AN ATTEMPT TOWARDS MAPPING OF LAND USE OF DEHRA DUN CITY USING AERIAL PHOTO-INTERPRETATION TECHNIQUES

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ABSTRACT

The Paper describes an effort made in mapping the existing Land Use in the City Centre of Dehra Dun, using Aerial Photo-interpretation techniques. An attempt is also made towards evolving a suitable land use classification for an Indian Urban situation as well as to test the land use classification scheme designed by the Town and Country Planning Organization (TCPO), Delhi. Black and white aerial photographs on a scale of 1:11,000 (approximately) taken by a wide angle lens camera were used. Field verification of random samples was carried out to check the validity of classification.

INTRODUCTION

Photo-interpretation techniques have been widely acclaimed to be the best known methods for rapid production of suitable land use maps. The advantage gained in speed, accuracy and cost is considerable. The techniques have not yet been fully appreciated in India due to various reasons. Recently, Urban Area Analysis Cell in IPI took up part of Dehra Dun as the pilot area for land use mapping, making use of the existing aerial photographs on 1:11,000 scale taken during the year 1964. At present the scope of the project has been limited to land use mapping of a sample area in order to test the suitability of the classification adopted, to establish a ground truth correlation for each category of land use through intensive field verification of sample areas selected randomly, and to test the definition of each classification unit against the level of reliability in identification of that land use. It is necessary to continue this project further to evolve a general model for the functional relationship between semantic information performance and various factors affecting it and to work out methodology of presentation of various statistical and the thematic information. A specimen of the land use classification map which has been prepared is presented (Fig. 1).

CRITERIA FOR EVALUATION OF CLASSIFICATION

To provide a framework for the evolution of a land use classification system for the Urban Area of Dehra Dun City, it was essential to consider the macro functions as well as land uses, peculiar to the core of an Indian settlement. Within the scope of the present study, the factors of significance to photo-identification were only taken into consideration. The criteria considered were as follows:

a) A detailed classification of areas under mixed uses gives results of
poor significance if the photography is not of required specifications.

b) Detailed classification to specify usage of a single building structure of areas having high density of dwellings in the city centre was not attempted considering the scale of photography used. The classification for Urban core, was made on parcel basis rather than on unit basis. However, large commercial, industrial and service establishments were separated within such heterogeneous parcels.

c) The city core is marked with mixed land uses and different land uses of the same space. In order to generalise areas of such nature and arrive at a practical classification unit, such areas were classified under “mixed dwellings”. Since such areas are predominantly under residential use, the classification unit of the “mixed dwellings” was grouped under the main group “residential”.

d) Commercial establishments like retail and wholesale trade, warehouses, restaurants etc., which could not be identified due to poor ground resolution of the available photography and lack of indicators, were grouped under single category “commercial”. However, residential establishments run on commercial basis such as hotels, hostels, tourist rest houses etc. were grouped under the land use “residential/commercial establishment”. Similarly public utility buildings such as theatres, offices, banks, etc., were grouped under “services” because of the nature of their functions.

e) Land uses such as agriculture, unused open space, areas under development, recreational etc., signifying the unconstructed space were classified under the main head of “open space”. However, it was recognised that a detailed classification resulting in land utility map of urban area including urban fringe area, can be developed through interpretation of aerial photograph on suitable scale.

f) The scope of development of a land use classification was limited to examination and evaluation of land uses existent in the core of Dehra Dun (non-existent land use categories were omitted).

**CLASSIFICATION**

A land use classification system recommended by the Town and Country Planning Organisation, Delhi, was taken as basis for evolving present classification for the urban core of Dehra Dun. Based on the criteria discussed earlier, the following land use classification was adopted:

<table>
<thead>
<tr>
<th>Main Groups</th>
<th>Subgroup</th>
<th>Description</th>
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<tbody>
<tr>
<td>Residential</td>
<td>i) Single family</td>
<td>Parcels having more than 75% of single family dwellings with or without open space (including detached dwellings also).</td>
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(Contd.)