

DRAFT

NILS Survey Management and Measurement Management Tie to the
Bureau Architecture at Level Three

January 12, 2001

2.0 Assess Condition/Status

This work process includes the compilation, collection, synthesis, analysis, and interpretation of basic land ownership, boundary (cadastral survey), natural resources (including vegetation, fire, WH&B herd areas, etc.), social, and economic information used to describe existing conditions, status, and trends affecting the Public Lands and resources, to characterize risks, and to identify opportunities for improvement. It also includes the work necessary to manage the resulting data and information, and the coordination of short- and long-term condition/status information needs with Bureau specialists, and with Federal, State and local partners. It does not include work associated with preparing environmental assessments (See work process 3.0 - Perform planning) or in assessing progress toward specific management objectives (see work process 6.0 - Perform Monitoring).

2.1 Manage Assessment Request

This process involves conducting an in-depth review of existing BLM or other agency data to meet an internal BLM or external request for basic Condition/Status information. Requests for condition/status information can come from the other primary "business processes" internal to BLM including: Planning, Authorize Use, Implementation, Monitoring, and Manage Programs. The requested information may be used for many purposes including (but not limited to) doing planning, implementing an on-the-ground action, or adjudicating a use authorization request. Upon receipt of a Condition/Status information request, the work is to determine the data and information requirements, including the temporal and spatial scope of the request, and determine and implement a strategy to respond to the assessment request.

2.1.1 Determine Ability to Respond to Request

Do comparative analysis to determine whether existing (managed) data is sufficient to address the request, and if a gap exists, to determine whether there are other sources of data available or whether it must be collected. If the Condition/status information is readily available, directly provide the information to the requestor. If the information is not readily available, call for the preparation of an Assessment Report, including the collection of new data if required in order to respond.

2.1.2 Respond to Assessment Request

If the information is already available, or once the Condition/Status Assessment has been completed, the information is provided to the source of the original request. The information response can be in the form of a written report, table, spatial display, plat, drawing, or digital file; and/or a combination of all these media.

2.2 Collect Condition/Status Data

The work process involved in developing an inventory implementation plan, and conducting inventory (including census) activities either by agency

personnel, contract, or agreements with other federal, state, tribes or local agencies. A request for Condition/Status data provides an opportunity to enhance and build on existing resources data, and identify new information needs through interagency or intergovernmental sharing. Although the process focuses on the collection of data, the intended condition/status assessment (models and/or analytical processes) and future potential uses for the data all contribute to defining the appropriate collection process.

2.2.1 Determine Data Collection Protocol/Standards/ Location

The assessment data collection standards and protocol may be defined by existing plans, by other agencies, from the scientific literature, or from public involvement. The design of the data collection process may also be defined by the spatial depiction of existing conditions including; ownership, elevation, hydrological network, geomorphology, and vegetation distribution. The better the a priori information, the more efficient and robust the sample design. The resulting Data Collection Strategy is used to guide the actual data collection effort, notify the public of collection of information on individuals, identify sensitive data in files and systems, and meet and comply with Data Administration requirements, identify records maintenance requirements, and assess risk.

2.2.2 Collect Condition/Status Data

Perform data collection processes following defined protocols, standards and design. Develop demographic information, and collect information from the public, if needed.

2.2.3 Compile Condition/Status Data

The resulting collected data is compiled into a report, to annotate and/or update specific records, files or databases. Products are reviewed, documented, distributed and stored. Plan/coordinate/order base thematic data. As data is collected, perform QA/QC, record data, and update existing thematic coverages, as appropriate.. Review data for QA/QC, contract compliance and acceptance.

2.3 Describe Condition/Status Assessed

Gather and analyze resources/base data and relevant information, assess resource data and conditions against identified standards/criteria, and analyze resource management and use proposals to define current Condition/Status.

2.3.1 Analyze Condition/Status Data

Synthesize data, compare, contrast, and analyze inventoried resource conditions with Resource Standards. Follow analytical processes defined by the BLM, other agencies, or in the scientific literature. The analysis may require more than one analytical procedure since there may not be an agreed-to protocol. The evaluation of the data under different condition assessment processes may provide better information than just applying one method.

2.3.2 Generate Condition/Status Report

Once the Condition/Status Assessment has been completed, the results of the analysis are provided to the source of the original request. The results are also forwarded to the appropriate management/program unit, as well as to other agencies and the public in general.

2.3.3 Maintain Condition/Status Assessment Record

The Condition/Status Assessment can be provided in the form of a written report, table, spatial display, plat or drawing; and /or a combination of all. The components of the report and supporting data are to be stored in a manner that will facilitate future responses. Maintenance of the resulting Report and ancillary data makes future response more efficient as well as providing for a process that can be repeatable, consistent and scientifically credible. Reportable assessments are generally conducted as part of regularly recurring efforts to keep Congress and the public informed about the overall condition of the public lands. They are also done for preparation of land use planning and in response to specific external and internal customer requests, or recognition of emerging issues, new scientific findings, cadastral land tenure records, or significant changes in customer desires.

Survey Management Business Rules

SM-01 Survey Research

- ❖ Locate, view and evaluate all relevant digital database and non-digital records for the research scope. Sources may include hardcopy records, plats, monument rubbings, aerial photos, survey notes, etc.

SM-02 Pre Field Survey Setup

- ❖ Process to create a field survey setup file to manage the collection of readings, observations, and measurements.

SM-03 In Field Survey Setup

- ❖ This is the in-field process to configure a data collection device and/or a computation device by selecting and applying a field survey setup file.
- ❖ (An example data collection device is a palmtop configured with NILS field survey software. An example computation device is a laptop configured with NILS field survey software. Data collection devices and/or computation devices are distinguished from a measuring device such as a total station.)

SM-04 Collect Field Data Observations

- ❖ Actor performs field data collection by recording readings using a data collection device. Readings are computed with a computation device to derive observations and measurements.

SM-05 Perform COGO and Layout

- ❖ Process to use coordinate geometry (COGO) tools to calculate coordinate positions. Includes planar and geodetic calculations. May be used to perform layout or to search for point locations. May be used in conjunction with building a measurement network, a legal description fabric, or a parcel fabric.

Measurement Management Business Rules

MM-01 Construct Measured Feature

- ❖ Measured Features are constructed from component elements in a measurement network by applying construction and computation methods. Measured features have topological associations to their component elements (i.e. component features and/or survey points.)
- ❖ This use case may be used in conjunction with building a measurement network, a legal description fabric, or a parcel fabric.

MM-02 Edit Measurement Data

- ❖ Perform an iterative parametric least square adjustment on a measurement network to analyze and adjust coordinate values for points. Generate statistics on measurement and coordinate reliability.

May be used in resolving the cartographic and/or coordinate representation (relationship) of non-survey features (map control, legal descriptions, digitized, scanned/vectorized) relative to surveyed features. May be used to resolve the representation of non-surveyed features without reference to surveyed features.

- ❖ NOTE: A measurement network may be composed of legal descriptions as well as measurements.

MM-03 Adjust and Anaylze Measurement Network

Manual entry/edit of measurement data values. Includes types of anomaly detection and anomaly correction as parts of edit validation.

2.1.1 Determine Ability to Respond to Request

2.1.1.1 SM-01 Survey Research

Review request; search all record sources for relevant data. Determine if information and data exist to fill request; determine if fieldwork (surveying) is necessary.

2.1.1.2 SM-02 Pre-Field survey Setup

Prepare field equipment and data collection device for use in field; load data from 2.2.2.1 into instruments and data collection devices.

2.1.1.3 SM-03 In-Field Survey Setup

If fieldwork is necessary, prepare files and equipment for field survey.

2.1.1.4 SM-04 Collect Field Data Observations

Collect pertinent field data if it exists; search field locations for possible, relevant survey points.

2.1.1.5 SM-05 Perform COGO Layout

Using record data and field data, determine if it is possible to construct features required by request.

2.1.1.6 MM-01 Construct Measured Feature

Using record data, field data and COGO features, if possible, construct measured features for request.

2.1.1.7 MM-02 Adjust Analyze Measurement Network

Incorporate measured features into existing measurement network

2.1.1.8 MM-03 Edit Measurement Data

Edit network(s) as necessary.

2.1.2 Respond to Assessment Request

2.1.2.1 SM-01 Survey Research

If survey information is NOT available to satisfy the request then search all sources for relevant data; review the data and establish surveying task necessary to gather required information

2.1.2.2 SM-02 Pre-Field Survey Setup

Prepare field equipment and data collection device for use in field; load data from 2.1.2.1 into instruments and data collection devices.

2.1.2.3 SM-03 In-Field Survey Setup

Prepare files and equipment for field survey.

2.1.2.4 SM-04 Collect Field Data Observations

Collect pertinent field data.

2.1.2.5 SM-05 Perform COGO Layout

Using record data and field data, construct features required by request.

2.1.2.6 MM-01 Construct Measured Feature

Using record data, field data and COGO features, construct measured features for request.

2.1.2.7 MM-02 Adjust Analyze Measurement Network

Incorporate measured features into existing measurement network. Prepare data and reports for request.

2.1.2.8 MM-03 Edit Measurement Data

Edit network(s) as necessary

2.2.1 Determine Data Collection Protocol/Standards/Location

2.2.1.1 SM-01 Survey Research

2.2.1.2 SM-02 Pre-Field Survey Setup

2.2.1.3 SM-03 In-Field Survey Setup

2.2.2 Collect Condition/Status Data

2.2.2.1 SM-01 Survey Research

Search, collect, analyze all available data relevant to current task.

2.2.2.2 SM-02 Pre-Field survey Setup

Prepare field equipment and data collection device for use in field; load data from 2.2.2.1 into instruments and data collection devices.

2.2.2.3 SM-03 In-Field Survey Setup

Setup field equipment and data collection device; configure for current task; perform initial calculations.

2.2.2.4 SM-04 Collect Field Data Observations

Record readings on data collection device, derive observations and measurements.

2.2.2.5 SM-05 Perform COGO and Layout

In field, in a GIS environment, calculate solutions to survey and initial layout; add features to field data. Also may be used to assist during the survey.

2.2.2.6 MM-01 Construct Measured Feature

Using computations and GIS construction methods (intersection, offset, subdivision, etc) , construct measured features (boundaries, corners, lots, etc).

2.2.2.7 MM-02 Adjust Analyze Measurement Network

Incorporate measured features into existing measurement network; mathematically and statistically compute the most correct measurements from multiple values of features in the network.

2.2.2.8 MM-03 Edit Measurement Data

Edit current work as necessary – manually add data; using spatial tools and analysis, change data as necessary; eliminate errors

2.2.3 Compile Condition/Status Data

2.2.3.1 SM-01 Survey Research

To perform QA/QC and/or update, search for all relevant information and data relevant to the current task; review and analyze the same. Determine if surveying/re-surveying is required.

2.2.3.2 SM-02 Pre-Field Survey Setup

Prepare field equipment and data collection device for use in field; load data from 2.2.3.1 into instruments and data collection devices.

2.2.3.3 SM-03 In-Field Survey Setup

Setup field equipment and data collection device; configure for current task; perform initial calculations.

2.2.3.4 SM-04 Collect Field Data Observations

Record readings on data collection device, derive observations and measurements.

2.2.3.5 SM-05 Perform COGO Layout

In field, in a GIS environment, calculate solutions to survey and initial layout; add features to field data to improve and/or update the current task data.

2.2.3.6 MM-01 Construct Measured Feature

Using computations and GIS construction methods (intersection, offset, subdivision, etc) , construct additional and/or improved measured features (boundaries, corners, lots, etc) which relate to the current task.

2.2.3.7 MM-02 Adjust Analyze Measurement Network

Incorporate new, measured features into existing measurement network; mathematically and statistically compute or recompute the most correct measurements from multiple values of features in the network

2.2.3.8 MM-03 Edit Measurement Data

Edit network(s) as necessary.

2.3.1 Analyze Condition/Status Data

2.3.1.1 SM-01 Survey Research

Locate and collect records, data and information relevant to an established cadastral unit, parcel, etc. Review and critique the same. Check accuracy, relevancy, etc., to conform to pre-established standards and protocol. Surveying/re-surveying may be required to correct or change the records etc; establish task necessary to gather required information.

2.3.1.2 SM-02 Pre-Field Survey Setup

Prepare field equipment and data collection device for use in field; load data from 2.3.1.1 into instruments and data collection devices.

2.3.1.3 SM-03 In-Field Survey Setup

Setup field equipment and data collection device; configure for current task; perform initial calculations.

2.3.1.4 SM-04 Collect Field Data Observations

Record readings on data collection device, derive observations and measurements.

2.3.1.5 SM-05 Perform COGO Layout

In field, in a GIS environment, calculate solutions to survey and initial layout; add features to field data for re-assessment of the current task data.

2.3.1.6 MM-01 Construct Measured Feature

Using computations and GIS construction methods (intersection, offset, subdivision, etc) , construct additional measured features (boundaries, corners, lots, etc) which will aid in re-assessment of the current task.

2.3.1.7 MM-02 Adjust Analyze Measurement Network

Incorporate new, measured features into existing measurement network; mathematically and statistically compute or recompute the most correct measurements from multiple values of features in the network

2.3.1.8 MM-03 Edit Measurement Data

Edit network(s) as necessary

2.3.2 Generate Condition/Status Report

2.3.2.1 SM-01 Survey Research

2.3.2.2 SM-03 In-Field Survey Setup

2.3.2.3 SM-04 Collect Field Data Observations

2.3.2.4 SM-05 Perform COGO Layout

2.3.2.5 MM-01 Construct Measured Feature

2.3.2.6 MM-02 Adjust Analyze Measurement Network

2.3.2.7 MM-03 Edit Measurement Data

2.3.3 Maintain condition/Status Assessment Record

2.3.3.1 SM-01 Survey Research

Locate and collect records, data and information required (retrieve from database, abstract new data, etc) for their routine maintenance; prepare existing data to satisfy requests, planning issues, incorporation of new concepts, etc. Determine if surveying is required; if so, establish plan of action.

2.3.3.2 SM-02 Pre-Field Survey Setup

Prepare field equipment and data collection device for use in field; load data from 2.3.1.1 into instruments and data collection devices.

2.3.3.3 SM-03 In-Field Survey Setup

Setup field equipment and data collection device; configure for current task; perform initial calculations.

2.3.3.4 SM-04 Collect Field Data Observations

Record readings on data collection device, derive observations and measurements.

2.3.3.5 SM-05 Perform COGO Layout

In field, in a GIS environment, calculate solutions to survey and initial layout; add features to field data for re-assessment of the current task data.

2.3.3.6 MM-01 Construct Measured Feature

Using computations and GIS construction methods (intersection, offset, subdivision, etc) , construct additional measured features (boundaries, corners, lots, etc) which will aid in re-assessment of the current task.

2.3.3.7 MM-02 Adjust Analyze Measurement Network

Incorporate new, measured features into existing measurement network; mathematically and statistically compute or recompute the most correct measurements from multiple values of features in the network

2.3.3.8 MM-03 Edit Measurement Data
Edit network(s) as necessary