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LAND USE AND NATURAL RESOURCE MAPPING: GLOSSARY OF TERMS

By Eddie L. Schwertz, Jr., Stephan W. Miller, George L. Loelkes, Jr.
and William C. Good

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INTRODUCTION

The national land use and land cover mapping program of the U.S. Geological Survey (USGS) has been underway since 1975. During this period a number of users and potential users of the maps and digital data have asked for clarification of terms used in various aspects of the interpretation, compilation, computerization, and analysis of the mapped data.

The need for clarification was emphasized during the recently completed 2-year demonstration Program for Technical Assistance in the Analysis of Land Resources which was jointly funded by the Ozarks Regional Commission (ORC) and the USGS. This program actively involved Federal, State, sub-State, and local agency personnel in the ORC as well as in Iowa, Illinois, Minnesota, Nebraska, and Wisconsin. During the 2 years, program staff visited over 200 governmental agencies and contacted over 500 people.

In the course of the visits it became apparent that a glossary was needed to define terms commonly used in mapping land use and land cover and other types of natural resource information such as soils, slope, and flood plain parameters. This need was further emphasized during the numerous workshops and seminars held for the ORC States.

This glossary has been prepared as a followup to efforts began during the demonstration program. It is designed

to serve as a ready reference for users of natural resource maps and for natural resource planners and others involved in the preparation and use of land use maps and natural resource information.

The glossary contains graphic as well as digital cartographic terms used in the compilation of maps and map data. Each definition is followed by a bracketed code which identifies its source. Definitions have been tailored, where appropriate, to correspond to usage in the National Mapping Division. Terms defined by the Geographic Investigations Office, National Mapping Division, are indicated by the source code "GIO." Definitions which follow commonly accepted usage have been extracted from established reference sources. Titles of all sources are provided in the listing of Sources of Definitions. Full bibliographic information for each source is provided in the Selected References.

Glossary users may contact the following office for clarification of any related term not included in the glossary, or to offer comments, ideas, or suggestions for its improvement.

Geographic Investigations Office
Mid-Continent Mapping Center
U.S. Geological Survey
1400 Independence Road, Mail Stop 821
Rolla, Missouri 65401
Telephone (314) 341-0846
FTS 277-0846

SOURCES OF DEFINITIONS*

<u>Code</u>	<u>Source</u>
AHD	- The American Heritage Dictionary of the English Language Morris, William, ed.
ATC	- Automation Terms in Cartography American Congress on Surveying and Mapping
BCT	- Basic Computer Terms Louisiana State Planning Office
CAC	- Computer-Assisted Cartography Monmonier, M.S.
CB	- Guide to Programs and Publications: Subjects and Areas U.S. Department of Commerce, Bureau of the Census
CIA	- Computers in Action Spencer, D.D.
CMH	- Coastal Mapping Handbook Ellis, M.Y., ed.
DCB	- Digital Computer Basics U.S. Department of Defense, Bureau of Naval Personnel
EC	- Elements of Cartography Robinson, A.H., Sale, R.D., and Morrison, J.L.
ECS	- Encyclopedia of Computer Science Ralston, Anthony, ed.
FR	- Federal Register U.S. Department of Housing and Urban Development, Federal Insurance Administration
GDH	- Geographical Data Handling Tomlinson, R.F., ed.
GIO	- Geographic Investigations Office, Mid-Continent Mapping Center
GIS	- Geographic Information Systems, Methods and Equipment for Land Use Planning International Geographical Union, Commission on Geographical Data Sensing and Processing
GMCGT	- Glossary of Mapping, Charting, and Geodetic Terms U.S. Department of Defense, Defense Mapping Agency Topographic Center

*See selected references for full bibliographic information.

- GOG - Glossary of Geology
Bates, R.L., and Jackson, J.J., eds.
- ICS - Introduction to Computer Science
Gear, C.W.
- IP - Information Processing
Bohl, Marilyn
- MFA - Maps for America
Thompson, M.M.
- MP - Manual of Photogrammetry
Slama, C.C., ed.
- MRS - Manual of Remote Sensing
Reeves, R.G., ed.
- PDBM - Principles of Data-Base Management
Martin, James, Jr.
- PP - Pocket Pal
International Paper Company
- PP964 - A Land Use and Land Cover Classification System for Use With Remote
Sensor Data
Anderson, J.R., Hardy, E.E., Roach, J.R., and Witmer, R.E.
- RS - Remote Sensing
Estes, J.E., and Senger, L.W.
- SCSA - Resource Conservation Glossary
Soil Conservation Society of America
- TI - Topographic Instructions: Definitions
U.S. Geological Survey
- VDP - Vocabulary for Data Processing, Telecommunications, and Office Systems
International Business Machines Corporation
- WD - Webster's New World Dictionary
Guralnik, D.B., ed.

GLOSSARY

aerial photography - The art, science, or process of taking aerial photographs. [GMCCT]

ALGOL - An acronym for algorithmic oriented language, a higher level programming language particularly useful for expressing mathematical relationships which is more widely used in Europe than in the United States. [GDH]

algorithm - A set of well-defined rules for the solution of a problem in a finite number of steps; for example, a complete statement of a procedure for computing a rate of return. [IP]

alphanumeric or alphameric - Pertaining to a character set that includes both alphabetic characters (letters) and numeric characters (digits) and usually special characters such as punctuation marks. [IP]

analog - In computers, representation of numerical quantities by means of physical variables, such as translation, rotation, voltage, or resistance. Contrast with digital. [DCB]

analog computer - A computer that operates on data in the form of continuously variable physical quantities such as flow, pressure, or temperature, translated into related mechanical or electrical quantities which serve as analogs (representations) of the data. Contrast with digital computer. [IP]

arc - In computer terminology, curved or straight line segments defined by a series of x, y coordinate pairs bounded by end nodes. An arc is one of the basic topological units used in the GIRAS data structure. Arcs are linked together to form polygons. [GIO]

ASCII - An acronym for American Standard Code for Information Interchange, a seven-bit code adopted as a standard to facilitate interchange of data between various machines and systems in teleprocessing environments. [IP]

assembly or assembler language - A low-level symbolic programming language. Assembly language instructions are written on the basis of a subsequent one-for-one conversion from machine-language instructions. [CIA]

associated maps - Maps of Political Units, Census County Subdivisions, Hydrologic Units, Federal Land Ownership, and possibly State Land Ownership prepared at the same publication scale as the USGS land use and land cover maps. [GIO]

attribute - In data base management concepts, a field in a record containing information about an entity. A single item of data in a data base. For land use and land cover maps, for example, a polygon is an entity of data and the land use code associated with the polygon is the attribute. [GIO]

automated cartographic systems - Automated methods of producing maps and charts in graphic or digital form. [GDH/GIO]

automation - The entire field of investigation, design, development, application, and method of rendering processes or machines self-moving or self-controlling. [ATC]

base map - A map or chart showing certain fundamental information, used as a base upon which additional data of specialized nature are compiled or overprinted. Also, a map containing all the information from which maps showing specialized information can be prepared. [GMCCT]

batch processing - A method whereby items are coded and collected into groups and then processed sequentially in a computer. [GDH]

binary number system - A numeration system using the digits 0 and 1 and having a base of 2. For example, the binary numeral 1001 means $(1 \times 2^3) + (0 \times 2^2) + (0 \times 2^1) + (1 \times 2^0)$ which is equivalent to the decimal number 9. [IP]

bit - An acronym for binary digit; the smallest unit of data in the representation of a value in binary notation. A bit can be either a 0 or a 1. [IP]

blue-line print - A positive copy of a map or other data printed in blue. [TI]

Boolean algebra - A series of algebraic systems including set algebra and the operations of set complement, union, and intersection. It also includes concepts of logical operators for comparing values (such as "equal to," "not equal to," "less than," "greater than") and logical connectors for extended comparisons (such as "and" and "or"). Named after George Boole, an English mathematician and logician. [GIO]

buffer - The internal portion of a data processing system serving as intermediary storage between two storage or data handling systems with different access times or formats. [GDH]

bug - An error in a routine or a malfunction. [GIO]

byte - A small group of adjacent binary digits considered as a single unit of information within a computer. On most computers a byte consists of six or eight binary digits. [GDH]

Cartesian coordinates - See plane coordinates.

cathode-ray tube (CRT) - A vacuum tube generating a beam of electrons which can be deflected by electronic and magnetic fields. The terminus of the beam is visible as a spot or line of luminescence on a sensitized screen at one end of the tube. The common television picture tube is a CRT. [RS]

census county divisions (CCD's) - Community areas which have been defined for census purposes by the U.S. Bureau of the Census with the cooperation of State and local officials. [CB]

Census County Subdivisions Map - A map depicting the census county subdivisions or equivalent areas for census tracts within Standard Metropolitan Statistical Areas as used in taking the 1970 or 1980 Census of Population. Each area is identified by an appropriate code, as defined by the U.S. Bureau of the Census. [GIO]

centroid - An x, y coordinate point which is used to represent the mean location of a polygon area. [GIO]

CIR film - See color-infrared film.

clear film - A clear transparent photographic film, often referred to as mylar film. [GIO]

COBOL - An acronym for common business oriented language, a computer language used particularly for business data processing. [GIS/GDH]

color-infrared (CIR) film - A film with three emulsion layers, one of which is sensitive to that portion of the electromagnetic spectrum with wavelengths just beyond the red end of the visible portion of the spectrum. [GIO]

compilation scale - (1) The scale at which a map or chart is originally prepared. This scale may be larger than final reproduction or publication scale. [GMCCT] (2) For land use and land cover maps, the compilation scale will often (but not always) be the scale of the source photographs. For associated maps of political units, hydrologic units, census county subdivisions, Federal land ownership, and State land ownership, the compilation scale is usually the publication scale-- 1:250,000 or 1:100,000, as appropriate. [GIO]

compiler - (1) A computer program which in addition to performing the functions of an assembler has the following characteristics: (a) it makes use of information on the overall logical structure of the program to improve the efficiency of the resulting machine program; (b) its language does not parallel the actual form of the machine language, but is oriented toward convenient problem or procedure statement; (c) it usually generates more than one machine instruction for each symbolic instruction. [PDBM] (2) In mapping, the person who selects and assembles map data from various source materials (such as existing maps, aerial photographs, surveys, and new data) and prepares a new or improved map based on this detail. [GIO]

computer - A device for solving problems by accepting data, performing prescribed operations on the data, and supplying the results of these operations. In data processing, the device is usually a stored-program computer, which performs these operations without the intervention of a human operator. [IP]

computer (systems) analyst - A person involved in data processing who is responsible for guiding the technical aspects of system development. An

analyst is usually subordinate to a data processing manager or data base manager, and directs the work of programmers who are usually given specific work tasks. [GIO]

computer graphics - Maps, graphs, or diagrams plotted directly or displayed on a cathode-ray tube from data stored in computer banks and suitable for publication with minimal manual cartographic enhancement. [GIO]

computer language - An organized sequence of letters and symbols forming significant code words that are linked together according to an observed syntax and interpreted by a computer into understandable and operational instructions. [ICS]

computer programmer - A person who designs, writes, tests, and maintains computer programs. [BCT]

computer terminal - An input/output device operated at a distance from the central computer facility. Also referred to as a remote terminal. [IP]

computer word - A group of characters (bytes) occupying a single storage location in the computer. The word is treated and transported as a unit in the electronic circuitry. [GDH]

contact print - A photographic image produced by the exposure of a sensitized emulsion in direct contact with a negative or positive transparency. The resultant product is reproduced at the same size (scale) as the original. [GIO]

continuous tone - A photographic image which has not been screened and contains gradient tones from black to white. [PP]

contour - A line joining points of equal elevation above or below a datum. [GDH]

contrast (photography) - The actual difference in density between the highlights and the shadows on a negative or positive. Contrast is not concerned with the magnitude of density, but only with the difference in densities. [MP]

control points - (1) For the graphic input procedure of GIRAS, nine points on the 1:250,000-scale map projection neatline with known geographic and digitizer coordinates. Control points are used when rotating, translating, or scaling digitized coordinates. [GIO] (2) Any station in a horizontal and (or) vertical control system that is identified on a photograph and used for correlating the data shown on the photograph. [GMCCT]

control survey nets, national - Two geodetic control survey networks extending over the United States, established and maintained by the National Geodetic Survey (NGS) of the National Ocean Survey (NOS), and comprising: (1) The basic horizontal-control net consisting of arcs of first- and second-order triangulation and lines of first- and second-order traverse, some of which have been established by the U.S. Geological Survey, the U.S. Army Corps of Engineers, and other organizations. The derived survey data are coordinated and correlated on the North American Datum of 1927, pending a 1983 general adjustment. (2) The vertical-control net consisting of interconnected lines of first- and second-order spirit leveling which determine the elevations of thousands of bench marks above or below a common datum (mean sea level). This network, based on the 1929 general adjustment, also includes lines established by the U.S. Geological Survey, the U.S. Army Corps of Engineers, and other organizations. [CMH/GIO]

core storage - A type of storage system in which the magnetic core is the basic memory element. [DCB]

CPU - An acronym for central processing unit. Synonym: Processor. [GHD]

CRT - An acronym for cathode-ray tube.

cursor - An aiming device, such as a lens with crosshairs, on a digitizer. [GIO]

data - Facts that have been collected, categorized, and recorded in some fashion. A representation of events, concepts, and instructions, including numbers, letters, and symbols, arranged in a specialized manner to facilitate communication, interpretation, or processing by humans or computer equipment. [ICS]

data base - A collection of inter-related or independent data items stored together without unnecessary redundancy, to serve one or more applications. "Data base" usually connotes a systematized collection of data that can be immediately accessed and operated upon by a data processing system for a specific purpose. [VDP]

data density - The volume of digital data generated from a unit length or area on a map. See packing density. [GIO]

data element - A single observation or fact regarding a person, place, or object usually recorded as a single element or item of data. See attribute; entity. [GIO]

data file - A collection of similar or related records grouped for processing. An example of a data file would be the complete set of x, y coordinates defining the polygons from a map overlay. All x, y coordinates for a single polygon constitute a record. [GIO]

data handling - Specific techniques of an information system concerned with successively refining data. See data manipulation. [GDH]

data manipulation - As generally defined, synonymous with data handling--that is, it refers to processing of data to produce reports, records, files, etc. In a more specific sense, refers only to those specific techniques of data handling which will allow or facilitate subsequent processing to retrieve or analyze the data. For example, an area of interest such as a county or hydrologic unit may be split into two map sheets and consequently two data files. Prior to processing that spatial unit through certain retrieval or analytical techniques, it may be necessary to merge the map sheets or data files so that the unit can be subsequently processed in its entirety. [GIS]

data reduction - Any process which transforms data into a more condensed or simplified form to facilitate its use. As an example, certain automated techniques capture data at a much greater density than is actually required to replicate the graphic mapped data. A perfectly straight line from the graphic data may contain three or more points when in fact only two points are required. The elimination of all but the terminal points of the line can be referred to as data reduction. See thinning. [GIO]

data set - (1) A major unit of data storage and retrieval, as viewed by operating-system programs; loosely, a file. (2) A device that performs modulation or demodulation and control functions necessary to provide compatibility between user equipment and communication facilities; if the device can perform both modulation and demodulation it may be called a modem rather than a data set. [IP]

data volume - The total magnitude of data to be handled. Operational measures for digital data include the number of line inches of x, y coordinates, total number of square inches of mapped data, total number of grid cells for a region (assuming various grid cell sizes), and so forth. [GIO]

debug - Test to detect errors in a computer program or to correct malfunctions in the computer or its peripheral equipment. A corrected program is said to have had the "bugs" removed. Synonymous with troubleshooting. [BCT/GDH]

deck - A collection of computer punch-cards, usually a complete set used for a specific purpose. Synonymous with card deck. [BCT]

deep-etch - (1) In offset lithography, a plate used for extended printing runs where inked areas are slightly recessed below the surface. (2) In the National Mapping Division, the term is sometimes used to describe two different processes: (a) Transferring a linework image from a positive to a scribecoat (a pre-sensitized scribe material). Subsequent exposure and developing removes the emulsion, duplicating the original linework image as a negative. The advantage of this method is the ease in making additions or corrections using conventional scribing techniques. (b) Making an open-window negative. "Peelcoat" material is exposed to a light source through a scribed or photographic negative original. Emulsion is removed in exposed areas during developing, thus providing an outline around areas from which remaining emulsion is removed (peeled) manually. This process is often referred to as etch rather than deep-etch. [GIO]

diazo print - A print on light-sensitized material, made directly by exposure to strong light, usually ultraviolet light, from a positive transparency. Generally scale-stable when made in a vacuum frame, but elongated in direction of movement through a circular-drum printer. [GOG]

digital - Representation of data in the form of bits. Contrast with analog. [GDH]

digital computer - A computer that represents quantities as digits, usually from the binary number system. Contrast with analog computer. [GDH]

digital data - Data that have been converted to machine-readable form. The term is specifically used to distinguish the data from parent source material, which is in graphic form. Contrast with graphic data. [GIO]

digital plotter - See plotter, digital.

digitization, automatic - The process of conversion of analog or graphic data into digital form using automatic processors such as automatic line following, character recognition, pattern recognition, or scanning. [GDH]

digitization, manual - The process of conversion of analog or graphic data into digital form by an operator with or without mechanical or computer aids (see encode). [GDH]

digitizer - Specialized computer equipment designed to facilitate the conversion of graphic data to machine-readable form. [GIO]

digitizer, graphic - A machine that changes graphic cartographic information into a digital format for computer input. [GDH]

digitizer, line-following - A device which automatically tracks an individual line and at selected intervals digitally records its position with respect to an arbitrary coordinate system. [GDH]

digitizer, point - A manually controlled cursor that senses positions, usually by electromechanical means. An operator must activate the recording of positional elements or other information. [GDH]

direct access - The retrieval of data from a storage location by referencing its location rather than by relating it to the previously retrieved or stored data. [BCT]

disk - See magnetic disk.

display - A visual representation of information, including words, numbers, and drawings on a CRT console screen that is connected to a computer. A display is usually a temporary representation, such as current values or readings, and is not intended as a permanent record. [GIO]

documentation - The process of gathering, organizing, storing, and indexing information into an orderly presentation. Documentation of a computer program includes written text and flow charts, which indicate the purpose, functions, and operational details of the program. Proper documentation facilitates the use of the computer program. [BCT]

EBCDIC - An acronym for Extended Binary Coded Decimal Interchange Code, an eight-bit code used to represent specific data characters in many current computer systems. [IP]

editing - Detection and correction of the data obtained in graphic data reduction. [GDH]

encode - In graphic to digital data conversion, the process of creating machine-readable data from graphic, tabular, or other source data. The term "manual encoding" is often used in contrast to automated methods of digitizing. See digitization, manual. [GIO]

entity - Something about which data are recorded. In data base management concepts, a person, place, or object about which items of data are collected, recorded, and organized into fields, records, and data files. [PDBM]

enumeration district - Small areas defined by the U.S. Bureau of the Census having an average population of about 800. These areas are the building blocks upon which larger statistical units are made. They are redefined with each decennial census. [CB]

EOF - An acronym for end of file. [GIO]

etch - See deep-etch.

Federal Land Ownership Map - A map depicting the surface expression of Federally owned lands greater than 16 hectares (40 acres) in size administered by a Federal agency. Each Federal land ownership polygon is identified by a two-digit code number (attribute). [GIO]

field - (1) In a computer punchcard, a group of columns whose punch coding represents one item. (2) A subdivision of a computer word or instruction, for example, a group of bit positions within an instruction that holds an address. A subdivision of a record, that is, an item. [IP]

field classification - Field inspection and identification of features which a map compiler is unable to delineate; identification and delineation of political boundary

lines, place names, road classifications, buildings hidden by trees, and so forth. Field classification may be included as part of the control survey effort and normally is completed prior to the actual stereocompilation (or monocompilation) phase. [GMCCT]

field inspection - The process of comparing aerial photographs with conditions as they exist on the ground, and of obtaining information to supplement or clarify that which is not readily discernible on the photographs themselves. Also called classification survey. [GMCCT]

file - A collection of related data records treated as an entity in a data processing system. [GIO]

file header - Typically, records at the beginning of a file that describe the contents and purpose of the file. The header supplies values for parameters used by computer programs which process the file. [GIO]

file structure - The arrangement and organization of data in the file. [GIO]

film thickness - The depth or extent from one surface to its opposite surface, measured in thousandths of an inch. Two of the most commonly used film thicknesses are 0.004 (4 thousandths of an inch) and 0.007 (7 thousandths of an inch). The thicker the film, the greater the stability and durability. [GIO]

FIPS - An acronym for Federal Information Processing Standards, a series of publications issued by the National Bureau of Standards to provide guidelines in coding or classification. The National Mapping Division uses the U.S. Bureau of the Census Geographic Identification Code Scheme for reference to State, county, place, and minor civil division code numbers. [GIO]

fixed-length record - A file in which all records are limited to a uniform, predetermined length. A fixed-length record contrasts with a variable-length record. [BCT]

flood elevation study - An examination, evaluation, and determination of flood hazards and, if appropriate, corresponding water surface elevations, or an examination, evaluation, and determination of mudslide (mudflow) and (or) flood-related erosion hazards. [FR]

flood hazard area - The land in the flood plain subject to a one percent or greater chance of flooding in any given year. [FR/GIO]

Flood Hazard Boundary Map (FHBM) - An official map of a community, issued by the Federal Insurance Administrator, where the boundaries of the flood and mudslide (mudflow-) related erosion areas having special hazards have been designated as Zone A, M, and (or) E. [FR]

Flood Insurance Rate Map (FIRM) - An official map of a community on which the Federal Insurance Administrator has delineated both the special hazard areas and the risk premium zones applicable to the community. [FR]

flood insurance study - See flood elevation study.

flood plain or flood-prone area - Any land area susceptible to being inundated by water from any source. [FR]

floodway - See regulatory floodway.

flow chart - A graphic representation of the processing and control flow of a computer program. A flow chart can be very simple, with relatively few symbols, or it can be more

sophisticated in its content, but the level of detail throughout the flow chart should be consistent. A flow chart is a master plan for a computer program. Its purpose is to depict what is to be done and how it is to be implemented. [BCT/GIO]

format - A specific arrangement of fields of data on a document or in a file. The arrangement of punctuation on a cathode-ray tube screen, binary digits in magnetic-core storage, and the layout or arrangement of information on a message or form are various types of formats. [GDH]

FORTRAN - (1) An acronym for formula translator. (2) A name given to several specific procedure-oriented programming languages designed for algebraic, arithmetic, and scientific applications. [BCT]

general soil map - A small-scale map showing broad areas that have distinctive patterns of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, a map unit consists of one or more major soils and some minor soils but is named for the major soils. The map units on a general soil map are often referred to as soil associations. [GIO]

geocoding - The process of georeferencing and assigning attribute code values to spatial data items. [GIO]

geodetic coordinates - Latitude and longitude with reference to a standard spheroid. [GDH]

geographic coordinates - (1) Coordinates expressed in latitude and longitude. (2) More generally, the locational components of a data set. [GDH]

geographic data - (1) In computer terminology, data which contain a component describing their location on the Earth's surface. [GIS] (2) In general, all data that can be tied or linked to a specific geographic location. [GIO]

geographic data handling - The application of techniques for manipulating, retrieving, or analyzing data where the geographic location of the data observation is a prime component of the data set. [GIS]

geographic information system (GIS) - An organized sequence of operations, usually computerized, used to acquire, store, manipulate, and display geographic and topological data for analyses and use in decisionmaking processes. [GIO]

georeferencing - A scheme for defining locations on the Earth's surface. The georeferencing system establishes the reference or origin point and method of measuring distance and (or) direction. [EC]

GIRAS - An acronym for Geographic Information Retrieval and Analysis System, a collection of software programs used by the National Mapping Division to input, edit, and output land use/land cover and associated map data. [GIO]

GIS - An acronym for geographic information system.

graphic data - Data which exist as hard copy intended for visual representation. Contrast with digital data. [GIO]

graphic display data - Any map, chart, or graphic presentation which is displayed as a virtual image on an electronic display device; for example, a bar chart on a cathode-ray tube. [GIO]

grid cell - A unit area of regular shape and size that is used for collecting and analyzing spatial data. Grids are usually rectangular but can be formed by other regular geometric shapes such as hexagons. The rectangular grid cells are formed by the intersection of two sets of parallel lines in a planar coordinate system. GIRAS converts vector data representations of polygons into square grid cells of 200 meters by 200 meters (approximately 10 acres) for purposes of generating statistical acreage tabulations. [GIO]

grid coordinates - Euclidean coordinate system in which points are described by perpendicular distances from an arbitrary origin. [GDH]

ground resolution - The minimum distance between two or more adjacent features or the minimum size of a feature which can be detected; usually measured in conventional distance units, for example, feet or inches. [RS]

halftone - A reproduction of continuous tone artwork, such as a photograph, with the image formed by dots of various size. [PP]

hard copy - A permanent record of machine output in human-readable form; generally, reports, listings, and other printed documents. Contrast with soft copy. [IP]

hardware - The physical equipment or machinery, such as the computer and its components, rather than the computer programs or usage. Contrast with software. [BCT/GDH]

hectare - A unit of surface measure in the metric system, equal to 10,000 square meters (100 ares or 2.471 acres). [WD]

high-level programming language - A problem-oriented or procedure-oriented programming language; for example, FORTRAN, COBOL, PL/1, BASIC, RPG, APL. [IP]

Hydrologic Units Map - A map depicting hydrologic "cataloging unit boundaries" as delineated by the Water Resources Council and published by the U.S. Geological Survey's Water Resources Division on 1:500,000-scale State maps. Each hydrologic unit polygon is identified by its eight-digit reference number which permits the cataloging units to be aggregated upward to accounting units, subregions, and regions. [GIO]

independent city - Cities located outside of any "county" area and administering functions elsewhere commonly performed by counties; for example, Washington, D.C., St. Louis, Mo., and Norfolk, Va. [CB]

input data - Data to be processed by a computer. [IP]

input/output - A device or channel that provides the means of communication between the computer and external equipment or other computers. Input and output operations involve units of external equipment, certain registers in the computer, and portions of the computer control section. Abbreviated I/O. [DCB]

interactive computing - A mode of processing that permits frequent interchange between the user at a terminal and the computer during the execution of a program; generally, each entry from the terminal elicits a response from the computer, and vice versa. [IP]

interface - A common boundary at which two separate systems or portions of each system join or interact. An interface can be mechanical, as in adjoining hardware surfaces, or it can be electrical, as in signal-level

transformation points. Moreover, it can also refer to human and machine interface, and the interaction between man and computers. [GDH]

interpolation - A process of estimating values at regular locations or intervals generally on the basis of irregularly spaced point values. [GIO]

interpretation accuracy - The degree of conformity of thematic map polygons with a standard, or the degree of perfection attained in the photo-interpretation of items or objects. [GIO]

intersection - Region containing all the points common to two other regions. [GDH]

island - In computer terminology, a polygon surrounded by a larger polygon. In the context of the Geographic Information Retrieval and Analysis System (GIRAS), two types of islands are identified. The first type, consisting of a single polygon, is referred to as a simple island. The second type, referred to as a complex island, consists of a cluster of two or more adjacent polygons surrounded by a larger polygon. [GIO]

isoline - In cartography, a line on a map which connects points of equal value, for example, a contour line. [GIO]

job - A unit of work to be done by an electronic data processing system. [IP]

job-control language (JCL) - The programming language used to write job-control statements to direct operating-system programs. [IP]

job stream - The sequence of tasks in a job to be processed. See job. [GIO]

K - A symbol representing a value of 1000 or 1024, used in discussion of addressable storage locations; for example, 64K bytes usually means 64 x 1024, or 65,536 bytes. [IP]

key - One or more characters associated with a particular item or record and used to identify that item or record, especially in sorting, collating, or direct-access input/output operations; also called a control field. [IP]

keyboard - In computer terminology, a manual input device for function operation or alphanumeric entry. [GDH]

kilometer - A unit of length or distance equal to 1,000 meters (3,280.8 feet or 0.62137 mile). [WD]

label - Descriptor of an item being digitized. [GDH]

land capability - The suitability of land for use without permanent damage. Land capability, as ordinarily used in the United States, is an expression of the effect of physical land conditions, including climate, on the total suitability for use without damage for crops that require regular tillage, for grazing, for woodland, and for wildlife. Land capability involves consideration of (1) the risks of land damage from erosion and other causes and (2) the difficulties in land use owing to physical land characteristics, including climate. [SCSA]

land capability classes - Eight classes of land in the land capability classification of the Soil Conservation Service. The land capability classes are distinguished according to the risk of land damage or the difficulty of land use and are grouped according to lands suitable for cultivation and other uses

(Classes I through IV) and lands generally not suitable for cultivation without major treatment (Classes V through VIII). [SCSA].

land capability classification - A grouping of kinds of soil into special units, subclasses, and classes according to their capability for intensive use and the treatments required for sustained use, prepared by the Soil Conservation Service. [SCSA]

land cover - The vegetation, water, natural surface, and artificial constructions covering the land surface. [GIO]

land use - Man's activities which are directly related to the land. [PP964]

Land Use and Land Cover Map - A map showing man's use of the land, such as commercial or industrial, and the surface cover of the land, such as forest, wetland, or tundra. On U.S. Geological Survey land use and land cover maps, the data are classified within a framework of nine general categories (Level I) that are further subdivided into 37 more specific categories (Level II). The data are delineated as polygons. [GIO]

land use classification system - A hierarchical system of categories and subcategories designed to organize types of land use and land cover. [GIO]

land use inventory - The use of field mapping surveys or statistical sampling techniques to determine or estimate the extent and type of land use activities occurring in a study area. [GIO]

land use level - See level, land use.

land use mapping - The systematic delineation, by means of a coding system, of the various purposes for which homogeneous areas of land are being used by man. The delineation can be achieved from photographic source materials, field surveys, or a combination of the two, and is performed for an entire study area. The land use and land cover maps prepared by the National Mapping Division represent such a mapping effort. [GIO]

land use mapping specifications - The standards, guidelines, and instructions used by the National Mapping Division to prepare the land use and land cover maps and associated maps. [GIO]

land use statistics - A term used in the U.S. Geological Survey national land use and land cover mapping program to refer to acreage tabulations grouped by administrative or earth science/natural resource boundaries. [GIO]

language - In computer terminology, a set of characters, conventions, and rules that is used for conveying information to hardware. The three aspects of language are pragmatics, semantics, and syntax. [VDP/GIO]

layout - The drawing or sketch of a proposed printed piece. [PP]

leader line - A thin line drawn from an attribute code toward the polygon it represents. Leader lines are used in cases where polygons are too small to contain their identifying attribute codes. [GIO]

left reading - A term used to describe a photographic film that when viewed from the emulsion side of the image is unreadable or reversed. [GIO]

legend - See map explanation.

level, land use - The extent of hierarchical classification uses in the delineation of land use/land cover. Higher levels of land use classification are synonymous with more detailed land use maps. For example, a U.S. Geological Survey Level II land use/land cover map could have as many as 37 land use categories, whereas a Level I map of the same area could have only as many as nine Level I land use categories. [GIO]

light pen - A device, the size of a ballpoint pen, which is used for pointing to a location on a cathode-ray tube screen. The coordinates of the location are obtained usually from a time-lapse measurement within the raster image formation. [GDH]

line printer - A peripheral device for computers which prints a line at a time. At each position along the line a set of alphanumeric characters is available. Maximum line length varies by manufacturer, but usually 120-130 columns are available on high-speed printers. It can be used for high-speed listing or, by spacing symbols, as a plotting device. [GDH]

line scanning - The use of a facsimile device, such as an intensity-modulated cathode-ray tube, which produces an image by viewing and recording a scene a line at a time. [RS]

line segment - A line consisting of two end points. Arcs consist of a series of line segments; polygons consist of a closed series of arcs. [GIO]

LUDA - An acronym for the Land Use Data and Analysis Program of the U.S. Geological Survey to map nationwide land use and land cover. This program officially began in 1974 but was the outgrowth of geographic research and demonstration projects begun earlier. [GIO]

magnetic disk - A flat circular plate with magnetic surfaces on which data can be written by selective magnetization of portions of its surfaces; the disk may be conventional (hard) or flexible (floppy). [IP]

magnetic tape - A plastic tape whose surface is coated with a magnetic material on which data can be stored. Most magnetic tape is one-half inch wide and is available on reels ranging from 500 to 2,400 feet in length. [GHD]

manuscript - The original drawing of a map as compiled from various data. [GIO]

map - Graphic representation of the physical features (natural, artificial, or both) of a part or the whole of the Earth's surface, by means of signs and symbols or photographic imagery, at an established scale, on a specified projection, and with the means of orientation indicated. [MFA]

map, choropleth - A spatially arranged presentation of statistical data, such as densities, percentages, or rates, tied to administrative or enumeration districts, for example, States, counties, or other kinds of districts. Degrees of shading or various colors are used to show differences among the areas. Contrast with map, isopleth. [GIO/EC]

map collar - The space lying outside of the map neatline on which such information as map scale, explanations, map name, north arrow, credit data, etc., are displayed. [GIO]

map explanation - The caption or captions used to explain how the various symbols are used on the map, chart, or illustration. [GIO]

map, isopleth - A map consisting of lines connecting places of equal

value of distribution for a given theme such as rainfall or temperature. [MFA]

map, planimetric - A map showing the horizontal position of features. In comparison, a topographic map presents the vertical position of features in measurable form as well as their horizontal positions. See map, topographic. [GMCCT]

map projection - A systematic drawing of lines on a plane surface to represent the parallels of latitude and the meridians of longitude of the Earth or a section of the Earth. A map projection may be established by analytical computation or constructed geometrically. A map projection is frequently referred to as a "projection" but the complete term should be used unless the context clearly indicates the meaning. [GMCCT]

map projection changes - The use of manual mathematical procedures or computer routines to transform coordinates from one map projection system to another. [GIO]

map scale - The ratio between distance on a map and the corresponding distance on the ground. [MP]

map sheet - An individual map or chart, either complete in itself or part of a series. [GMCCT]

map, thematic - A map depicting the spatial distribution of a single topic or theme, for example, land use, rainfall, or population. [GIO]

map, topographic - A map that presents the horizontal and vertical positions of the features represented; distinguished from a planimetric map by the addition of elevation in measurable form. See map, planimetric. [CMH]

mapping overlay - See overlay (mapping).

mask - In color separation photography, an intermediate photographic negative or positive used in color correction. In offset lithography, opaque material used to protect open or selected areas of printing plates during exposure. [PP]

matte film - A photographic film with a matte or frosted surface. The material provides the benefit of stability plus allowing the user to add additional information in pencil or ink. [GIO]

merge - Combining two sequenced files into a single sequenced file, or joining two or more lines and areas together. When this operation is complex, a combination of deletion and interpolation may be required to present a pleasing appearance. [GDH/GIO]

microcomputer - A complete computer on a single miniature circuit board. [IP]

minicomputer - A stored-program computer, generally having less memory and a smaller word size than larger machines, and available at a purchase price of less than \$50,000. [IP]

minimum mapping unit - The smallest polygon area to be delineated on land use and land cover maps or associated maps. The minimum size is a function of final publication scale. For land use and land cover maps at a scale of 1:250,000, the minimum mapping units are 10 and 40 acres, depending upon the category mapped. [GIO]

minimum mapping width - The minimum width distance required to represent a linear feature as an area (for example, to show a river as a polygon with double lines) on a thematic map overlay as a function of final publication scale. For land use and land cover maps at 1:250,000 scale, the

minimum mapping width is approximately 200 meters (660 feet) except for limited-access highways and all "double-line" rivers appearing on the 1:250,000-scale base maps which have a minimum width of approximately 92 meters (300 feet). [GIO]

minor civil divisions (MCD's) - The primary political or administrative subdivisions into which counties are divided by State law or county ordinance, for example, townships or precincts. Censuses of population, housing, and agriculture are tabulated for MCD's in States where such area designations have been recognized by the U.S. Bureau of the Census. See also census county divisions. [CB]

modem - An acronym for modulator-demodulator, a device that both modulates and demodulates signals transmitted over communication facilities. [IP]

monoscopic land use mapping (compilation) - The procedure of preparing a land use map from aerial photographs by using only one photograph at a time, fitting it to a planimetric map base at the same scale as the photograph, and outlining the land use polygons on the planimetric map base. [GIO]

monoscopic viewing - Viewing anything with only one eye or, as applied to photointerpretation, using both eyes (binocular vision) to view a single photograph. [GIO/MFA]

national map accuracy standards - See United States National Map Accuracy Standards.

neatlines - The lines separating the body of a map from the map collar. On a standard USGS quadrangle map, the neatlines are most often the meridians and parallels delimiting the quadrangle. [GIO]

negative - (1) A photographic image on film, plate, or paper, in which the subject tones to which the emulsion is sensitive are reversed or complementary. (2) In cartographic scribing, a scribed sheet is essentially a manually produced negative. [GMCCT]

negative composite - A film negative produced by photographically combining two or more images overprinted in register to form one image. [GIO]

network - In data base management terminology, a data structure consisting of nodes tied to line segments or the end of a line segment. [GIO/IP]

node - Point common to two or more line segments. [GDH]

object code - Output from a compiler or assembler which is itself executable machine code or is suitable for processing to produce executable machine code. [VDP]

oblique photograph - An aerial photograph taken with the camera axis directed intentionally between the horizontal and the vertical. [GMCCT]

offline - Pertaining to equipment or devices that are neither in direct communication with, nor controlled by, the central processing unit. [IP]

online - Pertaining to equipment or devices that are in direct communication with, or controlled by, the central processing unit. [IP]

opaque - In photoengraving and offset lithography, to paint out areas on a negative not wanted on the plate. In paper, the property which makes it less transparent. [PP]

open file - A term applied by the U.S. Geological Survey to results of investigations that are made available to the public outside the formal Survey publication channels. Open file reports include manuscript or map copy, basic data, field notes, or other data that are not reproduced and distributed in quantity but are available for public inspection at indicated depositories. The open file Land Use and Land Cover and Associated Maps are available only from the National Cartographic Information Centers (NCIC) at minimal cost. The types of materials available are (1) stable base film positives (clear or matte), (2) semi-stable diazo foil (matte), and (3) paper diazo. Also available are printed paper land use and land cover maps published in the U.S. Geological Survey L-series. [GIO]

origin - The starting point for measurement, particularly of any Cartesian or planar coordinate system. The origin typically is at the southwest corner point of an area for x, y coordinate reference, but it may be shifted to the northwest corner for grid cells with row and column notation. [GIO]

orthophotograph - A photograph which is derived from perspective photographs and which is equivalent to a photograph made by orthographic projection. In a perfect orthophotograph, there are no displacements of images because of tilt or relief. [TI]

orthophotomap - An orthophotograph, or a mosaic of orthophotographs, in standard quadrangle format, printed in colors to approximate ground conditions and enhanced with cartographic symbols including contours, elevations, boundaries, roads, and drainage. [GOG]

orthophotoquad - A monocolor ortho-
photograph, or a mosaic of ortho-
photographs, in standard quadrangle
format with little or no cartographic
enhancement. [GOG] Orthophotoquads
have the same positional accuracy
requirement as that of standard topo-
graphic maps and portray by photo-
imagery an abundance of detail not
found on conventional line maps.
[TI].

overlay (mapping) - A record on a
transparent medium to be super-
imposed on another record; for
example, maps showing original land
grants (or patents) prepared as
tracing cloth overlays so that they
can be correlated with the maps
showing present ownership. Also,
any of the several overlays that may
be prepared in compiling a manuscript
map; usually described by name--for
example, lettering overlay. [MP]

overprinting - Superposition by
successive printing of line-drawn or
continuous-tone information. [GDH]

packaged programs - Standard programs
and subroutines written for wide-
spread distribution and supplied by
the computer manufacturers or soft-
ware vendors to their customers.
[GIO]

packing density - The rate of byte
storage per inch of magnetic tape.
Common packing densities are 800 bpi
(bits per inch) and 1600 bpi. [GIO]

parameter - A variable that is
assigned a particular value in order
to modify, control, or influence a
specific process or procedure.
Parameters are often used as upper
and lower limits of data being
processed. [GIO]

peripheral devices - Input/output
equipment used to transmit data to
or from a computer. [ATC]

photograph - A general term for a
positive or negative picture made
with a camera on sensitized material,
or paper prints made from such a
camera original. [TI]

photostat - A trademark for a device
used to make quick, direct-reading
negative or positive copies of
written, printed, or graphic
material. [AHD]

PIDPLOT - An acronym for Polygon
Identifier Plot, a GIRAS software
plotting program which identifies
the attribute type and polygon number
for each polygon. [GIO]

plane coordinates - A system of coor-
dinates in a horizontal plane, used
to describe the positions of points
with respect to an arbitrary origin.
The origin is established by the
intersection of two reference lines
passing at right angles to each
other. These reference lines form
the coordinate axes. The distances
parallel with the true, or arbitrari-
ly assigned, north-south axis are
called the ordinates, the y coor-
dinates, or the northings. The
distances parallel with the true, or
arbitrarily assigned, east-west axis
are called the abscissas, the x coor-
dinates, or the eastings. The merit
of a rectangular coordinate system is
that computations involving positions
of points can be performed using
plane trigonometry. [GIO]

planimeter - A mechanical or elec-
tronic instrument for measuring the
area and (or) length of a regular or
irregular plane figure by tracing the
perimeter of the figure. [GIO]

planimetric map - See map, plani-
metric.

plotter, digital - A device which can draw graphs and drawings under the control of the computer. Typical applications might be drawings of weather maps, land contour maps, subdivision maps, computerized art, bridge designs, seismic exploration plots, or highway maps. [CIA]

plotter, drum - A plotter where the sheet material is transported by a rotating drum which provides the motion for one axis of the mechanism by a forward or backward motion. Pens are mounted on a bar parallel to the drum axis. The bar movement provides the second axis. [GDH]

plotter, electrostatic - A graphic output device employing static electrical charges to selectively charge elements of a very fine matrix of points (typically 80 to 200 points per linear inch). Sensitized paper is moved past the charging comb and black dots are produced which form lines or symbols similar in appearance to the output from a pen plotter. The electrostatic plotter produces output much more rapidly than flatbed or drum plotters. [GIO]

plotter, flatbed - A plotter where the sheet material is fixed on a flat table surface and the pen or printer is carried by a gantry and trolley mechanism providing two axes of motion. [GDH]

plotter, pen - A drum plotter or flatbed plotter which utilizes drafting or ballpoint pens to draw vectors. Other devices such as a scribehead may be attached to more elaborate models of pen plotters. [GIO]

point - An item or object represented by x, y rectangular coordinate values on a map with respect to a reference origin. [GIO]

point-in-polygon - A computer algorithm for determining the relationship between an x, y coordinate point and a closed area of x, y coordinates. [GIO]

polar coordinates - A system of coordinates used to describe the position of a point in space with respect to an arbitrarily chosen origin by means of two directions and one distance, that is, the vectorial angles and radius vector magnitude. [GMCCT]

Political Units Map - A map depicting county or parish boundaries and independent city boundaries as delineated on the 1:250,000- or 1:100,000-scale planimetric base and verified with the "County Subdivisions - Townships and Places" maps from the U.S. Bureau of the Census. Each political unit polygon is identified by a five-digit geographic identification code, as defined by the U.S. Bureau of the Census. [GIO]

polyester film - A stable base material used for map work which will maintain close tolerance dimensions if temperature and humidity are retained within close limits. [GIO]

polygon - (1) A closed plane figure consisting of three or more line segments. (2) A closed plane area, which because of its administrative or physical properties, can be a homogeneous area in accordance with a classification scheme and (or) exacting specifications (for example, a land use, a county, or a hydrologic unit polygon). (3) When mapped data has been encoded, through digitizing, the digital data approximate the graphic data by a set of related x, y coordinates. The connected line segments created from the x, y coordinates define the boundaries of the closed polygon. [GIO]

polygon label - See attribute.

positional accuracy - A term used in evaluating the overall reliability of the positions of cartographic features on a map or chart relative to their true position, or to an established standard. [GMCGT]

positive - A photographic image on film, plate, or paper having approximately the same rendition of tones as the original subject; that is, light for light and dark for dark. [GMCGT]

positive composite - A film positive produced by photographically combining two or more negatives. [GIO]

pre-punch register system - A method in which a system of precisely located holes are punched in the margins of map or chart materials (such as films, vinyls, etc.) prior to their actual use. Exact registration of materials can be accomplished by placing register studs (small plastic or metal pins) through the holes thereby assuring exact registration of detail. [GMCGT]

program - A sequence of instructions that directs the computer to perform specific operations to achieve a desired result (often, the solution to a specific problem); it may consist of one or several modules or routines, each of which may be composed of several subroutines. [IP]

programmer - See computer programmer.

programming - The designing, writing, and testing of computer programs. [VDP/GIO]

projection - See map projection.

random access - The process of obtaining information from or placing information into storage where the time required for such access is independent of the location of the information most recently obtained or placed in storage. [GDH]

raster scan - A line-by-line sweep across a display surface to generate or record an image. [GDH]

raw data - Data that have not been processed or reduced. Raw data may or may not be in machine-readable form. [GIO]

record - A collection of related data items; for example, in inventory control, one line of an invoice constitutes an item, a complete invoice constitutes a record, and the complete set of such records constitutes a file. [IP]

rectangular coordinates - See plane coordinates.

registration - The process of superimposing two or more images or photographs so that equivalent points coincide. [GOG]

registration holes - See pre-punch register system.

regulatory floodway - The channel of a river or other watercourse and the adjacent land areas that must be reserved [set aside] in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. [FR]

relative accuracy - (1) A statement of condition resulting from an evaluation of the random errors in determining the positional orientation (for example, distance, azimuth) of one point or feature with respect to another. (2) (chart, feature to graticule) An evaluation of the random errors in chart features with respect to the graticule excluding any error in the graticule or the datum defined by the graticule. (3) (chart, feature to feature) An evaluation of the random errors in determining the positional orientation of one chart feature to another feature on the same chart. [GMCGT]

remote job entry (RJE) - Submission of control statement programs and data from a remote terminal, causing the jobs to be scheduled and executed as though encountered in the regular input stream at the computer site. [GIO]

resolution - (1) The ability of an entire remote sensor system, including lens, antennas, display, exposure, processing, and other factors, to render a sharply defined image. [MRS] (2) The minimum distance between two adjacent features, or the minimum size of a feature, which can be detected by remote sensing. For photography, this distance is usually expressed in lines per millimeter recorded on a particular film under specified conditions; as displayed by radar, in lines per millimeter. If expressed in size of objects or distances on the ground, the distance is termed ground resolution. [MP]

reverse reading - See left reading.

right reading - A term used to describe a photographic film that has been produced so that when viewed from the emulsion side the image is readable. [GIO]

rotation - In computer terminology, the coordinate transformation consisting of an angular displacement (theta, θ), or successive angular displacements, of coordinate axes with the origin remaining fixed. Normally, theta (θ) is the counter-clockwise angle that brings the points and axes into the desired polar coordinate orientation. Contrast with translation. [GIO]

run - A single, continuous execution of one or more routines, with little or no operator intervention, thereby

causing the computer to perform a series of prescribed operations on a given set of data; a processing run; may be categorized further as assembly run, compilation run, production run, test run, parallel run, etc. [IP]

scale - See map scale.

scale change - A linear transformation of data with a factor of enlargement or reduction applied to current coordinate values or dimensions. [GIO]

scanner - A device which systematically breaks up an image into picture elements (or pixels) and records some attribute of each picture element. [GDH]

scanner, drum - An apparatus which scans and records two or more gray levels, usually of reflected light, from a picture fastened to a rotating drum. [GDH]

scanner, flying spot - An apparatus which scans and records gray levels, usually of transmitted light, by electronic means. [GDH]

scanner, laser - A scanner plotter with the exception that the light source is replaced by a laser to give very fine resolution. Total map production time is normally increased appreciably. [GDH]

schema - A chart and (or) summary description of the overall logical structure of a computerized data base, including a description of such items as set occurrences, record occurrences and associated data items, and data aggregations. [PDBM/GIO]

screen, biangle - In photography, a clear film base containing a composite of two dot screens, with the screen angles oriented 30° apart. These screens are used to print tones of color for chart features with thin lines. The biangle screen will reduce the line weight to a gray value represented by the screen percentage. For example, a 25 percent screen will print a 75 percent reduction in density of the original line. The screen is measured with a transmission densitometer. [GIO]

scribing - The process of preparing a negative which can be reproduced by contact exposure. Portions of a photographically opaque coating are removed from a transparent base with specially designed tools. [GMCCT]

SHADE plot - A GIRAS plotting routine which displays polygon data through the use of various combinations of patterns and colors. Also see map, choropleth. [GIO]

soft copy - A temporary, or non-permanent, record of machine output, for example, a CRT display. Contrast with hard copy. [IP]

software - (1) Programs, procedures, rules, and any associated documentation pertaining to the operation of a computer system. (2) In word processing, computer programs, procedures, rules, and any associated documentation concerned with the operation of a word processing system. Contrast with hardware. [VDP]

soil association - (1) A group of defined and named taxonomic soil units occurring together in an individual and characteristic pattern over a geographic region, comparable to plant associations in many ways. Sometimes called "natural land type." (2) A mapping unit used on reconnaissance or generalized soil maps in which two or more defined taxonomic

units occurring together in a characteristic pattern are combined because the scale of the map or the purpose for which it is being made does not require delineation of the individual soils. [SCSA]

soil mapping unit - A kind of soil, a combination of kinds of soil, or miscellaneous land type or types that can be shown at the scale of mapping for the defined purposes and objectives of the survey. (Combination of kinds of soil includes soils association, complexes, undifferentiated soils, or any class or combination of classes at the family level or higher categories of the soil classification system.) Soil mapping units are the basis for the delineation of a soil survey map. Mapping units normally contain inclusions of soils outside the limits of the taxonomic name, or names, used as the name for the mapping unit. Mapping units are generally designed to reflect significant differences in use and management. [SCSA]

soil phase - A subdivision of a soil taxonomy, usually a soil series or other unit of classification based on characteristics that affect the use and management of the soil but which do not vary sufficiently to differentiate it as a separate soils series. A variation in a property or characteristics, such as stones, texture of the surface, etc. Phases of soil series are the major components of the soil mapping units shown on detailed soil maps in the United States. [SCSA]

soil series - A group of soils having horizons similar in differentiating characteristics and arrangement in the soil profile, except for texture of the surface portion, or if genetic horizons are thin or absent, a group of soils that within defined depth limits, is uniform in all soil characteristics diagnostic for series. [SCSA]

soil survey - A general term for the systematic examination of soils in the field and in laboratories; their description and classification; the mapping of kinds of soil; the interpretation of soils according to their adaptability for various crops, grasses, and trees; their behavior under use or treatment for plant production or for other purposes; and their productivity under different management systems. [SCSA]

soil taxonomic unit - A unit of all soils that falls within the defined limits of a class at any categorical level in a system of soil classification. Commonly used as a member of the lowest class in the present classification scheme and in that use is equivalent to a series. [SCSA]

soil type - A subgroup or category under the soil series based on the texture of the surface soil. A soil type is a group of soils having horizons similar in differentiating characteristics and arrangement in the soil profile and developed from a particular type of parent material. The name of a soil type consists of the name of the soil series plus the textural class name of the upper part of the soil equivalent to the surface soil. Thus Miami silt loam is the name of a soil type within the Miami series. [Soil Conservation Service]

sort - The arrangement of data or items in an ordered sequence by the application of specific rules. [ATC]

spatial data - See geographic data.

specifications - See land use mapping specifications.

stand-alone - A computer operation with enough local or internal intelligence to perform certain tasks

independent of a related computer operation. An interactive graphics system, for example, supported by a minicomputer but capable of linking to a larger computer, can be considered a stand-alone system. Many large plotters are stand alone in that plot files are generated on a computer, stored on an intermediate medium such as magnetic tape, and processed by the plotter and its peripheral equipment. [GIO]

state coordinate system - The plane rectangular coordinate systems established by the U.S. Coast and Geodetic Survey (now the National Ocean Survey), one for each State in the United States, for use in defining positions of geodetic stations in terms of plane rectangular (x and y) coordinates. Also called state system of plane coordinates. [GMCCT]

State Land Ownership Map - A map depicting the surface expressions of State owned lands greater than 16 hectares (40 acres) in size. Maps are prepared only for those States with which the Survey has a joint funding agreement, with the State furnishing the necessary ownership information for compiling the maps. Each State land ownership polygon is identified by a numerical code established at the time the State turns over the ownership source materials. [GIO]

statistics - See land use statistics.

stereoscopic - Pertaining to the use of binocular vision for observing a pair of overlapping photographs or other perspective views, giving the impression of depth. [MFA]

stereoscopic land use mapping

(compilation) - The procedure of preparing a land use map from aerial photographs by means of photogrammetric stereoplotting instruments. The procedure requires the use of two overlapping aerial photographs to provide three-dimensional viewing of the overlapping area. The control used to establish the photographic model is generally obtained from the map base used for compilation. The optical train of the photogrammetric instrument may be connected to different types of plotting tables which allow plotting of land use polygons in their proper positions on the compilation base map. Contrast with monoscopic land use mapping. [GIO]

stickup - Letters, figures, or symbols printed or photographed on a medium to which a pressure-sensitive adhesive has been applied. This permits ease of transfer and positioning of information on maps or charts. [TI]

subroutine - A computer program which uses data or instructions from another program. A means of dividing a large computer program into smaller routines which may be used without modification in diverse applications. [GDH]

system - An organized combination of processes, procedures, or techniques assembled to accomplish specific operations or tasks. System is a general term that refers to the people, equipment, procedures, and programs involved in an organized effort to accomplish specific and desired operations or tasks. [GDH]

systems analysis - In computer terminology, the selection of the complex of equipment that might be used in a computer-based operation. The selection should be such that it maximizes

information management needs and is cost effective. [ECS/GIO]

systems analyst - See computer (systems) analyst.

table lookup - The operation of obtaining a value from a table stored in the computer. [GDH]

tape drive - A mechanism that transports paper or magnetic tape past a read/write head. Also known as tape transport. [GIO]

thematic map - See map, thematic.

thinning - Removal of redundant points composing a line in order to reduce storage requirements. [GDH]

throughput - (1) The rate at which work can be handled by an electronic data processing system; (2) the total volume of useful work performed by a system over a given period of time. [IP]

time sharing - A technique or system for supplying computing services to a number of users at geographically scattered terminals, providing rapid responses so that each user appears to be the only one using the system. [IP]

topographic map - See map, topographic.

topological data structuring - In automated cartography, the explicit linking of nodes to lines to form arcs and arcs to map areas to form polygons. Areas not conforming to the standard definition of a polygon, such as an island with only one arc, require special treatment. Well designed topological data structures can reduce data storage requirements, facilitate automated editing, and permit digital geographic applications such as adjacency analysis. [GIO]

topology - In automated cartography, the characteristics of data which describe the spatial relationships, such as dimensionality, adjacency, or connectedness, of map elements (nodes, arcs, and polygons) to each other. See topological data structuring. [GIO]

tracing film - A semitransparent matte-surface, generally stable-base material, useful in the preparation of overlays. [GIO]

translation - In computer terminology, the parallel and equal displacement of every point (x, y coordinate pair), node, and arc in a plane coordinate system to an alternate position. Contrast with rotation. [GIO]

turnaround time - (1) The elapsed time between submission of a job to a computer center and receipt of output. (2) In a data communication system, the time required to reverse the direction of transmission from send to receive or vice versa when half-duplex transmission is used. [IP]

turnkey system - A term used to describe a computer system consisting of both hardware and software that is delivered ready for immediate customer operation. [CAC/GIO]

United States National Map Accuracy Standards - (1) Horizontal accuracy: For maps at publication scales larger than 1:20,000, 90 percent of all well-defined features, with the exception of those unavoidably displaced by exaggerated symbolization, will be located within 1/30 inch (0.85 mm) of their geographic positions as referred to the map projection; for maps at publication scales of 1:20,000 or smaller, 1/50 inch (0.5 mm). (2) Vertical accuracy: 90

percent of all contours and elevations interpolated from contours will be accurate within one-half of the basic contour interval. Discrepancies in the accuracy of contours and elevations beyond this tolerance may be decreased by assuming a horizontal displacement within the permissible horizontal error for a map of that scale. Commonly referred to as map accuracy standards. [GMCCT]

Universal Transverse Mercator (UTM) grid - A grid system, in meters, based on the Universal Transverse Mercator projection, applied to maps of the Earth's surface extending to 84° N. and 80° S. latitudes. [TI/GIO]

update - To bring a master file up to date by changing, deleting, or adding to its contents current information, according to a specified procedure. [GIO]

utility program - A general-purpose routine that performs some activity required in most electronic data processing systems such as transferring files from punched cards to magnetic tape or preparing direct-access storage media for use in subsequent processing. [IP]

variable - An abstract quantity that can assume a given value used in computer programming languages to denote which quantities are to be processed and in what manner; for example, adding any two numbers and storing. [GIO]

vector - (1) A line segment composed of x, y coordinate points which is used to construct any line form on a plotter, drafting unit, or display. [GDH] (2) In computer graphics, a directed line segment. [VDP]

vertical control points - See control survey nets, national.

vertical photograph - An aerial photograph taken with the axis of the camera being maintained as closely as possible to a truly vertical position with the resultant photograph lying approximately in a horizontal plane. [GMCCT]

virtual image - See soft copy.

weeding - See thinning.

windowing - A method of designating and separating a particular area of map data for presentation on a display. [GDH]

word length - The number of digits or characters in a computer word; for example, 32 binary digits, or bits. [IP]

write - To record data from any source onto an external storage medium, such as magnetic tape, disk, or cathode-ray tube. Write generally refers to the recording of data on a moving magnetic surface, whereas print refers to the recording of data on paper. [GIO]

wrong reading - See left reading.

x, y coordinates - See plane coordinates.

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