1Supporting Statement – Part A

# RESIDUE AND BIOMASS FIELD SURVEY

OMB No. 0535-0251

This supporting statement addresses the continued data collection efforts for the Residue and Biomass Field Survey for a period of three years. This project will continue to concentrate on the South Fork Watershed in Central Iowa. The reference period will be each crop year beginning with 2016.

Data collected under this docket is for a cooperative research effort between the National Agricultural Statistics Service (NASS) and the Agricultural Research Service (ARS)/Hydrology and Remote Sensing Laboratory (HRSL). The purpose of this effort is for NASS and ARS/HRSL to make an objective connection between the amount of organic matter produced and how crop residues impact future crop yields. Ultimately, NASS and ARS/HRSL want to utilize the measurements of crop residues and crop biomass to assess what effects the removal of crop residue will have on the soil and water quality.

The Residue and Biomass Field Survey is part of NASS's annual data collection activities. NASS will continue to provide data collection through their Upper Midwest Regional Field Office and affiliated National Association of State Departments of Agriculture (NASDA) units. ARS/HRSL will be substantially involved throughout the development and implementation of the survey program.

## A. JUSTIFICATION

### 1. Explain the circumstances that make the collection of information necessary. Identify any legal or administrative requirements that necessitate the collection. Attach a copy of the appropriate section of each statute and regulation mandating or authorizing the collection of information.

The primary function of NASS is to prepare and issue official State and national estimates of crop and livestock production, disposition, and prices. Auxiliary services such as statistical consultation, data collection, and summary tabulation are performed for other Federal and State agencies on a reimbursable basis. The goal of this NASS information collection is for NASS and ARS/HRSL to make an objective connection between the amount of organic matter produced and how crop residues impact future crop yields. Ultimately, NASS and ARS/HRSL want to utilize the measurements of crop residues and crop biomass to assess what effects the removal of crop residue will have on the soil and water quality. Tracking the environmental benefits of these programs allows policy makers and program managers to evaluate and modify existing programs and design new

programs to more effectively meet the goals of Government Agencies.

General authority for these data collection activities is granted under U.S. Code Title 7, Section 2204(a) which specifies that "The Secretary of Agriculture shall procure and preserve all information concerning agriculture which he can obtain ... by the collection of statistics ... and shall distribute them among agriculturists."

**2. Indicate how, by whom, and for what purpose the information is to be used. Except for a new collection, indicate the actual use the agency has made of the information received from the current collection.**

HRSL will select 100 fields to represent four classes of crop residue cover for each crop based on remote sensing: <15% cover (Intensive Tillage), 15-30% cover (Reduced Tillage), 30-60% cover (Conservation Tillage), and >60% cover (No Tillage). The 100 fields include corn and soybean fields. There will be one permission form that will be presented to the 100 operators in May by NASDA enumerators prior to HRSL entering the operator's field, with the goal of receiving approximately 80 signed residue permission slips.

The 80 fields will have various measurements for crop residues. Crop residue cover will be estimated by a team of 2-3 people from HRSL who will walk to two locations within a field, stretch four 15-meter lines with 100 beads each, and count the number of beads intersecting pieces of crop residue. We also record field conditions and take photographs. Small soil and crop residue samples are collected to measure moisture content. Moisture content of soil and crop residue affects reflectance in the remotely sensed images. Multispectral and hyperspectral remotely sensed data will be acquired and analyzed to map crop residue cover and soil tillage intensity for the entire watershed. Accuracy of the remotely sensed maps of crop residue cover and soil tillage intensity will be assessed using the measured crop residue cover data.

Timing of the measurements is critical as crop residue cover should be assessed shortly after planting and before the plants have more than 3 leaves. HRSL monitors planting progress reported by NASS and select our sampling period when we expect >75% of the corn and >50% of soybeans have been planted. Planting progress varies from year to year based on soil moisture, rainfall, and air temperature.

Measurements will be taken during the same calendar week for a snapshot of conditions.

These tillage intensity maps provide a snapshot of current crop and soil management practices for the entire watershed. Biophysical models will use this information as a baseline to simulate the effects of various crop and soil management scenarios on soil and water quality at field to watershed scales.

The second permission form for corn producers will be presented at the same time as the residue permission form. After physiological maturity but before harvest (as determined in the NASS Crop Progress report), HRSL will collect above-ground biomass and grain corn samples. At two locations in each field, HRSL will cut, bag, and dry 6 corn plants, for a total of 12 plants per field. The corn grain and stover will be weighed separately. Harvest index, the ratio of grain weight to total above ground plant weight, will be calculated. Harvest index data and yield maps, supplied by the producers, will be used to estimate the spatial distribution of the amount of crop residue per acre. Remotely sensed estimates of crop residue cover will be used to track the fate of crop residue and determine how much residue has been tilled into the soil or removed for biofuel.

Corn operators who participated in the May and September collections will be visited again in December and asked to complete a questionnaire and, if possible, provide an electronic yield map.

The questionnaire and yield maps help associate measured residue and biomass to specific field management plans and provide realistic operation files for the water and soil quality models.

**3. Describe whether, and to what extent, the collection of information involves the use of automated, electronic, mechanical, or other technological collection techniques or other forms of information technology, e.g., permitting electronic submission of responses, and the basis for the decision for adopting this means of collection. Also describe any consideration of using information technology to reduce burden.**

Data collection will be completed on paper by a trained NASDA enumerator. Data collection does not currently involve the use of electronic submission of responses or other information technology to reduce burden.

Data collected will be compared and analyzed with remote sensing technology to determine accuracy of remotely sensed maps of crop residue cover.

**4. Describe efforts to identify duplication. Show specifically why any similar information already available cannot be used or modified for use for the purposes described in Item 2 above.**

NASS cooperates with State departments of agriculture, land grant universities, and other State and Federal agencies to conduct surveys. Wherever possible, surveys meet both State and Federal needs, thus eliminating duplication and minimizing reporting burden on the agricultural industry.

Residue measurements and field-level data on all activities conducted in the production of the crop must be obtained from farm operators; they are not

available from any other source.

**5. If the collection of information impacts small businesses or other small entities (Item 5 of OMB Form 83-I), describe any methods used to minimize burden.**

This information collection will not have a significant economic impact on small entities.

**6. Describe the consequence to Federal program or policy activities if the collection is not conducted or is conducted less frequently, as well as any technical or legal obstacles to reducing burden.**

The South Fork watershed is one of the Conservation Effects Assessment Project (CEAP – OMB #0535-0245) benchmark watershed. CEAP is a multi-agency effort to quantify the environmental effects of conservation practices and programs and develop the science base for managing the agricultural landscape for environmental quality. CEAP will also provide quantitative estimates of the effects of conservation practices for national and regional reporting, and assessment of the potential for existing conservation programs and future alternatives to better address the Nation's environmental and conservation goals. CEAP will improve the efficacy of conservation practices and programs by quantifying conservation effects and will provide the science and education base needed to enrich conservation planning, implementation, management decisions, and policy. Without this collection, our knowledge of the management practices in the watershed would be severely limited.

CEAP uses the National Resource Inventory (NRI) points in data collection. NRI provides updated information on the status, condition, and trends of land, soil, water, and related resources on the Nation’s non-Federal lands. This survey uses the NASS Cropland Data Layer (CDL) from the previous year to select their sample corn and soybean fields in the watershed. This survey also uses the latest satellite imagery to also determine disturbance, residue cover, and tillage levels in the 2 watersheds. They divide the samples into low, medium and high levels of residue cover.

The CEAP survey does not measure or collect information on the amount of crop residue left after harvesting of a crop, nor does it measure the impact the crop residue has on the quality of the soil for future years. The Residue and Biomass Field Survey will provide additional information to be used in constructing environmental models that will be used by environmentalists and conservationists.

**7. Explain any special circumstances that would cause an information collection to be conducted in a manner inconsistent with the general information guidelines in 5 CFR 1320.5.**

There are no special circumstances associated with this information collection.

**8. Provide a copy and identify the date and page number of publication in the Federal Register of the agency's notice, required by 5 CFR 1320.8 (d), soliciting comments on the information collection prior to submission to OMB. Summarize public comments received in response to that notice and describe actions taken by the agency in response to these comments.**

The Notice soliciting comments was published in the Federal Register on December 11, 2015, on pages 76931 -76932. One comment was received from Jean Public and did not require a response.

**Describe efforts to consult with persons outside the agency to obtain their views on the availability of data, frequency of collection, the clarity of instructions and record-keeping, disclosure, or reporting format (if any), and on the data elements to be recorded, disclosed, or reported.**

The Residue and Biomass Survey is conducted as independent study that will incorporate data from the Conservation Effects Assessment Project (CEAP) (OMB # 0535-0245).

CEAP incorporates peer review and comments from recognized experts in the conservation community, and scientists and modelers within and outside of government. Findings are presented at professional meetings and workshops.

An external review of the CEAP was conducted in 2006 by the Soil and Water Conservation Society (SWCS). A blue-ribbon panel composed of academics and leaders of nongovernmental organizations and State agencies was charged with conducting the review, for the purpose of making CEAP more useful and credible and to assure that CEAP's products have utility for policymakers, program managers, and the conservation community.

Results of the review may be found in the report "Final Report from the Blue Ribbon Panel Conducting an External Review of the U.S. Department of Agriculture Conservation Effects Assessment Project.", available online at: www.swcs.org/en/publications/ceap_review_recommendations/index.cfm.

In addition to this peer review process, oversight of the project is provided by two groups with interagency representation:

- CEAP Executive Steering Committee, consisting of leaders from Natural Resources Conservation Service (NRCS); National Agricultural Statistics Service (NASS); Farm Service Agency (FSA); Agricultural Research Service (ARS); Economic Research Service (ERS); Cooperative State Research,

Education, and Extension Service (CSREES); Environmental Protection Agency (EPA); and United States Geological Survey (USGS); and,

- CEAP Steering Committee and Interagency Advisory Group, consisting of mid-level managers from the participating agencies.

The combination of peer review and oversight is designed to provide policy and technical guidance to those directly implementing CEAP and to assure the scientific credibility and public acceptance of national and watershed assessments of the environmental benefits of conservation practices

A listing of federal agencies, universities, and nongovernmental organizations that are collaborating with CEAP may be found at: www.nrcs.usda.gov/technical/nri/ceap/about.html.

The CEAP survey does not measure or collect information on the amount of crop residue left after harvesting of a crop, nor does in measure the impact the crop residue has on the quality of the soil for future years. The Residue and Biomass Field Survey will provide additional information to be used in constructing environmental models that will be used by environmentalists and conservationists.

**9. Explain any decision to provide any payment or gift to respondents.**

This project relies on operators providing a sample of harvested corn for analysis by ARS/HRSL instead of selling it. For those respondents who provide corn samples to NASS, a $25 gas card will be provided as a gesture of appreciation for allowing HRSL to sample the field. Another $25 gas card will be offered to corn operators providing an electronic yield map during the December collection as a token of appreciation. The electronic yield maps provide data for the models to estimate crop residue per acre, and reduces study costs in keying in yield map data.

**10. Describe any assurance of confidentiality provided to respondents and the basis for the assurance in statute, regulation, or agency policy.**

Questionnaires include a statement that individual reports are kept confidential. U.S. Code Title 18, Section 1905 and U.S. Code Title 7, Section 2276 provide for the confidentiality of reported information. All employees of NASS and all enumerators hired and supervised under a cooperative agreement with the National Association of State Departments of Agriculture (NASDA) must read the regulations and sign a statement of compliance

Additionally, NASS and NASS contractors comply with OMB Implementation Guidance, “Implementation Guidance for Title V of the E-Government Act, Confidential Information Protection and Statistical Efficiency Act of 2002 (CIPSEA), (Public Law 107-347). CIPSEA supports NASS’ pledge of

confidentiality to all respondents and facilitates the agency's efforts to reduce burden by supporting statistical activities of collaborative agencies through designation of NASS agents; subject to the limitations and penalties described in CIPSEA.

The following CIPSEA Pledge statement appears on all NASS questionnaires.

> The information you provide will be used for statistical purposes only. In accordance with the Confidential Information Protection provisions of Title V, Subtitle A, Public Law 107–347, and other applicable Federal laws, your responses will be kept confidential and will not be disclosed in identifiable form to anyone other than employees or agents. By law, every employee and agent has taken an oath and is subject to a jail term, a fine, or both if he or she willfully discloses ANY identifiable information about you or your operation.

All individuals who may access these confidential data for research are also covered under Titles 18 and CIPSEA and must complete a Certification and Restrictions on Use of Unpublished Data (ADM-043) agreement.

**11. Provide additional justification for any questions of a sensitive nature.**

There are no questions of a sensitive nature.

**12. Provide estimates of the hour burden of the collection of information. The statement should indicate the number of respondents, frequency of response, annual hour burden, and an explanation of how the burden was estimated. If this request for approval covers more than one form, provide separate hour burden estimates for each form and aggregate the hour burdens in Item 13 of OMB Form 83-I. Provide estimates of annualized cost to respondents for the hour burdens for collections of information, identifying and using appropriate wage rate categories.**

Response burden hours are shown in the table below. The projected response rate was based on a targeted response rate of 80% for the permission forms and final survey.

Cost to the public of completing the questionnaire is assumed to be comparable to the hourly rate of those requesting the data. The annual, estimated reporting time of 64 hours is multiplied by $25 per hour for a total cost to the public of $1,600.

NASS regularly checks the Bureau of Labor Statistics' Occupational Employment Statistics (Published April 1, 2015). Mean wage rates for bookkeepers, farm managers, and farm supervisors are averaged to obtain the wage for the burden cost. The May 2014 mean wage for bookkeepers is $18.30. The mean wage for

farm managers is $34.89. The mean wage for farm supervisors is $22.86. The mean wage of the three is $25.35.

| Annual Estimated Sample Size and Respondent Burden for 2016 - 2018 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Survey** | **Sample Size** | **Waves of Data Collection** | **Responses** | | | | **Non-response** | | | | **Total Burden Hours** |
| | | | **Resp. Count** | **Waves x Count** | **Min./ Resp.** | **Burden Hours** | **Nonresp Count** | **Waves x Count** | **Min./ Nonr.** | **Burden Hours** | |
| Residue Screening Phase in May | 100 | 1 | 80 | 80 | 20 | 27 | 20 | 20 | 2 | 1 | 28 |
| Field Measuremtnes in May and June 1/ | 80 | 1 | 80 | 80 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Corn Screening Phase in May (Corn Only) | 60 | 1 | 48 | 48 | 20 | 16 | 12 | 12 | 2 | 0 | 16 |
| Harvest Sample crops (Corn Only) 1/ | 60 | 1 | 48 | 48 | 0 | 0 | 12 | 12 | 0 | 0 | 0 |
| Cropping Practices Survey (Corn Only) 2/ | 48 | 1 | 39 | 39 | 30 | 20 | 9 | 9 | 2 | 0 | 20 |
| | | | | | | | | | | | |
| **Total** | 100 | | 80 | 167 | | 63 | 20 | 53 | | 1 | 64 |

1/ The operator does not need to be present for the field visits (measurement and harvesting), so no respondent burden is associated with these phases of the survey.

2/ The concluding cropping practices survey applies only to corn producers that had measurement data collected in May and September.

**13. Provide an estimate of the total annual cost burden to respondents or record-keepers resulting from the collection of information.**

There are no capital/start-up or ongoing operation/maintenance costs associated with this information collection.

**14. Provide estimates of annualized cost to the Federal government; provide a description of the method used to estimate cost which should include quantification of hours, operational expenses, and any other expense that would not have been incurred without this collection of information.**

The projected total cost to the Federal government to conduct the Residue and Biomass Field Survey is approximately $40,000 for fiscal year 2016, most of which is staff costs.

**15. Explain the reasons for any program changes or adjustments reported in Items 13 or 14 of the OMB Form 83-I (reasons for changes in burden).**

The slight increase in burden requested and decrease in responses is a simple adjustment to the calculations from the previous approval.

**16. For collections of information whose results will be published, outline plans for tabulation and publication. Address any complex analytical techniques that will be used. Provide the time schedule for the entire project, including beginning and ending dates of the collection of information, completion of report, publication dates, and other actions.**

There will not be any publications directly from these surveys.

For the respondents, we measured something in the grower's field and could give him or her the results for that field. For the December questionnaire, we are receiving information from the grower. No publication is intended from the December questionnaire that could be given to the operator.

Landuse classification techniques are used to expand the residue estimates over the entire watershed based on the collected data. In addition, the residue classifications and management surveys will be incorporated into several soil and water quality models including the Soil and Water Analysis Tool (SWAT) and the Environmental Policy Integration Calculator (EPIC) model for obtaining the current status of the watershed and evaluating the effects of alternative crop and soil management strategies.

A general description of the SWAT program can be found at:

http://swat.tamu.edu/media/57882/Conservation-Practice-Modeling-Guide.pdf.

A remote sensing paper for the South Fork watershed utilizing these data has just been accepted for publication in the Journal of Soil and Water Conservation, but the publication date is uncertain at this time.

Survey design.....Mar-Apr 2016
Sample selection.....Apr 2016
Questionnaire design.....Mar 2016
Materials to field offices.....Apr 2016
Obtain permission for 1st visit.....May-June 2016
1st Field Visit for Residue.....June 2016
Obtain permission for 2nd visit.....Aug –Sept 2016
2nd Field Visit for Corn samples….Sept 2016
Cropping Practices Survey.....Dec 2016
Above Tasks repeated.....Annually

**17. If seeking approval to not display the expiration date for OMB approval of the information collection, explain the reasons that display would be inappropriate.**

No approval is requested for non-display of the expiration date.

**18. Explain each exception to the certification statement identified in Item 19, "Certification for Paperwork Reduction Act Submissions" of OMB Form 83-I.**

There are no exceptions to the certification statement.

February, 2016