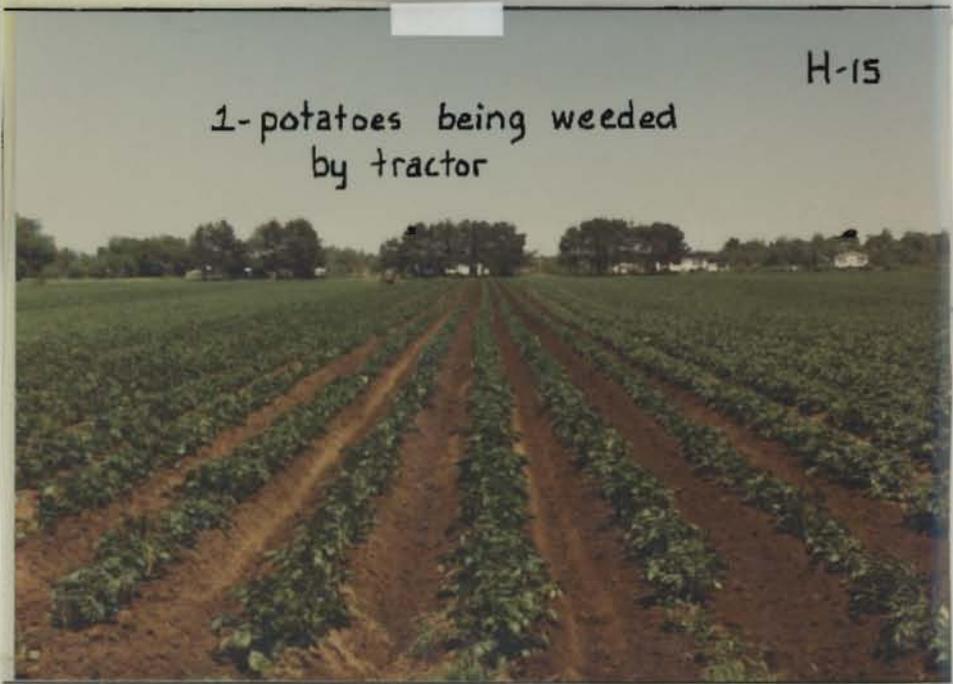
A 26023

65









- J -

J

Beamsville, Ontario

Location: NTS 1:25,000 Map Sheet Lincoln 30N/3e
Photo Centre for A26035-13 Lat 43° 10';
Long 79° 23'

Date of Airphotography: 1 July 1982

Scale of Airphotography: 1:35,000

Ordering Information: National Air Photo Library
615 Booth Street,
Ottawa, Ontario K1A 0E9

A26035 - 12,13

Description: Sample illustrates orchards, vineyards, poultry barns, greenhouses and an agricultural research station. Other classes include corn, grain and several outdoor recreational site activities.

Activity and Cover Classes:

A111	A240	J610	W111
A112	A270	J620	W120
A117	E111	B100	W210
A121	F152	B130	W211
A122	F214	A000	W300
A131	R216		V111
A132	D220		V112
A140	F111		V120
A160	H121		V210
A190	N220		X120
A212	C210		X220
			Y210



MA 1000 152.00

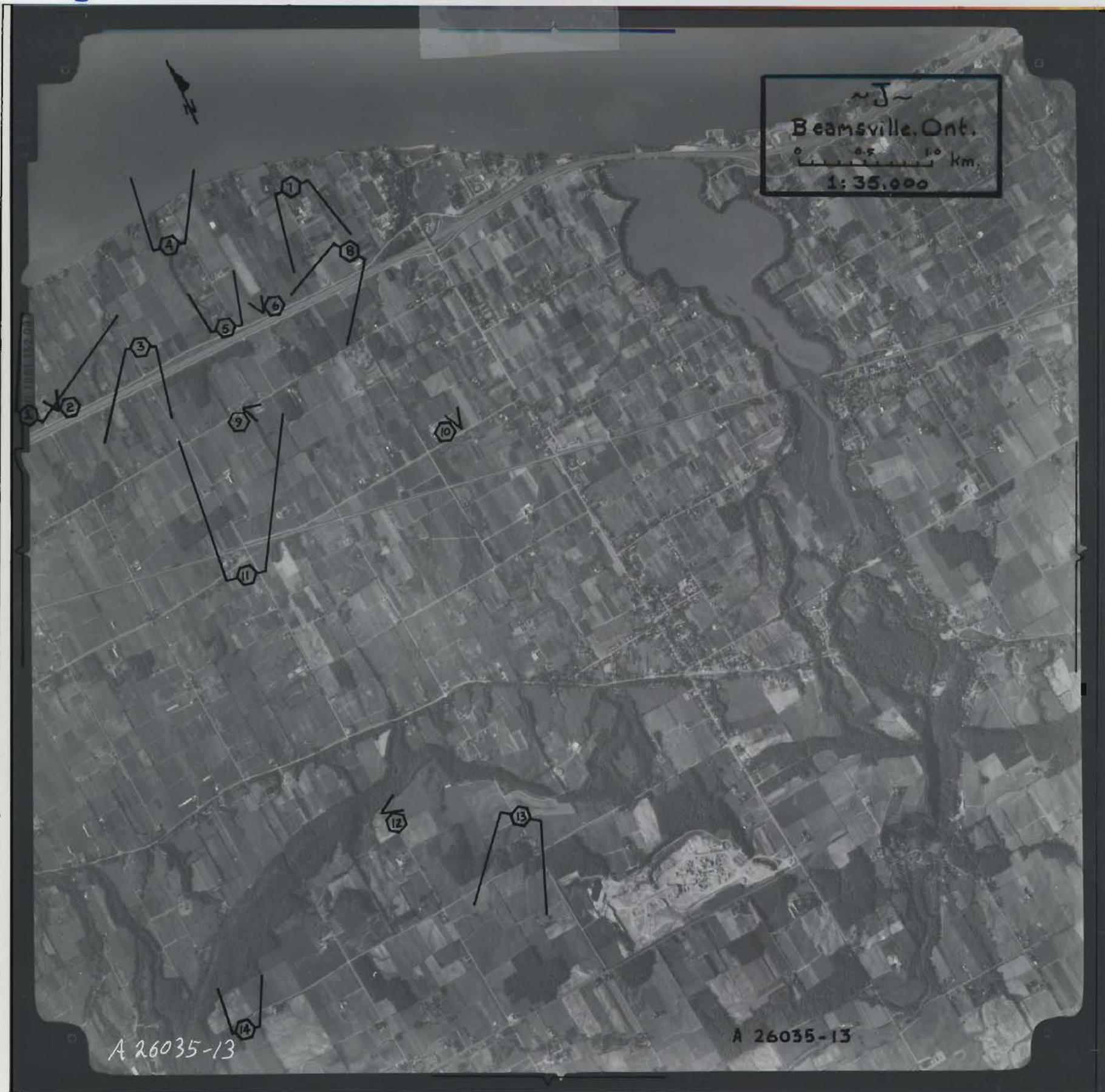
A-26035-12

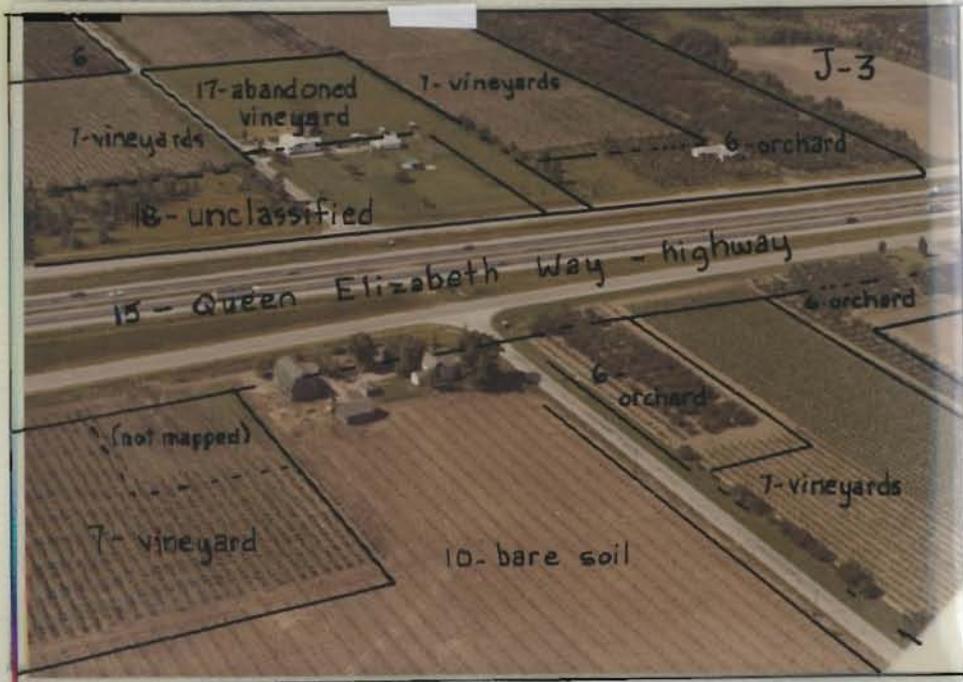
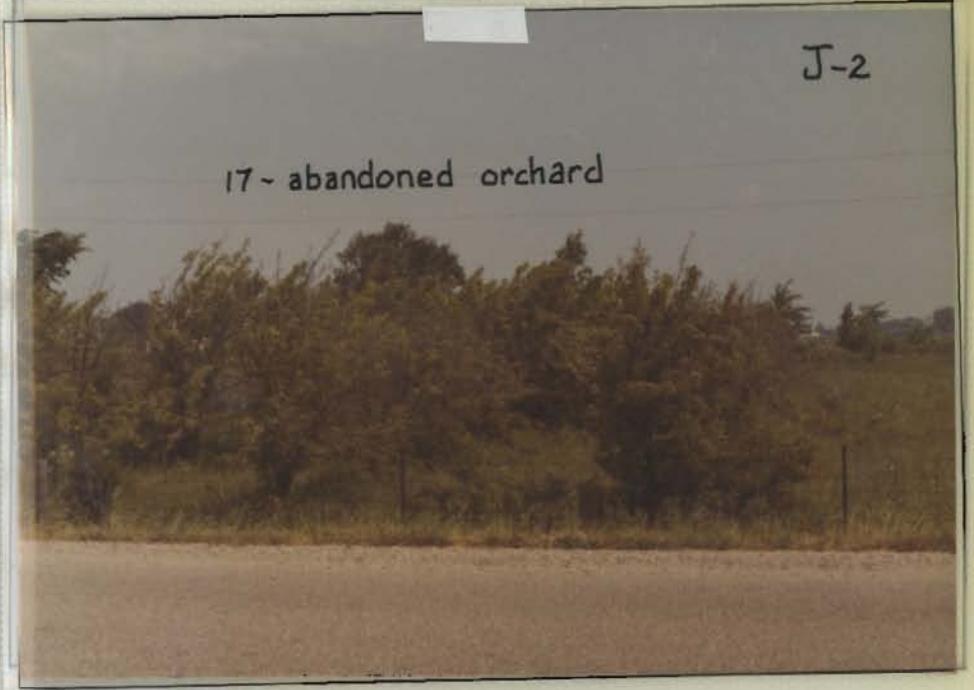
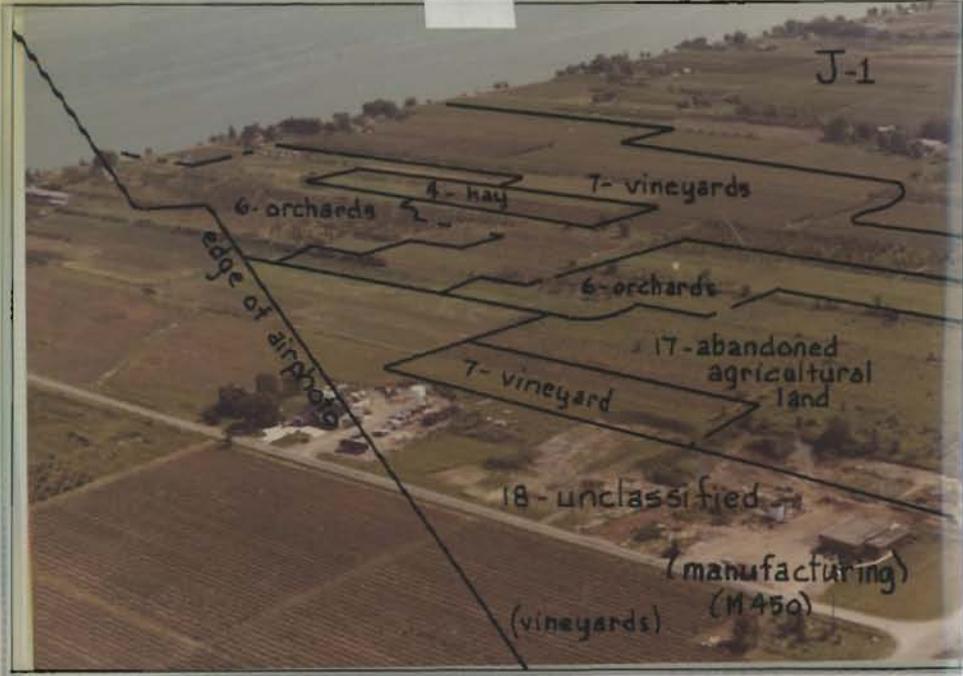


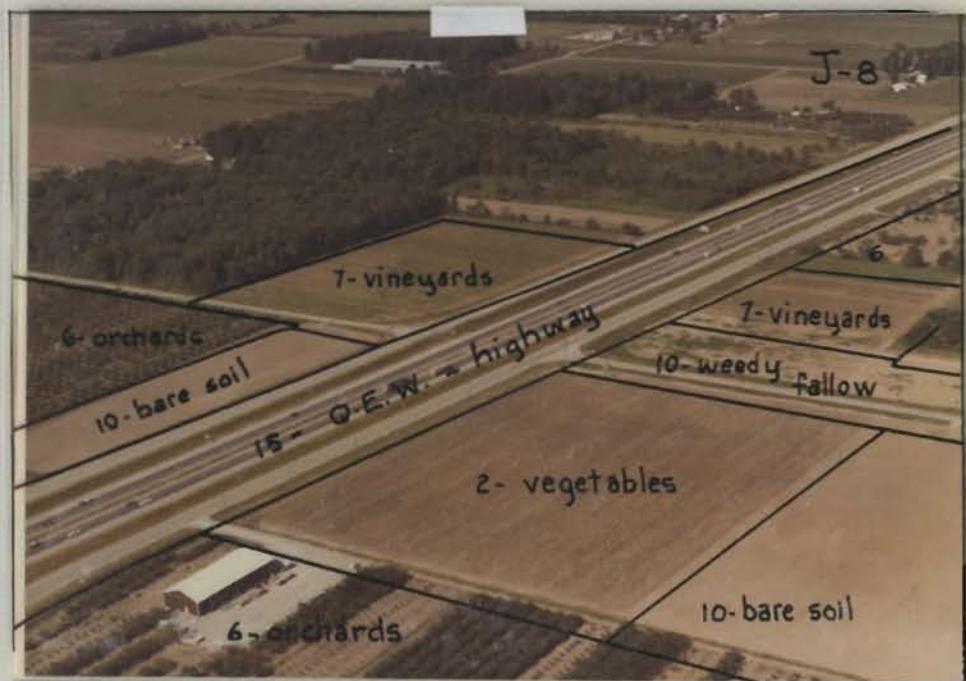
~J~
 Beamsville, Ont.
 0 0.5 1.0 km
 1:35,000

1. grain (A111/V120)
2. vegetables (A112/V112)
3. corn (A117/V111)
4. improved hay (A121/V210)
5. pasture (A122/V210)
6. orchards (A131/W111 & W211)
7. vineyards (A132/W300)
8. ornamental nursery (A140/W210)
9. agricultural research (A160)
10. bare soil-fallow or planted (A190/X220)
11. poultry barns (A212)
12. greenhouses (A240)
13. mushroom growing (A270)
14. quarry (E111/X120)
15. highway (H111/Y210)
16. cemetery (J620)
17. abandoned agricultural land (B100, B130)
18. woodlots (N000/W120) and undifferentiated uses and covers.

A 26035-13



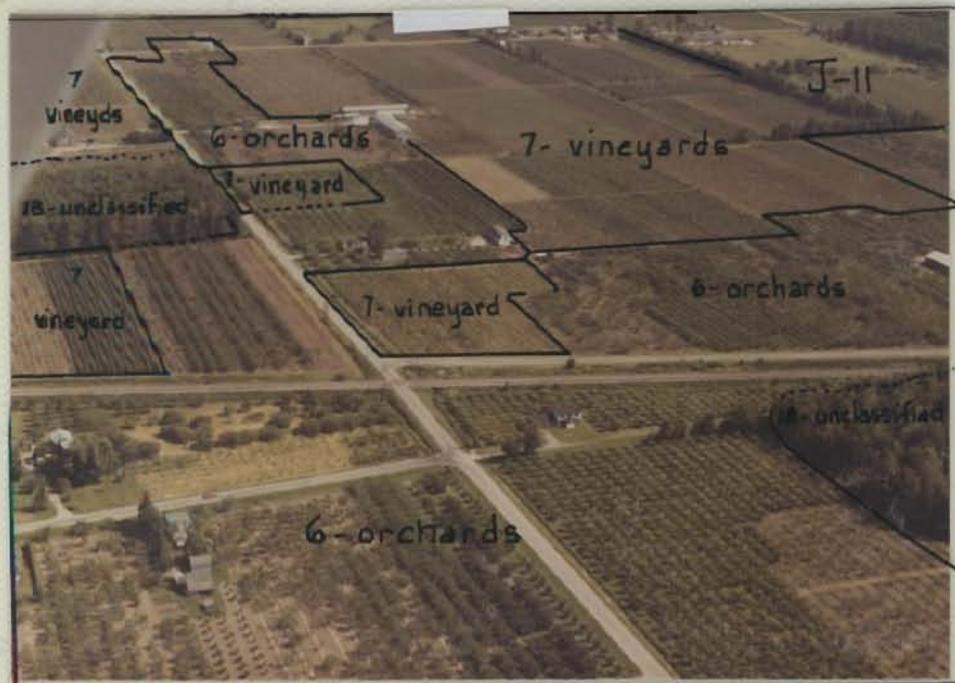




13 - mushroom barns

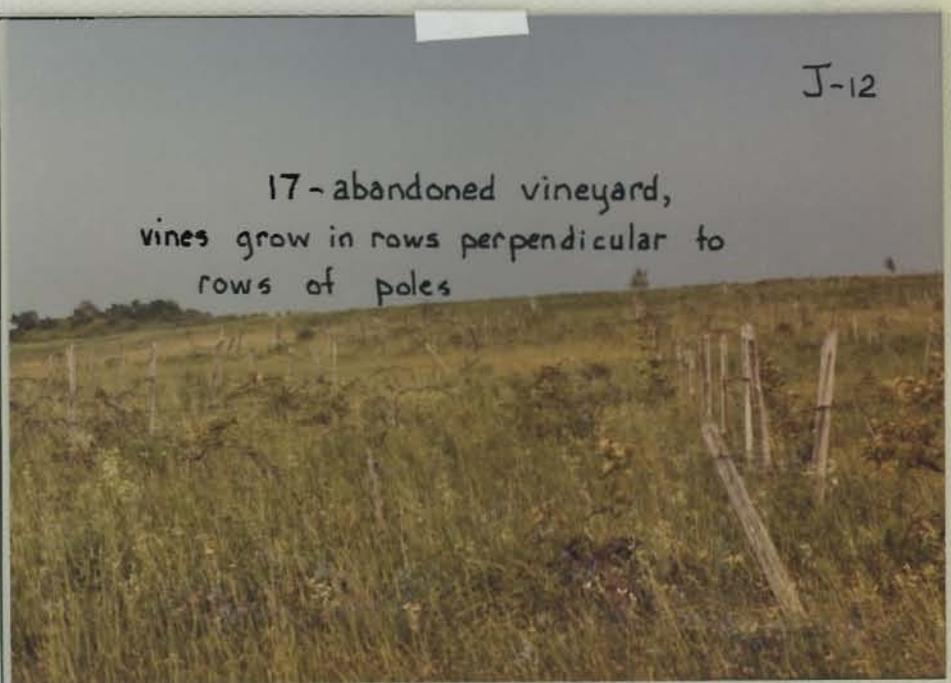


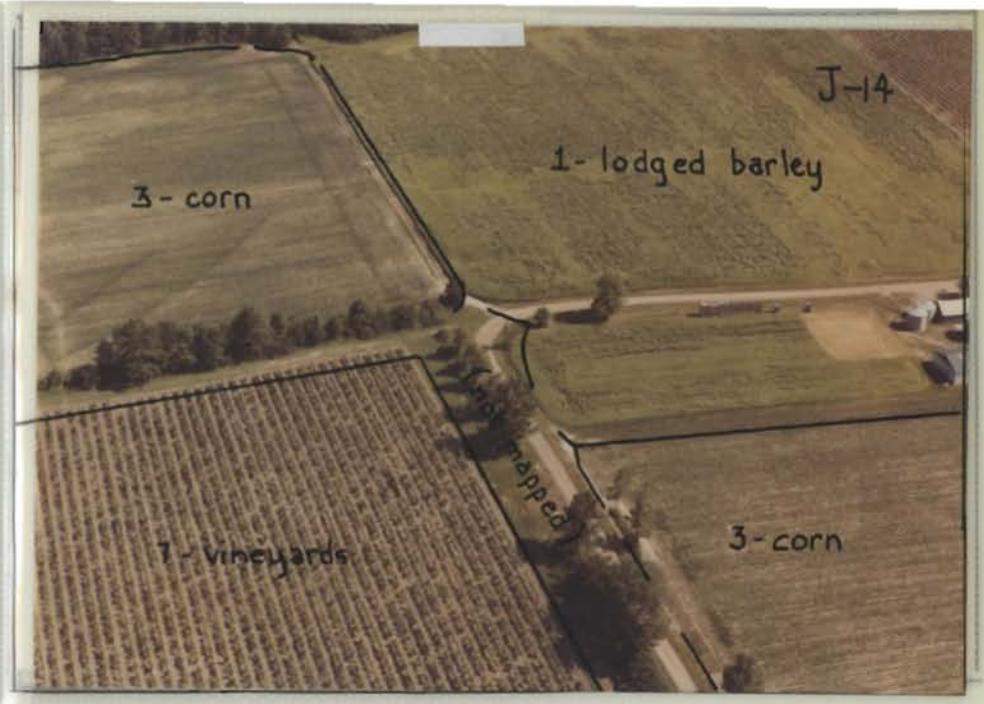
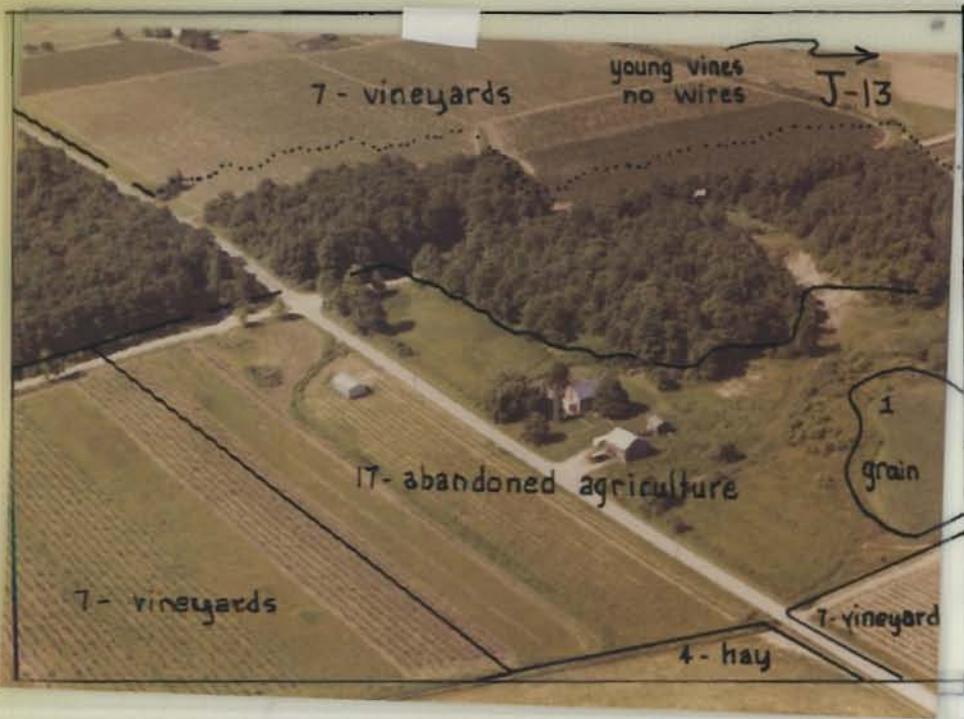
2 - cauliflower J-10



J-12

17 - abandoned vineyard,
vines grow in rows perpendicular to
rows of poles





-K-

K

Fort Saskatchewan, Alta.

Location: NTS 1:50,000 Map Sheet Edmonton 83H/11
Photo Centre for LN40-AS-2650 - 078 ≈ Lat 53°40';
Long 113°20'

Date of Airphotography: 20 August 1982

Scale of Airphotography: 1:30,000

Ordering Information: Alberta Map and Air Photo
Distribution Centre
Alberta Energy & Natural Resources
2nd fl., West, North Tower, Petroleum Plaza
9945 - 108 St., Edmonton, Alta., T5K 2C6

LN40 AS 2650 - 077,078,079

Description: Sample illustrates grain and fallow as well as a
provincial jail, provincial hospital, tree nursery,
DND land and sod farming.

Activity and Cover Classes:

A000	D110	W120
A111	H111	G210
A121	H200	V120
A122	J230	V121
A140	J240	V122
A150	J310	V123
A190	J410	V210
A200	B100	V220
A211	N000	X220
A221		
A231		
R134		

83H W

53.41

1:30,000

82-08-20

1767

UAG 1048 15326

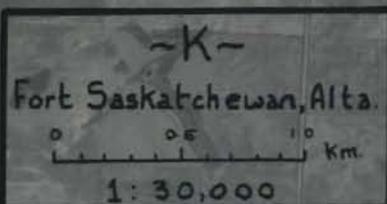
82-89

81-47 P

LN 40 AS

2650 077





1. grain crops which can't be consistently differentiated (A111/V120) W - wheat (V121)
O - oats (V122)
B - barley (V123)

2. fallow (A190/X220)

3. improved forage (A121/V210)

4. pasture (A122/V210) or grazing (A122/V220)

5. abandoned agriculture (B100)

6. wetlands possibly used for grazing (N000 or A122)

7. livestock farmsteads (A211, A221, A231, D110)

8. woodlots (N000/W120)

9. provincial jail (J230) and gun practice range

10. sod farm (A150)

11. Dept. of National Defence property (J240) and communication towers (H200)

12. rural residences and minor agr. act. (D110, A000)

13. horse farm (A211, A223)

14. school (J310)

15. nursery (A140/W210)

16. provincial hospital, rehabilitation centre and poultry farm (J410, A200)

-R-
Fort Saskatchewan, Alta.
0 5 10 km
1:30,000

83H11 53.41 130,000 82-08-20

LN 40 AS 2650 078
81-47 P
82-89

LN 40 AS 2650 078

UAG 1048 153.26 7619



83H11

53.41

1:30,000

82-08-20

17620

UAG 1048 153.26

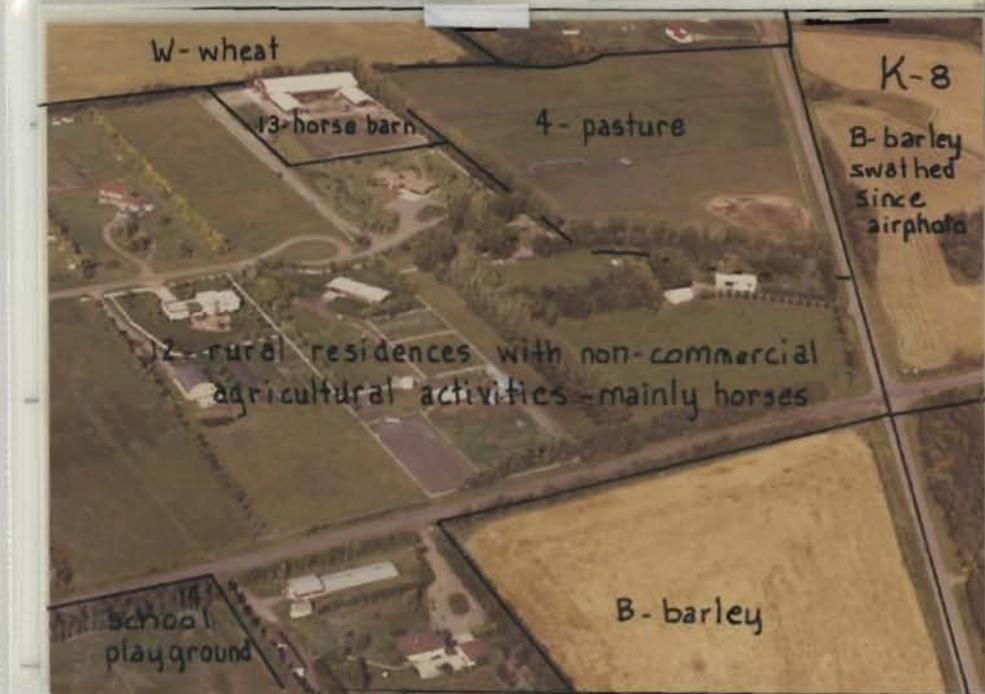
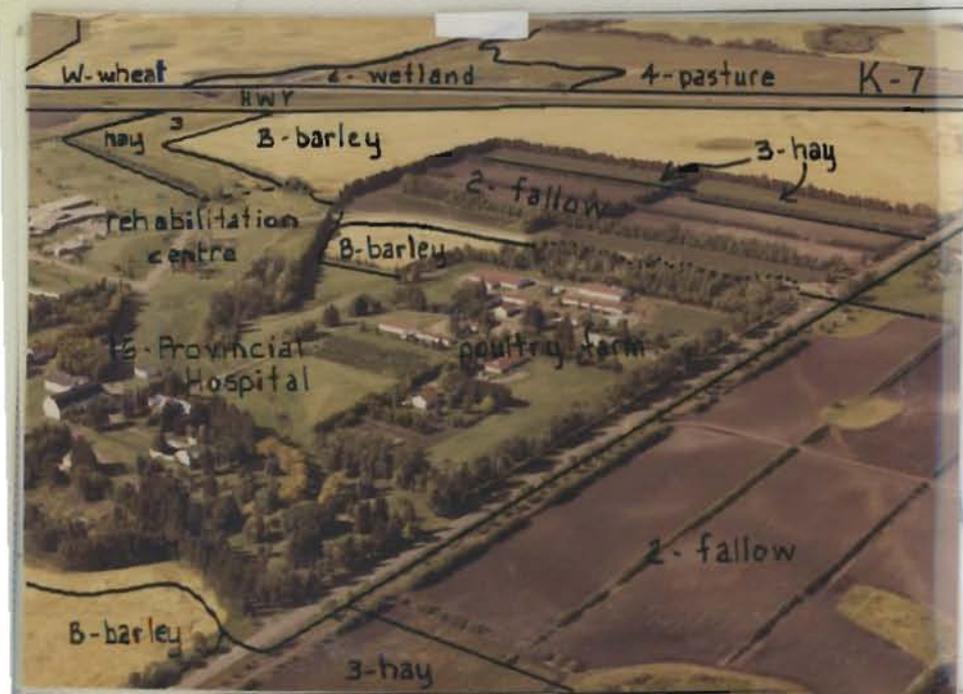
82-89

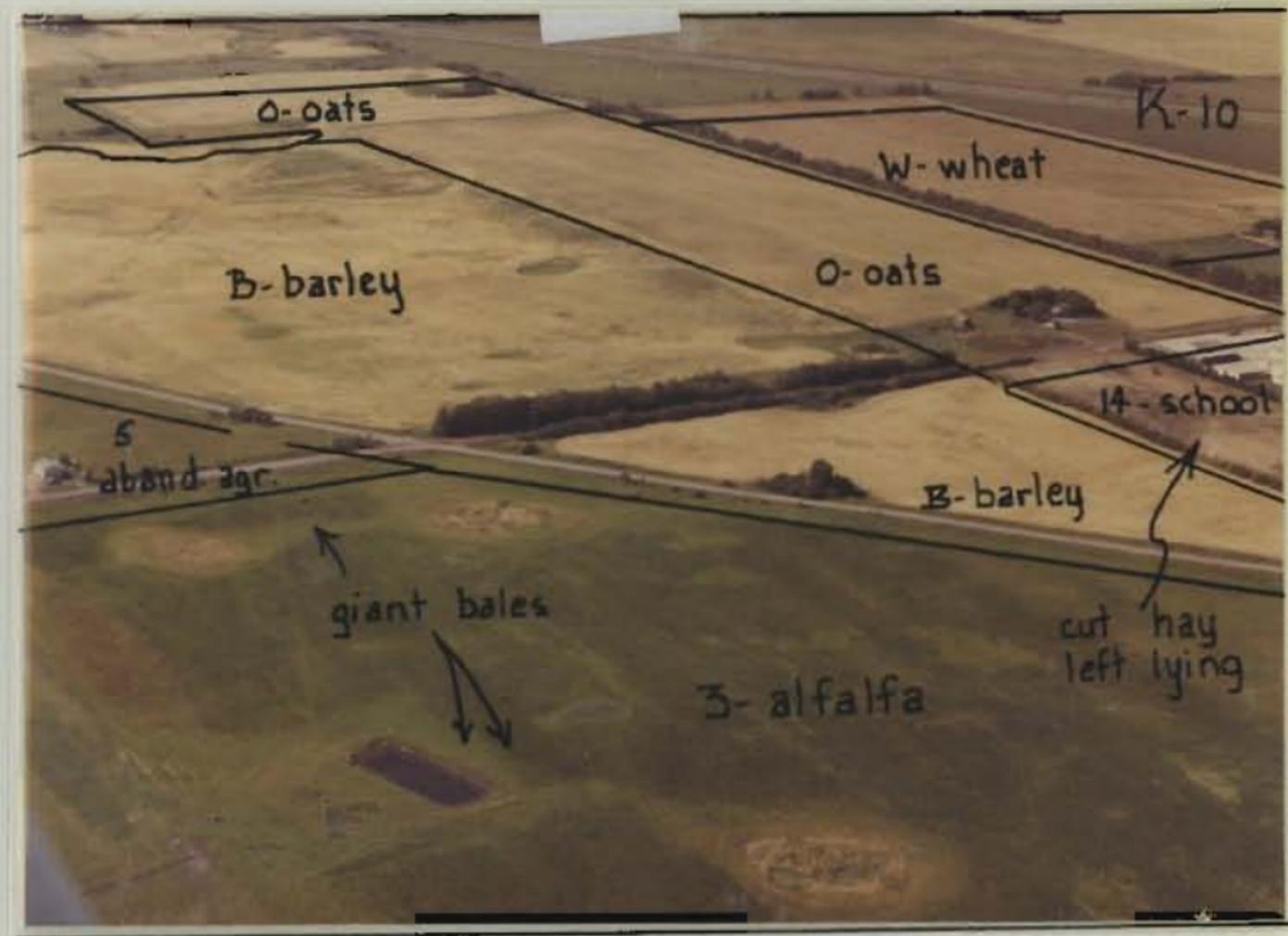
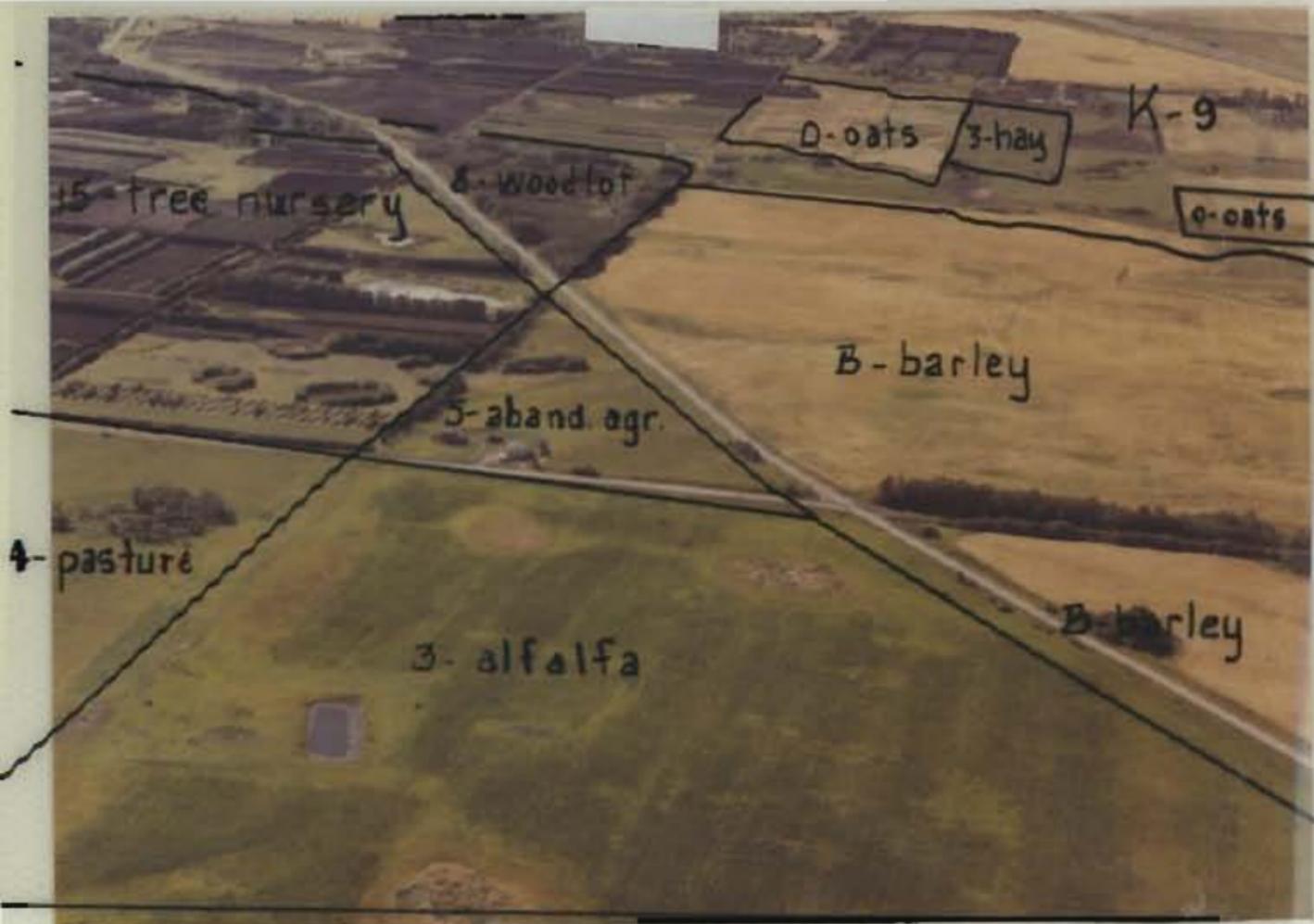
81-47 P

LN 40 AS

2650 079







Sherkston, Ontario

Location: NTS 1:50,000 Map Sheet Welland 301/14
Photo Centre for A26035 -3 @ Lat. 42° 54';
Long 79° 7'

Date of Airphotography: 24 June 1982

Scale of Airphotography: 1:35,000

Ordering Information: National Air Photo Library
615 Booth Street
Ottawa, Ontario K1A 0K9

A26035 - 2,3

Description: Sample illustrates corn, grain, hay and pasture
as well as ornamental nurseries, a golf course, and
campground.

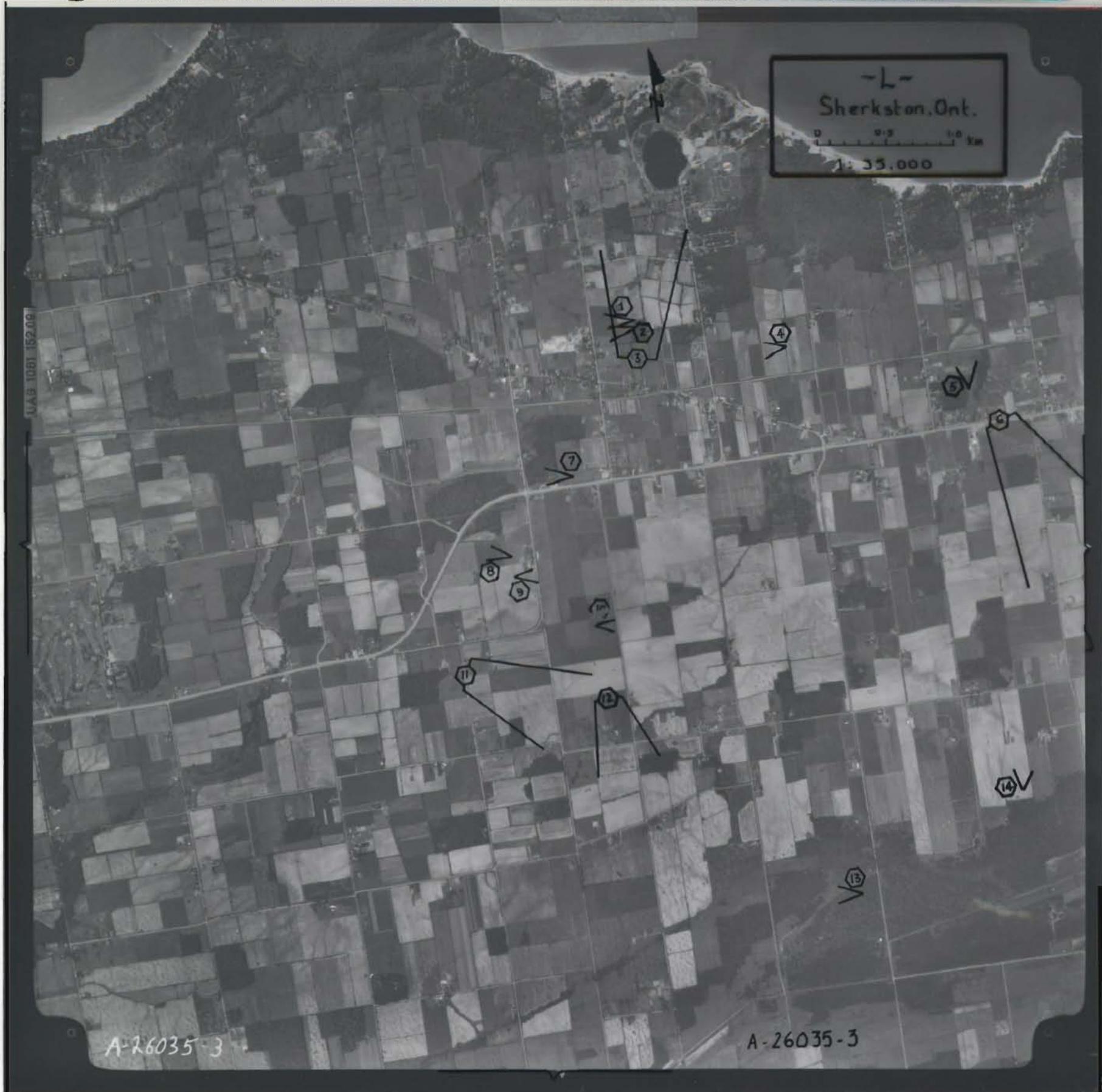
Activity and Cover Classes:

A111	R151	W120	V400
A112	R216	W210	X210
A117	D100	V212	X220
A190	D110	V220	Y110
A121	B100	V110	
A122	B300	V111	
A133	E600	V112	
A140	N000	V120	
A200	L000	V200	
A212		V210	
R110		V220	



UAG 101 15-00

A-26035-2



1. grain (A111/V120)
2. vegetables (A112/V112)
3. corn (A117/V111)
4. corn stubble and weeds (A190/V220)
5. bare soil (A190/X220)
6. hay (A121/V210)
7. pasture (A122/V200)
8. strawberries (A133/V110 or V400)
9. raspberries (A133/W212)
10. ornamental nursery (A140/W210)
11. poultry barn (A212/Y110)
12. golf course (R110/V210, W120)
13. public beach (R151/X210)
14. campground and tourist trailer park (R216)
15. cottages and permanent residences (D100)
16. undifferentiated residences, farmsteads & associated lands. (D110, A200)
17. abandoned airstrip (B600)
18. abandoned agricultural land (B100) reverting to scrubland (W220)
19. no perceived activity (N000) in woodlots (W120) or scrub (W220)
20. land in transition (L000/X220)
21. unclassified



A-26035-3

A-26035-3

L-1

4 - corn stubble and weeds



4 - corn stubble and weeds
field margin partially ploughed

L-2



L-3

4 - corn stubble

(scrub - not mapped)

4 - corn stubble

6 - hay

6.7 - hay and pasture

6 - hay

(scrubland around farmstead - not mapped)

6 hay



5 - mostly bare soil with grass-like vegetation coming up

L-4



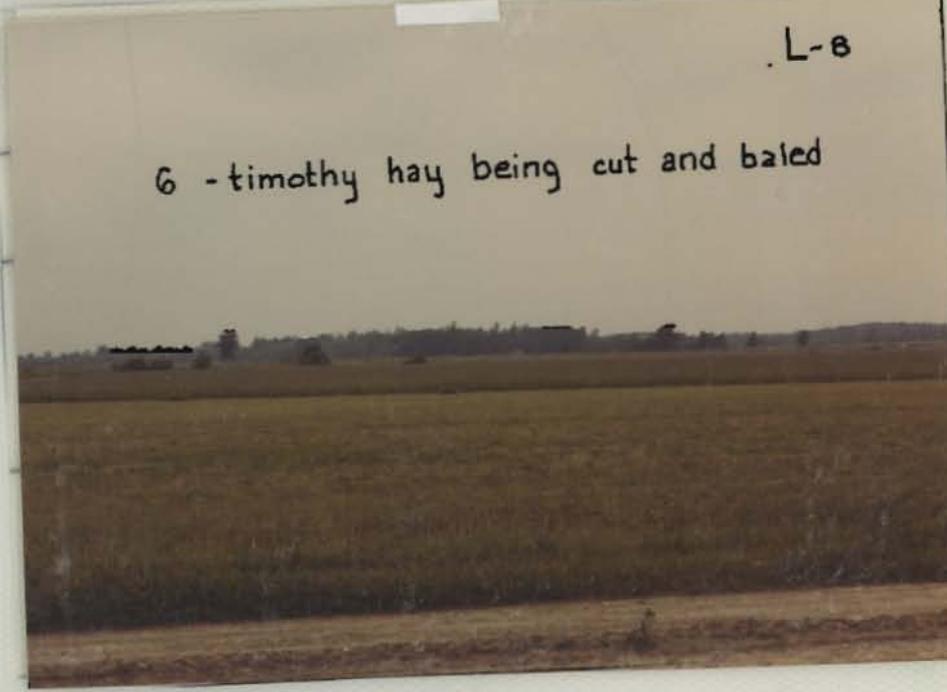
4 - corn stubble and weeds L-5



4 - corn stubble L-6
6 - hay
12 - golf course
parking on practise greens



1 - barley L-7
≈ 1 m.
≈ 25 cm.



L-8
6 - timothy hay being cut and baled

L-9

6 - weedy hay
possibly unused



L-10

drainage ditch being
redug



L-13

3- corn



L-14

5- bare soil and weed growth
in ploughed corn stubble



-M-

M

Trois Rivières, Qué.

Location: NTS 1:50,000 Map Sheet Trois Rivières 31 I/7
Photo Centre for A26023 -45 Lat 46°18';
Long 72°37'

Date of Airphotography: 17 June 1962

Scale of Airphotography: 1:20,000

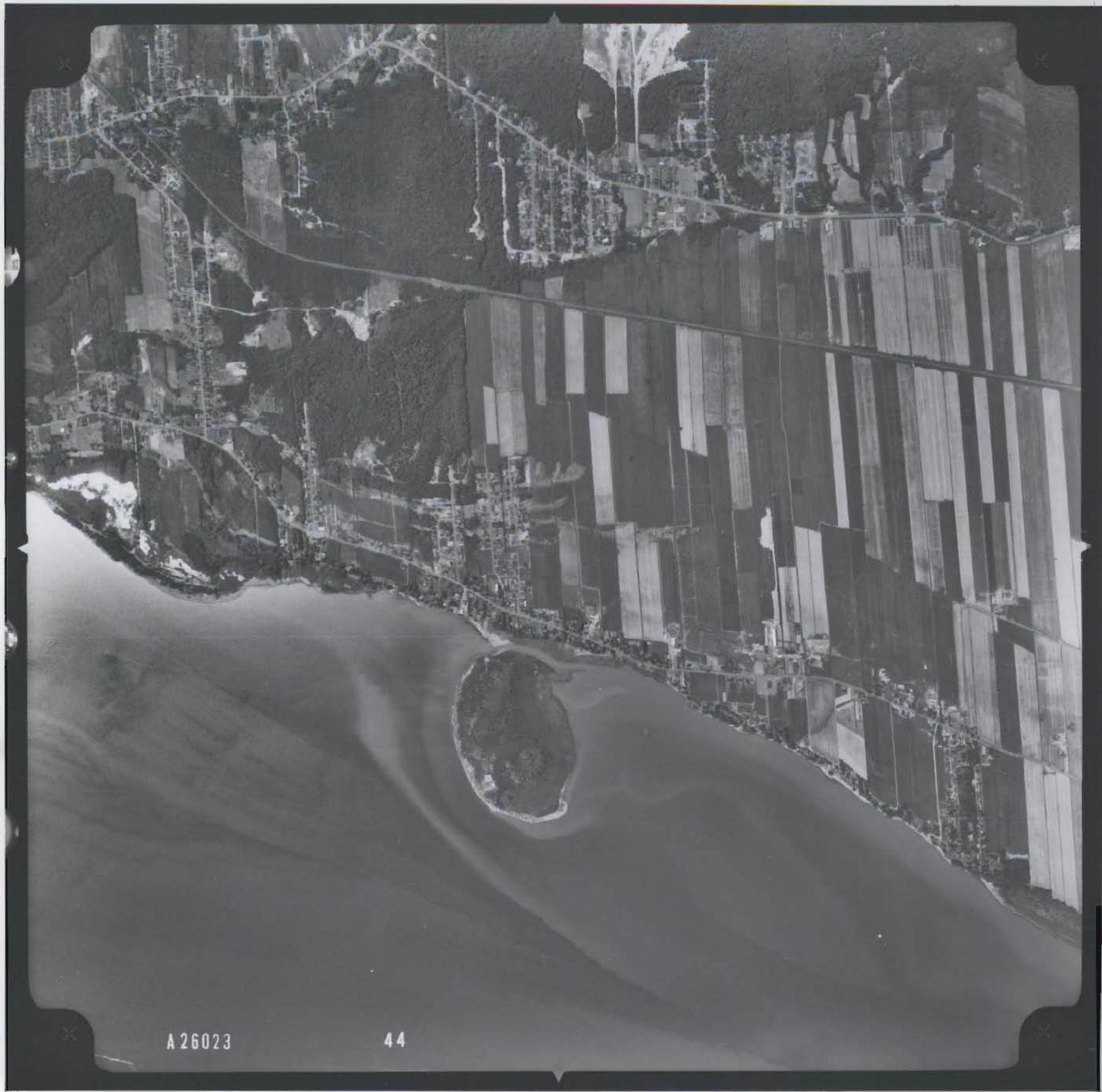
Ordering Information: National Air Photo Library
615 Booth Street
Ottawa, Ontario K1A 0E9

A26023 - 44,45,46

Description: Sample illustrates grain, corn, forage and pasture
early in the year. Other classes include raspberries
strawberries and abandoned agriculture.

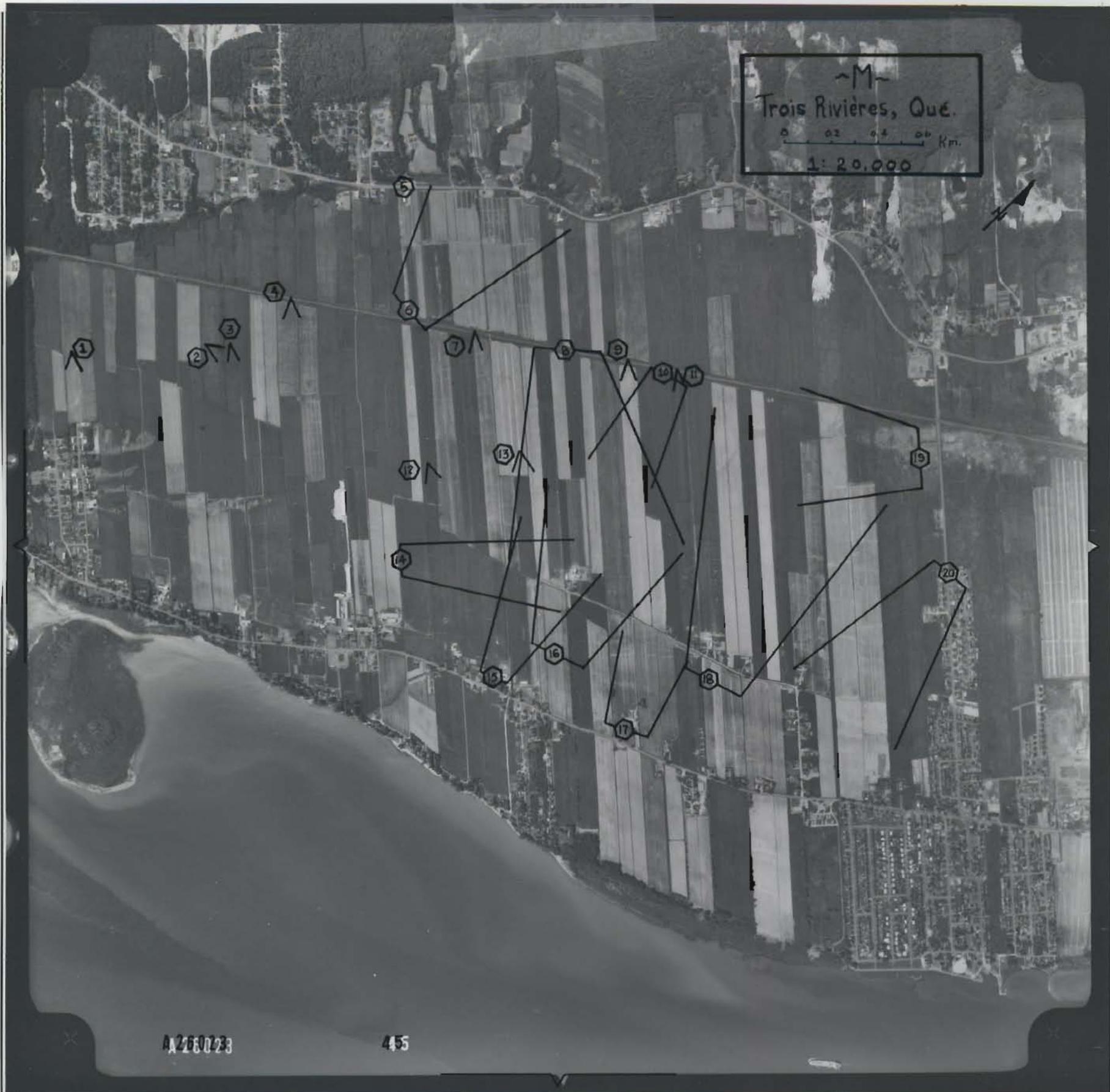
Activity and Cover Classes:

A111	W212
A114	V110
A117	V111
A121	V114
A122	V122
A133	V123
A190	V212
A212	V213
H121	V210
B100	V220
	V400



A 26023

44



M
Trois Rivières, Qué.
0 0.2 0.4 0.6 Km.
1:20,000

AA260723

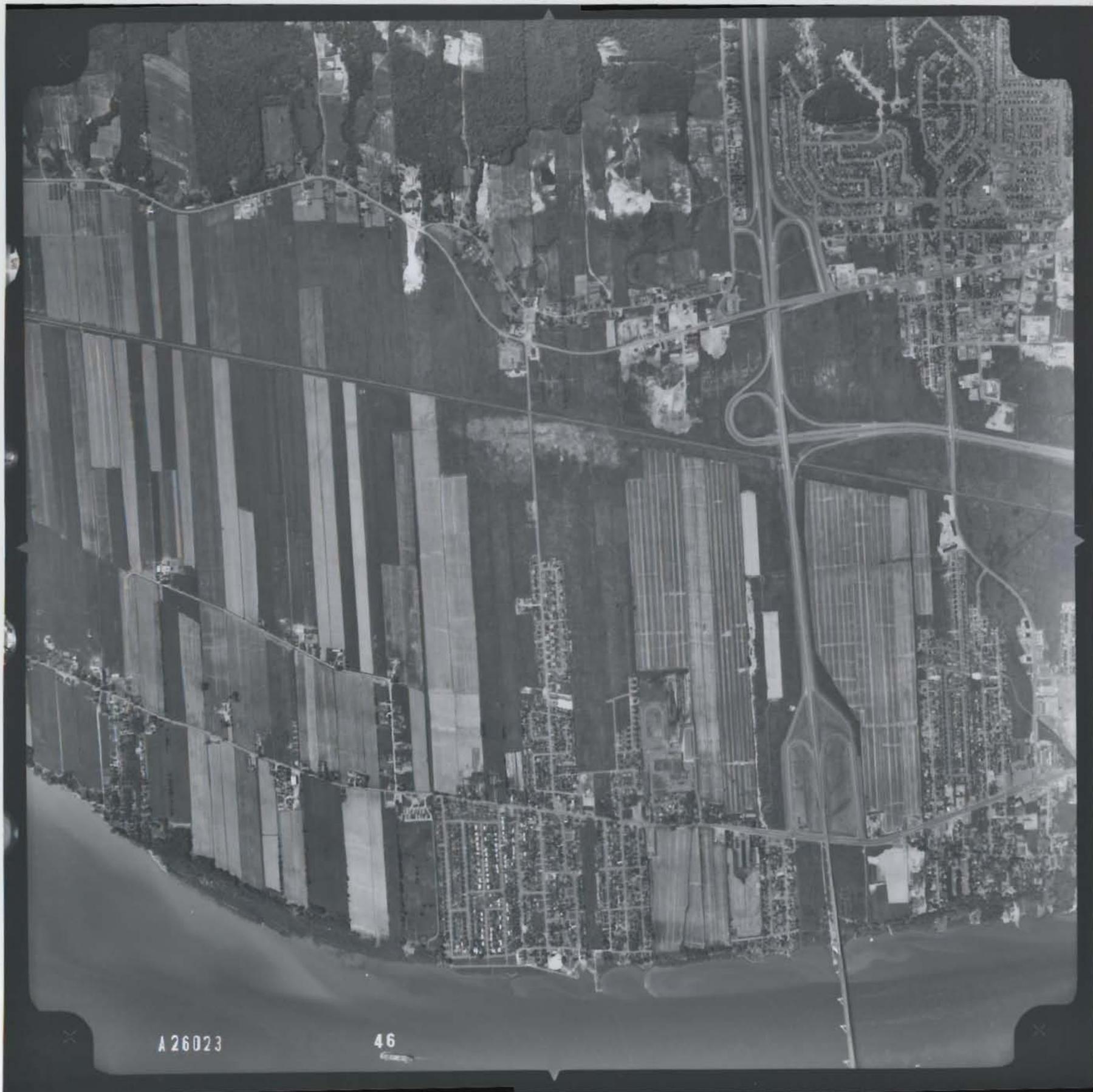
455



1. grain: A - oats (A111/V122)
B - barley (A111/V123)
2. corn (A117/V111)
3. good quality hay: 3 - mixed legumes and grass (A121/V213)
3L - pure legumes (A121/V212)
4. weedy hay (A121/V210, V220)
5. pasture (A122/V210)
6. raspberries (A133/W212)
7. strawberries (A133/V110 or V400)
8. abandoned agriculture (B100)
9. fallow in mustard, oats and weeds (A190/V220)
10. soy beans (A114/V114)

A 26023

45

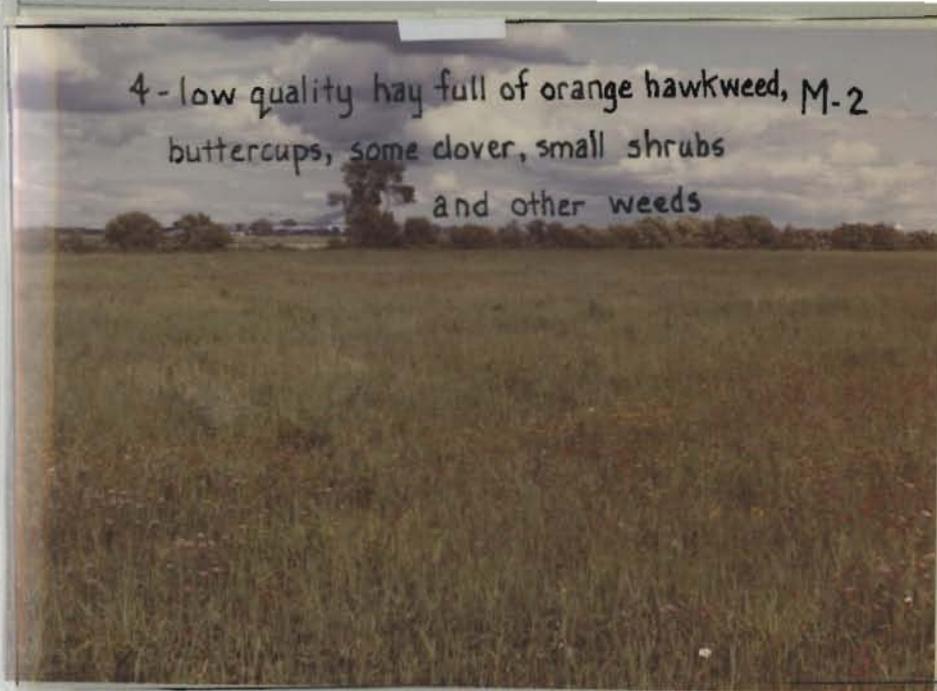


A 26023

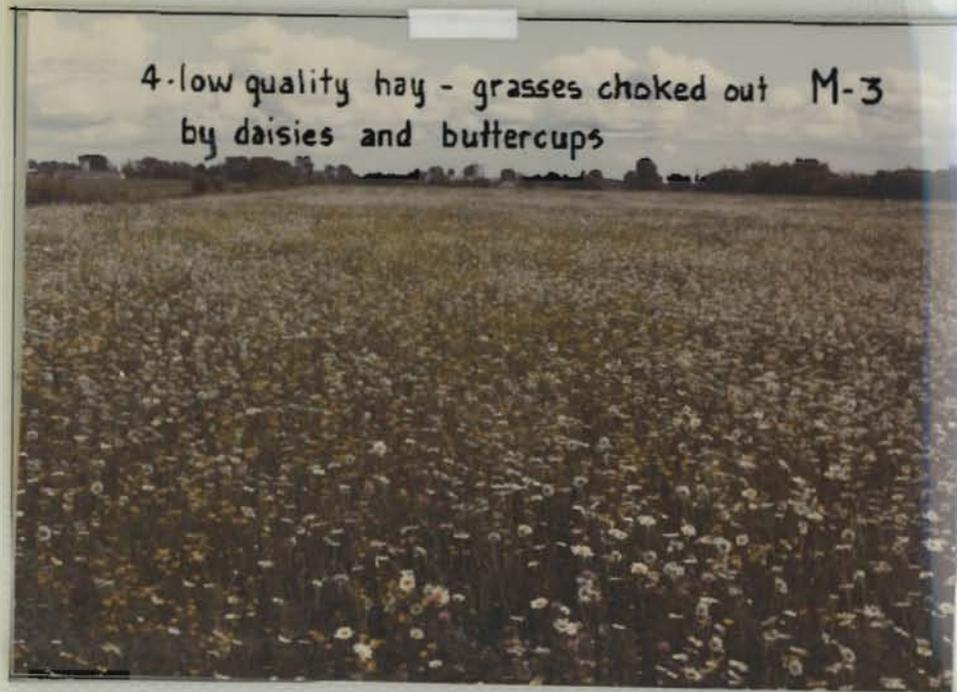
46



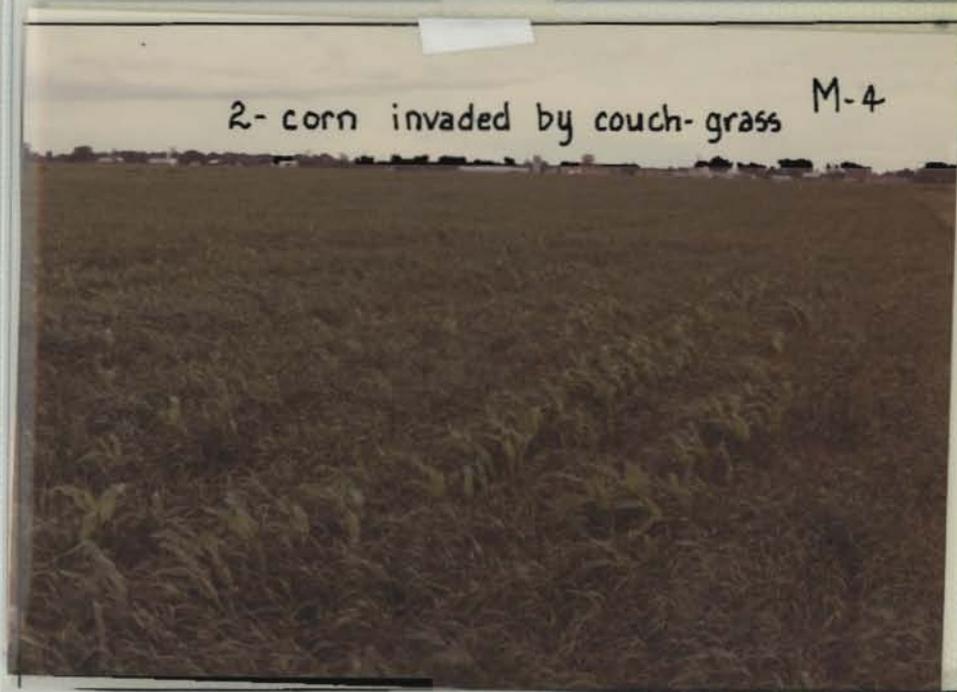
M-1
9-fallow in neglected oats,
mustard and weeds



4 - low quality hay full of orange hawkweed, M-2
buttercups, some clover, small shrubs
and other weeds



4 - low quality hay - grasses choked out M-3
by daisies and buttercups



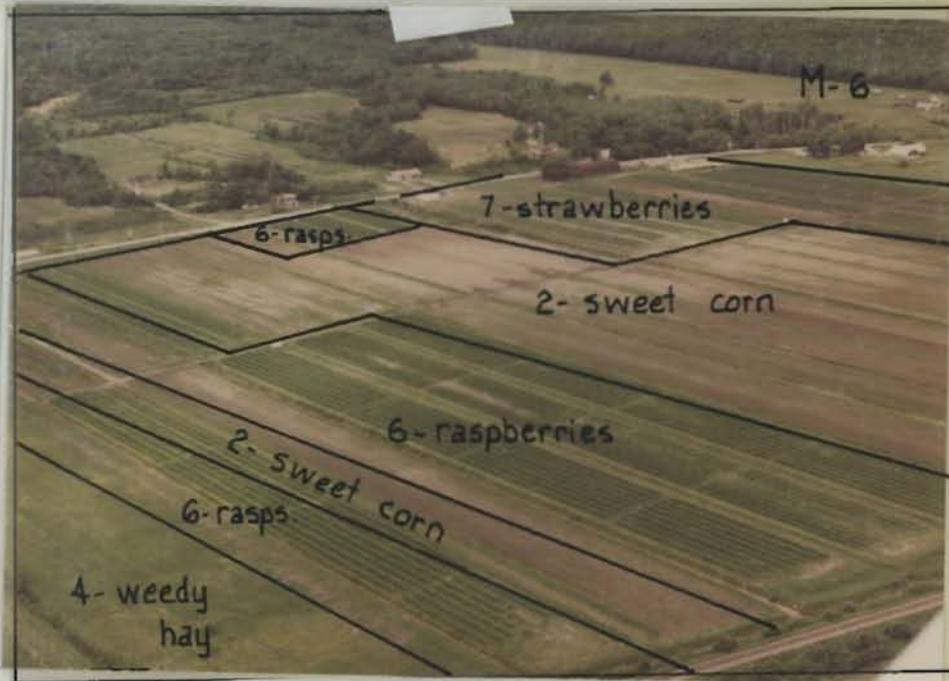
2 - corn invaded by couch-grass M-4

M-5

6 - raspberries



M-6



M-7

drainage ditch

1- oats

3- hay



M-8



M-9

2 - corn \approx 0.5 m. tall



M-10

1B- barley

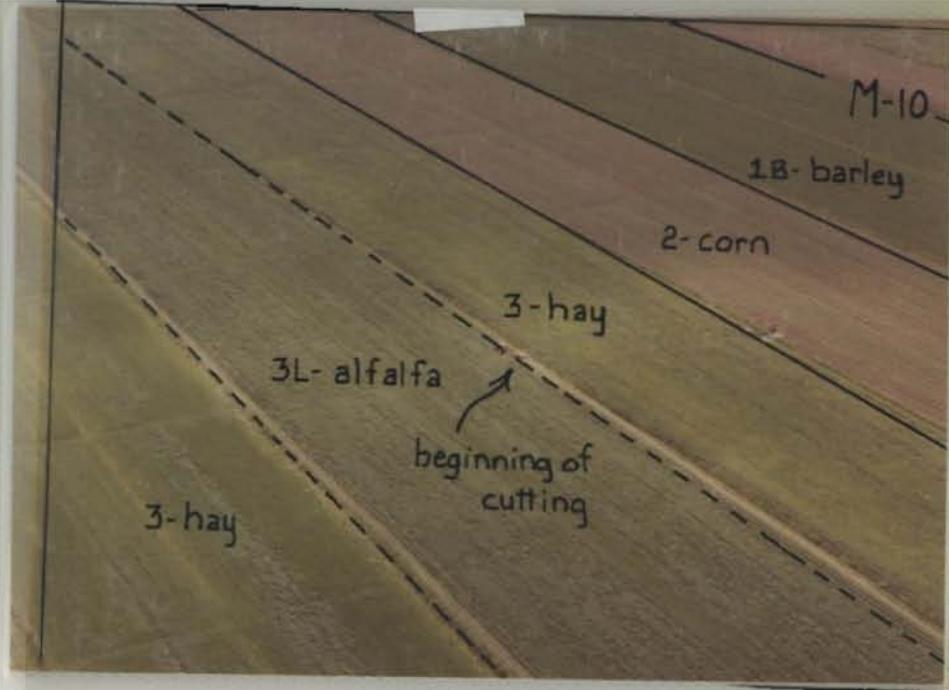
2-corn

3-hay

3L- alfalfa

beginning of
cutting

3-hay



M-11

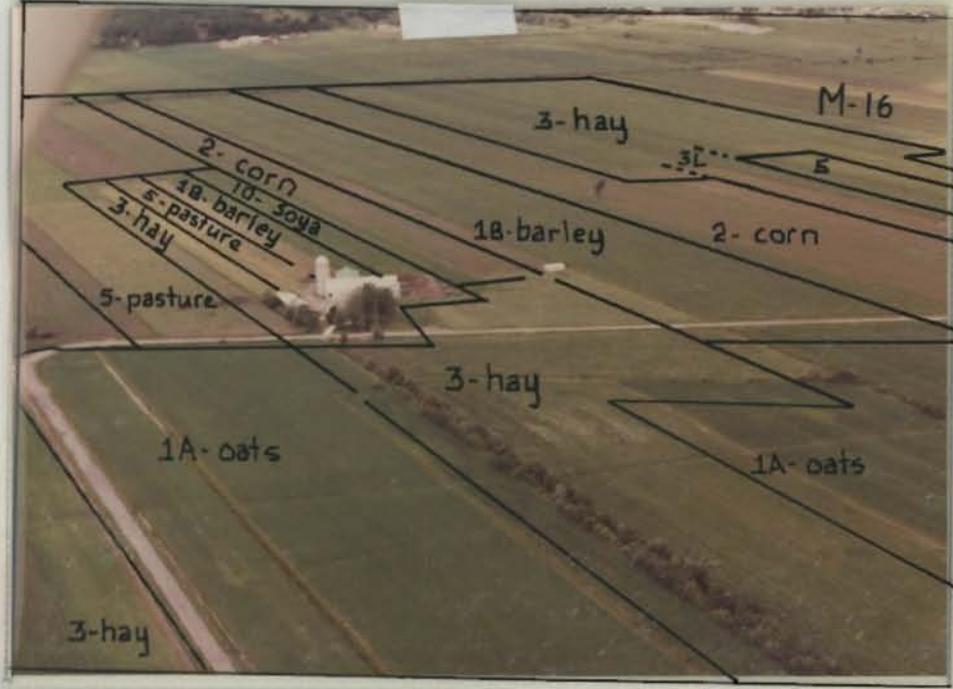
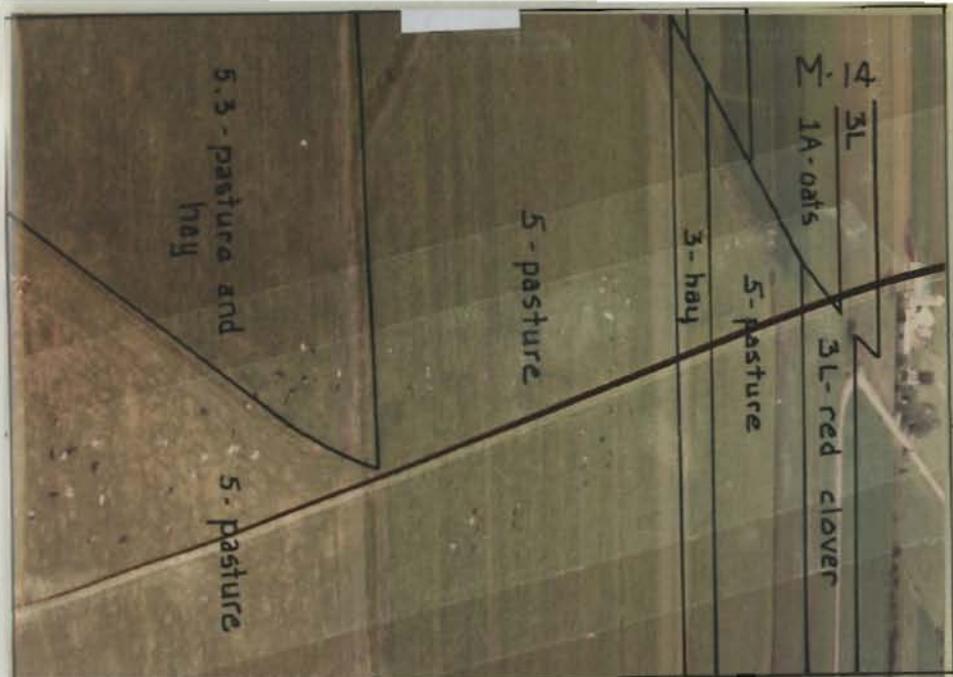
3 - timothy and clover hay

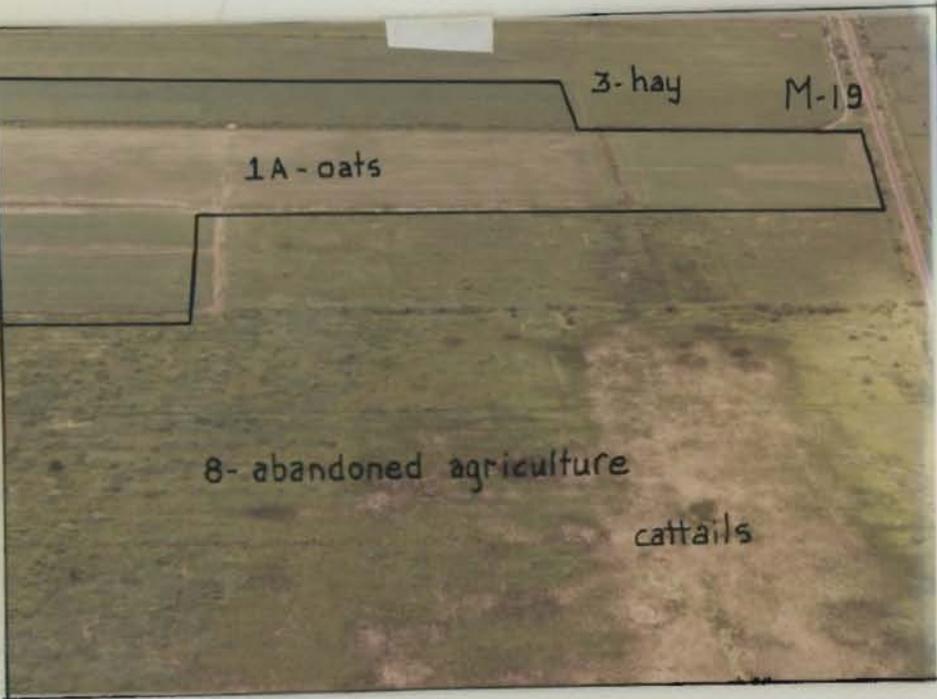
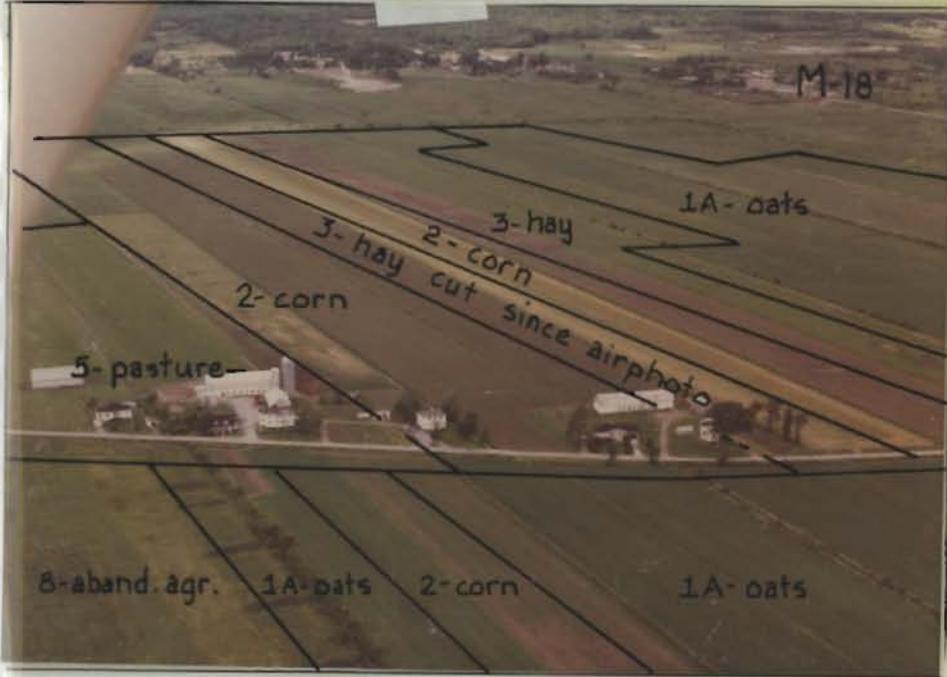


M-12

3L - red clover hay







-N-

Windsor, N.S.

N

Location: NTS 1:50,000 Map Sheet Windsor 21A/16
Photo Centre for 82017-10 ≈ Lat 44° 58'; Long 64° 07'
82034-126 ≈ Lat 44° 58'; Long 64° 08'

Date of Airphotography: 82107 - 19 May 1982
82034 - 26 September 1982

Scale of Airphotography: 1:35,000

Ordering Information: Maritime Resource Management Service (MRMS)
Box 310, Amherst, N.S., P4H 3Z5

82017 - 9, 10
82034 - 125, 126

Description: Samples illustrate early spring and late fall dyked
hayland. Other classes include greenhouses,
abandoned orchards, and several recreational site
activities.

Activity and Cover Classes:

A111	M511	G111
A131	M611	W210
A121	C000	V120
A132	J410	V210
A140	J620	V220
A190	P200	X210
A223	P210	X220
A242	P220	
E120	E100	
F170	B130	
R200	N000	
B214		
T221		
U118		

~N~
Windsor, N.S. - May
0 0.5 1.0 Km.
1:35,000



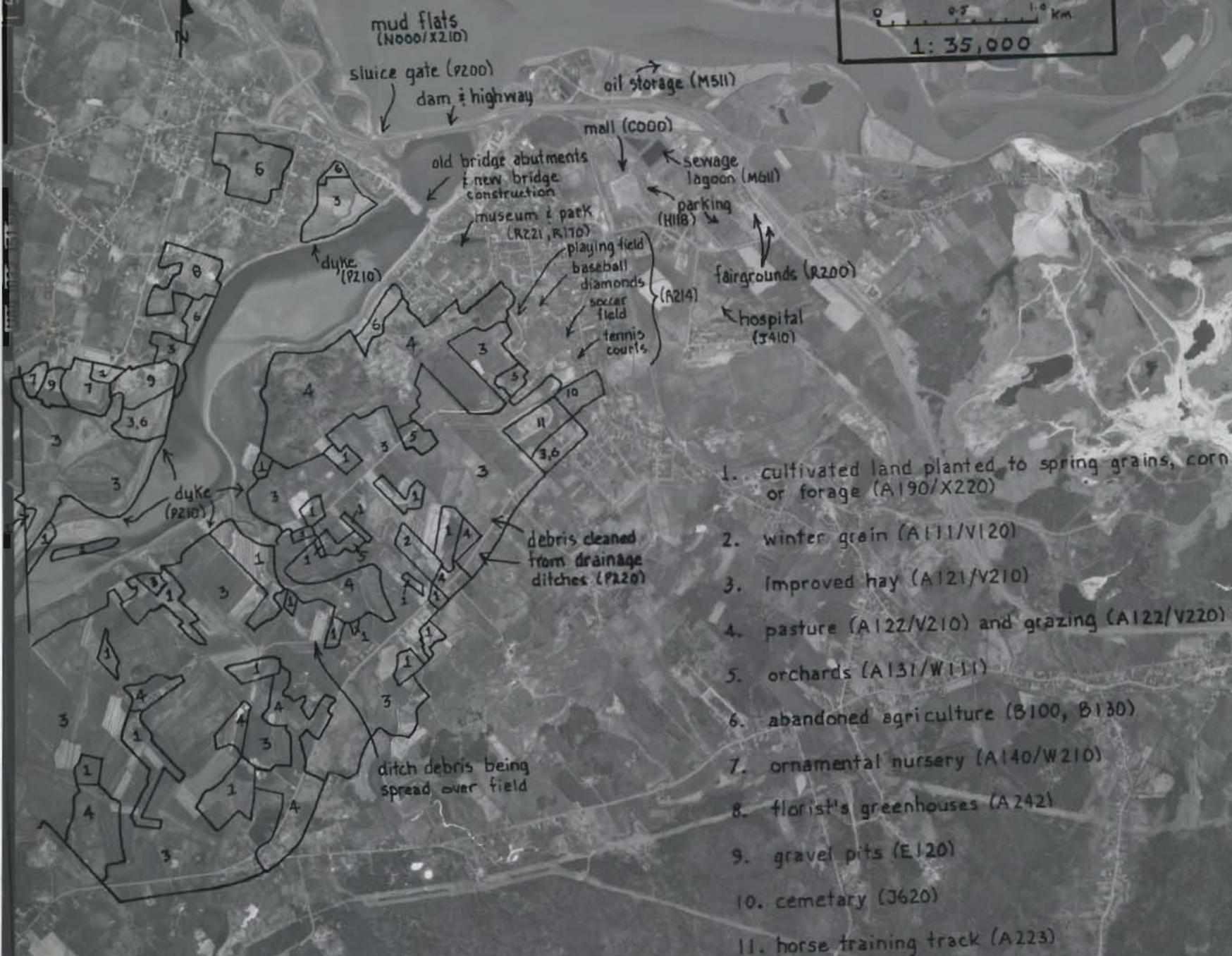
82017

9

~N~
Windsor, N.S. - May

0 0.5 1.0 km

1: 35,000



1. cultivated land planted to spring grains, corn or forage (A190/X220)
2. winter grain (A111/V120)
3. improved hay (A121/V210)
4. pasture (A122/V210) and grazing (A122/V220)
5. orchards (A131/W111)
6. abandoned agriculture (B100, B130)
7. ornamental nursery (A140/W210)
8. florist's greenhouses (A242)
9. gravel pits (E120)
10. cemetery (J620)
11. horse training track (A223)

82017
82017

10 10





UAG 1032 151.58

1981

82034

125

~N~
 Windsor, N.S. - Sept.
 0 0.5 1.0 km.
 1:35,000



1. Fields planted in spring 1982 in grains, corn or forage
2. grain stubble (A111/V120)
3. improved hay (A121/V210)
4. pasture (A122/V210) and grazing (A122/V220)
5. orchards (A131/W111)
6. abandoned agriculture (B100, B130)
7. ornamental nursery (A140/W210)
8. florist's greenhouses (A242)
9. gravel pits (E120)
10. cemetery (J620)
11. horse training track (A223)



-P-

P

Kelowna, B.C.

Location: NTS 1:50,000 Map Sheet Kelowna 82B/14
Photo Centre for BRP2062 I6s - 7 s Lat. 49°51';
Long 119°20'

Date of Airphotography: 26 July 1982

Scale of Airphotography: 1:40,000

Ordering Information: Burnett Resource Surveys Ltd.
2073 Lake City Way
Burnaby, B.C. V5A 3A1
(604) 420-2600

BRP2062 I6s - 7,8

Description: Sample illustrates primarily orchard and vineyard classes, but also includes ornamental nurseries, sod farms, horse farms and equestrian centre, trailer parks, golf courses and land-in-transition.

Activity and Cover Classes:

A111	R222	W111
A112	H110	W210
A121	H162	W211
A122	H200	W300
A131	M633	V112
A132	J620	V123
A140	E160	V210
A150	B130	V220
A190	L300	X220
A211	L000	Y120
A223		
E120		
R110		
R214		

BR82062 L 65-7

~P~
 Kelowna, B.C.
 0 0.5 1.0 km
 1: 40,000

urban core (00007)

note: pattern due to lodging & uneven ripening

radio tower (H200)

urban core (00007)

formerly in vegs.

eroded slope (M000)

radio towers (H200)

cemetery (B070)

urban core (00007)

car wrecker (M63)

transformer station (H162 / Y120)

land previously in transition, now till.

1. grain (A111/V123)
2. mixed vegetables incl. some sweet corn. (A112/V112)
3. improved hay (A121/V210)
4. improved pasture (A122/V210)
5. fruit orchards (A131), mature (W111) and newly planted (W211)
6. vineyards (A132/W300)
7. ornamental nursery (A140/W210)
8. sod (A150/V210)
9. horse barns (A211) and holding & training areas (A223)
- 10 gravel pit (E120/X220)
- 11 golf course (R110)
- 12 rifle range (R214)
- 13 equestrian centre (R214, R222)
- 14 trailer park (D110/Y120)
- 15 land in transition (L000)
- 16 undifferentiated uses & covers
- 17 unimproved grazing (A122/V220)
- 18 abandoned gravel pit (B300)
- 19 abandoned agriculture (B100, B130)
- 20 fallow (A190/X220)



BR82062 L 65-7

Kelowna, B.C.

0 0.5 1.0 Km

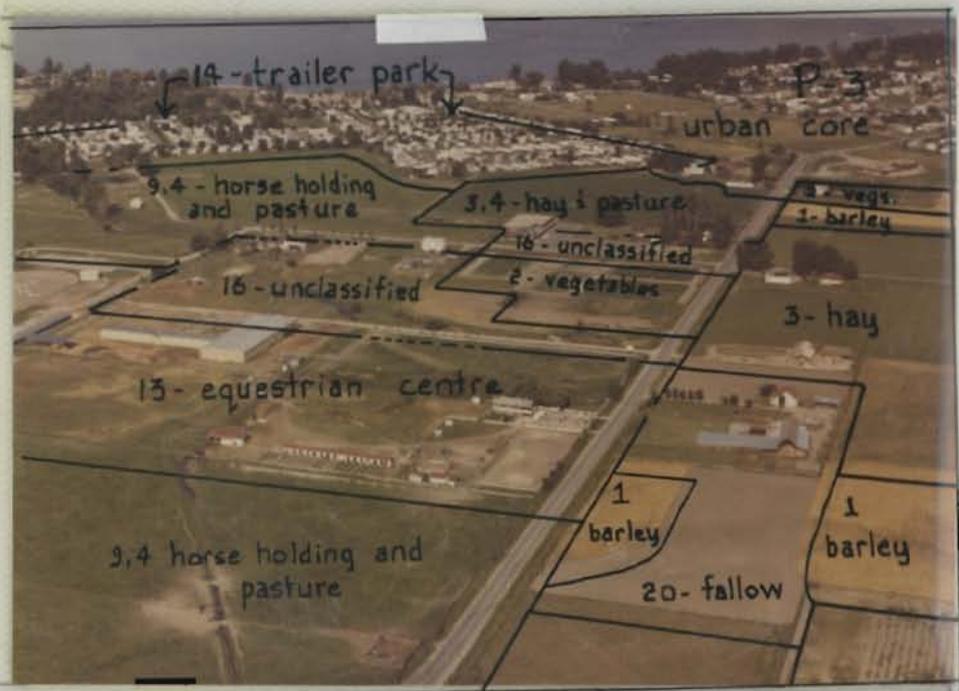
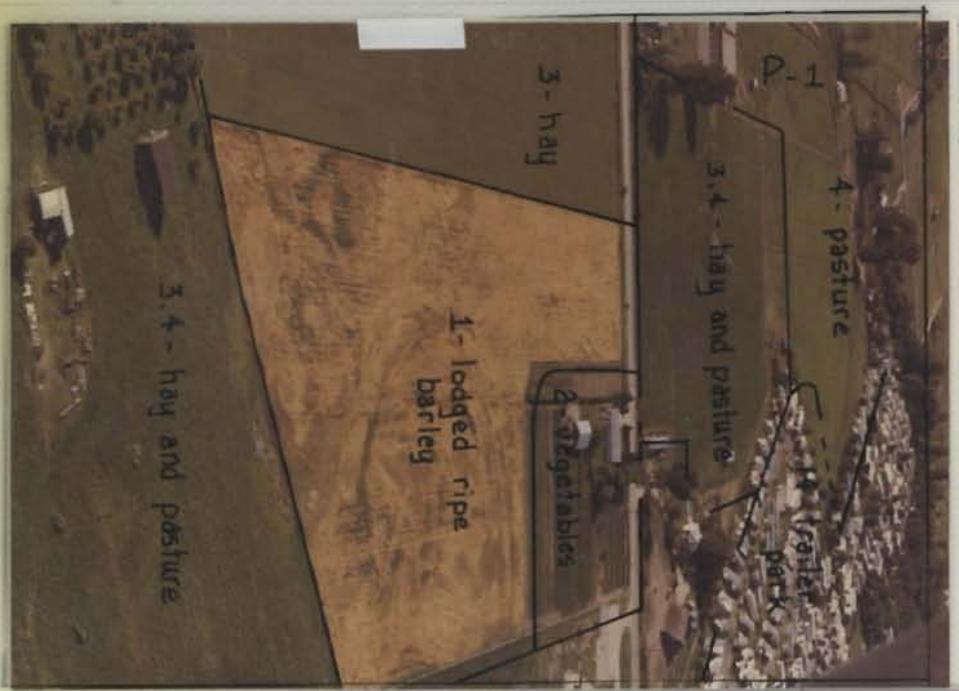
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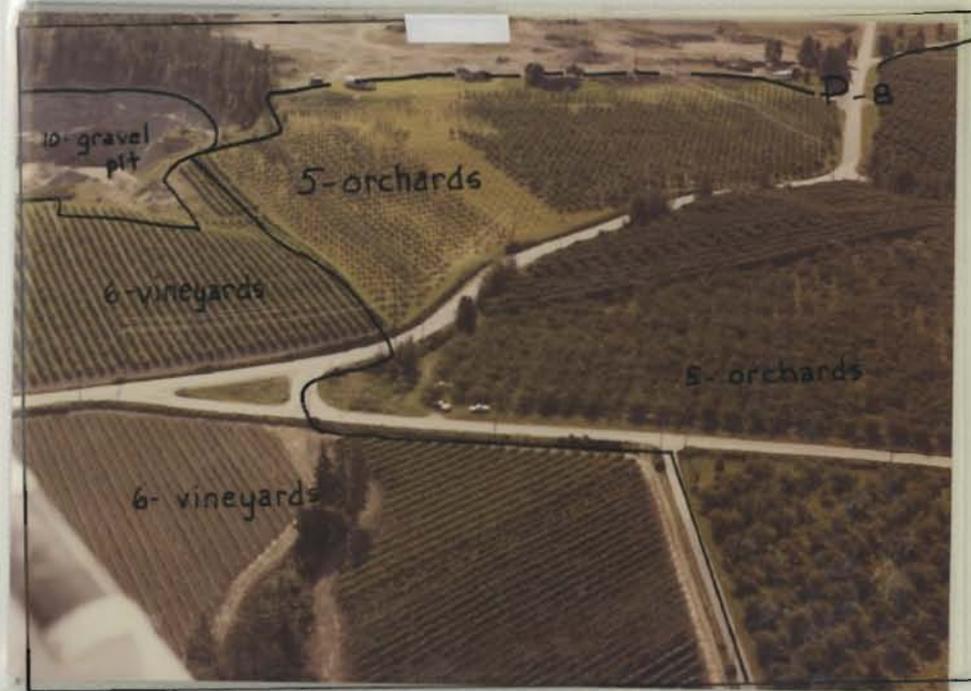
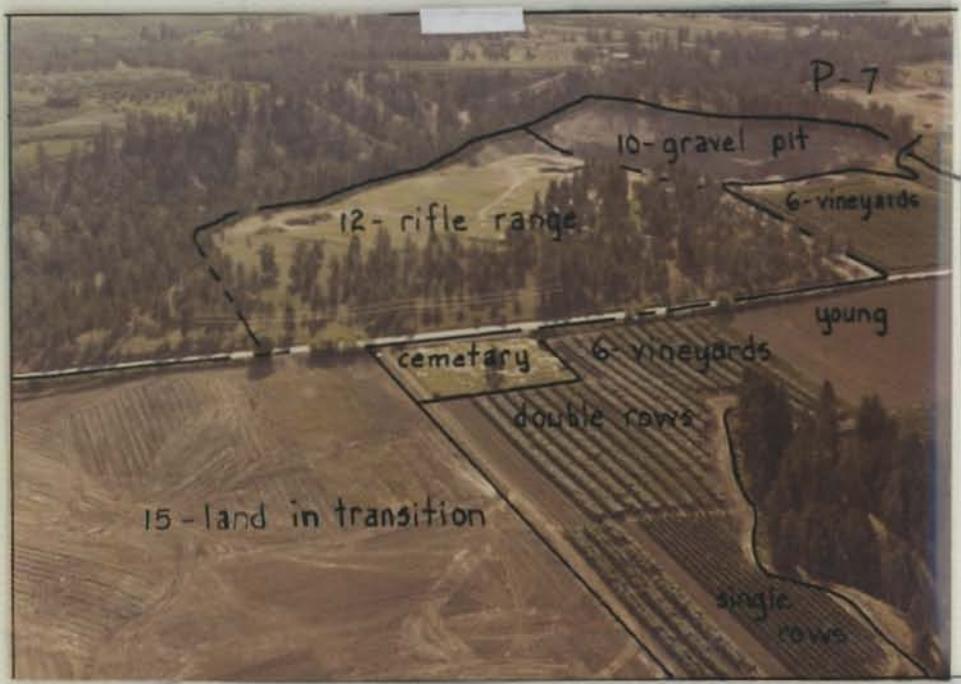
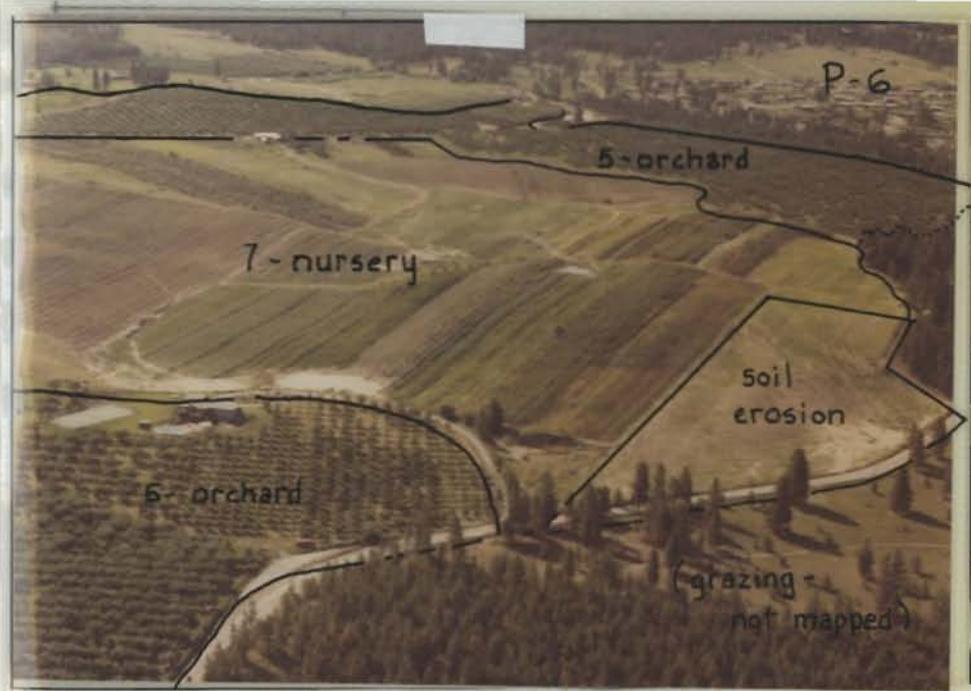
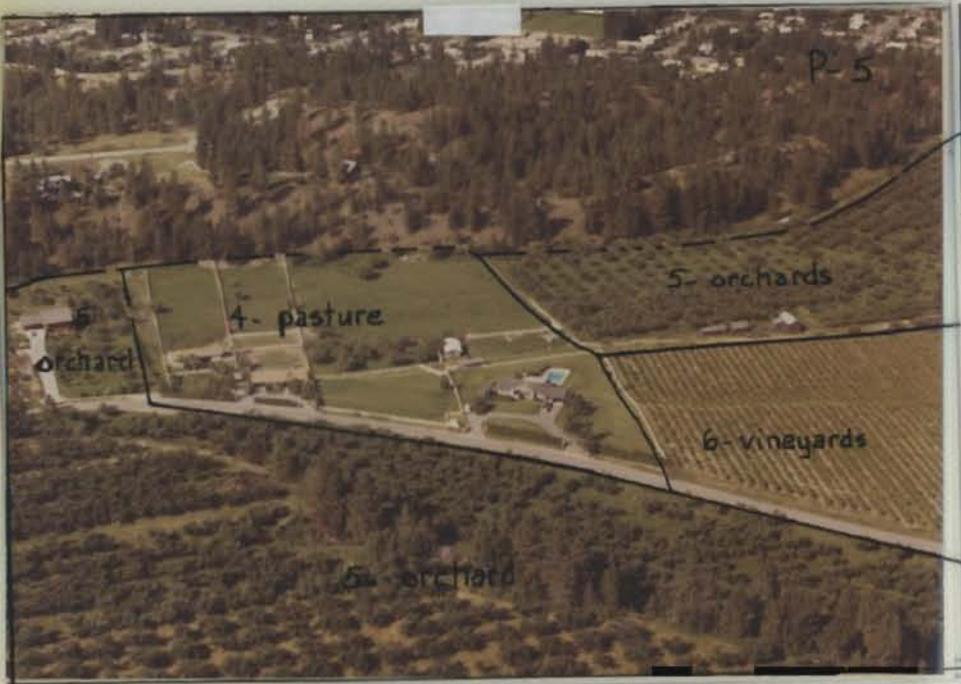


Ag 340
152.68



BR 82062 L-65-8







-Q-

Q

Chilliwack, B.C.

Location: NTS 1:25,000 Map Sheet Rosedale 92h/4f
Photo Centre for BR82041 L4-47 Lat. 49° 12';
Long 121° 49'

Date of Airphotography: 22 June 1982

Scale of Airphotography: 1:40,000

Ordering Information: Burnett Resource Surveys Ltd.
2973 Lake City Way
Burnaby, B.C. V5A 3A1
(604) 420-2600

BR82041 L4-46,47

Description: Sample illustrates corn, improved hay
and grazing, hops, hazelnuts, raspberries
and ornamental nurseries.

Activity and Cover Classes:

A111	A231	W110
A112	A240	W210
A117	A250	W211
A121	F100	W212
A122	R110	W300
A133	R152	V111
A135	R160	V112
A140	R214	V120
A170	D100	V210
A200	D110	Y120
A211	M220	
A212	J310	
A213	F210	
A221	B100	
A223		



BRB2041 L4-46

Chilliwack, B.C.

0 0.5 1.0

1:40,000

1. grain (A111/V120)
2. vegetables (A112/V112)
3. corn (A117/V111)
4. improved hay (A121/V210) and grazing (A122/V210). Good examples of each are indicated by an F=hay and G=grazing
5. raspberries (A133/W212)
6. hazelnuts (A135/W211)
7. ornamental nurseries (A140/W210)
8. hops (A170/W300)
9. dairy farmstead (A211, A221, A231, A250)
10. poultry farm (A212)
11. fur farm (A213)
12. horse barn and paddocks (A211, A223)
13. greenhouses (A240)
14. productive forest activities (F100/W110)
15. golf course (R110)
16. recreational fishing and boating (R160, R152)
17. park & baseball diamond (R214)
18. trailer park (D100/Y120)
19. undifferentiated residences, farmsteads & associated lands (D110, A200)
20. hops processing plant (M220)
21. schools (J310)
22. abandoned raspberries (B100)

B282041 L4-47

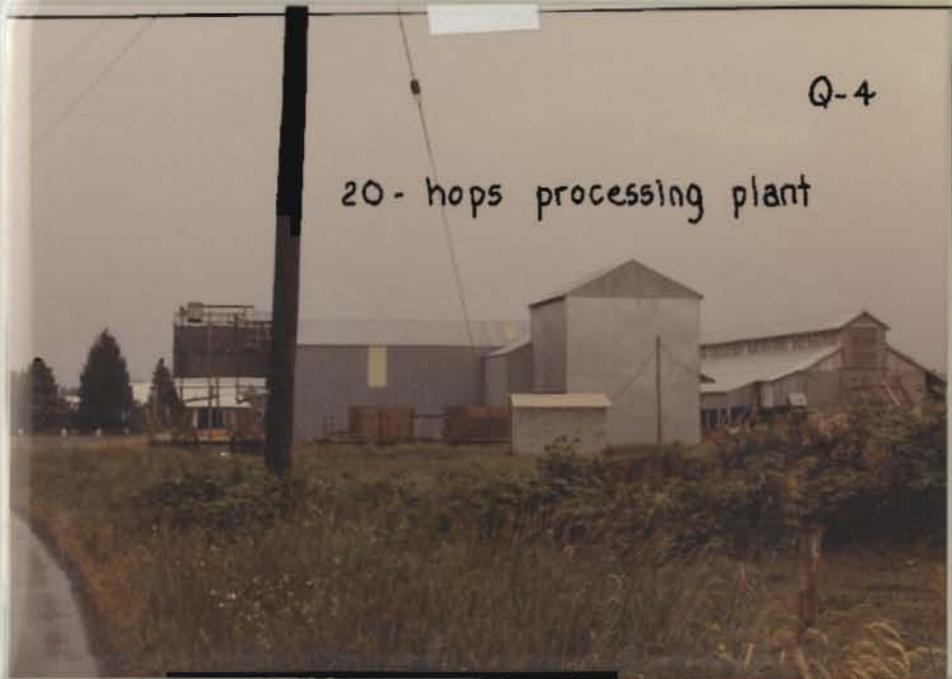
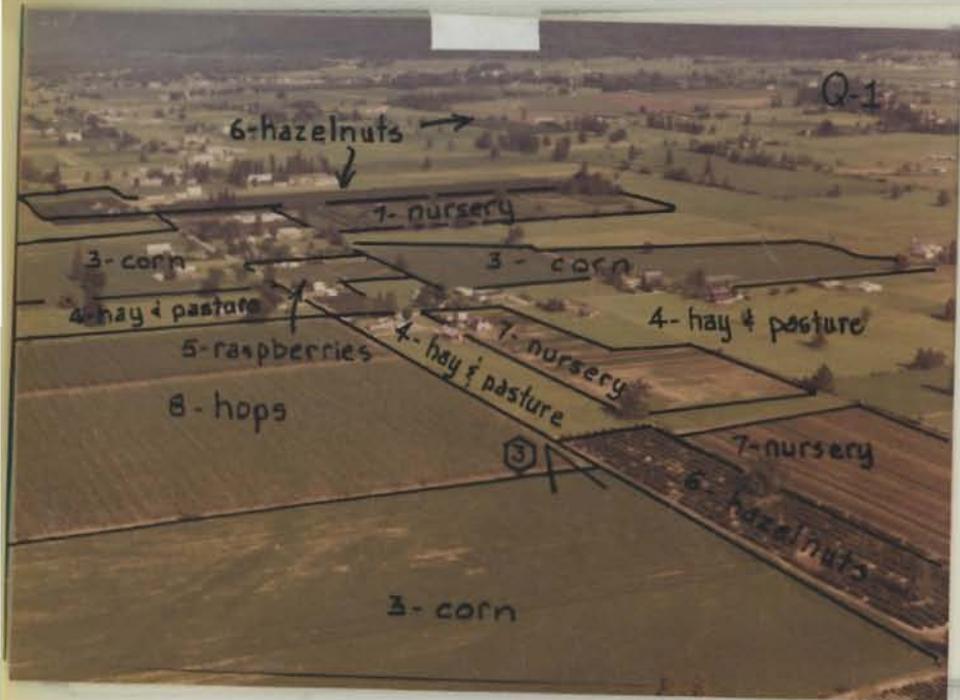
~Q~
Chilliwack, B.C.

0 0.5 1.0

1:40,000



B282041 LA-47



Q-5

irrigation pipe is
visible on airphoto

8 - hops

4 - pasture



Q-7

13 - greenhouses

3 - corn

Q-8

5 - raspberries

Q-9

7 - nursery



Q-10

9 - dairy farmstead

hay crib

1 - oats



hops in early August
(outside study area Q)

Q-extra



mature hazelnut orchard
(outside study area Q)

Q-extra

