

9160 - Mapping Sciences

Table of Contents

[.01 Purpose](#)

[.02 Objectives](#)

[.03 Authority](#)

[.04 Responsibility](#)

[.05 References](#)

[.06 Policy](#)

[.07 File and Records Maintenance](#)

[.08 Coordination of the Annual Program of Work](#)

Glossary of Terms

[.01 Purpose](#). This Manual Section establishes responsibilities, policies, and procedures for ensuring mapping sciences support for the management of BLM public land resources.

[.02 Objectives](#). The mapping sciences within the BLM includes the disciplines, tools and associated data management of cartography, photogrammetry, remote sensing, and geographic information systems (GIS). The objective is to provide technical guidance, training, and quality control for the collection, processing, display and archive of base cartographic data, including Resource Base Data, in support of the BLM mission. This is extended to provide quality assurance and oversight for the collection, compilation, and cartographic presentation of thematic resource data.

[.03 Authority](#).

A. Freedom of Information Act (5 U.S.C. 552).

B. Reports by Secretaries of the Interior and Agriculture, recommendations to Congress, contents of reports (16 U.S.C. 1275, Section (a)).

C. Economy Act (31 U.S.C 1535-36 (formerly codified 31 U.S.C. 686)).

D. Use of Off-Road Vehicles on Public Lands (42 U.S.C. 4321; Executive Order No. 11644, February 9, 1972, Public Information, Section 5).

E. United States Board on Geographic Names (43 U.S.C. 364).

F. Federal Land Policy Management Act (Subsection 1711, 43 U.S.C. 1701).

G. Depository Library Program (44 U.S.C. 1900).

H. Endangered Species Act of 1973 (U.S.C. 3410.2-4).

- I. National Environmental Policy Act of 1969 (42 U.S.C. 4321).
- J. Intergovernmental Act of 1968 (42 U.S.C. 2701).
- K. Military Surveys and Maps. Assistance of United States Mapping Agencies (10 U.S.C 4537).
- L. Metric System Authorized (15 U.S.C 204).
- M. National Historic Preservation Act (16 U.S.C 470), Executive Order No. 11593, May 15, 1971, Section 3.
- N. Working Capital Fund (16 U.S.C 579b).
- O. Exploratory program for Evaluation of Known Recoverable Coal Resources (30 U.S.C 208-1).
- P. Copies of Records, Charges, Disposition of Receipts
(43 U.S.C 1460 through 1463).
- Q. Roads (43 U.S.C 1762).
- R. Distribution and Sale of Public Documents, P.L. 90-620, (44 U.S.C. 1701-02).
- S. Public Contracts, Property Management (41 CFR 14).
- T. Records and Testimony (43 CFR 2).
- U. Designation of Areas and Sites (43 CFR 2070).
- V. Off-Road Vehicles (43 CFR 8340; Subsection 8342.2).
- W. National Archives and Records Administration (NARA), (36 CFR 1200, Subchapter B).
- X. General Services Administration (GSA) records administration regulations, (41 CFR 201-2, 6, 7, 9), (55 CFR 53386).
- Y. Coordination of Surveying and Mapping Activities. (OMB Circular A-16 (1990)).
- Z. User Charges (OMB Circular A-25).
- AA. Performance of Commercial Activities (OMB Circular A-76).
- BB. Internal Control Systems (OMB Circular A-123).
- CC. Management of Federal Information Resources (OMB Circular A-130).

.04 Responsibility.

- A. The Director and Deputy Director have overall responsibility for ensuring that BLM resource management officials are provided with the mapping support required to carry out their responsibilities.
- B. The Assistant Director for Management Services is responsible for policy development and interpretations, program direction, interagency and intraagency coordination, and leadership for mapping sciences activities in the BLM. This responsibility is exercised through the Chief, Division of Information Resources Management (IRM).

C. The Assistant Directors for Lands and Renewable Resources, Energy and Mineral Resources, Fire and Law Enforcement, and Support Services have responsibility for:

1. Identifying mapping-related requirements and funding.
2. Establishing standards for the automation of resources data and articulating the future use and application of this data. Coordination of these activities occurs through the Assistant Director for Management Services.
3. Ensuring that mapping sciences and spatial data policies and procedures are implemented within their programs.

D. The Chief, Division of IRM (Headquarters Office), is responsible for:

1. Providing Bureauwide leadership and guidance in establishing goals, objectives, policies, procedures, and standards for mapping sciences activities. This includes a lead role for the review of and recommendation for adoption of advanced technologies.
2. Evaluating mapping sciences activities performance and providing guidance for unusual problems where policy and guidance have not been established.
3. Preparing Annual Work Plan (AWP) directives and determining national level priorities through coordination with other Headquarters' staffs.
4. Providing mapping sciences policy and standards support to Headquarters' divisions and offices.
5. Identifying the levels of skill, knowledge, and ability required by mapping sciences personnel to provide high-quality products and services. Coordinating with all offices to determine Bureauwide training needs to support mapping sciences activities.
6. Providing Bureauwide coordination nationally and internationally to avoid duplication of effort, encourage the exchange of data, and to promote cooperative efforts. This requirement includes the lead for development of national level Memorandums of Understanding (MOU's) and Interagency Agreements (IA's) and oversight at all levels.
7. Ensuring the coordination of and response to Office of Management and Budget (OMB) Circular A-16. This includes oversight and coordination of BLM participation in the Federal Geographic Data Committee (FGDC) and Interior Geographic Data Committee's (IGDC) activities.
8. Ensuring coordination during the development and implementation of data and records administration policies as they relate to mapping sciences program activities, including applicable data security policies.
9. Representing BLM to the Civil Applications Committee (CAC), Board on Geographic Names (BGN) and other national and international activities affecting the mapping sciences.
10. Ensuring that Quality Assurance and Quality Control (QA and QC) policies are developed for mapping sciences products and data using established BLM data administration QA and QC policies and guidelines.
11. Providing technical expertise and oversight for technology transfer for those improvements adopted.

E. The Chief, Office of IRM/Modernization has the responsibility for:

1. Supporting the existing GIS (ADS/MOSS/COS) until the new GIS is operational.
2. Developing and supporting tools for transition to the new GIS.

3. Evaluating technological advances in hardware and software to determine whether incorporation of new technology is possible and advantageous to the agency.
4. Ensuring that the IRM/Modernization staff has the required level of skill, knowledge and ability to provide high-quality system administration and configuration management for the hardware/software being provided to support mapping sciences and spatial data processing.
5. Providing on-site liaison between the U.S. Geological Survey, National Mapping Division and the BLM at a National and Regional level to consolidate efforts and maximize resources in the area of geospatial data. Establishing cooperative programs and enhance the interchange of information for mapping sciences, data standards and land records and spatial data collection methodologies.
6. Assist the Washington Office and the State Offices in facilitating national and state MOU's and Interagency Agreements.
7. Providing technical direction and assistance to those GIS developmental analysis and modeling activities designated as bureauwide automation Information Resources management and modernization projects.
8. Providing the states with assistance in the preparation and review of technical specifications for GIS procurements. Maintain a clearinghouse of current specifications to assist requesting offices.

F. The Service Center Director has the responsibility for:

1. Providing technical support for all phases of the BLM's mapping sciences and spatial data functions. Providing leadership and guidance in development and implementation of procedures, and standards for mapping sciences activities.
2. Providing advice and counsel to all offices in evaluating mapping sciences activities performance and unusual programmatic problems.
3. Providing assistance to the Washington Office in the development of mapping sciences policy and standards.
4. Providing support for the writing and updating of mapping sciences manual and handbook sections.
5. Ensuring that the SC mapping science staff has the
required levels of skill, knowledge, and ability to provide high-quality products and services to all offices.
6. Assisting the Phoenix Training Center in needs assessment and provide Bureauwide training to support mapping sciences activities.
7. Providing Bureauwide support, advice, and council for interagency coordination to avoid duplication of effort, encourage the exchange of data, and to promote cooperative efforts. This includes the development and management of MOUs, and IAs.
8. Preparing and consolidating draft BLM responses to OMB Circular A-16, from guidance provided by the Washington Office.
9. Ensuring the implementation of data and records administration policies as they relate to SC mapping sciences activities, including appropriate data security.
10. Assisting in the development and implementation of QA/QC procedures for mapping sciences products and spatial data.

11. Providing technical direction and assistance to those mapping sciences designated as Bureauwide Automation, Information Resources Management, and Modernization (AIM) projects.
12. Reviewing mapping sciences hardware and software requirements to ensure conformance to BLM standards and policies.
13. Providing the States with assistance in the preparation and review of technical specifications for procurement. The SC will also maintain a clearinghouse of current specifications to assist requesting offices.
14. Evaluation and subsequent transfer of the appropriate mapping sciences technologies.

G. State Directors have the responsibility for:

1. Providing Statewide leadership and guidance in establishing goals, objectives, policies, procedures, and standards for mapping sciences activities.
2. Evaluating State mapping sciences activities and providing advice and counsel on unusual problems.
3. Preparing Statewide AWP directives and determining state priorities to ensure mapping sciences support to accomplish resource program goals.
4. Providing all organizational levels with mapping science support to ensure that products and data meet required standards and satisfy mission requirements. This may include the development of state and local standards for spatial data in the absence of National or BLM established standard.
5. Contributing to the writing and updating of the mapping sciences manual sections, including the supplemental manuals for each State.
6. Identifying the levels of skill, knowledge, and ability required by mapping sciences personnel to provide high-quality products and services. Coordinating with all offices to determine Statewide training needs to support mapping sciences activities.
7. Providing Statewide coordination with other agencies to avoid duplication of effort, encourage the exchange of data, and to promote cooperative efforts. This requirement will include input to the development of MOU's and IA's at all levels in accordance with data and records administration procedures and policies.
8. Ensuring the timely response to OMB Circular A-16 related activities.
9. Providing review and approval for mapping sciences hardware and software to ensure conformance to BLM standards and policies.
10. Ensuring that mapping sciences requirements are included in the State data and records administration policies, including data security policies.
11. Ensuring that quality control and quality assurance policies are implemented for mapping sciences products and data.

.05 References.

A. Departmental Manual chapters 306, 375 through 384, 436, and 476, provide policy and guidance on data administration, records administration, financial management, cost recovery, ADP cost accounting, and other policies affecting the administration of mapping sciences.

- B. Departmental Manual 757 DM (Chapters 1, 2, 3) - Surveying and Mapping.
- C. BLM Manual Section 9100.03 and Appendix 1 to Manual Section 9100 - authorities specific to mapping and related activities.
- D. Manual of Survey Instructions, Technical Bulletin 6, Bureau of Land Management.
- E. Principles, Policies, and Procedures: Domestic Geographic Names, U.S. Board on Geographic Names, 1987.
- F. Department of the Interior Executive Order 3159.
- G. Resources Mapping Support Study for the BLM's LIS (1989).
- H. BLM Geographic Coordinate Data Base Policy (1992).
- I. BLM Information Resources Management Strategic Plan (1992).
- J. BLM Digital Elevation Model Production (1992).
- K. Standard Operating Procedures for Resource Applications Using Positioning System Technology (1992).
- L. Content Standards for Spatial Metadata, Federal Geographic Data Committee. (1994)
- M. BLM Geographic Sciences Policy (1993).
- N. BLM Disclaimer Policy for External Release of Electronic Records (1993).
- O. Automated Information Systems Security - BLM Manual 1264.
- P. Records Administration - BLM Manual 1270.
- Q. Electronic Records Management - BLM Manual 1270-1.
- R. Records Inventory and Disposition - BLM Manual 1272.
- S. Data Administration - BLM Manual 1283.
- T. Printing - BLM Manual 1550.
- U. Publication Standards - BLM Manual Handbook H-1553.

.06 Policy. It is the BLM's policy to consistently provide reliable and accurate mapping sciences products, tools, and responsive service in support of the BLM's mission. This policy shall be implemented through the application of cost-effective technologies and procedures. One critical component of this policy is the support of appropriate training to ensure continued application of industry standard technologies and procedures. Another critical component is the development and implementation of rigorous - quality assurance/quality control guidelines. Specific reference to standards, procedures, and guidelines are contained in subsequent manual sections designated for the specific mapping science disciplines.

It is the BLM's policy to:

- A. Program Management.

1. Compile an annual summary of mapping sciences activities. Each State Office, the Service Center, and the National Interagency Fire Center shall submit an annual report of mapping sciences activities. A standard template will be used to ensure consistency. The annual report shall be submitted to the Director (WO-870) by the 15th of January of each year. The report shall include a summary of cartography, photogrammetry, remote sensing, and GIS activities for the past year. Workmonths, cooperative activities, and contract work shall be reported.

A summary report will be prepared by the Headquarters BLM Mapping Sciences coordinator.

2. Supplement in-house capabilities with appropriate commercial contracting as a means of procuring cost-effective services/support for the production of mapping sciences products. Each State, the SC, and NIFC will adhere to established policy and procedures related to contracting.
3. Maintain a cadre of managers and mapping science/spatial data specialists at all appropriate organization levels to evaluate emerging technologies and their application to BLM programs.
4. Make use of the USGS's National Mapping Program products and standards for BLM standard mapping products and processes. Program Managers shall use USGS production facilities to the fullest extent to support BLM resource mapping activities.
5. Support and participate in national, regional, and local cooperative efforts designed to improve standards, consistency, and reliability of products and data, and encourage information exchange and cooperative data collection. Interagency efforts via the development and implementation of MOU's and IA's are encouraged.
6. Maintain accurate cost and production data in order to respond to audits and inquiries, and comply with the BLM's cost recovery policies.
7. Maintain an accurate and current inventory of spatial data holdings to comply with BLM records administration and FGDC requirements. This includes both hard copy and digital files.
8. Ensure that funding requirements for mapping support are included within all components of the BLM's budget cycle.
9. Produce quality spatial data and products through the application of standards. BLM will make use of Federal, national, DOI, and agency standards for the collection, processing, display, dissemination and archive of spatial data.

The hierarchy for the application of standards and procedures applied to spatial data activities is:

- a. First consideration: Federal standards approved as a Federal Information Processing Standard (FIPS);
- b. Second consideration: Standards recognized as national in scope such as soils, but not adopted as a FIPS;
- c. Third consideration: Standards recognized by the DOI;
- d. Fourth consideration: Standards recognized by the BLM;
- e. Fifth consideration: Standards adopted by the State Offices, and
- f. Sixth consideration: Local Standards.

This hierarchy and policy applies regardless of the media. The application of a lower standard, when a higher order standard is in place, requires documented justification and approval by the appropriate Data Administrator and Mapping Sciences Program Leader.

10. Adhere to national and BLM data and records administration policies and standards for the collection, storage, use, security, access, and disposition of all data. (This includes special requirements for electronic records.)

11. Ensure a high degree of technical quality and adherence to Bureau policy (BLM Manual Section 1120.56) through peer and management review of all professional publications and presentations.

B. Spatial Data Collection.

1. Establish and maintain metadata information for spatial data and products. Metadata shall be catalogued according to FGDC standards.

2. Develop data collection standards and procedures for digitizing, remote sensing, photogrammetry, geopositioning, scanning, and data exchange/conversion. Standards are developed with involvement by Field Office users and must be approved by the WO.

3. Ensure that data collection from the USGS series to support BLM's land management requirements is accomplished according to established national standards. BLM shall use DOI contract mechanisms as appropriate, or otherwise ensure that digitized base map data is of such quality for inclusion within the National Digital Cartographic Data Base (NDCDB).

C. Spatial Data Analysis and Interpretation.

1. Apply the most appropriate procedure to satisfy mapping sciences user requirements specific to each project.

2. Develop and maintain spatial data analysis procedures and standards to ensure the application of accepted scientific methods and principles.

3. Maintain the scientific and technical expertise to develop solutions to complex spatial data analysis problems.

D. Spatial Data Products.

1. Develop and maintain a mapping sciences products catalog and user's guide describing the extent of coverage of products offered. This will not duplicate any national clearinghouse efforts.

2. Adhere to publication specifications defined in BLM Publication Standards Handbook H-1553.

3. Produce and maintain four categories of mapping products that meet National Map Accuracy Standards. These include:

a. Surface/mineral management maps (1:100,000 scale, except Alaska);

b. State-based land status maps (1:500,000 scale, except California and Alaska);

c. Wilderness maps (1:1,000,000 scale);

d. Digital elevation models (7.5 minute format);

4. Provide project specific, special mapping products to meet the requirements of the BLM's resource programs. Applicable standards, specifications and procedures shall be used.

5. Use disclaimer statements as required to describe limitations on the use of the data.

E. Other Products and Publications.

1. Produce related digital or hardcopy products (photographic, graphic, plats, engineering, administrative, etc.) which are noncartographic or nonspatial in nature. State Directors may authorize mapping sciences units to assist in the production of these products.

2. Furnish materials and data to the Depository Library Program as required.

.07 File and Records Maintenance. Required reports include an annual report of mapping sciences activities and an annual response to the OMB Circular A-16. Files and recordkeeping requirements are further addressed in subsequent manual sections developed under the mapping sciences series.

A. Records Administration Policy. Records administration guidance is provided in Manual Section 1270. Mapping sciences products, whether produced manually or digitally, are classified as records.

B. A-16 Reporting Requirements. Instructions for reporting Office of Management and Budget (OMB) Circular A-16 requirements are provided annually. Circular A-16 designates departmental responsibilities and allows for individual agency programs if they are coordinated through the national program. Circular A-16 officially establishes the Federal Geographic Data Committee for the coordination of spatial data activities.

C. Cost Recovery. All offices must maintain an accurate record of all costs associated with the production of products, regardless of media type, that have the potential of being shared with external organizations, groups, or individuals. This includes products with the potential of being requested under the Freedom of Information Act as well as contracts, agreements, and general written requests. Cost recovery policy is detailed in Manual Section 1270.08.5.

D. Records Disposition. It is unlawful to remove or destroy documents which have been designated as official agency records. Records are defined in Manual Section 1270.08.1.13. See BLM Manual Section 1272 for the Bureau's Records Schedule.

.08 Coordination of the Annual Program of Work.

A. Prior to preparation of the Preliminary Annual Work Plan (PAWP), Washington Office and State Office program leaders shall provide mapping sciences coordinators with information concerning mapping requirements for the upcoming fiscal year.

B. Washington and State Office mapping coordinators shall provide the Service Center (SC) with a preliminary listing of projects requiring SC support for the next fiscal year no later than July 1. The SC project listings will form the basis for the preparation of the PAWP narratives and the definition of the SC workload.

Glossary of Terms

-A-

automation/information resource management/modernization (AIM): AIM is

an ongoing initiative to modernize BLM's business. "Business" includes activities such as processing land use and administrative applications and collecting, managing, storing, and using a variety of resource management and other data and information. AIM is intended to improve the timeliness, accuracy, quality, and responsiveness of these business operations.

automated resource data (ARD): program specific spatial data not

commonly used by all disciplines. It is reliant upon base mapping and resource base data for proper spatial orientation.

-B-

base cartographic data: information about the location and type of

geographic features necessary to support general purpose applications, including the production of digital line graph (DLG) files and National Mapping Program (NMP) topographic quadrangle maps. Such data also serve as the geometric and content foundation for the delineation of thematic data to support geographic information system and other analytical and mapping applications. Base cartographic vector data categories and representative features, as represented in DLGs and on NMP topographic quadrangle maps include:

1. Reference systems -- geographic and other coordinate systems except the public land survey network.
2. Hypsography -- contours and elevations.
3. Hydrography -- streams and rivers, lakes and ponds, swamps and marshes, reservoirs, and shorelines.
4. Surface cover -- woodland, scrubland, orchards, and vineyards.
5. Non vegetative features -- surface features normally designated by names or unique symbols, other than contour lines, such as playas, dunes, and barren areas.
6. Boundaries -- edges of political and administrative subdivisions, such as counties and civil townships, national parks and forests, military reservations, and cemeteries. These data document boundaries established by the concerned jurisdictions and agencies, and do not definitively represent land ownership or land use.
7. Transportation systems -- roads, railroads, trails, canals, pipelines, transmission lines, bridges, and tunnels.
8. Manmade structures -- buildings, airports, dams, and towers.
9. Survey control and markers -- geodetic control, survey monuments, and other survey markers.
10. Cadastral -- U.S. Public Lands Survey System corners and related monuments, land grant delineations, and special survey areas.
11. Base cartographic data also include the following raster information:
 - A. Elevation models -- arrays of land and water surface elevations.
 - B. Orthophotographic imagery -- differentially rectified aerial photograph or other image.

-C-

cartography: the art and science of expressing graphically, by maps and

charts, a curved sphere (i.e., the earth) on a flat surface.

civil applications committee (CAC): a forum that facilitates the

exchange of spatial data, information, technology, and requirements between civilian Federal agencies and the Department of Defense.

-D-

data: data are symbols representing facts, ideas, or values which may

be processed to produce information. It is only valuable to the extent that it can be accessed and interpreted by individuals (users) to help them derive information and make decisions. There are basically two categories of data when referring to BLM data management: alphanumeric and spatial.

depository library program: a program established by Congress in the

1850's and administered by the Government Printing Office's Superintendent of Documents. Federal depository libraries ensure free access to information about government, make government publications widely available to anyone, and ensure their preservation for future generations.

digital line graph (DLG): files of base cartographic vector planimetric

and elevation data. These data are represented as point, line, and area features; features are attributed and the data are topologically structured.

digital elevation model (DEM): files of raster elevation data.

digitizing services contract: a vehicle for bureaus to minimize

redundant digitizing of base cartographic vector data from National Mapping Program topographic quadrangle maps. The contract provides for the collection of data conforming to DLG standards, or in a form that can be upgraded to those standards for entry into the National Digital Cartographic Data Base (NDCDB). Basic Ordering Agreements are established with a pool of qualified contractors who are authorized to bid on individual delivery orders. The U.S. Geological Survey (USGS) administers the contract for the Department of the Interior.

-F-

federal geographic data committee (FGDC): an organization established

by revised OMB Circular A-16 as an interagency coordinating committee on geographic data issues.

file: (1) an accumulation of records maintained in a predetermined

physical arrangement. Used primarily in reference to current records, the term in archival usage may refer to either a series or file unit, such as a folder or dossier; (2) in machine-readable records/archives, two or more data records of identical layout treated as a unit. The unit is larger than a data record but smaller than a data system and is sometimes known as a data set.

-G-

geographic information systems (GIS): a computer-based, data base

management system used to store, retrieve, manipulate, analyze, and display geographically referenced information.

geopositioning: relating to the earth and the location of features on

the earth.

global positioning system (GPS) Mapping: a tool that can be used to

determine the precise location coordinates of an object anywhere on the surface of the earth through the use of timing signals broadcast from satellites.

-I-

information: processed or analyzed data that is used to make a decision

or produce a conclusion for a specific purpose; the meaning that a human assigns to data by means of the known conventions used in their representation; any communication or reception of knowledge such as facts or opinions in numerical, graphic, or narrative forms in any medium, including computerized databases, paper, microform or magnetic tape.

interior geographic data committee (IGDC): an organization within the

Department of the Interior responsible for the coordination and oversight of activities, financed in-whole or in-part by Department of the Interior funds, relating to the development, use, sharing, and dissemination of surveying, mapping, and related spatial data.

-M-

map: a representation in a plane surface, at an established scale, of

the physical features (natural, artificial, or both) of a part of the Earth's surface, with the means of orientation indicated.

map compilation: the process of gathering spatially related data to a

common base. The base may range from a network of control data to previously mapped information. The methods for map compilation may include digital imagery analysis, analog and analytical photogrammetric techniques to gather physical features from aerial photography or satellite imagery; and the more straightforward techniques of direct image transfer from one source to another. Inherent in this process are several other processes such as map registration, projection transformations, and developing supplemental control networks.

mapping sciences: the disciplines, tools and associated data management

of Cartography, Photogrammetry, Remote Sensing and Geographic Information Systems. The methods, techniques, and theories for collecting, processing, and displaying positional information about the earth and its administrative, cultural, and physical resources. Within the Bureau, these mapping sciences tools and techniques are applied as required to support resource management decisions.

media: the physical form of a file or record.

metadata: information or documentation about data. Data stored in a

dictionary is metadata. This metadata typically includes data element names, definitions, alias names, valid codes, access and change authorities, security classification, stewardship information, systems wherein the data element lies, etc. Metadata also includes information about the characteristics of data, such as the history of the data; who, how, why, and when the data was collected; and other information that allows for an assessment of the fitness for use of the data. This metadata is typically associated with spatial data and may be stored with the data itself.

-N-

national digital cartographic data base (NDCDB): A central archive

established by the U.S. Geological Survey for dissemination to the user community of digital data that meets Federal digital cartographic standards for use in map production and in automated systems.

national map accuracy standards (NMAS): First issued in 1941 by the

U.S. Bureau of the Budget to ensure that maps produced by Federal agencies meet the high expectations and requirements of the user community. The current NMAS was issued in

-P-

photogrammetry. The art or science of obtaining reliable measurements

by means of imagery.

-Q-

quality assurance. The procedures involved with maintaining the

accuracy and integrity of an automated or manual system as well as the accuracy of the data being entered into and processed by the system. Quality assurance involves formal monitoring of a system or database to ensure that standards are being used and enforced. Quality assurance is often thought of as trying to make sure that data is captured at the highest quality level possible.

quality control. A system for verifying and maintaining a desired level

of quality in a product or process by careful planning, continued inspection, and corrective action where required. Quality control includes a structured, documented approach whereby statistically reliable procedures are used to sample and error-check products, processes, data, or databases, then compare the results against a predetermined source standard. Quality control includes taking steps to remove errors and improve quality.

-R-

records: recorded information (derived data) that is either created or

obtained by the BLM and is in the control of the BLM at the time a request is made. The BLM records include all books, papers, maps, photographs, machine readable materials, electronically stored data, or other documentary materials, regardless of physical form or characteristics, made or received in connection with the transaction of public business and preserved as evidence of the organization, functions, policies, decisions, procedures, operations, or other activities of the BLM, or because of the informational value of data in them.

remote sensing:. the measurement or acquisition of information of some

property of an object or phenomenon, by a recording device that is not in physical or intimate contact with the object or phenomenon under study; e.g., the utilization at a distance (as from an aircraft, spacecraft, or ship) of any device and its attendant display for gathering information pertinent to the environment.

resource base data (RBD): digital data used to produce cartographic

products and provide the analytic base maps for automated resource data, Geographic Information Systems and other analytical procedures. It consists of base map layers and value added data commonly used by most disciplines in the BLM.

-S-

spatial data: those data that include geographically referenced

features that are described by geographic positions and attributes in analog or digital form. When in digital format, these data may be manipulated by a geographic information system.

standard: a prescribed set of rules, conditions or requirements

concerned with the definition of terms; classification of components, delineation of procedures, design or operations; measurement of quality and quantity in describing materials, products, systems, services or practices, or evaluating results; descriptions of fit and measurement of size.