National Resources Inventory Grazing Land On-Site Data Collection Quality Assurance Plan
March 26, 2011

The Natural Resources Conservation Service (NRCS) requires staff to be authorized before conducting data collection and data to be reviewed through a quality assurance (QA) process. The Grazing Land On-Site Data Collection Quality Assurance Plan describes the quality assurance measures to be implemented for the National Resources Inventory (NRI) grazing land on-site data collection for:

1. Data collector authorization,
2. Post-training calibration exercises,
3. In-field reviews, and
4. Post-collection data review.

1. Data collector authorization
All field data collectors must be authorized before collecting NRI grazing land on-site data for the current field season. Authorization is granted on an annual basis; previously authorized data collectors must be authorized for the current field season before they are permitted to collect data. There are two levels of authorization: (1) technical leader; and (2) crew member. Each field crew must have at least one authorized technical leader; all other crew members must have at least crew member level authorization. To become authorized at the crew member level, personnel must be trained in the field protocols, pass a written post training test, sign an NRI confidentiality certification agreement, and perform calibration exercises. In addition to the requirements for crew member level authorization, technical leader authorization requires that the candidate to pass a performance based post training test (See Appendix A, NRI Grazing Land On-Site Data Collection Protocol Performance Checklist).

The field supervisor will submit the names and authorization level of data collectors authorized to collect NRI grazing land on-site data for the current field season to Roni Lessard (Vlessard@iastate.edu, 515-294-1248) before data collection begins. Authorization may be rescinded by NRCS if quality standards are not met or fabrication is detected.

Training
State rangeland/grazing land specialists and State Resource Inventory Coordinators (SRIC) will provide training sessions in NRI grazing land on-site protocols. The NRI Grazing Land On-Site Data Collection Training Syllabus (See Appendix B, NRI Grazing Land On-Site Data Collection Training Syllabus) is provided to standardize training sessions with both classroom and field components.

Classroom component:
- Review NRI Grazing Land On-Site Data Collection handbook of instructions
- Demonstrate NRI grazing land on-site data collection protocols
- Demonstrate use of data recording instruments and software (CASI)

Field component:
- Demonstrate and practice use of GPS navigational instruments
- Practice use of data recording instruments and software (CASI)
• Demonstrate and practice data collection protocols
• Calibration exercises for data collection protocols

Written post-training test
The written post-training test will be provided to the states through the NRI Help Desk.

Performance-based post-training test
Trainers will observe trainees performing grazing land on-site data collection protocols and record the outcome on the NRI Grazing Land On-Site Data Collection Protocol Performance Checklist (See Appendix A). Trainers will work with the data collector to correct any misapplied techniques.

Calibration exercises
During the training session, all trainees will perform calibration exercises (See Appendix E, Quality Assurance Calibration for Grazing Land On-Site Quantitative Protocols, in the National Resources Inventory Handbook of Instructions for Rangeland Field Data Collection Data Collection) for:
• Soil stability,
• Line point intercept,
• Line intercept transects for canopy cover,
• Plant height, and
• Species composition by weight (required only if double-sampling is used by crew).

Calibration data collected by data collectors during the training sessions will be uploaded to the server at Iowa State University.

NRI confidentiality certification agreement
Each data collector must sign an NRI confidentiality certification agreement (Confidentiality Certification and Request for Access to National Resources Inventory (NRI) Data) before authorization at either the technical leader or crew member level is granted.

2. Post-training calibration exercises
In addition to the calibration exercises conducted during the training sessions, field supervisors or their designee(s) will schedule at least two calibration sessions with each field crew assigned to collect data for 15 or more segments. Field crews assigned fewer than 15 segments may attend only one calibration session. Multiple field crews may attend each scheduled calibration session. Calibration segments containing data collected during the calibration sessions shall be uploaded to the server at Iowa State University.

The calibration session will include protocol exercises (See Appendix E, Quality Assurance Calibration for Grazing Land On-Site Quantitative Protocols, in the NRI Grazing Land On-Site Data Collection handbook of instructions) for:
• Soil stability,
• Line point intercept,
• Line intercept transects for canopy cover,
• Plant height, and
• Species composition by weight (required only if double-sampling is used by crew).
3. In-field reviews

Field supervisors shall conduct in-field data reviews for each field crew during the field season. At least 5% of segments completed by each field crew will be reviewed in the field. If fewer than 20 segments are completed by a field crew, the field supervisor will perform an in-field review of at least one of those segments. For an in-field review, the field supervisor will visit the site either with the field crew present or within a few days of data collection. The field supervisor will review the data collected for the segment and complete the In-field Review Check List (See Appendix C).

4. Post-collection data review

Data review tables are used by the states to view sets of related grazing land on-site data elements for segments and points in their corresponding states. State specialists make any necessary data corrections in the grazing land on-site data collection instrument (grazing land on-site CASI).

The password-protected grazing land on-site data review tables are posted on a website for states to download and review (http://www.nrisurvey.org/nrcs/range/data_review/Download.htm). The grazing land on-site review tables generally present groups of data to be viewed within the context of a single grazing land on-site protocol. The review tables are periodically updated with edited data.
Appendix A – NRI Grazing Land On-Site Data Collection Protocol Performance Checklist

Data Collector________________________ Reviewer____________________________

Date________________________

**Type of Point** (circle one): Rangeland or Pastureland

**Chapter 3 – Point Location and Plot Transect Layout**
- [ ] Pass [ ] Redo - Use of GPS to navigate to the correct location
- [ ] Pass [ ] Redo - Lay out of the two transects
- [ ] Pass [ ] Redo - Orientation
- [ ] Pass [ ] Redo - Tapes are straight, low to the ground, and tight
- [ ] Pass [ ] Redo - Use of digital camera
- [ ] Pass [ ] Redo - Photo card label and placement
- [ ] Pass [ ] Redo - Photo clarity
- [ ] Pass [ ] Redo - Photo targets

Notes:

**Chapter 5 – Ownership**
- [ ] Pass [ ] Redo - Ownership determination

Notes:

**Chapter 6 – Land Cover/Use**
- [ ] Pass [ ] Redo - Land cover/use determination

Notes:

**Chapter 7 – Landscape and Soils**
- [ ] Pass [ ] Redo - NASIS SSAID determination for area where the soil is located
- [ ] Pass [ ] Redo - NASIS MUSYM determination for area where the soil is located
- [ ] Pass [ ] Redo - Soil component name
- [ ] Pass [ ] Redo - Soil component ID number
- [ ] Pass [ ] Redo - Vertical slope description
- [ ] Pass [ ] Redo - Horizontal slope description
- [ ] Pass [ ] Redo - Slope percent
- [ ] Pass [ ] Redo - Slope length
- [ ] Pass [ ] Redo - Slope aspect

Notes:

**Chapter 8 – Ecological Site (ESD)/Forage Suitability Group (FSG) Information**
- [ ] Pass [ ] Redo - MLRA determination
- [ ] Pass [ ] Redo - Site (ESD/FSG) determination
- [ ] Pass [ ] Redo N/A - Apparent Rangeland Trend determination
- [ ] Pass [ ] Redo N/A – Pastureland use determinations

Notes:
Chapter 9 – Line Point Transects for Cover Composition
☐ Pass ☐ Redo - Data collector stands on the south side of the transect when reading
☐ Pass ☐ Redo - Vertical placement of pin
☐ Pass ☐ Redo - Eye is positioned directly in line with the pin when reading intercepts
☐ Pass ☐ Redo - Species identification
☐ Pass ☐ Redo - Canopy hit determinations
☐ Pass ☐ Redo - Litter hit determinations
☐ Pass ☐ Redo - Basal hit determinations

Notes:

Chapter 10 – Line Intercept Transects: Basal and Canopy Gaps
☐ Pass ☐ Redo - Data collector stands on the south side of the transect when reading
☐ Pass ☐ Redo - Eyes are positioned 90 degrees vertical to the transect tapes
☐ Pass ☐ Redo - Gaps reading determinations

Notes:

Chapter 11 – Soil Stability Test (optional for pastureland)
☐ Pass ☐ Redo ☐ N/A - Sample soil ped collection technique and placement in sieve
☐ Pass ☐ Redo ☐ N/A - Sample soil ped size (thickness and area)
☐ Pass ☐ Redo ☐ N/A - Dipping methods and timing
☐ Pass ☐ Redo ☐ N/A - Soil stability rating

Notes:

Chapter 12 – Plant Height
☐ Pass ☐ Redo - Plant height determination (correct units)

Notes:

Chapter 14 – Species Composition by Weight (for rangeland only)
☐ Pass ☐ Redo ☐ N/A - Percent air dry weight for each plant species
☐ Pass ☐ Redo ☐ N/A - Estimated percent of the current plant growth
☐ Pass ☐ Redo ☐ N/A - Percent of the current year’s growth for each plant species
☐ Pass ☐ Redo ☐ N/A - Percent of the current year’s plant growth compared to a normal year
☐ Pass ☐ Redo ☐ N/A - Percent allowable production
☐ Pass ☐ Redo ☐ N/A - Plant species determination
☐ Pass ☐ Redo ☐ N/A - Unadjusted plant weight determination (correct units)
☐ Pass ☐ Redo ☐ N/A - Woody quadrat box is checked in CASI for woody plant species
☐ Pass ☐ Redo ☐ N/A - Woody plant species data obtained from woody quadrats
☐ Pass ☐ Redo ☐ N/A - Herbaceous plant species data obtained from herbaceous quadrats

Notes:

Chapter 15 – Standing Biomass (for pastureland only)
☐ Pass ☐ Redo ☐ N/A - Biomass weight determination (correct units)
☐ Pass ☐ Redo ☐ N/A - Woody plant species data obtained from woody quadrats
☐ Pass ☐ Redo ☐ N/A - Herbaceous plant species data obtained from herbaceous

Notes:
Chapter 16 – Plant Census
- Pass  □  Redo -Species identification
- Pass  □  Redo –Density categories
Notes:

Chapter 17 – Resource Concerns
- Pass  □  Redo -Resource concern determinations
Notes:

Chapter 18 – Conservation Practices
- Pass  □  Redo -Conservation practice determinations
Notes:

Chapter 19 – Disturbance Indicators
- Pass  □  Redo -Disturbance indicator determinations
Notes:

Chapter 20 – Rangeland Health
- Pass  □  Redo -Rangeland health determinations
Notes:

Chapter 21 –Pasture Condition
- Pass  □  Redo -Pasture condition determinations
Notes:

Chapter 22 –Sagebrush Shape
- Pass  □  Redo –Sagebrush shape determinations
Notes:
Appendix B – NRI Grazing Land On-Site Data Collection Training Syllabus

Training Dates:

<table>
<thead>
<tr>
<th>Instructor’s name:</th>
<th>Phone number:</th>
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Welcome to the NRI Grazing Land On-Site Data Collection Training. Through this training session we want to provide you with the knowledge you need to make your NRI rangeland field data collection season a success.

Course description and objectives: The objectives of the NRI Grazing Land On-Site Data Collection training is to ensure that you have a basic knowledge of the NRI Grazing Land On-Site Data Collection and are able to demonstrate your ability to:

- Locate NRI sample sites and navigate to those sites using GPS,
- Use the Grazing Land On-Site Data Collection instructions and follow data collection protocols,
- Use the survey equipment and tools to measure and obtain information, and
- Use data recording instruments and software (CASI).

Authorization requirements: All field data collectors must be authorized before collecting NRI rangeland data for the current field season. There are two levels of authorization: (1) technical leader; and (2) crew member. Each field crew must have at least one authorized technical leader; all other crew members must have at least crew member level authorization.

To be granted crew member authorization, you must:
1. Participate in an annual NRI rangeland field data collection training,
2. Pass a written test,
3. Perform calibration exercises, and
4. Sign an NRI confidentiality certification agreement.

To be granted technical leader authorization, you must:
1. Participate in an annual NRI rangeland field data collection training,
2. Pass a written test,
3. Pass a performance-based test,
4. Perform calibration exercises, and
5. Sign an NRI confidentiality certification agreement.

Training Topics:

Classroom component:
- Review NRI Grazing Land On-Site Data Collection handbook of instructions
- Demonstrate NRI Grazing Land On-Site Data Collection protocols
- Demonstrate use of data recording instruments and software (CASI)
Field component:

- Demonstrate and practice use of GPS navigational instruments
- Practice use of data recording instruments and software (CASI)
- Demonstrate and practice data collection protocols
  - Establish plots; lay out transects
  - Landscape and soils
  - Ecological site/forage suitability group
  - Line point intercept
  - Line intercept transects for basal and canopy cover
  - Soil stability
  - Plant height
  - Species composition by weight (production)
  - Standing biomass
  - Plant census
  - Resource concerns
  - Conservation practices
  - Disturbance indicators
  - Rangeland health
  - Pasture condition
- Calibration exercises for data collection protocols

Calibration exercises:

- Soil stability
- Line point intercept
- Line intercept transects for canopy cover
- Plant height
- Double sampling to estimate total weight for production and standing biomass (optional)

Post-Training Tests

- Written test – Successful completion required for both technical leader and crew member authorization
- Performance-based test – Successful completion required for technical leader authorization

Course materials:

- National Resources Inventory (NRI) Grazing Land On-Site Data Collection handbook of instructions (http://www.nrisurvey.org/nrcs/range/resource/2010/)
- NRI Rangeland Field Videos

Tools and equipment: (See NRI Grazing Land On-Site Data Collection handbook of instructions, section 2.5)
## Appendix C - In-field Review Check List

Data Collector____________________ Reviewer__________________________
Segment____________________ County____________________ Date_________

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<th>Disagree</th>
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<th>Comments</th>
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<td>Recorded soils match what is mapped</td>
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<td>Ecological site/forage suitability group</td>
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<td>Slope information (slope, length, aspect)</td>
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<td>Rangeland trend</td>
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<td>Range health or pasture condition data</td>
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<td>Disturbance indicators</td>
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<td>Resource concerns</td>
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<td>Soil stability</td>
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<td>Line intercept – gap existence</td>
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<td>Total production or standing biomass</td>
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Additional comments: