FSA
HANDBOOK

Geospatial Information Systems

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For State and County Offices

SHORT REFERENCE

1-GIS

UNITED STATES DEPARTMENT OF AGRICULTURE
Farm Service Agency
Washington, DC 20250

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Farm Service Agency
Washington, DC 20250

Geospatial Information Systems 1-GIS	Amendment 4

Approved by: Acting Deputy Administrator, Farm Programs



Amendment Transmittal

A Reasons for Amendment

Paragraph 500 has been amended to correct the name of CRM Farm Records.

Paragraph 817 has been amended to change the point of contact for the ArcGIS Online administrator.

Exhibit 16 has been amended to update the PDD SharePoint Site.

Exhibit 86 has been amended to update the Citrix instructions from Citrix Receiver to Citrix Workspace.

Exhibit 87 has been amended to correct GET instructions for Windows 11.

Exhibit 88 has been amended to correct CLU Maintenance Tool instructions for Windows 11.

Exhibit 98 has been amended to correct DRT instructions for Citrix Workspace and Windows 11.

Exhibits 100, 118, 119, 120, 121, 122, 123, 124, 125, 126, 126.1, 127, 128, 128.1, 129, and 130 have been amended to correct toolbox instructions for ArcGIS Pro.

Exhibit 177 has been amended to change the point of contact for the ArcGIS Online administrator.

Page Control Chart		
TC	**Text**	**Exhibit**
9, 10	7-1, 7-2 10-5, 10-6	16, pages 1, 2 86, pages 1-6 87, pages 1, 2 88, page 1 98, pages 1, 2 100, pages 1, 2 118, pages 1, 2 119, pages 1, 2

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TC	**Text**	**Exhibit**
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Part 1 General Information and Administrative Provisions

1 Overview

A Background

FSA began its GIS program as part of the partner Agency Service Center Initiative. Through this initiative, there were 2 key components for developing a successful GIS system for FSA: imagery and a national CLU layer. To date, many common systems use both imagery and the CLU layer within everyday business practices.

At the National and State level, offices have designated employees to be responsible for GIS-related tasks. Specific job titles may vary. For clarity, these employees are referred to as the GIS Specialist in this handbook.

FSA uses GIS to support the implementation, delivery, and management of FSA programs. GIS can be used as a decision support tool to help determine eligibility, ensure compliance, and analyze patterns to improve agency efficiency and program delivery. FSA will use GIS Specialists to manage geospatial data and use technical resources to ensure consistency for all FSA GIS-based initiatives.

Integration of geospatial data and program-specific tabular data will allow FSA to use GIS to improve program delivery by:

- using maps to show relationships between spatial and tabular program data
- incorporating internal and external datasets to display in spatial or tabular formats
- providing targeted outreach to improve program participation
- maintaining and providing access to historical data.

B Handbook Purpose

This handbook provides:

- policy and standards for GIS-related roles and responsibilities within FSA for National, State, and County employees

- specifications for geospatial data used by the agency

- standard methodology for supporting FSA programs through the use of geospatial technology and data.

1 Overview (Continued)

C GIS Coordination and Program Areas

FSA has identified areas that require coordination between the GIS Specialist and applicable FSA staff such as:

- farm records maintenance
- acreage reporting and compliance
- conservation programs
- disaster programs
- emergency management
- farm loan programs
- imagery acquisition and analysis
- personnel and agency administration.

D Related Handbooks for Geospatial Coordination

The following handbooks are related to or require coordination with the responsibilities of the GIS Specialist.

IF material covers…	THEN see…
Acreage Reporting	2-CP.
Acreage Compliance	2-CP and 3 FI.
Biomass Crop Assistance Program	1-BCAP.
Boll Weevil Eradication Program	1-BWEP.
Conservation	2-CRP and 3-CRP.
CRP - TERRA User Information	3-CONSV.
Disaster Designations	1-DIS and 1-SEM.
District Director Areas	16-AO.
Emergency Conservation Program	1-ECP.
Environmental Reviews	1-EQ.
Farm Records	10-CM, 3-CM, and 1-CM.
File Encryption Protocol	ISPP (Rev. 4).
Freedom of Information Act	2-INFO.
Highly Erodible Land/Wetland Compliance	6-CP.
Imagery	1-AP.
Local Administrative Areas	15-AO.
Livestock Disaster Assistance Programs	1-LDAP (Rev. 1).

1 Overview (Continued)

D Related Handbooks for Geospatial Coordination (Continued)

IF material covers…	THEN see…
Marketing Assistance Loans and Loan Deficiency Payments for 2008 and Subsequent Crop Years	8-LP (Rev. 2).
Noninsured Crop Disaster Program Assistance Program and 2015 and Subsequent Years	1-NAP (Rev. 2).
Privacy Act	3-INFO.
Record Management	25-AS.
Risk Management Agency Spot Checks	4-RM.
STORM Reports and Emergency Management	1-SEM.

2 Sources of Authority

A Executive Orders

The following Executive Orders relate to the geospatial activity for FSA:

- **Executive Order 12906** (Coordinating Geographic Data Acquisition and Access: The National Spatial Data Infrastructure)
- **Executive Order 13231** (Critical Infrastructure Protection in the Information Age)
- **Executive Order 12472** (Information Technology Management Reform Act).

B Statutory Authority

The following Statutory Authorities relate to the geospatial activity for FSA:

- 7 CFR 2.42 provides authority to disclose geospatial information about agricultural land or operations pursuant to the consent of the agricultural producer or owner of agricultural land
- 7 CFR Part 718 provides authority to establish procedures for acreage determinations, compliance activities, Farm Records maintenance, and Reconstitutions

2 Sources of Authority (Continued)

B Statutory Authority (Continued)

- authority for the development of the CLU data (theme) was provided by the National Food and Agricultural Council. The USDA Service Center GIS Strategy, as approved by the National Food and Agricultural Council on August 18, 1998:

  - designated FSA as the Data Steward for the CLU dataset
  - provided the initial funding and production schedule for CLU digitizing.

C Regulatory Authority

The following Regulatory Authorities relate to the geospatial business for FSA:

- **OMB Circular A-16** – This Circular provides direction for federal agencies that produce, maintain or use spatial data either directly or indirectly in the fulfillment of their mission

- **OMB Circular A-130 Revised** – This Circular establishes general policy for the management of Federal information resources, IT resources, and supporting infrastructure. The CLU dataset follows the FGDC guidance that includes the Geospatial Data Lifecycle, which outlines 7 stages agencies should use when developing, managing, and reporting on nationally significant datasets under the guidance of OMB Circular A-16. The stages associated with the management of the data lifecycle allow stakeholders to assess whether A-16 data production activities meet business requirements and use best practices that enable shared or common services.

D Other Authoritative Sources

The following other authorities relate to the geospatial business for FSA:

- **OMB M-13-13 (Open Data Policy – Managing Information as an Asset)** – This Memorandum "requires agencies to collect or create information in a way that supports downstream information processing and dissemination activities"

- ***--DR 3465-001, Enterprise Geospatial Data Management** defines the strategic**--*** direction necessary to optimize the management of the USDA geospatial data as departmental enterprise assets. The USDA Enterprise Geospatial Data Management policy presents elements of an enterprise geospatial data management framework and internal geospatial data sharing process.

3-6 (Reserved)

Part 2 Geospatial Responsibilities

7 Roles and Responsibilities

A National Office Responsibilities

National Office responsibilities include, but not limited to:

- developing and publishing an annual National GIS Plan. The National GIS Plan is used as an internal document to coordinate GIS activities and communicate priorities for data development, remediation, and training. Components of the National GIS Plan include:
  - National Geospatial Priorities
  - Communication Plan
  - Training Plan
  - Short Term Process Improvements
  - Long Term Enterprise Process Improvements
- setting standards for geospatial data to ensure that data is captured at a sufficient level of detail to meet program needs
- setting cartographic standards for map products
- identifying FSA datasets of national significance
- setting standards for archiving of geospatial data
- ensuring FSA data availability for FSA employees and customers
- coordinating with APFO as it relates to the use and collection of imagery
- supporting and developing best management practices for web mapping applications
- ensuring that GIS applications meet FSA business requirements
- reviewing State GIS Plans to identify training needs, data quality issues, local initiatives, and processes that may have national or regional applicability

7 Roles and Responsibilities (Continued)

A National Office Responsibilities (Continued)

- representing FSA on the USDA GDMT
- providing training to State GIS Specialists
- defining GIS hardware requirements.

B SED Responsibilities

SED will coordinate with the State GIS Specialist to evaluate the geospatial needs for the State, including:

- developing and updating the State GIS Plan on an annual basis
- using the GIS Specialist to incorporate geospatial data and technology across all FSA programs and departments to identify agricultural issues and impacts within a State based on USDA FSA program information
- promote collaboration between State GIS specialists, National Office, and outside resources.

C State GIS Specialist Responsibilities

The State GIS Specialist will:

- develop the State GIS Plan and update annually
- perform regular QC checks on FSA authoritative geospatial data

  Note: See **Exhibit 5** for required QC checks.

- provide training and support to State and County Office employees on geospatial data and tools
- provide data and reports to SED and State personnel as needed

7 Roles and Responsibilities (Continued)

C State GIS Specialist Responsibilities (Continued)

- ensure that the CLU and wetland data is available to County Offices and is updated on a weekly basis
- provide cartographic products, including printed maps, digital maps, and web mapping
- provide access to other geospatial data such as parcel data or PLSS for State and County Office users
- use GIS as a decision support tool for FSA programs at the State and county level
- provide State-level coordination and support for NAIP
- provide State mobile device management (**paragraph 281**), including:
  - maintaining inventory of GPS devices and cameras
  - maintaining list of certified GPS users
  - assessing GPS training needs annually
  - providing hardware and software support
- coordinate with SLR to ensure that GIS users have correct access permissions to GIS applications
- coordinate with local CTS to ensure that technology infrastructure is properly used, including:
  - ensuring that correct permissions are assigned to folders
  - managing storage and backups
  - ensuring that correct software versions are installed for geospatial applications
- establish and maintain relationships with public and private organizations

7 Roles and Responsibilities (Continued)

D State Office Program Area Responsibilities

State Office staff will coordinate with the State GIS Specialist to incorporate geospatial data and technology across FSA programs and departments where geospatial activities have been identified by the National Office. Examples of State Office coordination include:

- involving the State GIS Specialist in program training, staff meetings, and other activities
- using the State GIS Specialist as a technical expert for National GIS tools, processes, and data

  Note: For more information, see **Part 9**.

- incorporating geospatial best practices developed by the National Office
- identifying program areas where GIS is underused
- coordinating with State GIS Specialist to identify and obtain core data needed to create maps or other reports for program support.

E County Office Responsibilities

County Office employees with GIS-related duties shall:

- follow all policies in this handbook
- ensure that CLU, wetland, and other FSA geospatial data is accurate
- use TERRA to support CRP enrollment
- coordinate with State GIS Specialist to correct data quality issues
- use available mobile devices for field data collection and navigation
- handle geospatial data requests
- provide maps to producers as required.

8 State GIS Plan

A Overview

The State GIS Plan is a detailed strategy for managing geospatial activity for the FY. The State GIS Plan is intended to:

- evaluate the integrity of the State and county CLU, wetlands, and CRP data
- outline corrective action needed at the State and county level
- detail a plan for creating and maintaining producer maps
- identify State and county training needs
- detail a plan for data collection and usage with available GPS equipment
- detail a plan for archiving State-specific data for the FY.

B State Office Action

State Offices will submit the annual State GIS plan to PDD by January 1. The State GIS plan shall include:

- identification of roles and responsibilities within the State, including:
  - SED
  - State Office
  - District Director
  - County Office
- Summary of State data integrity (QC) report
- corrective action plan
- plan for creation and distribution of producer maps
- State GIS Training Plan
- GPS inventory
- summary of mobile device usage
- identification of geospatial data to be archived or refreshed

8 State GIS Plan (Continued)

B State Office Action (Continued)

- identification of current base imagery and replacement plan
- Summary of Special GIS Projects
- Summary of GIS Outreach activities
- Summary of AGOL Usage

Note: **Exhibit 6** contains an example of a State GIS Plan.

9 GIS Specialist Tasks

A Overview

State GIS Specialists have tasks to complete on a weekly, monthly and yearly basis. These tasks will ensure data availability and the data integrity of the CLU and Farm Records information. Some of the outlined tasks affect multiple program areas, such as emergency preparedness and compliance.

B Data Tasks

The types of tasks to be completed by the GIS Specialist include:

- data management
- Farm Records and CLU attributes QC
- conservation QC
- crop data QC
- Geodata management
- emergency preparedness.

Note: State GIS Specialists will use **Exhibit 5** as a guideline for keeping track of the required tasks.

10-25 (Reserved)

Part 3 Geospatial Data Management

Section 1 Roles and Responsibilities

26 Managing Geospatial Data

A Overview

USDA uses a team approach to managing geospatial data to ensure data availability and to reduce duplication of efforts between agencies.

B FSA National GIS Program Coordinator

--Following the scope of Executive Order 12906, OMB Circular A-16, and DR 3465-001-- (Enterprise Geospatial Data Management), the FSA National GIS Program Coordinator participates as steering committee lead for the following groups:

- USDA GDMT
- USDA Remote Sensing Coordination Council
- FGDC Imagery theme lead (co-leadership with USGS)
- National Digital Ortho-Imagery Program.

The participation and representation of FSA within these cooperative data partnerships with Federal, State, local, tribal and international governments, where feasible, is important to reduce geospatial data investment costs.

C National Geospatial Data Management Team

The GDMT is a self-directed cross agency team organized as follows.

- GDMT Steering Committee - Composed of senior representatives from the Forest Service, FSA, NRCS, RD, and RMA.

- GDMT Coordination Group – Composed of senior GIS technical staff from the field-based agencies. The Group rotates technical leadership of the GDMT on a calendar year basis and supports the GDMT and Steering Committee as needed.

- GDMT Members – Composed of field, State, regional, and center and NHQ staff as appropriate and charged with exploring technical geodata-related issues, documenting key points and offering options for resolution.

- GDMT Technical Sub-Groups – composed of GDMT members and others as needed to adequately address the topic at hand. Sub-groups will form and disband as appropriate to address technical issues.

26 Managing Geospatial Data (Continued)

D State GDMT

The State GDMT consists of the SGA from each SCA and 1 or more representatives from CTS. The team meets at least quarterly to discuss geodata coordination activities as outlined in the Manual for Managing Geospatial Datasets in Service Centers.

The State GDMT:

- identifies needs for new geospatial data and establishes naming conventions for new folders and datasets
- provides supplemental guidance to address local geodata issues
- communicates geodata management issues to the National GDMT
- develops policy for geodata that is consistent with the National Geodata Manual
- addresses geospatial data licensing issues
- works with CTS to resolve permission issues
- works with CTS to ensure that geospatial data is adequately backed up
- sets timeframes for updates to geodata in Service Centers

27 Geospatial Data Responsibilities

A Overview

Managing geospatial data and other digital information is essential for effective use of GIS. Geospatial data management requires collaboration between business owners and GIS specialists.

B National Office Responsibilities

The National Office is responsible for:

- ***--**following guidance in DR 3465-001, Enterprise Geospatial Data Management at **https://www.usda.gov/directives/dr-3465-001**.**--***
- providing guidance in the collection, maintenance and use of geospatial data
- supporting FSA Program and Administrative areas
- coordinating with other divisions within FSA to ensure that geospatial investments are used effectively
- coordinating with partner Agencies and the Department to reduce data duplication
- creating and managing lifecycle data management plans for FSA authoritative datasets
- creating and managing geospatial metadata for national datasets.

27 Geospatial Data Responsibilities (Continued)

C SGA Responsibilities

Each State will designate the State GIS Specialist as SGA for their respective State and represents FSA on the multi-agency State GDMT.

The SGA is responsible for coordinating with the State GDMT and CTS to manage data and new employees' access within the geodata directory of each Service Center server. This includes but is not limited to:

- ensuring that appropriate geodata folder permissions are assigned to FSA employees
- updating and coordinating development of geodata for FSA as needed
- ensuring that geodata standards are followed in all County Offices
- ensuring that State and National geospatial datasets and metadata are available for State and County Office use
- ensuring that data and metadata in State and local offices adheres to established standards and policies
- training State and county staff on management and usage of geospatial datasets
- maintaining an inventory of all geospatial data used for FSA purposes
- ensuring that FSA geospatial data is archived appropriately

For more information, see the Manual for Managing Geospatial Datasets in Service Centers located at **https://inside.fsa.usda.gov/program-areas/dafp/common-processes/gis/gis-library/index**.

27 Geospatial Data Responsibilities (Continued)

D County Office Responsibilities

County Offices are responsible for:

- following the guidance outlined in this handbook and directions from the State GIS Specialist to manage geospatial data
- processing authorized producer requests for CLU and Wetland data (clips/subsets)
- providing metadata with the associated geospatial clips/subsets created for authorized producer requests using standard metadata templates
- providing NRCS with applicable TERRA scenarios for conservation planning purposes.

28, 29 (Reserved)

*--Section 2 Geospatial Authoritative Data Resources

30 Geospatial Authoritative Data--*

A Overview

--FSA is responsible for defining and managing the GAD that FSA uses for business-- purposes. These authoritative datasets are both national and statewide datasets. This handbook defines FSA's authoritative datasets.

*--B Definition of GAD

DR 3465-001, Enterprise Geospatial Data Management identifies GAD as any geospatial data that meets one or more of the following:

- is required by statute
- is authored, maintained, and considered authoritative by USDA Mission Areas, agencies and staff offices
- is used to support policy
- is used to manage programs
- is used to inform the public.

Note: Datasets created by joining or relating a table are not considered GAD.--*

C Core Management Principles

*--GAD's carry particular expectations of how data is to be managed within an Agency. Following the guidelines in DR 3465-001:

- GAD's will be made available to anyone with access authority
- the creation and/or management of GAD's can encompass various platform sources including desktop, portals, mobile, cloud, web applications, and legacy where appropriate
- FSA's SGA will be the data steward of statewide GAD's specific to their State
- FSA GAD's will have lifecycle data management plans
- FSA GAD's and subsets (or clips) of those datasets will have metadata
- metadata XML templates designed by the National Office will be used for supplying metadata to GAD's and subsets of those datasets.--*

***--30 Geospatial Authoritative Data (Continued)**

D FSA GAD's

The following geospatial datasets have been identified as FSA GAD's and have national**--*** standards established:

- CLU
- Wetland Points.

--**Future FSA GAD's may include:**--

- FSA County Boundaries
- Service Center Points
- State Office Points
- District Boundaries
- Local Administrative Areas
- FSA Administrative Regions.

31 Data Lifecycle Management

A Overview

--**DR 3465-001 requires agencies to identify a geospatial data lifecycle for all GAD's. The GAD geospatial data lifecycle stages allow stakeholders to assess whether USDA data production activities meet business requirements. The National Office is responsible for managing lifecycle data management plans of all FSA national GAD's.**--

B Geospatial Data Lifecycle Plan

*--Geospatial data lifecycle management plans for FSA GAD's will be based on the document at **https://www.fgdc.gov/policyandplanning/a-16/stages-of-geospatial-data-lifecycle-a16.pdf**.**--***

Geospatial data lifecycle management also includes planning for archiving and records disposition.

32-35 (Reserved)

Section 3 Geodata Management: Environments and Standards

36 Geospatial Environments

A Overview

FSA accesses and manages geospatial data in multiple environments, including:

- State Office and Service Center Servers
- Citrix
- AGOL
- Other Web applications such as CRM.

Each environment has similar yet separate rules and procedures for file storage and access. The State GIS Specialist has responsibilities in each environment. Additional information on AGOL is found in **Part 10**.

B State Office and Service Center Servers

State Office and Service Center servers are used to distribute State- and county-specific geospatial data. Data is stored on these servers as a shared resource for authorized SCA users. FSA and NRCS use locally stored geodata for analysis, mapping and other decision-support activities.

The geodata directory structure and associated folder permissions are the same between the State Office and Service Center servers. The use of consistent file naming procedures is essential for proper data management for all partner agencies.

Data stored on the State Office Server is considered the primary copy of the geospatial data and should be used for distribution to Service Center servers. As updates to datasets become available, the State GIS Specialist will copy the updated data to the Service Center servers to ensure consistency within the State. Using the State Office Server as the primary copy also ensures data availability in case of data loss in a Service Center.

Note: Data stored on State and Service Center servers is a copy, and is not actual production data.

The State GIS Specialist shall ensure that proper geodata practice standards outlined in this handbook are followed.

36 Geospatial Environments (Continued)

C Citrix Environment

In the Citrix Environment (also known as FSA ArcGIS Desktop West), each user is provided an individual desktop experience similar to working on a personal computer, except that it is a virtual machine running from a centralized server farm in Kansas City. Data available in this environment is only for supporting TERRA, CLU Maintenance Tool. Not all data found in the Service Center server environment will be stored in Citrix.

37 Geodata Management

A Overview

GIS data serves a critical need for FSA to conduct business at all levels. Geospatial data management requires coordination and timely updates from within and outside of USDA FSA.

Standard storage and naming conventions as identified in the Manual for Managing Geospatial Datasets are required for:

- consistency among USDA agencies for data sharing
- coordinated refreshes of datasets from national or State resources
- uniformity for enterprise applications, scripts, tools, and models
- facilitating backup and versioning of data.

B USDA Coordinate System

FSA uses the following specifications for the transfer of GIS layers for use by partner agencies:

- Coordinate System: UTM
- Projection: UTM
- Units: Meters
- Datum: NAD83
- Zone: (State specific).

37 Geodata Management (Continued)

C Geospatial Dataset Naming Guidelines

Naming standards apply to all nationally distributed datasets. State or local datasets should also follow naming standards.

Names are designed to be unique within the entire geodata directory. Unique names allow for data to be easily identified, accessed and shared.

D Geospatial File Name Elements

Standard file names must convey the following information:

- Dataset (Theme) name
- Type of data
- Physical location or spatial extent of data
- Projection of the data (for data other than UTM)
- File type extension (e.g. .shp, .gdb, .tif, .csv)

Note: Dataset (theme) name can be the full name, a shortened version or an acronym used to represent the business name of the dataset.

E Standard Characters

The only characters allowed in a standard file or directory name are the following:

- lower-case text characters a-z OR upper-case text characters A-Z
- the numerals 0-9
- the underscore "_" character
- the dash "-" character, but only when designating mosaic tiling (x-x).
- the first character in the file name shall be a letter (a-z or A-Z).
- spaces are not allowed in file or folder names. Use the underscore character "_" to represent a space.

37 Geodata Management (Continued)

F Name Length

The total length of the dataset filename will not exceed 30 characters.

G Codes and Abbreviations for Standard Naming Conventions

The following table identifies example codes and abbreviations used in describing geospatial dataset names in this handbook.

Abbreviation	Definition or Rule
< >	Indicates a substitution notation.
***--**<code>	Conservation files include a code that represents the project in the attributes. This code is used to abbreviate the project name. This code is used to identify the project when a State has multiple projects (e.g. SAFE Project Areas).**--***
<prj>	Indicates the projection of the data, (e.g. cpa_a_md_gcs.shp). Use for data other than UTM.
<st>	The 2-character State postal abbreviation; precip_a_co is the filename for Colorado annual precipitation.
<stnnn>	The 2-character State postal abbreviation and 3-digit county FIPS code (e.g., clu_a_md047 is the CLU filename for Worcester County, Maryland).
<stssaid>	The State soil survey area ID (e.g., soils_l_md047 is the filename for Worcester County, Maryland) SSURGO Database (SSURGO Lines).
<us>	Indicates dataset covering the entire United States, its protectorates and territories.
<us48>	Indicates the conterminous or contiguous United States.
<v>	Indicates the revision 1, 2, 3, etc.
<x-x>	Indicates the 2-digit HUC (region).
<xxxxxxxx>	The 8-digit HUC.
<yyyy>	The calendar year.
<yyyymm>	The calendar year and month.
<yyyymmdd>	The date expressed as year, month, and day. When entire date is not available, use at least year <yyyy>.

37 Geodata Management (Continued)

H Data Type Codes

The following table defines the codes used within geospatial file names to identify the type of data contained within a dataset.

Data Type Code	Definition
a	area
d	database/spreadsheet
l	line
p	point
t	table
x	GPS points (without differential resolution, or of unknown resolution)
xd	GPS points (with differential resolution)
y	Photograph, image clip, image (from digital camera, scanner, or ArcGIS export map function)

I Non-USDA Datasets

When non-USDA datasets are used, the datasets shall retain the original source name that the outside agency has used. The following can be added to the original name if needed.

Feature Code Identifiers	Definition
<agency>	Federal or State Agency
<countygovt>	Identify local county government
<yyyy>	The calendar year of dataset
<yyyymm>	The calendar year and month of dataset
<yyyymmdd>	The date expressed as year, month, and day. When entire date is not available, use at least year <yyyy> of dataset

38 Geospatial Data Organization

A Overview

Geospatial data is stored on a shared data drive on the network servers in each Service Center and on each State Office GIS server. The shared data drive is typically labeled as the F:\ drive in both the Service Center and State Office. Similar geodata structures are stored in the Citrix Thin Client environment.

Shared geospatial data folders allow:

- sharing information with co-workers and partner agencies
- providing a staging area for downloading nationally developed and State-developed data layers, and making the data accessible to all GIS users
- providing a place to store spatial data that is to be backed-up on a regular basis.

B Geodata Folder Structure

The standard permissions based **geodata** folder structure resides on all Service Center and State Office servers holding geospatial data.

There will be only1 shared geodata folder in any Service Center or State Office.

Note: The State Office shared geodata folder shall be managed as a primary copy of all statewide and archived dataset.

The following rules apply to the Service Center and State Office geodata folders

- the geodata's original 34 primary subfolder integrity must be maintained as permissions, scripts, and some agency tools are built upon this structure
- no new folders will be added to the original 34 folders directly under the f:\geodata directory tree without approval of the USDA GDMT
- sub folders are allowed in any of the 34 established folders upon agreement with all State SGA's within the State.

38 Geospatial Data Organization (Continued)

C Citrix Geodata

Several drive letters will be automatically mapped for the users during login based on a login script policy. The following table describes the users and drive letter mapping.

User Group	Drive Letter	Drive Name
All users	I:\	National
State users	K:\	State
Individual user	O:\ S:\ (local Shared Drive) F:\ (local Data Drive) H:\ (local user's Home Drive)	Users

The Citrix Geodata folder structure is a modified version of the F:\geodata folder structure documented in the Manual for Managing Geospatial Datasets in Service Centers. Naming conventions and rules are similar to those in the F:\geodata structure, however there are no specific folder permissions. The Citrix folder structure is not an exact copy of the F:\geodata folder structure that resides on each Service Center server. A minimum set of geodata required for TERRA and CLU Maintenance Tool are maintained in Citrix.

D Data Access and Management

Network drives mapped to a user's workstation, including F:\ and S:\ drives, are visible within Citrix environment. Users shall ensure that any data used in GIS Applications within Citrix is accessed from only the I:\, K:\, or O:\ drive.

Note: The C:\ drive visible within Citrix is not a local drive; it is a storage location in the Citrix environment. Data in this drive will not persist from session to session.

38 Geospatial Data Organization (Continued)

E Citrix National Directory Folder Structure

The National folder structure (I:\ drive) will be available for all users and will provide information that is applicable to all users across the nation. The National directory is for posting national datasets, tools and templates. All users have 'read-only' access to this data.

Folder	Description
Conservation	This folder contains conservation national datasets used in TERRA.
Government Units	This folder contains a variety of national government boundary related datasets.
Imagery	This folder contains national image layer (.lyr) files.
Scripts \Remap SDE Connections \PythonMapSeries	This folder contains subfolders with scripts for specific data management purposes.
Templates \Trimble_Projections \Metadata \Applications	This folder contains subfolders with files geared for shared use.

F Citrix State Directory Folder Structure

The State folder structure (K:\ drive) will be available for posting State-specific datasets so all users have access to this data from a single source.

38 Geospatial Data Organization (Continued)

G Citrix Subfolders for Counties

County specific datasets will be stored in subfolders within the standard geodata folders. Geospatial data files should not be duplicated in any folder within the Citrix environment. For any required adjacent county data, users will navigate to the appropriate geodata folders within the K:\ drive as needed.

County subfolders must:

- only reside below the State folder structure
- have a consistent naming convention throughout the entire State folder structure – with the exception of Split, Shared and Combined managed type counties.

Geodata folders for Split, Shared and Combined Counties example.

County Type	Example Folder Naming Convention
County	K:\ME\Geodata\Service_Center\me025_Somerset
Split County	K:\ME\GeoData\Service_Center\me002_Aroostook_Houlton
Shared County	K:\ME\GeoData\Service_Center\me005_031_Cumberland_York
Combined County	K:\MD\GeoData\Service_Center\md031_027_Montgomery_Howard

Note: County Offices will follow the guidance of the State GIS Specialist to create and maintain subfolders.

39 Geospatial Data Directory

A Geodata Folder Structure and Data Storage Locations

The files and folders identified in the following table shall be maintained and reviewed by the State GIS Specialist on a regular basis. Not all files or folders will exist in every environment. The "Location" column in the following table identifies in which environment the data is stored. The folder structure identified in this paragraph is not exhaustive. Refer to the appropriate Manual for Managing Geospatial Datasets in Service Centers for a complete listing of folders.

Locations to store data are represented by the following codes:

- F – County and State Office server (unless specified)
- K – Citrix State level folder
- I – Citrix National level folder.

Note: Location codes do not necessarily reflect mapped drive letters.

Folder	Location	File Name	Description
cadastral			Check files yearly; Ensure that files are on external hard drive in State Office.
	F, K	plss_a_<stnnn>	PLSS polygon data
	F, K	plss_p_<stnnn>	PLSS centroids for cartographic display
	F, K	plss_<st>	Best Practice: Statewide file geodatabase and surrounding other State counties
\tax_parcel	F, K	parcels_a_<stnnn>	County tax parcels
common_land_unit			Check files monthly; Ensure that statewide files are on external drive in State Office.
\fsa_clu	F, K	clu_a_<stnnn>	Read-only copy of certified CLU
	F, K	wet_p_<stnnn>	Read-only copy of wetland point dataset
	State Office server only	clu_<st>_<yyyyddmm>	File geodatabase of statewide merged CLU and wetland points

39 Geospatial Data Directory (Continued)

A Geodata Folder Structure and Data Storage Locations (Continued)

Folder	Location	File Name	Description
conservation			Check files monthly; Ensure that statewide files are on external drive in State Office.
	F, K	cpa_a_<st>_utm<nnn>	State CPA's in UTM projection
	K	cpa_a_<st>_gcs	State CPA's in GCS projection
	F, I	***--**cp<nn>_a_<stnnn>	Practice eligibility zone
	F, K	crep_<code>_a_ <st>_<prj>	CREP eligibility area
	F, F, I	pez_a_<stnnn>	Practice eligibility zone
	F, K	safe_a_<code>_ <st>_<prj>	SAFE project eligibility area
	F, K	whpa_a_<stnnn>	Wellhead protection areas**--***
\bcap_project	K	bcap_<ST>.gdb\bcao_a _<stccc>_<year>	Feature classes can be named uniquely by State and county. Manage layers in a statewide file geodatabase.
\fsa_crp	State Office server only	crp_a_<stnnn>	CRP statewide dataset

39 Geospatial Data Directory (Continued)

A Geodata Folder Structure and Data Storage Locations (Continued)

Folder	Location	File Name	Description
\conservation_planning\ SU<nn>	F, K County Office servers only	Uniquely defined file names	This folder contains conservation datasets and related information required for conservation plan development that is shareable between SCA's. The required conservation planning (TERRA) files and related information may be stored in this folder on a temporary basis.
\crp_scenarios\saved \SU<nn>	F, K County Office servers only	TERRA tool defined output file naming convention	Output location for conservation offers created through TERRA scenarios are to be archived to a subfolder noting signp number.
\gps_data	F, K County Office servers only	Uniquely defined file name	GPS data collected for the purpose of CRP enrollment and compliance activities

39 Geospatial Data Directory (Continued)

A Geodata Folder Structure and Data Storage Locations (Continued)

Folder	Location	File Name	Description
disaster_events	F		Check files yearly; Ensure that files are on external hard drive in State Office.
\ECP\<yyyymmdd>	F County Office servers only	TBD	File dataset and georeferenced photos
\fsa_facilities	F	ffsf_p_<yyyymmdd>.shp	Point feature locations of county of Food, Feed, Seed Facilities output files from the FFSF tool. See 1-SEM. Restricted dataset.
	F	fert_p_<yyyymmdd>.shp	Point feature locations of county of Fertilizer Facilities output files from the FFSF tool. See 1-SEM. Restricted dataset.
	F	Uniquely defined file name	Leasing data
\storm_summaries\ <yyyy>	F	<disaster type_a_<st>_ <yyyymmdd>	Data identifying location of natural disasters contributing to agricultural losses. Ensure that year folders are created and subfolders are added for each date event.

39 Geospatial Data Directory (Continued)

A Geodata Folder Structure and Data Storage Locations (Continued)

Folder	Location	File Name	Description
\storm_summaries\ <yyyy> (Continued)	F	crop_a_<stnnn>	Subset of cropland data affected by a natural disaster
	F	Uniquely defined file name	Short-term weather warning polygons
\USDM\<yyyy>	F	Uniquely defined file name	Location for the storage of weekly U.S. Drought Monitor files. Update weekly during drought events.
government_units	F, I		Check files yearly; Ensure that files are on external hard drive in State Office.
	F, I	\ Admin_FSA_Counties.gdb Feature datasets contained within this geodatabase are indicated with ..\ on subsequent rows	FSA administrative county boundaries geodatabase **Note:** Geodatabases will be managed through ArcCatalog. Contents of geodatabases are not visible in Windows Explorer.
	F, I	..\Cart_FSA_ Counties	Generalized county boundary dataset used for cartographic display
	F, I	..\FSA_Admin_Counties	County boundary dataset used for determining administrative and physical locations of program data
	F State Office server only	fsa_facilities_p_<st>	FSA Service Center statewide points; Update as needed.

39 Geospatial Data Directory (Continued)

A Geodata Folder Structure and Data Storage Locations (Continued)

Folder	Location	File Name	Description
	F, I	tlgdb_<yyyy>_a_us_aiarelated.gdb	TIGER American Indian Lands data from U.S. Census Bureau
	F	Uniquely named by source	TIGER City data from U.S. Census Bureau
	F, I	tlgdb_<yyyy>_a_us_substategeo.gdb ../County	U.S. Census Bureau TIGER Geodatabase County Boundaries
	F	Uniquely defined file name	Townships/Parishes
	F	Uniquely defined file name	Congressional Districts
	F	Uniquely defined file name	State Boundaries
geology	F		Check files yearly. Ensure that files are on external hard drive in State Office.
	F	Uniquely defined file name	Seismic zone data used for disasters
hazard_sites	F		Check files yearly. Ensure that files are on external hard drive in State Office.
	F	Nhfl_<st>_<date>.gdb	FEMA polygon geodatabase
	F	…\s_fld_haz_<st>	FEMA polygon dataset by State
	F	s_fld_haz_<st>.gdb	FEMA floodplain geodatabase by State
	F	…\100yr_nhlf_<st>_<date>	100-year floodplain derived from FEMA
	F	…\500yr_nhlf_<st>_<date>	500-year floodplain derived from FEMA

39 Geospatial Data Directory (Continued)

A Geodata Folder Structure and Data Storage Locations (Continued)

Folder	Location	File Name	Description
hydrography	F, K		Check files yearly. Ensure that files are on external hard drive in State Office.
	F, K	hydro100k_l_<stnnn>	1:100,000 Census TIGER line data for hydrology
	F, K	nhd24kst_l_<st>	1:24,000 USGS/EPA National Hydrography Dataset streams line data by 8-digit sub basin
	F, K	nhd24kar_a_<st>	1:24,000 USGS/EPA National Hydrography Dataset polygon area reach data by 8-digit sub basin
	F, K	nhd24kwb_a_<st>	1:24,000 USGS/EPA National Hydrography Dataset polygon waterbody data by 8-digit sub basin
	F, K	ssara_p_<stnnn>	Sole source aquifer recharge areas
	F, K	watbod_a_<stnnn>	1:100,000 Census TIGER area features for water bodies

39 Geospatial Data Directory (Continued)

A Geodata Folder Structure and Data Storage Locations (Continued)

Folder	Location	File Name	Description
hydrologic_units **Note:** In Citrix, this folder is named "**hydrological**"	F, K		Check files yearly. Ensure that files and HUC's are on external hard drive in State Office.
	F, K	wbdhu12_a_<st>	1:24,000 12-digit polygon data at the 4th, 5th and 6th level by sub- basin (huc8)
	F	wbdhu12_l_<st>	1:24,000 12-digit line data at the at the 4th, 5th and 6th level by sub-basin (huc8)
	F	wbdhu10_a_<st>	1:24,000 10-digit polygon data at the 4th, 5th and 6th level by sub-basin (huc8)
	F	wbdhu10_l_<st>	1:24,000 10-digit line data at the at the 4th, 5th and 6th level by sub-basin (huc8)
	F	wbdhu08_a_<st>	1:24,000 8-digit polygon data at the 4th, 5th and 6th level by sub-basin (huc8)
	F	wbdhu08_l_<st>	1:24,000 8-digit line data at the at the 4th, 5th and 6th level by sub-basin (huc8)

39 Geospatial Data Directory (Continued)

A Geodata Folder Structure and Data Storage Locations (Continued)

Folder	Location	File Name	Description
imagery	F, K, I		Check files yearly. Ensure that files are on external hard drive in State Office.
	F, K, I	Uniquely defined file name	Folder storage location for imagery layer files (.lyr) And satellite imagery files
land_site	F, K		
	F, K	***--**Uniquely defined file name	Folder storage for land site type layers and files**--***
	F, K	wellhead_p_<stnnn>	Point locations of wells within a county
land_use_land_cover	F		Check files monthly; Ensure that statewide files are on external drive in State Office.
\fsa_compliance	F	crop_a_<stnnn>	Geodatabase combining the CLU data with the crop dataset from CARS produced by the Build Crop Data Polygons tool in the Statewide toolset
\producer_submitted	F	TBD	Folder used to store precision data from producers submitted though ACRSI
Maps	K		
\pythonmapseries_citrix	K	Uniquely named by tool	Folder used for the Python Map Series tool

39 Geospatial Data Directory (Continued)

A Geodata Folder Structure and Data Storage Locations (Continued)

Folder	Location	File Name	Description
Measurement_services	F, K		
\collection\<yyyy>	F, K	col_<program>_xd_<stnnn>_<producername>	GPS data collected in the field
\navigation\<yyyy>\	F, K	nav_<program>_p_<stnnn>_<producername>	Point files derived from the CLU layer used to navigate to points in the field
ortho_imagery	F		
\NAIP_Shapefiles	F, K	Naip_<stccc>_<yyyy>	Storage location of official NAIP shapefiles
project_data	F		
\fsa\frs	F	Uniquely defined file name	Stores files for farm records, including name and address listings and base acre queries

39 Geospatial Data Directory (Continued)

A Geodata Folder Structure and Data Storage Locations (Continued)

Folder	Location	File Name	Description
\fsa\map_reference	F	Uniquely defined file name	Stores files for cartography including annotation. Recommended use of file geodatabases. **Note:** The original purpose of the f:\geodata\project_data\<agency name> directory was to provide an alternative solution for the storage of unique State and local datasets. The project_data folders are to be thought of as working directories for each agency and should be managed by each individual agency. Both temporary and permanent data can be placed in these folders but the files need to be appropriately managed.
\fsa\RMA\	F County Office servers only	See 4-RM	File dataset and georeferenced photos for RMA spot checks
scripts	K		
\expressions\toolbox_files	K	TBD	A placeholder of tools designed for mapping, analysis and data management

39 Geospatial Data Directory (Continued)

A Geodata Folder Structure and Data Storage Locations (Continued)

Folder	Location	File Name	Description
service_center	K		
\<countyname>	K		Citrix equivalent of the project_data\fsa folder
shapefiles	K		
	K	Uniquely defined file name	Use determined locally
soils	F, K		Check files yearly; Ensure that Soils Survey Geographic Soils files are on external drive in State Office.
\spatial	F, K	soilmu_a_<stnnn>	SSURGO Map Unit files used in TERRA
templates	K		
\metadata	K	Uniquely defined file name	State-defined metadata templates based on national template files
topographic_images	F		Check files yearly; Ensure that 1:24,000 image files are on external drive in State Office.
	F	Uniquely defined file name	Location for 1:24000 topographic images used for disasters
transportation	F, K		Check files yearly; Ensure that files are on external drive in State Office.
	F, K	Uniquely defined file names	Road, rail, and other transportation data

39 Geospatial Data Directory (Continued)

B Geodata for Emergency Preparedness

Geodata files should be stored in both Statewide and county format. GIS specialists must have access to files if network access is unavailable. A laptop and/or external drive are necessary for GIS specialist job functions. For more information, see **paragraph 927**.

Note: Ensure that a current version of ArcGIS is installed on the laptop.

The following geodata folders (and associated files) will be regularly updated and available for use on a laptop or external hard drive for emergency preparedness activities:

- Common_Land_Unit
- Cadastral
- Disaster_events
- Geology
- Government_units
- Hazard_site
- Hydrography
- Hydrologic_units
- Land_use_land_cover
- Ortho_imagery
- Soils
- Topographic_images
- Transportation.

39 Geospatial Data Directory (Continued)

C Citrix Individual User Folder Structure

Personal storage space in Citrix is created for each user and mapped as the O:\ drive. Folders and files in this personal storage space are **only** accessible to that particular user's name and account.

The O:\ drive will only be used for temporary use and not for long term storage. Users must remove data from the O:\ drive within 1 month of data creation.

Additional folders to the main O:\ folder structure will not be added by users unless approved by the FSA GIS Office. Users can add data to some folders but may not remove or delete folders.

The following table lists O:\ drive subfolders that are permitted for use.

Subfolder Name	File Name Prefix	Description
O:\<user.name>\		Top folder in the directory
GET		The location where the GET .xml file is stored.
Maintenance Data	Locally named	TEMPORARY USE ONLY Example use: Temporary location for any GPS datasets. All GPS datasets should be archived back to the appropriate F:\geodata directory.
My Documents \ArcGIS \AddIns \Default.gdb Toolbox	Locally named	TEMPORARY USE ONLY
My Stuff		ArcGIS ArcMap document files; map templates.
Shapefiles	Locally named	TEMPORARY USE ONLY Example use: Location for CLU clip files for producer/3rd Party requests and to be exported to the eventual F:\geodata directory for archival. This task is performed on an as needed basis.

40 Imagery in the Citrix Environment

A ArcGIS Image Services

APFO has implemented a suite of CONUS, State, and regionally based image services for current year and historical imagery (where available) using ArcGIS Image Server. FSA GIS users in Citrix have a common tool that allows for adding additional imagery to their respective ArcGIS ArcMap documents. Users should note that imagery should only be turned on when in use. This will allow for much more efficient map rendering.

B USDA Conus Prime Layer Service

The USDA_CONUS_PRIME layer should be used for all current or most recent year imagery needs in the lower 48 States. For areas outside the lower 48 States, regional services have been developed and are available. USDA_CONUS_PRIME is a cached service and provides the best performance available.

C Historical Imagery

If past years of imagery are needed, the State-based historical image services should be used. These services contain all 1 meter NAIP imagery collected for each State. To access the historical data, the time functionality must be enabled and the time slider toolbar opened.

D Special Image Files

Special image files for a particular area for a specified period of time will be allowed within the Citrix environment but only within the K:\ drive State folder structure – not within individual O:\ drives.

Image files such as jpeg 2000 and the MrSid that are commonly found on the F:\geodata Service Center server, will not be allowed and will be taken off the Citrix server if found within the State folder structure directory.

E NAIP Image Layer Files

NAIP image layer files (.lyr) are available in I:\ drive national folder as an alternative data source. The files can be used from the I:\ drive location instead of creating duplicate copies of the files.

41-45 (Reserved)

Section 4 Server Environment Permissions

46 Server Environment Permissions

A Overview

User groups have been established to manage the shared geodata folder to meet the business requirements of all three SCA's. Employees assigned to these user groups are assigned read and write permissions to the specific subfolders in the F:\geodata folder depending on assigned duties, responsibilities and the type of data.

Maintenance of user groups and permissions is a coordinated effort between CTS and Geodata Administrators in each State.

B Administration of Geodata Folders

Specific permission groups interact with the geodata folders on the Service Center and State Office servers. Each group has a specific set of permissions for reading and/or writing files, and creating/deleting specific subfolders. The level of access assigned to groups may vary from subfolder to subfolder. Groups will, in many cases, have members from multiple agencies.

In addition to the SGA role, the State GIS Specialist must have access to the following:

- AD
- read/write access to Service Center server shared S:\ drives
- remote access to County Office servers
- Citrix (all tools and permissions).

State CTS staff will work with the FSA SGA, to assign group membership to new FSA employees.

46 Server Environment Permissions (Continued)

C Permissions Matrix

The Permissions Matrix identifies applicable FSA user groups originally published in the Manual for Managing Geospatial Datasets in Service Centers and matches the group names created through the OCIO EAD migration project. Updated group name information can also be found in the FSA Addendum to Manual for Managing Geospatial Datasets in Service Centers.

Group Name	Group Name	Example Group Name
State Geodata Administrator	AIOG[2 DIGIT STATE]SGA	AIOGIASGA
Local Geodata Administrator	AIOG[2 DIGIT STATE, 3 CHARACTER]LGA	AIOGIADESLGA
FSA – Local Geodata Editors	ASAG[2 DIGIT STATE, 3 CHARACTER]LGE	ASAGIADESLGE
FSA – Local CLU Data Editors	ASAG[2 DIGIT STATE, 3 CHARACTER]CLU	ASAGIADESCLU
FSA – Disaster Events/FSA Facilities Access and Edit	ASAG[2 DIGIT STATE, 3 CHARACTER]DE	ASAGIADESDE
Service Center Users	AIOG[2 DIGIT STATE, 3 CHARACTER]USERS	AIOGIADESUSERS
FSA Staff Users Group	ASAG[2 DIGIT STATE, 3 CHARACTER CITY]	ASAGIADES
FSA State User Group	ASAG[2 DIGIT STATE]SGU	ASAGIASGU

46 Server Environment Permissions (Continued)

D Permission Group Names and Definitions

The following table lists the geodata permission group names and definitions.

Group Name	Definition
State Geodata Administrator **AIOG**[2 DIGIT STATE]SGA	USDA employees assigned to this group (such as the FSA State GIS Specialist) will have access to all geospatial data for the State on the network servers at the Service Centers and State Office, excluding any "sensitive" data identified in the Permissions Matrix. This group will have permissions to read, write, change, and delete folders, subfolders, or individual files by making global changes or changes to individual elements within them. SGA's can create folders and subfolders as necessary.
Local Geodata Administrator **AIOG**[2 DIGIT STATE, 3 CHARACTER]LGA	Not assigned to new users. USDA employees assigned to this group have access to all the geospatial data at the Service Center, excluding any "sensitive" data identified in the Permissions Matrix (see end of this section). This group has permissions to read, write, change, and delete folders, subfolders, or individual files by making global changes or changes to individual elements within them. LGA's can create folders and subfolders as necessary within that Service Center.

46 Server Environment Permissions (Continued)

D Permission Group Names and Definitions (Continued)

Group Name	Definition
FSA – Local Geodata Editors ASAG[2 DIGIT STATE, 3 CHARACTER]LGE	FSA employees assigned to this group will have access to all FSA specific geospatial data at the Service Center and permissions to read, write, change, delete and replicate all FSA administered folders except restricted folders. Specifically, this group should include employees responsible for creating, updating and maintaining geospatial layers other than CLU. Typically these datasets are created by custom applications and the use of GPS. Examples are, but not limited to, datasets or files as a result of measurement services, compliance reporting, acreage reporting, Farm Loan easement development, grain bin monitoring, CRP/conservation monitoring, or disaster events monitoring.
FSA Local CLU Data Editors ASAG[2 DIGIT STATE, 3 CHARACTER]CLU	FSA employees assigned to this group will have access to geospatial and customer/business CLU data at the Service Center with permissions to read, write, change, delete, and replicate CLU specific data files. At a minimum, one FSA Service Center employee and one backup should be assigned to the group.

46 Server Environment Permissions (Continued)

D Permission Group Names and Definitions (Continued)

Group Name	Definition
FSA Disaster Events/FSA Facilities Access and Edit ASAG[2 DIGIT STATE, 3 CHARACTER]DE	FSA employees assigned to this highly restricted group will have access to view and edit geospatial point locations and associated attribute data related to FSA Food, Feed, Seed, and Fertilizer Facilities. Two FSA employees per county should be assigned to this group, having sufficient GIS skills to create and maintain this point feature dataset.
Service Center Users **AIO**G[2 DIGIT STATE, 3 CHARACTER]USERS	USDA employees assigned to this group will have read-only access to all nonrestricted folders.
FSA Staff Users Group ASAG[2 DIGIT STATE, 3 CHARACTER CITY]	FSA employees assigned to this group will have FSA agency only read access to specific folders (e.g., measurement services) and sub-folders that are restricted to access by other agencies, but will have full access to project_data\fsa subfolders.
FSA State User Group ASAG[2 DIGIT STATE]SGU	FSA employees assigned to this group will include those FSA employees whose workload crosses county boundaries within a State, allowing access to all nonrestricted folders, and Read Only access to the restricted folders, as outlined in the “Permissions Matrix”.

47 Role-Based Permissions for FSA

A Overview

Elevated permissions are required for the State GIS Specialist and for FSA employees who work directly with geospatial data.

B Elevated Geodata Permissions for the State GIS Specialist

The following role-based permissions and access are required for the State GIS Specialist.

Group Name	Definition
State Geodata Administrator (SGA)	The GIS Specialist must have access all data for the State. The GIS Specialist must also have permissions to read, write, change, and delete folders, subfolders, or individual files by making global changes or changes to individual elements within them.
CLU Editor (CLU)	The GIS Specialist must have access to all geospatial and customer/business CLU data at all Service Centers and State Office GIS server – with permissions to read, write, change, delete and replicate CLU specific data files.
Local Geodata Editor (LGE)	The State GIS Specialist must have access to all FSA specific geospatial data at the Service Center and permissions to read/write/change/delete/replicate all FSA administered folders.
Disaster Events (DE)	The GIS Specialist must be able to overwrite and review related geospatial files for the entire State and manage statewide datasets for emergency purposes.

See **paragraph 51** for information about requesting permissions for a new GIS Specialist.

47 Role-Based Permissions for FSA (Continued)

C FSA Role-Based Level Permissions

FSA users must be added to the following groups to maintain geodata in a Service Center.

Group Name	Definition
Service Center Users AIOG<stcity>users	Access to a specific server; gives read only access to all nonrestricted folder.
FSA Staff Users ASAG<stcity>	Access to specific FSA folders.
FSA State Users ASAG<stcity>sgu	Access to other county F:\ drive folders within the State.

D Elevated Permissions for FSA Users

FSA employees with specific duties will be added to the following groups.

Group Name	Definition
CLU Editor ASAG<stcity>clu	Provides capability to overwrite data in the fsa_clu subfolder.
Disaster Events ASAG<stcity>de	Provides capability to update the FFSF facility files.
FSA Local Geodata Editor ASAG<stcity>lge	Provides read and write access to all FSA-administered geodata folders.

See **paragraph 51** for information about requesting permissions for a new Service Center employee.

48 Managing Permissions - AD

A Overview

AD is the Microsoft structure that manages the permissions, groups, and accounts. Additional information on AD can be found at **https://msdn.microsoft.com/en-us/library/bb742424.aspx**.

AD controls permissions for the Windows OS and Microsoft Applications. Other permissions that affect GIS users are managed through EAS or eAuth.

B Using AD

AD allows users to view employees' user group assignments added through SAAR. This access view does not include roles added via ERSR.

All GIS Specialists will have AD installed on their workstations. AD allows GIS specialists to review user permissions and troubleshoot issues that may be related to incorrectly assigned or missing permissions.

Installation of AD requires assistance from CTS. See ITS Newsflash: 2013 Active Directory Users and Computers (ADUC) Snap-In.

C Show AD Group Members Script

A script to create a list of all AD group members is available for use by all GIS Specialists.

Using the installed AD application and Group Members script will create a CSV file of all FSA employees and the associated groups to which the employees belong.

Note: See **Exhibit 8** for instructions to run the script.

The script should be run on an annual basis and results reviewed to ensure that permissions are set correctly.

49 Managing County Office Server Data and Users

A Overview

The State GIS Specialist will work with CTS and the NRCS SGA to review each Service Center server and the employees' permissions assigned to those network servers on an annual basis.

B Accessing County Office Servers

Access to Service Center server drives (F:\ and S:\) is important for ensuring proper geodata management. With permissions granted by CTS, remote access to County Office servers can be done through either Windows Explorer or SharePoint links by:

- typing in the directory path name
- mapping to a drive using a saved directory path.

Note: Typing a directory path name is not case sensitive – use either upper or lower case.

The State GIS Specialist will coordinate with CTS to create and maintain a list of server names for all Service Centers. Servers may be accessed through an IP address, server name, or DFS address. DFS addresses are preceded by **\\usda.net**.

The following table identifies the different drives available on County Office server.

Server Drives Folders	Server Drive Structure Example
Backup Data Home Profile Shared	• Structure – Data = F drive – Home = H Drive – Shared = S Drive • Ex: \\aiomtcul3fp1\mtcul\data

C Shared Drive (S Drive)

The SHARED drive contains collaboration folders. Each SCA at a site has a folder on the SHARED drive to save files for access by others within the respective agency. A permissions-based folder should be created to allow the sharing of business documents such as producer maps between agencies.

Geospatial data is shared on the DATA (F:\) drive and will not be placed on the SHARED drive.

50 Example FSA Producer Map Storage Location

A FSA Producer Maps Subfolder

Creating a shared folder for producer maps enables all users in a Service Center to access producer maps without requesting maps from FSA program staff regardless of GIS expertise. The shared location allows users to access other Service Centers, which improves customer service for multi-county producers.

The following table identifies an example folder structure for FSA Producer Maps.

Folder Name	Description
S:\PUB\	Inter-Agency collaboration workspace.
PUB \FSA_NRCS	A permissions-based FSA and NRCS collaboration workspace. All FSA and NRCS employees should have full access to this folder and subsequent subfolders.
PUB\FSA_NRCS\producer_maps	FSA producer maps are used by partner agencies for a variety of reasons. Easy access to maps meets the needs of: • NRCS • FSA State Office • neighboring County Offices • farm loan.

50 Example FSA Producer Map Storage Location (Continued)

B FSA Producer Map File Requirements

Producer maps in a shared folder directory are organized based on:

- State
- county
- farm
- tract
- program year.

Files are uniquely named. Only 1 file per farm/tract map per program year should exist in the producer_maps folder.

The only map files that should be stored in this location are for current program year and either:

- previous program year for compliance review purposes
- next program year.

PDF maps do not need to be archived. CLU is archived and can be used to recreate any map if necessary. The hard copy map associated to the FSA-578 crop report is documentary evidence.

51 Requesting Permissions

A Overview

Certain service providers, systems and applications require submitting specialized forms in addition to FSA-13-A. The GIS Specialist should coordinate with the State Office SLR to ensure that new employees and existing employees needing modifications have appropriate access to FSA systems.

B FSA-13-A

New employees or existing employees requiring modifications to access must have FSA-13-A completed by their supervisor. See:

- **Exhibit 9** for instructions about new GIS Specialist role requirements
- **Exhibit 10** for instructions about new PT or CED role requirements.

Note: Refer to the Information Security Office's Security Forms page at ***--https://usdagcc.sharepoint.com/sites/FBC-IAB/resources/Forms/Forms.aspx.--***

C Server Environment Permissions

Server environment permissions are requested on FSA-13-A. See **paragraph 46**.

Note: Refer to the Information Security Office's Security Forms page at ***--https://usdagcc.sharepoint.com/sites/FBC-IAB/resources/Forms/Forms.aspx.--***

51 Requesting Permissions (Continued)

D Citrix Environment Permissions

The Citrix environment is role based. Each user is assigned appropriate roles based on job duties. The GIS Specialist works with the State Office SLR to assign Citrix users to either of the following categories:

- editor
- read only.

These same user roles apply to the following FSA GIS tools found in Citrix:

- Maintenance Tool
- TERRA.

The following table describes the different Citrix user groups.

User Group Type	Definition
National Users	Everyone who connects into the Citrix site is a national user and has read-only rights associated with that account type. All national users should be able to read all files placed in the national drive.
State Users	Every user (State GIS Specialist and County Office personnel) from that specific State will have (read/write) access to the folder structure of their State. State GIS Specialists will also have (read/write) access to other State folders.
User Folders	Users shall have (read/write) access to their O:\ drive folder structure, but will not be allowed to create additional folders at the root of the mapped drive. Subfolders may be created within the proposed folder structure by anyone assigned the proper rights.

Citrix environment permissions are requested on FSA-13-A.

E FSA GIS SharePoint

The FSA GIS SharePoint is a permissions-based resource for both National and State GIS Specialist staff. For access, contact the National Office.

The FSA GIS SharePoint is available at
--https://usdagcc.sharepoint.com/sites/FBC-GDMS/FSA_GIS/SitePages/Home.aspx.--

52-60 (Reserved)

Section 5 Metadata Management

61 Metadata Standards

A Overview

--**This section follows the guidance of DM 3465-001, Geospatial Metadata Standards, to establish consistent metadata management practices with currently identified FSA GAD's. The observed metadata management standard is the FGDC-Endorsed Metadata Standard.**--

B Metadata Requirements

*--Machine readable metadata is required for:**--***

- all FSA national authoritative datasets
- Statewide FSA authoritative datasets
- all geospatial clips (or subsets) that are distributed to a customer (approved Agency, authorized user, producer and/or third party).

C Metadata Style Type

*--Metadata can be easily edited using ESRI ArcGIS Pro. Metadata will be formatted using the **FGDC CSDGM** standard. To set ArcGIS Pro to use the correct metadata style, see **Exhibit 11**.

For more information about metadata style and standards, see **https://pro.arcgis.com/en/pro-app/latest/help/metadata/view-and-edit-metadata.htm**.**--***

62 Working With Metadata

A Definition of Metadata

Metadata is information that describes a dataset, such that a dataset can be understood, re-used, and integrated with other datasets.

Metadata for spatial data may describe and document the files such as:

- subject matter
- how, when, where, and by whom the data was collected
- availability
- distribution information.

--DR 3465-001 mandates that metadata be provided in all FSA authoritative datasets and-- derived products such as subsets (clips). To ensure consistency and validity of content, metadata templates will be used to help with the management of metadata.

* * *

B Viewing Metadata

Metadata is important when sharing and archiving tools, data, and maps. The information made available for viewing and editing is determined by the metadata style selected in ArcGIS.

*--Metadata can be viewed using desktop GIS applications such as ArcGIS Pro. Metadata for online resources is viewable through ArcGIS Online or online hubs such as **https://www.geoplatform.gov**.--*

63 National Metadata Templates

A Overview

Agency-wide metadata templates help streamline the task of managing metadata. Similar to a map document template or Word document template, a metadata template contains information that will be used again and again. ArcGIS automatically updates properties of an item and metadata templates in place, requiring less effort to complete an item's metadata.

B National Metadata Templates

Predefined metadata XML templates have been created for the purpose of fulfilling the metadata obligation for FSA's authoritative datasets. The use of metadata XML templates incorporates standardization of information and eases the task of metadata management.

The following list describes all the metadata templates available.

*--

Authoritative Data Type	Template Name	Template Location
CLU	CLU_FGDC_Metadata.xml	I:\Geodata\Templates\Metadata
Wetlands	WET_FGDC_Metadata.xml	I:\Geodata\Templates\Metadata
Service Center	Service_Center_FGDC.xml	I:\Geodata\Templates\Metadata
FSA County	FSA_County_FGDC.xml	I:\Geodata\Templates\Metadata

--*

63 National Metadata Templates (Continued)

C Customizing the National Metadata Templates

All statewide authoritative datasets must have metadata that identifies local information for the respective State. All subset (clips) created for the purpose of fulfilling producer or third-party requests will also have metadata associated with each subset.

The State GIS Specialist must customize the national metadata template for the respective States. The State Office address information will be added to all areas within the metadata listing contact information.

The following table describes the layer and metadata update frequency.

Data Layer Type	Update Metadata Timeframe
CLU statewide layer	Update metadata when statewide layer is refreshed.
Wetland statewide layer	Update metadata when statewide layer is refreshed.
CLU (clip) layer	Upon request for clips; metadata date should reflect the date the clip was created.
Wetland (clip) layer	Upon request for clips; metadata date should reflect the date the clip was created.
Service Center statewide layer	Update metadata when statewide layer is refreshed.
FSA County statewide layer	Update metadata to reflect State Office point of contact information upon creation of statewide layer.

The State GIS Specialist will use the State Office location information for all metadata templates.

The prepared metadata template files for CLU and Wetlands will be used for all export tools.

Before editing or customizing metadata, the national template must be copied from its original location. **See Exhibit 12**.

63 National Metadata Templates (Continued)

D Example National Metadata Templates

For metadata content examples as read in ArcGIS, see:

- **Exhibit 13** for CLU
- **Exhibit 14** for Wetlands.

E Importing Customized Metadata for Producer or Third Party Subsets

Subsets of national data, such as CLU or Wetlands, will have relevant metadata supplied to the requestor. Editing of metadata is not necessary. See **Exhibit 15** for metadata import instructions.

64-70 (Reserved)

Section 6 Data Backups and Archiving

71 Data Backups and Archiving

A GIS Data to Archive

The following list defines data that is required to be archived by the GIS Specialist and retained at the State Office.

Data	Type	Frequency	Description
CLU	Statewide dataset	Extract weekly to county servers F:\ drive; Archive weekly, monthly and annually at rollover	FSA's authoritative dataset is key for emergency management, historical land use analysis and NRCS business operations.
Wetlands	Statewide dataset	Extract weekly to county servers F:\drive; Archive weekly, monthly and annually at rollover	FSA's authoritative dataset – created from the NRCS-CPA-026 source data.
Cropland Data Layer	Statewide dataset	Archive the final export of program year (typically January).	Statewide CLU layer is joined to a statewide raw crop data file.
Data used for STORM analysis	Statewide dataset	Archive annually	Weather data and derived products used to analyze local and regional impacts of weather events.

B Data Used With Custom ArcGIS Tools

Archive all data required to run the tools as well as all data outputs that represent the end of the FY data. See **paragraph 510**.

Note: Many of these tools required users to download data from either the GIS SharePoint, Common Reports SharePoint, or EDW. For detailed instructions, see **Exhibit 16**.

71 Data Backups and Archiving (Continued)

C Archiving FOIA or Privacy Act Requests

The office responsible for distributing a requested FOIA or Privacy Act Request shall archive the data to a media storage device.

See 3-INFO or 2-INFO for requirements.

D Maintaining and Storing Aerial Photographs

County Offices shall retain the aerial photographs from which the CLU was digitized indefinitely. File the photographs in the County Office in a way that will protect them from rolling, breaking, emulsion, damage to edges, dust, moisture, and excessive heat.

If the county has a digital scan of these aerial photographs, that county still must retain the hard copy of the photographs.

Note: Do **not** dispose of these aerial photographs.

E Disposing of Obsolete Photographs

All aerial photographs **other than** the set of enlargements from which the CLU was digitized are considered obsolete and can be disposed of according to the following.

Dispose of obsolete contact prints and photography in 1 of the following ways:

- offer the prints or photographs to other Federal agencies or State, county, or local Governments

  Note: Federal agencies or State, county, or local governments shall be advised that they are responsible for keeping secure all personal identifiers contained on the maps.

- donate the prints or photographs to schools or nonprofit organizations after first removing (or making unreadable) all personal identifiers contained on the maps

- destroy the prints or photographs.

--**For more information, see 32-AS (Records Management) and 32-AS Supplement (FSA File Maintenance and Disposition Manual) available on the FSA Handbooks page (**https://intranet.fsa.usda.gov/dam/handbooks/handbooks.asp**) through the FSA Intranet.**--

72-99 (Reserved)

Part 4 FSA Geospatial Portfolio

Section 1 CLU

100 General Information

A Definition of CLU

CLU or field is the smallest unit of land that has a:

- permanent, contiguous boundary
- common land cover and/or land management
- common owner
- common producer association.

Permanent boundaries may be defined by visible features, differences in management, differences in ownership, or by FSA program requirements.

The term CLU may be used to refer to either an individual polygon or a group of polygons stored together in a feature dataset.

B Data Sources

The CLU was created using heads-up digitizing methods to capture line work that was originally drawn on 24” x 24” aerial photography. CLU was digitized at a scale of 1:4800 using NAD83 and UTM Grid System. Attributes were added to each polygon to capture notations made on the paper map indicating:

- farm number
- tract number
- field number
- acres
- HEL status
- land classification
- CRP.

101 Data Management and Responsibilities

A Agency Responsibilities

The CLU is a shared geospatial dataset used by all agencies in the Service Center. FSA assumes responsibility at the national, State, and local level for the maintenance of the dataset.

The CLU Business Owner is a high-level, business-area manager who is accountable for the collection, management, and use of data assets. The person has overall responsibility for:

- overseeing the creation and ongoing maintenance of software systems to collect and process data
- providing ongoing executive leadership over data content, validity, and usage
- designating National CLU Data Manager, Wetland Data Manager, and other critical data management roles and responsibilities as appropriate.

Note: The Director of PDD is the CLU Business Owner.

B CLU Data Manager Responsibilities

Data Managers for CLU will be designated at national and State levels to ensure CLU data integrity and availability.

C National CLU Data Manager Responsibilities

The National CLU Data Manager is responsible for:

- acting as the designated authority and point of contact for all business-area decisions concerning the CLU
- establishing and maintaining business rules and consistent definitions for data elements
- establishing policy and procedures to ensure that data meets quality standards as outlined in the CLU Lifecycle Data Management Plan
- ensuring that metadata is collected, approved, and certified for release according to industry, Federal, and USDA metadata and data management standards
- establishing policy and procedures that ensure the validity, accuracy, and completeness of the physical data and supporting metadata

101 Data Management and Responsibilities (Continued)

C National CLU Data Manager Responsibilities (Continued)

- establishing policy and procedures for certifying that data is ready for release for internal and/or public use
- delegating responsibilities as necessary to ensure the accuracy, availability and security of CLU
- providing training to the State Offices on CLU data management roles and responsibilities
- providing data reconciliation reports to the State Geospatial Data Manager
- reviewing Annual CLU Data Quality Reports submitted by State Geospatial Data Managers
- developing and discussing data remediation plans with State Geospatial Data Managers and appropriate program staff to resolve data quality issues in a timely manner
- providing regular updates to the CLU Business Owner.

101 Data Management and Responsibilities (Continued)

D State Geospatial Data Manager Responsibilities

The State Geospatial Data Manager and backup will be identified in each FSA State Office. Both the manager and backup are responsible for:

- providing training to Service Centers on CLU data management and editing roles and responsibilities
- conducting regular reviews of CLU datasets for the State to ensure continued QC (**Exhibit 5**)
- knowing the standards and criteria for maintaining the CLU
- ensuring that Service Centers maintain the data and metadata to meet the needs of the partner agencies and protect data from loss
- archiving county CLU data
- maintaining a current statewide CLU feature dataset (**Exhibit 17**)
- providing CLU reconciliation reports to county CLU Data Editors
- developing data remediation plans with input from SED, DD, CED, and appropriate State program staff.

The State Geospatial Data Manager shall complete and submit an Annual Data Assessment Report as part of the Annual GIS Plan to the National CLU Manager by January 1. The Annual GIS Plan template can be found in **Exhibit 6**.

Note: The State GIS Specialist is the primary State Geospatial Data Manager.

101 Data Management and Responsibilities (Continued)

E Local CLU Data Editor Responsibilities

Local maintenance of CLU Data is performed through CRM Farm Records by trained Service Center personnel according to 10-CM.

Maintenance of CLU data in the Service Center includes:

- ensuring that CLU data is updated and maintained according to digitizing rules established in this handbook and the procedure for establishing farms, tracts, and fields according to 10-CM
- updating and correcting CLU boundaries and attributes as necessary
- delineating CLU's for FSA or partner agency business needs as identified in 1-CM
- reviewing CLU reconciliation reports provided by the State Geospatial Data Manager
- correcting erroneous data in a timely manner
- following data remediation plans outlined by the State Geospatial Data Manager
- reporting completion of data remediation tasks to the State Geospatial Data Manager.

102 Delineation and Attributes of CLU

A Accessing the CLU Feature Dataset

A CLU feature dataset for each county in the nation has been created. Editing the county CLU feature dataset is completed through the CRM Farm Records according to 10-CM. DRT is available for DRT user for special editing circumstances.

The CLU data can also be viewed with no editing capabilities for specific farms through the Citrix Maintenance Tool, TERRA, CARS mapping, and FSAfarm+ applications. ArcGIS Desktop can be used for viewing and analyzing an exported copy of the CLU feature dataset layer.

B Delineating CLU

CLU delineations may change based on changes in land cover, land use, ownership, or program participation. See 10-CM for delineation rules.

C Minimum Polygon Size

The minimum polygon size shall not be less than 0.01 acre. This size is based on current software limitations.

Different categories of land classification may exist within a single field. These areas of different land classification can be digitized as separate CLU's, if appropriate.

CLU's shall be drawn if that area is significant enough in size to affect FSA program acreage.

The size and type of fields to be delineated will be jointly agreed upon by the FSA SED, NRCS State Conservationist, and other USDA Service Center Agencies' State Managers with input from the State GIS Specialist. The determination on the size and type of inclusions will be submitted to the National CLU Data Manager for review and final approval.

102 Delineation and Attributes of CLU (Continued)

D Attributes of the CLU Feature Dataset

The following table describes the contents of the CLU feature dataset layer.

Name	Short Description
OBJECTID	Identifier assigned by ArcSDE to keep track of entries in the feature layer.
Shape	Digitized polygon representing the field.
clu_identifier	Identifier assigned to each digitized field. This number is automatically generated and is a combination of the latitude and longitude coordinates of the CLU center point
clu_number	The CLU number assigned by FSA to the field represented by the digitized polygon.
tract_number	The tract number assigned by FSA to the field represented by the digitized polygon.
farm_number	The farm number assigned by FSA to the field represented by the digitized polygon.
clu_classification_code	A code representing the type of land contained in the field (e.g. cropland, rangeland). There are ten CLU land classification codes.
clu_calculculated_acreage	System calculated acreage of the field determined by the area of the digitized polygon.
highly_erodible_land_type_code	The type of HEL determination code label as defined by NRCS. There are 4 types: HEL; NHEL; EHEL; UHEL. **Note:** See 6-CP.
comments	A field for comments about the field represented by the digitized polygon.
state_code	The FSA FIPS State numeric code associated with the ***--**State where the field is physically located. FSA FIPS represents the FSA physical location of land based on FSA program and administrative determinations.**--***

102 Delineation and Attributes of CLU (Continued)

D Attributes of the CLU Feature Dataset (Continued)

Name	Short Description
county_code	The FSA FIPS numeric code associated with the county ***--**where the field is physically located. FSA FIPS represents the FSA physical location of land based on FSA program and administrative determinations.**--***
data_source_site_identifier	A historical data field no longer populated. This data field was the identifier indicating the Service Center where the entry was created.
creation_date	The date the CLU was created, or the date the CLU was imported into ArcSDE.
last_change_date	The date when the entry was last updated.
data_source	The AD name or unique identifier of the person or system that last edited the record
admin_state	The FSA FIPS code associated with the State that administers the field.
admin_county	The FSA FIPS code associated with the county that administers the field.
cropland_indicator_3CM	A boolean (1=Yes or 0=No) field identifying whether the type of land represented in the digitized polygon meets the definition of FSA Cropland. See 10-CM.
sap_crp	A boolean field (1=Yes or 0= No) identifying whether the type of land is a CRP contract.
clu_status	A historical data field no longer populated.
cdist_fips	Congressional district code.
edit_reason	Identifies the conditions for the edit associated with the edit_reason_description field in the edit_reason_lookup table.
SHAPE_STArea__	Software calculated measurement of area.
SHAPE_STLength__	Software calculated measurement of polygon border length.
last_chg_user_nm	The eAuth ID of the user editing the record.
clu_alt_id	A Global Unique Identifier linking SAP-CRM Field data to ***--**distinct GIS CLU polygons. A distinct CLU polygon is a unique boundary representation for a CLU. Any changes to the boundary of the CLU requires a new clu_alt_id value.
State_ansi_code	The FIPS state numeric code associated with the state where the field is physically located. ANSI physical location is established from U.S. Census state and county records.
County_ansi_code	The FSA FIPS numeric code associated with the county where the field is physically located. ANSI physical location is established from U.S. Census state and county records.**--***
Shape_Length	Software created measurement of polygon border length.
Shape_Area	Software created measurement of area.

102 Delineation and Attributes of CLU (Continued)

E HEL Types Defined

The following table describes the type of HEL determination code label as defined by NRCS. See 6-CP for HEL policy. The following are the four HEL types.

highly_erodible_land_type_code	HEL Type Code Description
HEL	highly erodible land
NHEL	nonhighly erodible land
UHEL	undetermined highly erodible land status
EHEL	exempt from highly erodible land determination

F Other Export Table Formats

There are other export table formats that are available from the following tools:

- MapSeries Create .SHP for USDA Tool (.shp USDA format)
- Maintenance Tool Exporter (USDA format)
- Maintenance Tool Subset (.shp Producer format).

G Land Classifications

The partner agencies established 10 land classifications and codes based on land cover and land use. Land classifications represent various combinations of land cover and land use, and can be used for determining CLU boundaries. These classifications, codes, and descriptions are as follows.

Code	Land Class Name	Description
01	Urban	Urban CLU's: • include land that includes cities, towns, villages, strip developments along highways, transportation, power, and communications facilities • include areas such as those occupied by mills, shopping centers, industrial, and commercial complexes • include institutions that may, in some instances, be isolated from the urban areas. **Note:** Urban land is generally not associated with a farm or tract. CLU's should only be updated with an Urban classification as a temporary attribute until a reconstitution can be completed and the resulting farms inactivated. See 10-CM.

102 Delineation and Attributes of CLU (Continued)

G Land Classifications (Continued)

Code	Land Class Name	Description
02	Cropland	Cropland CLU's include land that meets the definition of cropland in 10-CM.
03	Rangeland	Rangeland CLU's: • include herbaceous, shrub, brush, or mixed range that has native vegetation dominated by grasses, grass-like forbs, or shrubs • include introduced forage species that are managed like rangelands • includes land that does not need to be grazed • are most commonly defined by physical boundary that is a permanent fence or other similar feature. **Note:** Features such as homesteads, barns, forest, etc., must be delineated out from any CLU that is used in determining acreage for calculation of FSA benefits, including but not limited to LFP, NAP, etc. CLU's are not required to be further delineated to remove acreage for the following type features: • intermittent water features (seasonal streambeds or ponds) or stock tanks • States that have carrying capacities established based on canopy cover or topology • land with different land cover that is managed similarly, such as small groups of trees within rangeland that are not fenced separately.

102 Delineation and Attributes of CLU (Continued)

G Land Classifications (Continued)

Code	Land Class Name	Description
04	Forest	Forest CLU's: • include land that includes deciduous, evergreen, grazed forest, or mixed forest land that have tree-crown density (crown closure percentage) of 25 percent or more of the total acres of tree or vegetative cover • have a tree-crown density (crown closure percentage) of 25 percent or more removed by clear cutting or fire, but still are primarily used for forest uses • are defined by physical boundaries that include forest, fences, or other similar features.
05	Water Body	Water Body CLU's: • include areas such as streams, rivers, canals, lakes, reservoirs, ponds, bays, estuaries, or aquaculture units • are defined by physical boundaries, such as edge of water, but may include permanent fences, roads, or other similar features.

102 Delineation and Attributes of CLU (Continued)

G Land Classifications (Continued)

Code	Land Class Name	Description
07	Barren	Barren CLU's: • include land that has minimal (generally < 5 percent) natural cover and limited capacity to support vegetative covers • include land that includes contiguous dry salt flats, beaches, sandy areas other than beaches, bare exposed rock, transitional areas, or mixed barren land • have no-vegetative natural cover, often having a limited capacity to support vegetation, with a surface of sand, rock, thin soil, or permanent ice or snow • are defined by physical boundaries that may include fences, roads, sidewalks, streets, landscaping, permanent waterways, forests, or other similar features.
08	Tundra	Tundra CLU's: • include land that applies to treeless regions beyond the limit of the boreal forest • include land that is above the altitudinal limit of trees in high mountain ranges • primarily occur in Alaska, in several areas of the western high mountain ranges and in small isolated locations in the higher mountains of New England and northern New York. **Note:** Tundra is a legacy land class code and definition. From a CLU digitizing rules perspective, this land category does not align with the general philosophy that nonagricultural land is not delineated.

102 Delineation and Attributes of CLU (Continued)

G Land Classifications (Continued)

Code	Land Class Name	Description
09	Perennial Ice and Snow	Perennial Ice and Snow CLU's: • include certain lands that have a perennial cover of either snow or ice because of a combination of environmental factors which cause these features to survive the summer melting season • include persisted land features such as snow, firn (course, compacted granular snow), or accumulated ice. **Note:** Perennial Ice and Snow is a legacy land class code and definition. From a CLU digitizing rules perspective, this land category does not align with the general philosophy that nonagricultural land is not delineated.
10	Other Agriculture	Other Ag CLU's include farmsteads, holding areas for livestock such as corrals, breeding and training facilities on horse farms, farm lanes and roads, ditches and canals, small farm ponds, and similar uses. Other features may include: • Confined Feeding Operations • Farmsteads • Farm Roads • Grain Drying Facilities • Other Agricultural Land. **Note:** These feature types correspond to the phrase "other land on the farm" as defined in 10-CM

103 QC of the CLU Dataset

A Overview

QC is an essential part of managing the CLU data. Quality begins with the maintenance of CLU data in the Service Center ensuring that CLU data is updated and maintained according to digitizing rules established in this handbook and the procedure for establishing farms, tracts, and fields according to 10-CM. It continues with the State Geospatial Data Manager conducting regular reviews of CLU datasets for the State to ensure continued QC.

B QC Tasks and Tools

Specialized tools and instructions have been developed to assist State Geospatial Data Manager in reviewing the CLU dataset. See **Exhibit 5** for a list of QC tasks to be completed on a regular basis and Part 6 for a description of the tools available.

C Attribute Queries for QC

Attribute queries and sorting will be used to ensure that CLU's have been attributed correctly. Review the attribute table for the following, see also **Exhibit 18**.

- Identify missing or inaccurately loaded land classification codes by sorting and reviewing the land classification code attributes. CLU's with missing or inaccurate codes can be selected and exported from the list for further review in CRM Farm Records.

- Identify CLU's where the land classification code is identified as cropland (2), but the 3-CM Indicator is set to "No". Since the 3-CM indicator is not set to "Yes", the acreage for these CLU's is not identified as Cropland Acres at the tract level in CRM. The CLU's should be reviewed to determine whether either the land classification code or the 3-CM indicator is incorrectly identified.

- Identify CLU's where the land classification codes is identified as something other than cropland (2), but the 3-CM Indicator is set to "Yes". In these cases the acreage for the CLU is being included as cropland acres at the tract level. The CLU's should be reviewed to determine whether either the land classification codes or the 3-CM indicator is incorrectly identified.

- Identify zero or null farm, tract, or CLU numbers by sorting or querying these attributes.

103 QC of the CLU Dataset (Continued)

C Attribute Queries for QC (Continued)

- Review CLU level HEL determinations for missing or inaccurate data using queries to identify cropland fields missing an HEL determinations and identifying fields with an Exempt determination.

- Identify unresolved orphan CLU's and polygons with zero acreage by querying the calculated acreage attribute field.

  Note: QC tools within the CLU Maintenance Tool may also be used to review attributes of county CLU datasets within Citrix.

104 Relationships to Other Data

A Background

The CLU serves as the base dataset that enables farm records and other agency data to be connected to a specific location. Other agency data may be linked to the CLU based on common attributes between the CLU and existing tabular data or by identifying spatial relationships between CLU and other geospatial data. Tabular datasets may be joined to the CLU using the following attributes:

- a unique identifier, such as the clu_alt_id or clu_identifier, provided the data exists in both the CLU and tabular dataset
- combination of Administrative State, Administrative County, Farm, Tract, and CLU Number

B Wetland Point Data

The following attributes are maintained in the wetland point dataset based on the CLU polygon that completely contains the wetland points:

- Administrative State code
- Administrative county code.

C CRP Feature Dataset

CRP contract data is maintained in CCMS. Because there is no established direct connection between CCMS and the CLU, field-level CRP data is maintained in CRM Farm Records through the CRP Info Assignment Block, which can be linked to the associated CLU. The CLU "SAP_CRP" attribute for fields with CRP contract data loaded at the field level in CRM is updated as "Yes".

Tabular CRP data maintained in CRM Farm Records is joined to the CLU polygon based on the following attributes:

- Administrative State code
- Administrative county code
- farm number
- tract number
- CLU number.

The CRP feature dataset is a subset of the CLU.

104 Relationships to Other Data (Continued)

D Detailed Crop Data Feature Dataset

The detailed crop data dataset is derived from the CLU layer. Reported crop attributes are matched to the associated CLU boundary. Sub-fields are not delineated in the crop layer, but rather sub-fields are associated to the entire parent CLU.

Important: Because there may be changes to farm, tract, and field numbers between the time crop data is exported and when the CLU is exported, not all crop records may join to the CLU. Analysis or summary of the detailed crop data should be completed on the All Crop data table and not the geospatial crop data boundary dataset.

105 Rules for Release of Data

A Overview

It is FSA policy to safeguard individual privacy from the misuse of Federal records while granting individuals access to records concerning themselves.

Information that is released to agencies of USDA should only be provided when they have an official use for the information. Release of this information to other Government agencies or a third party is allowable only if there has been a routine use established in the FSA Privacy Act system of records granting use of the information.

2-INFO provides procedures for all FSA offices to follow when making records available to the public, other Federal agencies, and Congress. 3-INFO provides procedures to be followed by all offices when collecting, maintaining, or disclosing data or information concerning an individual.

B Releasing CLU Data

Section 1619 of the 2008 Farm Bill (7 U.S.C. 8791) classifies CLU data as geospatial information provided by an agricultural producer or owner of agricultural land. CLU data is considered PII and generally cannot be released to third parties.

CLU and derived products may only be released to a person, Federal, State, local, or tribal agency:

- when working in cooperation with FSA to provide technical or financial assistance with respect to the agricultural operation, agricultural land, or farming or conservation practices
- when responding to a disease or pest threat to agricultural operations
- if written consent is provided by the agricultural producer or owner of the agricultural land
- if the information has been transformed into a statistical or aggregate form that does not identify an individual owner, operator, or producer or specific data gathering site.

105 Rules for Release of Data (Continued)

C Handling Requests

2-INFO provides procedures for all FSA offices to follow when determining the cost of making records available to the public, other Federal agencies, and Congress. 2-INFO, Part 4 provides procedures for determining the cost of search services, review services, computer services and related services.

IF the request for CLU data covers…	THEN the request is filled at the…
an individual owner, operator or producer	*--County Office. The County Office must ensure that the requestor is the producer or owner linked to the data, or that written consent has been provided by an associate producer or owner. See:--* • **Exhibit 19** to create the subset • **Exhibit 20** to encrypt and deliver subsets.
an entire county, multiple counties, or whole State	*--State Office. The State GIS Specialist will work--* with the State FOIA Officer to ensure that a current MOU with the requestor is in effect. *--**Note:** Requests from other Federal Agencies will be routed through the FPAC FOIA Office.--*
multiple States	*--FPAC FOIA Office.--*

*--**Note:** Producers will not be charged for CLU data for farms in which they have an--* interest. A producer is considered to have an interest in CLU if the producer is an operator, owner, or other producer on CLU.

D Memorandum of Understanding

A person or Federal, State, local, or tribal agencies working in cooperation with USDA must have an established MOU to receive CLU data.

--To pursue an MOU, the State GIS Specialist will contact the State FOIA/PA Coordinator.-- If the data sharing agreement is determined to be beneficial to FSA, the MOU must identify:

- the information that is being requested by the cooperating party
- the frequency the information will be exchanged between FSA and the requesting agency
- security requirements of the information.

--All MOU's will be approved by the FPAC FOIA Office.--

105 Rules for Release of Data (Continued)

E Creating Compliant Metadata

*--FGDC-endorsed machine-readable metadata will be provided with all CLU data. See **paragraph 61.--***

F Providing Photocopies to Producers

Photocopies of 24”x24” aerial photography used as the original source material for CLU *--digitizing will be provided to any producer on the farm upon producer’s request. Before photocopying historic imagery, all PII must be removed from the map area to be copied.--* Any maps that are copied or scanned via a photocopier machine or scanner must have the text, “NOT TO SCALE” applied to the map.

Note: See **paragraph 655** for providing maps to producers.

106 Archiving Data

A Archiving CLU and Wetlands

The county CLU data must be extracted weekly to county servers. A statewide CLU layer must be created and archived monthly by the State GIS Specialist. A final statewide CLU data layer must be created and archived by the State GIS Specialist at rollover. See **Exhibit 5**.

B Archiving TERRA Files

*--TERRA files will be copied from the Citrix environment to the local F:\ Drive for use in COLS. TERRA files that become CRP contracts are to be saved to a subfolder noting the signup number. Seeto 4-CRP.

On an annual basis, National Office staff will archive the XML file for all TERRA scenarios without regard to acceptance status. TERRA scenario folders for the current signup and immediately preceding signup will not be removed. All other TERRA scenario folders will be removed and the XML files for the respective scenarios will be archived in a central location.--*

107-110 (Reserved)

Section 2 Wetland Point Feature Dataset

111 General Information

A Overview

The wetland point feature dataset is the collection of points recorded by FSA that represent the location and attributes of wetlands as identified by NRCS and recorded on NRCS-CPA-026E. Wetland points before 1996 can be classified as either certified or inventoried. All wetlands identified after 1996 are certified.

B Wetland Point Locations

The points identified by FSA in the wetland point feature dataset represent the general location of where a wetland has been identified by NRCS. Wetlands may be represented by more than 1 point if the wetland crosses tract or CLU boundaries.

112 Data Management and Responsibilities

A NRCS Responsibilities

NRCS is responsible for identifying and determining wetlands. Official wetland determinations are recorded on NRCS-CPA-026E and requests for additional information concerning the determinations should be referred to NRCS.

B FSA Responsibilities

To assist producers and identify wetlands on FSA producer maps, the wetland point feature dataset was created to capture wetlands and wetland attributes including the wetland type, status, certification date, and acreage. FSA will associate both certified and inventoried wetland information from the NRCS wetland determination from form NRCS-CPA-026E to points on a feature dataset separate from the CLU feature dataset.

FSA producer maps must include the wetland point feature dataset. Point data associated with existing inventoried wetland determinations that are not officially certified will continue to be used until NRCS makes an official certification at the producer's request.

Tract level wetland determinations in CRM Farm Records must also reflect the applicable wetland status based on the NRCS wetland determinations for each tract. 6-CP and 10-CM should be referenced for additional information concerning requesting wetland determinations and loading determinations in both the wetland point feature dataset and CRM Farm Records Tract level.

112 Data Management and Responsibilities (Continued)

C National Office Responsibilities

The National Wetland Data Manager is responsible for:

- establishing policy and procedures to ensure that data meets quality standards
- providing data reconciliation reports to the State Geospatial Data Manager
- coordinating with NRCS to ensure that wetland data is captured consistently
- providing training on wetland data management to State GIS Specialists
- ensuring that wetland data is available to FSA partners with valid MOU's
- evaluating and monitoring the integrity of the wetland point data to ensure consistency in labeling and wetland identification
- providing reconciliation reports to State GIS Specialists as necessary.

D State Office Responsibilities

State GIS Specialists are responsible for:

- training County Office employees that will be editing and using the wetland point data
- evaluating the State wetland point data to ensure that the points and attributes are loaded accurately by the County Office employees

  Note: QC tools are available to evaluate the county wetland point data.

- assisting the State conservation compliance specialist with verifying that tract level wetland determinations are accurately loaded in CRM Farm Records
- ensuring that all maps created at either the State or County Office level provided to producers include the wetland point data
- archiving the wetland point data with the CLU on a weekly and monthly basis and at rollover.

112 Data Management and Responsibilities (Continued)

E County Office Responsibilities

The County Office is responsible for adding and maintaining the wetland points for farms that are administered from the local County Office. This includes:

- adding and updating wetland points when determinations are completed by NRCS and FSA is notified through NRCS-CPA-026E
- taking corrective action needed based on reports and guidance from the State Office
- updating administrative State and county codes when a farm transfer has been completed to change the administrative County Office for the associated farm in CRM Farm Records.

Local Geodata editors must have the applicable permissions according to **paragraph 34**.

113 Rules for Delineating and Attributing Wetlands Points

A Overview

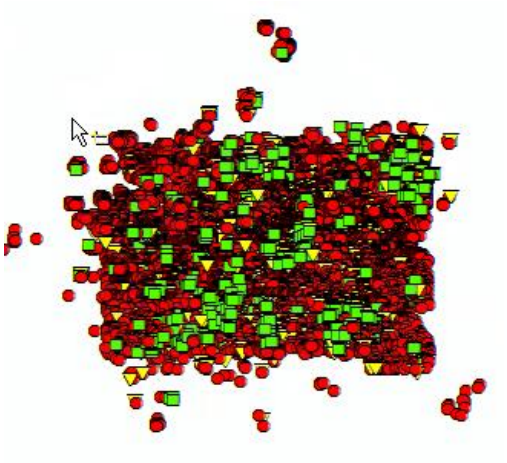
Both certified official wetlands and inventoried wetlands identified by NRCS from either the original aerial maps or the NRCS-CPA-026E shall be transferred to the wetland point feature dataset. Placement of the wetland points and entering the associated attribute data must be completed using the Wetland Point Data Tool through Citrix and the CLU Maintenance Tool.

Note: All wetland determinations completed by NRCS must be identified in the wetland point feature dataset, including all determinations for certified NW.

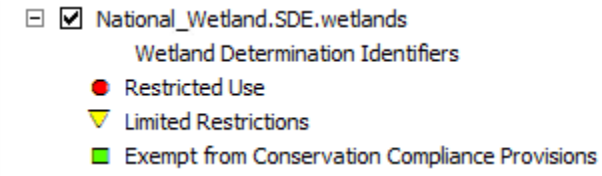
113 Rules for Delineating and Attributing Wetlands Points (Continued)

B Example of the Wetland Point Feature Dataset and Symbology

County Wetland Point Feature Dataset



Wetland Feature Dataset Symbology



C Accessing the Wetland Point Feature Dataset

A wetland point feature dataset for each county in the nation has been created. Editing the county wetland point feature dataset is completed through the Citrix CLU Maintenance Tool application. The wetland point data can also be viewed with no editing capabilities for specific farms through the CRM Farm Records, CARS mapping, and FSAfarm+ applications.

Note: See **Exhibit 21** for instructions on editing the Wetland Point feature dataset.

D Attributes of the Wetland Point Feature Dataset

The following table describes the contents of the Wetland Point feature dataset layer.

Name	Short Description
OBJECTID	Identifier assigned by ArcSDE to keep track of entries in the feature layer.
Shape	The digitized point representing the wetland area.
clu_wetland_unit_identifier	Identifier assigned to each wetland unit.

113 Rules for Delineating and Attributing Wetlands Points (Continued)

D Attributes of the Wetland Point Feature Dataset (Continued)

Name	Short Description
wetland_status_code	Code assigned to wetland status. There are 3 status types: 1=inventoried; 2=certified and 3=unknown.
wetland_label_code	Code assigned to wetland label type. There are 32 codes.
wetland_acreage	The acreage of wetland as determined by NRCS. Acreage is only populated for certified wetlands.
wetland_certification_date	The wetland certification date derived from the original NRCS-CPA-026E.
state_code	The FSA FIPS numeric code associated with the State where the wetland is physically located.
county_code	The FSA FIPS numeric code associated with the county where the wetland is physically located.
data_source_site_identifier	A historical data field no longer populated. This data field was the identifier indicating the Service Center where the entry was created.
creation_date	The date the entry was made into the database.
last_change_date	The date when the entry was last updated.
data_source	The user name of the last person to edit the wetland point.
admin_state	The FSA FIPS numeric code associated with the State where the wetland is administered.
admin_county	The FSA FIPS numeric code associated with the county where the wetland is administered.
wetland_label	A text abbreviation used to identify the wetland on NRCS-CPA-026-E.

113 Rules for Delineating and Attributing Wetlands Points (Continued)

E Wetland Status Codes, Names Defined

The following table describes the contents of the Wetland Point feature dataset layer.

Status Code	Status Name	Definition
1	Inventoried	Wetland determinations identified on NRCS-CPA-026E (and delivered to the producer) before July 3, 1996, that did not meet the quality mandates for wetland determinations provided in the regulation at 7 CFR Section 12.
2	Certified	The wetland determination is of significant quality to make a determination of ineligibility for USDA benefits. All wetland determinations (identified on NRCS-CPA-026E) made after July 3, 1996, are considered certified determinations. Determinations made before July 3, 1996, are considered certified if they met the procedural (appeal rights) and quality mandates provided in the regulation at 7 CFR Section 12.
3	Unknown	Missing or incomplete NRCS-CPA-026E documentation.

F Other Table Formats

There are other export table formats that are available from the following tools:

- MapSeries Create .SHP for USDA Tool (.shp USDA format)
- Maintenance Tool Exporter (USDA format)
- Maintenance Tool Subset (.shp Producer format).

113 Rules for Delineating and Attributing Wetlands Points (Continued)

G Wetland Point Symbology on Producer Maps and FSA Applications

The wetland point feature dataset is viewed in multiple FSA applications when viewing farm records data, including CRM Farm Records, CARS mapping, and FSAfarm+.

Additionally, the wetland point feature dataset must be included on all producer maps used for FSA program purposes or provided to the producer.

Wetland points are categorized using mapping Symbology by the type of wetland associated within the attributes of the point. The following identifies the wetland symbology and categories.

Wetland Abbreviation	Wetland Lookup Code	Wetland Symbol	Wetland Label
AW	1		Exempt from Conservation Compliance Provisions
AW/FW	2		Limited Restrictions
AW/W	3		Restricted Use
CC	4		Exempt from Conservation Compliance Provisions
CMW	5		Limited Restrictions
CW	6		Restricted Use
CW+Yr	7		Restricted Use
CWNA	8		Limited Restrictions
CWTE	9		Limited Restrictions
Easement	10		Limited Restrictions
FW	11		Limited Restrictions
FWP	12		Limited Restrictions
MIW	13		Limited Restrictions
MW	14		Limited Restrictions
MWM	15		Limited Restrictions
NI	16		Exempt from Conservation Compliance Provisions
NW	17		Exempt from Conservation Compliance Provisions
NW/NAD	18		Exempt from Conservation Compliance Provisions

113 Rules for Delineating and Attributing Wetlands Points (Continued)

G Wetland Point Symbology on Producer Maps and FSA Applications (Continued)

Wetland Abbreviation	Wetland Lookup Code	Wetland Symbol	Wetland Label
OW	19		Limited Restrictions
PC	20		Exempt from Conservation Compliance Provisions
PC/NW	21		Exempt from Conservation Compliance Provisions
TP	22		Limited Restrictions
W	23		Restricted Use
WX	24		Limited Restrictions
GFW	25		Restricted Use
GFW+Yr	26		Restricted Use
RPW	27		Restricted Use
RSW	28		Restricted Use
RVW+YR	29		Restricted Use
CWIL	30		Restricted Use
CWTA	31		Restricted Use
CPD	32		Limited Restrictions

114 QC of the Wetland Dataset

A Overview

QC is an essential part of managing the wetland point data. Quality begins with the maintenance of wetland data in the Service Center ensuring that wetland determinations from NRCS are updated and maintained according to digitizing rules established in this handbook. It continues with the State Geospatial Data Manager conducting regular reviews of wetland point data for the State to ensure continued QC.

B QC Tasks and Tools

GIS Specialists will generate query reports and maps to identify wetland tract issues within the State. While State GIS Specialists will prepare and create the reports, the designated Conservation/Compliance Specialist should collaborate to manage workload and develop process for addressing the issues that are found in their State.

QC must be completed to:

- review the transfer process with County Offices to ensure that wetlands are getting moved as required with the correct tracts and admin FIPS codes

- ensure that status codes are correct in MIDAS by tract according to NRCS-CPA-026E information on file.

Specialized tools and instructions have been developed to assist State Geospatial Data Manager in reviewing the wetland point feature dataset. See **Exhibit 5** for a list of QC tasks to be completed on a regular basis.

The Wetland Administrative State and County Code Review tool is available in Citrix. It is important that the administrative State and county codes are correct for exporting and map creation. This tool can be run on a single county to compare the administrative State and county codes for the wetland point and the CLU polygon in which they reside. If the codes differ the tool will prompt the user to correct the codes in the wetland point feature dataset, see paragraph 516 for further instructions.

C Attribute Queries for QC

Attribute queries and sorting will be used to ensure that wetland points have been attributed correctly. Review the attribute table for the following, see also **Exhibit 22**.

- Identify missing administrative State and county codes by querying the attributes. Wetland points with missing codes can be selected and exported from the list for further review with the CLU Maintenance Tool.

- Identify missing wetland labels and wetland status codes by querying the attributes. Wetland points with missing attributes can be selected and exported from the list for further review with the CLU Maintenance Tool.

114 QC of the Wetland Dataset (Continued)

C Attribute Queries for QC (Continued)

GIS Analysis can be done to compare the Wetlands Point layer to the CRM Tract wetland status. This analysis will help to ensure that correct information is provided to producers regarding wetland determinations. Incorrect wetland tract entries present a high risk for producers to believe there are no restrictions on a tract with regard to wetland compliance, when in fact there may be restrictions. The analysis spatially compares the certified wetlands that have restrictions with the CRM tract wetland status of the tract in which they reside. See **Exhibit 23** for full instructions and to create the following reports:

- identify tracts with the "Tract Does Not Contain a Wetland" (TN) status to ensure that no wetlands are present in the same tract
- identify tracts with the "Tract contains a wetland or farmed wetland" (TY) status to ensure that a wetland is present for the TY tracts
- identify tracts with the "Wetland determination not complete" (NC) status to ensure that no wetlands are present in the same tract.

D Wetland Code, GIS Map Symbol Definition, and CRM Tract Wetland Determination Type Table

The following table is to be used for QC in CRM Farm Records.

6-CP Wetland Code	GIS Map Symbol Definition	CRM Tract Wetland Determination
AW	Exempt from Conservation Compliance Provisions	Tract does not contain a wetland
AW/FW	Limited Restrictions	Tract contains a wetland or farmed wetland
AW/W	Restricted Use	Tract contains a wetland or farmed wetland
CC	Exempt from Conservation Compliance Provisions	Tract contains a wetland or farmed wetland
CMW	Limited Restrictions	Tract contains a wetland or farmed wetland
CPD	Limited Restrictions	Tract contains a wetland or farmed wetland
CW	Restricted Use	Tract contains a wetland or farmed wetland

114 QC of the Wetland Dataset (Continued)

D Wetland Code, GIS Map Symbol Definition, and CRM Tract Wetland Determination Type Table (Continued)

6-CP Wetland Code	GIS Map Symbol Definition	CRM Tract Wetland Determination
CW+Yr	Restricted Use	Tract contains a wetland or farmed wetland
CWIL	Restricted Use	Tract contains a wetland or farmed wetland
CWNA	Limited Restrictions	Tract contains a wetland or farmed wetland
CWTA	Restricted Use	Tract contains a wetland or farmed wetland
CWTE	Limited Restrictions	Tract contains a wetland or farmed wetland
Easement	Limited Restrictions	Tract contains a wetland or farmed wetland
FW	Limited Restrictions	Tract contains a wetland or farmed wetland
FWP	Limited Restrictions	Tract contains a wetland or farmed wetland
GFW	Restricted Use	Tract contains a wetland or farmed wetland
GFW+Yr	Restricted Use	Tract contains a wetland or farmed wetland
MIW	Limited Restrictions	Tract contains a wetland or farmed wetland
MW	Limited Restrictions	Tract contains a wetland or farmed wetland
MWM	Limited Restrictions	Tract contains a wetland or farmed wetland
NI	Limited Restrictions	Wetland determinations not complete
NW	Exempt from Conservation Compliance Provisions	Tract does not contain a wetland
NW/NAD	Exempt from Conservation Compliance Provisions	Tract does not contain a wetland
OW	Limited Restrictions	Wetland determinations not complete
PC	Exempt from Conservation Compliance Provisions	Tract does not contain a wetland
PC/NW	Exempt from Conservation Compliance Provisions	Tract does not contain a wetland

114 QC of the Wetland Dataset (Continued)

D Wetland Code, GIS Map Symbol Definition, and CRM Tract Wetland Determination Type Table (Continued)

6-CP Wetland Code	GIS Map Symbol Definition	CRM Tract Wetland Determination
RPW	Restricted Use	Tract contains a wetland or farmed wetland
RSW	Restricted Use	Tract contains a wetland or farmed wetland
RVW+YR	Restricted Use	Tract contains a wetland or farmed wetland
TP	Limited Restrictions	Tract contains a wetland or farmed wetland
W	Restricted Use	Tract contains a wetland or farmed wetland
WX	Limited Restrictions	Tract contains a wetland or farmed wetland

Note: Colors in the table correspond with the default wetland symbology.

115 Relationships to Other Data

A Relationship to CLU

The wetland point feature dataset is used in conjunction with the CLU feature dataset. Mapping and viewing producer GIS data in any application should include the wetland point feature dataset as identified in the NRCS wetland determinations made for producer's farming interest.

B CRM Farm Records

The wetlands identified for each tract in the CLU feature dataset should correspond with the tract level wetland determination loaded in CRM Farm Records according to 10-CM. See **paragraph 114**.

116 Rules for Release of Data

A Overview

It is FSA policy to safeguard individual privacy from the misuse of Federal records while granting individuals access to records concerning themselves.

Information that is released to agencies of USDA should only be provided when they have an official use for the information. Release of this information to other Government agencies or a third party is allowable only if there has been a routine use established in the FSA Privacy Act system of records granting use of the information.

2-INFO provides procedures for all FSA offices to follow when making records available to the public, other Federal agencies, and Congress. 3-INFO provides procedures to be followed by all offices when collecting, maintaining, or disclosing data or information concerning an individual.

B Releasing Wetland Data

Wetland data is considered PII and generally cannot be released to third parties.

C Creating Compliant Metadata

*--FGDC-endorsed machine-readable metadata will be provided with all wetland data. See **paragraph 61**.--*

D Archiving Wetland Point Data

The county wetland data must be extracted weekly to county servers. A statewide wetland layer must be created and archived monthly by the State GIS Specialist. A final statewide wetland layer must be created and archived by the State GIS Specialist at rollover. See **Exhibit 5**.

117-119 (Reserved)

Section 3 CRP Feature Dataset

120 General Information

A Definition of CRP Feature Dataset

The CRP feature dataset is a subset of CLU that represents land currently enrolled in CRP. The CRP feature dataset is created by joining tabular conservation data maintained in CRM Farm Records to CLU using a unique attribute comprised of the administrative State, administrative county, farm number, tract number, and field number.

B Data Sources for CRP Feature Dataset

CRP contract information is added by local CLU data editors at the field level in CRM Farm Records in the CRP Data assignment block.

121 Data Management and Responsibilities

A Agency Responsibilities

FSA is responsible for administering CRP. The CRP feature dataset allows the agency to improve program administration through geospatial analysis and mapping capabilities.

B National Office Responsibilities

The National Office is responsible for:

- ensuring that metadata is collected, approved, and certified for release according to industry, Federal, and USDA metadata and data management standards
- working with CEPD and National FOIA Officer to ensure that MOU's are established with National technical and financial cooperators
- developing policy and procedures that ensure the validity, accuracy, and completeness of the physical data and supporting metadata
- aggregating State-developed CRP feature datasets into a nationwide CRP feature dataset.

121 Data Management and Responsibilities (Continued)

C State GIS Specialist Responsibilities

The State GIS Specialist is responsible for:

- joining tabular conservation data maintained in CRM Farm Records to the CLU data using the Create CRP Layer tool located within the State Office Tools toolbox (**Exhibit 24**)
- running the "Compare MIDAS to CCMS" tool in the State Office Tools toolbox on a regular basis to identify inconsistencies between contract information stored in CCMS and CRP data loaded at the field level in CRM farm records (**Exhibit 25**)
- working with County Office to ensure that CRP data is updated and maintained in CRM Farm Records
- creating maps to help program staff identify opportunities and improvements within their programs.

D County Office Responsibilities

The County Office is responsible for:

- delineating CRP fields in CRM Farm Records by practice
- updating and maintaining CRP data in CRM Farm Records within the CRP data assignment block.

122 Attributes of the CRP Feature Dataset

A Naming Conventions

The CRP feature dataset is created by the "Create CRP Layer" tool in ArcGIS. Data is stored in a file geodatabase named CRP_a_<ST>.gdb, where <ST> is the 2-letter State abbreviation. A single feature dataset named CRP is stored within the file geodatabase.

B Practice Boundaries

CLU's that are enrolled in CRP are delineated at the conservation practice level. See 10-CM.

C Attributes of the CRP Feature Dataset

The following table describes the contents of the CRP feature dataset layer after creating the CRP Layer with the Create CRP Layer tool.

Name	Short Description
OBJECTID	Identifier assigned by ArcSDE to keep track of entries in the feature layer.
Shape	Polygon representing the field.
Shape_Length	Software created measurement of polygon border length.
Shape_Area	Software created measurement of area.
admin_state	The FSA code associated with the State that administers the field.
admin_county	The FSA code associated with the county that administers the field.
farm_number	The farm number assigned by FSA to the field represented by the CLU.
tract_number	The tract number assigned by FSA to the field represented by the CLU.
clu_number	The CLU number assigned by FSA to the field represented by the CLU.
crp_contract_number	The CRP contract number assigned by FSA in CRM Farm Records to the field represented by the CLU.
expiration_date	The CRP contract expiration date assigned by FSA in CRM Farm Records to the field represented by the CLU.
practice_number	The CRP practice number assigned by FSA in CRM Farm Records to the field represented by the CLU.

122 Attributes of the CRP Feature Dataset (Continued)

C Attributes of the CRP Feature Dataset (Continued)

Name	Short Description
clu_calculated_acreage	The acreage of the field determined by the area of the CLU.
sap_crp	A Boolean field (1=Yes or 0= No) identifying whether the type of land is a CRP contract.
clu_identifier	Identifier assigned to each digitized field. This number is automatically generated and is a combination of the latitude and longitude coordinates of the CLU center point.
comments	A field for comments about the field represented by the CLU.

The following attributes are added to the CRP feature dataset layer after running the Compare MIDAS CRP to CCMS tool.

Name	Short Description
Signup	The CRP signup number assigned by FSA in CCMS to the field represented by the CLU.
approval_date	The CRP contract approval date assigned by FSA in CCMS to the field represented by the CLU.
orig_start_date	The CRP contract original start date assigned by FSA in CCMS to the field represented by the CLU.
rental_rate	The CRP contract rental rate assigned by FSA in CCMS to the field represented by the CLU.

123 QC of the CRP Feature Dataset

A Overview

QC begins with the maintenance of CRP CLU data in the Service Center ensuring that CLU data is updated and maintained according to digitizing rules established in this handbook and the procedure for establishing farms, tracts, and fields according to 10-CM. It continues with the State Geospatial Data Manager conducting regular reviews of CRP feature dataset for the State to ensure continued QC.

B Quality Control Tasks and Tools

Specialized tools and instructions have been developed to assist State Geospatial Data Manager in reviewing the CRP feature dataset. See **Exhibit 5** for a list of QC tasks to be completed on a regular basis and Part 6 for a description of the tools available.

The Compare MIDAS to CCMS tool is available to compare the spatial CLU CRP data with the CRP information entered in both CRM Farm Records and Conservation Contract Maintenance System (CCMS). For detailed instructions for using this tool, see **Exhibit 25**.

C Attribute Queries for QC

Attribute queries and sorting will be used to ensure that the CRP CLU's have been attributed correctly. Review the attribute table for the following, see also **Exhibit 26**:

- find invalid or expired contracts
- find invalid expiration dates
- find invalid contract and practice numbers
- find missing or incorrect SAP CRP flags.

124 Relationships to Other Data

A CLU

The CLU contains a single attribute named “SAP_CRP” that is updated based on data entered in the CRM Farm Records CRP Data assignment block. See **paragraph 102** for details about this data field.

Exported data from CRM Farm Records is joined to CLU using the Admin_State, Admin_County, farm_number, tract_number, and clu_number attributes to create the CRP feature dataset.

B CRM Farm Records

The CRP feature dataset is created from attributes entered in the CRP Data assignment block in CRM Farm Records. Tract and farm level CRP totals in CRM Farm Records are calculated based on data entered at the field level.

125 Rules for Release of Data

A Basic Policy

It is FSA policy to safeguard individual privacy from the misuse of Federal records while granting individuals access to records concerning themselves.

Information that is released to agencies of USDA should only be provided when they have an official use for the information. Release of this information to other Government agencies or a third party is allowable only if there has been a routine use established in the FSA Privacy Act system of records granting use of the information.

2-INFO provides procedures for all FSA offices to follow when making records available to the public, other Federal agencies, and Congress. 3-INFO provides procedures to be followed by all offices when collecting, maintaining, or disclosing data or information concerning an individual.

125 Rules for Release of Data (Continued)

B Releasing CRP Feature Dataset Data

Section 1619 of the 2008 Farm Bill (7 U.S.C. § 8791) classifies CLU Data as geospatial information provided by an agricultural producer or owner of agricultural land. CLU Data is *--considered PII and generally cannot be released to third parties. CRP features are a derivative product of CLU that contain producer-provided information and are also covered by Section 1619.--*

CLU and derived products may only be released to a person, Federal, State, local, or tribal agency:

- when working in cooperation with FSA to provide technical or financial assistance with respect to the agricultural operation, agricultural land, or farming or conservation practices
- when responding to a disease or pest threat to agricultural operations
- if the information has been transformed into a statistical or aggregate form that does not identify an individual owner, operator or producer or specific data gathering site
- if written consent is provided by the agricultural producer or owner of the agricultural land.

C Creating Compliant Metadata

*-- FGDC-endorsed machine-readable metadata will be provided with all CRP data. See **paragraph 61**.--*

126-133 (Reserved)

Section 4 Detailed Crop Acreage Data Feature Dataset and Tables

134 Detailed Crop Acreage Data Feature Dataset

A Definition of Detailed Crop Data Feature Dataset

The Detailed Crop Data feature dataset is a geospatial representation of all reported crop acreages linked to the corresponding CLU as reported in the CARS application. A detailed crop feature dataset and crop data tables are created by the State GIS Specialist that relates the crop data obtained from CARS to CLU using a unique attribute comprised of the administrative State, administrative county, farm number, tract number, and field number.

During the Detailed Crop Data creation process, additional data including a mismatch report of all crops reported without a corresponding CLU and a complete reported crop data table are created. See **Exhibit 5** for all the related QC tasks.

B Data Sources for Detailed Crop Data

Detailed crop data is entered into the CARS application on the FSA-578 Detailed Crop Acreage Report by the local County Office staff based on producers' annual report of crops.

Detailed crop data for each crop year is provided monthly by the National Office to the GIS Specialist through the National GIS SharePoint page.

The detailed crop data is crop year specific and contains all acreage report loaded in CARS at the time to data is downloaded by the National Office staff.

Important: The Detailed Crop Data is restricted data containing PII and must be handled accordingly. The data must be securely saved at both the State and County Office level and cannot be provided in its raw format outside the agency. Current crop year data may not be shared outside FSA in detail or aggregate form until after the first public release of data.

135 Data Management and Responsibilities

A Agency Responsibilities

Agency responsibilities for collecting crop acreage data are defined in 2-CP.

B National Office Responsibilities

The National Office manager is responsible for:

- acquiring a download of the detailed crop data in an acceptable format for all States
- maintaining the security of the detailed crop data.

C State GIS Specialist Responsibilities

The State GIS Specialist is responsible for:

- downloading the crop data from the posted location
- compiling the individual county data using the Build Crop Data Polygons tool
- evaluating the State-detailed crop data with the State acreage reporting and compliance specialist
- providing the county crop data to the local County Offices in a secure manner
- analysis of the crop data as needed to assist with State and county programs or assessments
- archiving the crop data files for each crop year.

136 Compiling the State Detailed Crop Data

A Overview

Python tools have been created and made available through the State Office CLU Toolbox to compile the State-detailed crop data received from the National Office. The Crop Data tools include:

- Build Crop Data Polygons tool
- Merge Cropland Feature Datasets.

A Python script, named “iterate_cropdata.py” has also been created to assist GIS Specialists with running the Build Crop Data Polygons tool to quickly compile each counties’ detailed crop layer and associated tables.

The tools allow States to break the State data into individual county data sets and link the acreage report data from CARS to the associated CLU’s. Once the data is compiled it can be used for review and analysis purposes as needed.

The detailed crop data is also required when creating the County and State Summary Reports. See **paragraph 518** for more information on the summary reports.

136 Compiling the State Detailed Crop Data (Continued)

B Build Crop Data Polygons Tool

The Build Crop Data Polygons tool breaks the State-detailed crop data file by administrative county and links the data to the CLU based on farm, tract, and field number. Crops and acreage reported on sub-field are linked to the whole CLU. Sub-fields are not delineated through the tool.

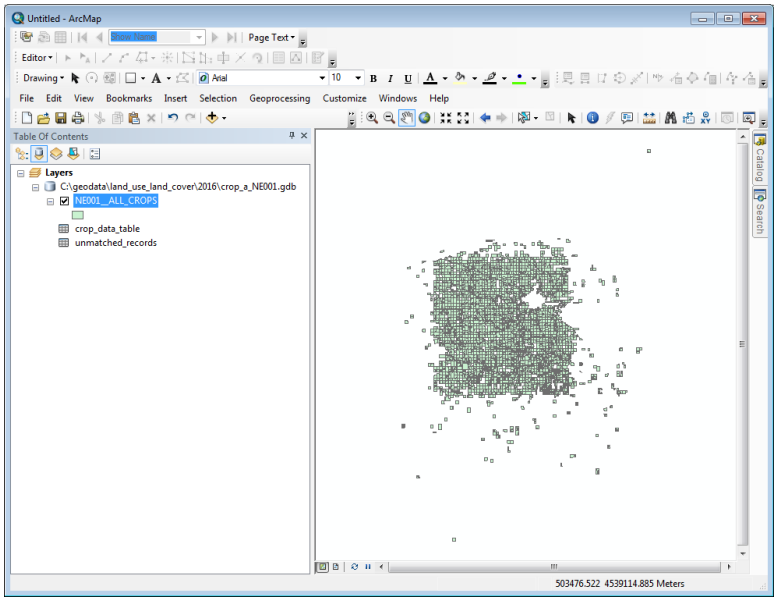
The tool creates a geodatabase file for each county that contains the following outputs.

Dataset Name	Description
<stnnn>_<crop-selection>_Crops **Example:** WI059_ALL_Crops	Geospatial dataset of all CLU's matched with associated reported crop acreage data based on the tool inputs.
Crop_data_table	Data table with all reported detailed crop data by county that is not linked to the CLU layer.
Unmatched_records	Data table identifying acreage reports that were not able to be matched to the CLU layer. **Note:** Field numbers used on the acreage report must match the associated CLU number in Farm Records. Field numbers may not match because of reconstitutions or recent cropland changes that have not been updated on FSA-578 yet.

136 Compiling the State Detailed Crop Data (Continued)

B Build Crop Data Polygons Tool (Continued)

The following is an example of an ArcMap map document showing the outputs of the Build Crop Data Polygons tool.



C Running the Build Crop Data Tool

The Build Crop Data tool can be run on individual counties or can be batched to process multiple counties at the same time. Options provided in the tool allow the data to be processed for individual crops or all crops in the dataset. Instructions for running the Build Crop Data Tool are found in **Exhibit 27**.

The crop data for each county in the State can be batch processed through the "Iterate_Cropdata" python script. Instructions for running the Build Crop Data tool through the batch scripts can be found in **Exhibit 28**.

D Merge Cropland Feature Dataset Tool

The Merge Cropland Feature Dataset tool can be used after the Build Crop Data tool to merge the individual county crop data into a State layer to be used for mapping and analysis. The Merge Cropland Feature Dataset Tool will only merge the crop data geospatial datasets and will not merge the separate tables that are created by the Build Crop Data tool. Instructions for running the Merge Cropland Feature Dataset tool can be found in **Exhibit 29**.

137 Archiving Data

A Overview

The county- and State-detailed crop data must be archived by the State GIS Specialist when acreage reporting has been finalized for the crop year and the last download provided by the National Office.

B Archiving

The GIS Specialist shall archive the compiled data from the crop data that represents the last data set for the crop year.

C Example of Archiving Data

The final acreage reporting deadline in Nebraska for crop year 2015 was July 15, 2015. The final detailed crop data download for crop year 2015 provided by the National Office was delivered in December 2015. The December 2015 crop data is joined with the final CLU archived for the FY. The December crop data is archived along with CLU that was downloaded before rollover.

138 Analysis and Use of Crop Data

A Coordination With the State Compliance Specialist

The detailed crop data can be used for many purposes to assist with program implementation and assessment at both the county, State, and national level.

At the State level, the GIS Specialist should review the data with the State acreage reporting/compliance specialist to verify the accuracy of the acreage report data and how County Offices are loading crop data in CARS. Maps can be created to identify crops at the county and State level. The crop data attributes can also be sorted and reviewed to summarize acreage for all or specific crops or crop data as needed for the State.

B Other Uses

The following are additional potential uses for the State or county crop data. Uses are not limited to the following:

- COC assessment of prevented planting and failed acreage claims by identifying crops and planting dates for neighboring farms

- outreach for program eligibility

  Example: Identifying all NAP eligible crops in a county, or identifying farms eligible for LDP or LFP based on reported crops.

- disaster assessment and assistance with STORM reports to identify farms and crops impacted by a disaster event

- creation of the State and County Summary Report.

139 Relationships to Other Data

A CLU

The detailed crop data dataset is derived from the CLU layer. Reported crop attributes are matched to the associated CLU boundary. Sub-fields are not delineated in the crop layer, but rather sub-fields are associated to the entire parent CLU.

Important: Because there may be changes to farm, tract, and field numbers between the time crop data is exported and when the CLU is exported, not all crop records may join to the CLU. Analysis or summary of the detailed crop data should be completed on the All Crop data table and not the geospatial crop data boundary dataset.

B State and County Summary Report

The State-detailed crop data report is needed as an input to create the State and County Summary Reports. See **paragraph 518** for running the summary reports.

140 Rules for Release of Data

A Basic Policy

The Detailed Crop Data feature dataset is considered PII unless aggregated to a State or county level. Release of the data is the same as the CLU. Users are cautioned about creating maps with the detailed crop data that are shared outside of the agency to ensure that data is sufficiently aggregated to avoid disclosing personal information.

Important: Maps, reports or other information derived from the Detailed Crop Data for *--the current crop year, regardless of aggregation, will not be shared outside--* of the agency before the final crop reporting date of the crop year.

B Creating Compliant Metadata

*--FGDC-endorsed machine-readable metadata will be provided with all crop data. See **paragraph 61**.--*

141-145 (Reserved)

Section 5 Boll Weevil Program Feature Dataset

146 General Information

A Definition of Boll Weevil Data Feature Dataset

The Boll Weevil data feature dataset is a geospatial representation of all cotton acreage data linked to the corresponding CLU as reported in the CARS application. A detailed crop feature dataset and crop data tables are created by the State GIS Specialist that related the crop data obtained from CARS to CLU using a unique attribute comprised of the administrative State, administrative county, farm number, tract number, and field number.

B Data Sources for the Boll Weevil Data

Detailed crop data is entered into the CARS application on FSA-578 by the local County Office staff based on producers' annual report of crops.

Detailed cotton crop data for the crop year is provided monthly by the National Office to the GIS Specialist through the National GIS SharePoint page.

The detailed cotton crop data is crop year specific and contains all acreage report loaded in CARS at the time to data is downloaded by the National Office staff.

Important: The Detailed Crop Data for cotton is restricted data containing PII and must be handled accordingly. The data must be securely saved and shared only with the designated organizations listed in the 2008 Boll Weevil MOU (FSA, APHIS, and State cotton grower organizations). BWEP is only applicable for the following States: AL, AZ, AR, FL, GA, LA, MS, MO, NM, NC, OK, SC, TN, TX, and VA.

147 Data Management and Responsibilities

A Agency Responsibilities

Agency responsibilities for collecting crop acreage data are defined in 2-CP.

B National BWEP Specialist Responsibilities

The National BWEP Specialist is responsible for announcing annual program requirements for BWEP through a national notice.

147 Data Management and Responsibilities (Continued)

C National Geospatial Data Manager Responsibilities

The National Geospatial Data manager is responsible for:

- compiling cotton acreage, share, name and address information into a personal geodatabase (*.mdb)
- posting each BWEP State's geodatabase on the GIS SharePoint in a secure ZIP file
- maintaining the security of the detailed crop data.

D State GIS Specialist Responsibilities

The State GIS Specialist is responsible for:

- downloading the secure ZIP file containing the State's geodatabase to their workstation
- link the cotton acreage information in the geodatabase with CLU shapefile for identified counties with cotton production
- compiling the individual county data using the Add Crop Data to CLU toolset
- evaluating the State-detailed crop data with the State acreage reporting and compliance specialist
- providing the combined cotton crop dataset to the designated MOU organizations in a secure manner
- analysis of the crop data as needed to assist with State programs or assessments
- archiving the cotton data files for each crop year.

148 Compiling the State BWEP Crop Data

A Overview

Python tools have been created and made available through the Add Crop Data to CLU Toolbox to compile the State-detailed crop data received from the National Office.

The tool allow the BWEP States to merge the individual county data sets and links the acreage report data from CARS to the associated CLU's. Once the data is compiled it can be used for review and analysis purposes as needed. See **Exhibit 5** for a list of data preparation tasks.

B Running the Add Crop Data to CLU Tool

The Add Crop Data to CLU tool merges all individual county CLU's added into a single statewide dataset. The tool adds new data columns to the CLY for total reported ELS cotton acres, total reported Upland cotton acres, and a key comprised of concatenated State, county, farm, tract, and CLU. The tool deletes all CLU features without reported cotton. Instructions for running the Add Crop Data to CLU Tool are found in **Exhibit 30**.

149 Archiving Data

A Overview

The State BWEP crop data should be archived by the State Crop Data Manager when the last download of data is provided by provided by the National Office.

B Archiving

The GIS Specialist should archive the BWEP crop data annually.

150 Rules for Release of Data

A Basic Policy

The Boll Weevil program feature dataset is considered PII and releasable only to the organizations listed in the 2008 Boll Weevil MOU unless aggregated to a State or county level. Release of the data is the same as the CLU. Users are cautioned about creating maps with the detailed crop data that are shared outside of the agency to ensure that data is sufficiently aggregated to avoid disclosing personal information.

B Creating Compliant Metadata

FGDC compliant metadata shall be provided with Boll Weevil program feature dataset if released outside of the agency.

151-158 (Reserved)

Section 6 National Agricultural Imagery Program

159 General Information

A Definition of National Agricultural Imagery Program (NAIP)

NAIP is an aerial photography program that acquires ortho-rectified imagery during the *--"leaf on" peak growing season. Imagery is provided to FPAC-GEO within 30 days after the state has been completely collected. Service Centers will use this imagery as a base layer--* for GIS and to maintain CLU boundaries and complete compliance spot checks.

B Additional Information

See 1-AP for additional information on NAIP.

160 Data Management and Responsibilities

A Agency Responsibilities

--FPAC-GEO is the USDA Data Steward for ortho-imagery.--

B Requests for Large Areas

*--Requests for ortho-imagery for the entire county or large areas will be directed to FPAC-GEO at **geo.sales@usda.gov**.--*

C Requests for Small Areas

Requests from an individual producer for imagery covering their land can be filled at the Service Center.

D Charges

*--Producers will not be charged for digital or paper copies of farms in which they have an interest. Refer other requestors to FPAC-GEO at **geo.sales@usda.gov**.--*

161-171 (Reserved)

Section 7 Conservation Priority Areas

172 General Information

A Definition of Conservation Priority Areas (CPA)

CPA is a region designated by DAFP that has actual significant adverse water quality, wildlife habitat, air quality, or other natural resource impacts related to agricultural production activities or if the designation helps agricultural producers to comply with Federal and State environmental laws. CPA designations expire after 5 years unless redesignated or can be withdrawn before 5 years at the request of the appropriate State water quality agency or as determined appropriate by DAFP.

Cropland that falls within CPA's is considered eligible for enrollment in CRP based on identified environmental concerns.

Within a State or national CPA, additional zones may be designated. STC's shall consult with State Conservationists and State Technical Committees to develop zones.

B Data Sources for CPA's

--CPA's may be defined by whole county boundaries, hydrologic unit code (HUC) boundaries, or a combination thereof.--

173 Data Management and Responsibilities

A Agency Responsibilities

DAFP is responsible for designating national CPA's.

Subject to DAFP review, FSA STC's, in consultation with NRCS and the State Technical Committee, may designate State CPA's.

173 Data Management and Responsibilities (Continued)

B National Office Responsibilities

The National Office is responsible for:

- coordinating with DAFP to delineate National CPA's based on county boundary and/or hydrologic unit feature datasets
- ensuring that overlaps do not exist between National CPA's
- ensuring that overlaps do not exist between State CPA's
- ensuring that State CPA's and zones are attributed with correct names, types, and codes
- ensuring that State Zones fall completely within State or National CPA's
- ensuring that National CPA's are available for State and County Office use
- ensuring that National and State CPA's are available to partner agencies and technical cooperators
- processing State CPA's and creating corresponding data files for TERRA.

C State GIS Specialist Responsibilities

The State GIS Specialist is responsible for:

- coordinating with State Conservation Specialist, State Conservationist, and State Technical Committee to delineate State CPA's
- ensuring that State CPA's meet program requirements as defined by DAFP
- ensuring that current hydrologic unit feature datasets are available for State and county use
- State CPA's are attributed correctly
- overlaps do not exist between CPA's where multiple State CPA's may exist
- State Zones fall completely within State or national CPA's
- ensuring that State CPA's are available for County Office use in TERRA
- reviewing data annually to ensure that current CPA's are being used for CRP signup activity.

174 Rules for Delineating

A Naming Conventions

State CPA's will be maintained in a shapefile format that includes all State CPA's and priority zones for the State.

Name the shapefile "cpa_a_<st>_<prj>.shp" where <st> is the 2-letter State abbreviation and <prj> is the projection of the data. All shapefiles will be stored in GCS format. The following illustrates the naming convention for a potential Maryland CPA:

- cpa_a_md_gcs.shp
- cpa_a_md_gcs.shp.xml
- cpa_a_md_gcs.shx
- cpa_a_md_gcs.dbf
- cpa_a_md_gcs.prj.

B County Boundaries

CPA's that are defined by county boundary will use the U.S. Census Bureau TIGER geodatabase county boundaries as the source geometry.

CPA's that encompass multiple counties will have boundaries dissolved to minimize the number of features in the feature dataset.

Multipart polygons will not be allowed in the CPA feature dataset.

174 Rules for Delineating (Continued)

C Hydrologic Unit Boundaries

CPA's that are defined by HUC will use the USGS WBD as the source geometry. Current WBD data is available at **http://nhd.usgs.gov/wbd.html**.

CPA's may be defined by an aggregation of:

- entire 8-digit HUC
- entire 10-digit HUC
- entire 12-digit HUC.

CPA's that encompass multiple HUC's will have boundaries dissolved to minimize the number of features in the feature dataset.

Multipart polygons will not be allowed in the CPA feature dataset.

D Other Geographic Aggregations

CPA's may be defined by a:

- combination of county and 8-digit HUC
- combination of county and 10-digit HUC
- combination of county and 12-digit HUC.

CPA's defined by a combination of county boundaries and HUC boundaries will use the TIGER County Boundary feature dataset and the current WBD feature dataset as the source geometry.

CPA's will have boundaries dissolved to minimize the number of features in the feature dataset.

Multipart polygons will not be allowed in the CPA feature dataset.

Note: See **Exhibit 31** for instructions to create the State CPA dataset.

174 Rules for Delineating (Continued)

E Size Limitations for State CPA's

State CPA's are limited to no more than 25 percent of the available remaining State cropland.

Note: To determine available cropland, State Offices must subtract any applicable National CPA acreage.

To determine total available cropland acreage for the State.

Step	Process
1	Add the State CLU layer and any applicable National CPA's to ArcMap.
2	Select all CLU's that do not intersect the National CPA.
3	Select from the currently selected CLU's those features where the 3-CM Cropland attribute is "Yes".
4	Open the CLU attribute table and view the statistics for the CLU Calculated Acreage attribute. The size limitation for the State CPA is 25 percent of this total.

To determine whether the size of a State CPA is within the size limitation.

Step	Process
1	Add the State CLU layer and the State CPA's to ArcMap.
2	Select all CLU's that intersect the State CPA.
3	Select from the currently selected CLU's those features where the 3-CM Cropland attribute is "Yes".
4	Open the CLU attribute table and view the statistics for the CLU Calculated Acreage attribute. The sum of the CLU calculated acreage must not exceed the size limitation for the State CPA.

F Wildlife Zones

Wildlife zones may be established within State and National CPA's where proposed land may contribute to restoration of habitat of threatened or endangered species or contribute to the restoration of important and declining species of national, regional, State, or local significance. Restoration of rare and declining native habitat may also be addressed.

Wildlife zones within State CPA's must be based on the same geographic aggregation used to establish the State CPA's. Zone boundaries established within National CPA's must be based on county boundaries. Zones with different purposes may overlap.

Note: See **Exhibit 32** for instructions to delineate zones.

174 Rules for Delineating (Continued)

F Wildlife Zones (Continued)

Wildlife zone polygons shall be attributed with the following.

Attribute	Value
Name	"State Wildlife Habitat Priority Zone"
Type	"State WL"
Code	"WL"
State	The 2-letter postal abbreviation for the State

G Water Quality Zones

Water quality zones may be established within State and National CPA's where proposed land may contribute to groundwater or surface water quality impairment.

Water quality zones within State CPA's must be based on the same geographic aggregation used to establish the State CPA's. Zone boundaries established within National CPA's must be based on county boundaries. Zones with different purposes may overlap.

Note: See **Exhibit 32** for instructions to delineate zones.

Water quality zone polygons shall be attributed with the following.

Attribute	Value
Name	"State Water Quality Priority Zone"
Type	"State WQ"
Code	"WQ"
State	The 2-letter postal abbreviation for the State

H Air Quality Zones

Air quality zones may be established within State and National CPA's where agricultural crop production could impact air quality standards.

Air quality zones within State CPA's must be based on the same geographic aggregation used to establish the State CPA's. Zone boundaries established within National CPA's must be based on county boundaries. Zones with different purposes may overlap.

Note: See **Exhibit 32** for instructions to delineate zones.

174 Rules for Delineating (Continued)

H Air Quality Zones (Continued)

Air quality zone polygons shall be attributed with the following.

Attribute	Value
Name	"State Air Quality Priority Zone"
Type	"State AQ"
Code	"AQ"
State	The 2-letter postal abbreviation for the State

I State CPA Attributes

State CPA's shall be attributed with the following.

Attribute	Value
Name	<name of state> "State CPA"
Type	"CPA"
Code	"CPA"
State	The 2-letter postal abbreviation for the State

175 Relationships to Other Data

A TIGER County Boundary Dataset

CPA's based on county boundaries will use TIGER Geodatabase County as the source geometry for these CPA's.

B WBD

CPA's based on HUC boundaries will use USGS WBD as the source geometry. CPA's may be defined by an aggregation of:

- entire 8-digit HUC
- entire 10-digit HUC
- entire 12-digit HUC.

C CLU

Statewide CLU data is used to determine the number of cropland acres within CPA.

176 Rules for Release of CPA Data

A Basic Policy

CPA data does not contain PII and may be released. See 2-INFO to determine cost.

B Creating Compliant Metadata

*--FGDC-endorsed machine-readable metadata will be provided with all CPA data. See **paragraph 61**.--*

ISO-compliant metadata shall be provided with CPA feature datasets.

177-187 (Reserved)

Section 8 Service Center Location Feature Dataset

188 General Information

A Definition of Service Center Location Feature Dataset

The Service Center Location feature dataset identifies the location of a Service Center, State Office, or Program Delivery Point. A single point is used to identify the location regardless of the number of agencies or staff at the location.

Service Center locations are used to support emergency management, leasing, and other administrative functions at the State and National level.

B Data Sources for Service Center Locations

Service Center locations are created by using NAIP imagery, GPS data, geocoded address data, or a combination thereof.

189 Data Management and Responsibilities

A Agency Responsibilities

PDD is responsible for collecting and managing the Service Center locations. DAFO is responsible for maintaining office name and administrative information related to the Service Center.

B National Office Responsibilities

The National Office is responsible for:

- coordinating with State GIS Specialists to review and update Service Center locations annually
- ensuring that all USDA Service Centers are identified in the Service Center Point feature dataset
- ensuring that Service Center Location data is available for National, State, and County Office use.

189 Data Management and Responsibilities (Continued)

C State GIS Specialist Responsibilities

The State GIS Specialist is responsible for:

- updating and maintaining Service Center Point data for Service Centers and program delivery points within the State using best available
- verifying the accuracy of Service Center Point data
- ensuring that attributes are consistent with set national standards.

Note: Collection of GPS data may be delegated to Service Center employees, with the resulting data being compiled by the State GIS Specialist into a single Service Center Location feature dataset.

190 Rules for Collecting Service Center Location Data

A Naming Conventions

Service Center Locations will be maintained in a shapefile format that includes all FSA Service Centers and program delivery points within the respective State.

Name the shapefile “fsa_offices_p_<st>_wgs.shp” where <st> is the 2-letter State postal abbreviation. All shapefiles shall use the WGS84 projection. The following illustrates the naming convention for a potential Minnesota Service Center Location feature dataset:

- fsa_offices_p_mn_wgs.shp
- fsa_offices_p_mn_wgs.xml
- fsa_offices_p_mn_wgs.shx
- fsa_offices_p_mn_wgs.dbf
- fsa_offices_p_mn_wgs.prj.

190 Rules for Collecting Service Center Location Data (Continued)

B Service Center Attributes Defined

The point of the Service Center will be attributed using the following.

Attribute	Value
Name	The name of the office, using the county name and "Service Center". For Service Centers that administer multiple counties, each county shall be included with the name separated by hyphens. **Example:** "Stark-Billings USDA Service Center"
State	The 2-letter postal abbreviation for the State
County	Physical FSA County Name
City	City Name
FIPS	5-digit State and county FSA code <stccc> (Example, <24023>
Site_ID	Site number for the USDA Service Center listed in the FSA Service Center Locator web page at **http://offices.sc.egov.usda.gov/locator/app?state=us&agency=fsa**.
OIP_Code	OIP Code for the office listed in the FSA Service Center Locator web page at **http://offices.sc.egov.usda.gov/locator/app?state=us&agency=fsa**.

C Point Location

If using NAIP imagery to identify an office location, the point of the Service Center will be placed on the top (center) of the building. Data collected using GPS devices or geocoded addresses generally must be edited to correct the location to represent the center of the building.

To adjust or locate the Service Center location.

Step	Process
1	Add the Service Center Point layer and most recent NAIP Imagery to ArcMap.
2	Zoom to each point to determine correct positioning of the point location.
3	Edit as necessary.
4	Update the latitude and longitude based on the adjustment.
5	Open the Service Center attribute table and review attributes for completeness. Update information as needed.

191-246 (Reserved)

Part 5 Measurement Service

Section 1 Measurement Service and Site Inspections

247 Completing Measurement Service and Site Inspections

A Overview

FSA is required to perform measurement service and field visits for multiple program purposes including:

- Producer Requests
- Spot Checks
- Site Inspections
- Staking and Referencing.

This section provides the guidance for completing measurement service and field visit activities, including site inspections using mobile devices. 2-CP and other applicable program directives must be referenced for the policy requirements when completing field visit, measurement service rates, and tracking measurement service requests.

B Definition of Measurement Service

Measurement service is the act of identifying the length or area of land using either in-office measurement tools or field ground compliance equipment. A measurement service request is a producer request for any in-office measurement or acreage determination, or any field measurement or acreage determination that is not required by procedure.

C Definition of Site Inspection

A site inspection is the act of completing a field visit to verify or inspect field, land, or stored crop conditions. Measurement service for a site inspection may or may not be completed; however, digital pictures, GPS points, and other documentation may be obtained to describe and verify the inspection results. Reasons for site inspections may include:

- conservation inspections
- damage assessments and emergency management
- acreage reporting
- NAP inspections
- FSFL inspections
- RMA spot checks
- Service Center Office assessments.

248 Responsibilities

A National Office Responsibilities

The National Office is responsible for ensuring that instructions and equipment for completing inspections and measurement services are made available.

B State Office Responsibilities

The State GIS Specialist is responsible for providing training to field staff as needed to complete measurement service and field inspections and ensuring that correct procedure is followed.

C County Office Responsibilities

The County Office is responsible for using the most accurate technology available and following procedures and guidelines in this handbook and 2-CP.

249 Measurement Service Requests

A Acceptable Requests

Generally, the County Office may accept measurement service requests from a producer at any time for:

- in-office measurements using current imagery and measurement tools
- staking and referencing
- field measurements for length or acreage.

B Completing and Tracking Measurement Requests

Measurement service requests should be completed timely.

Measurement service requests must be tracked by the County Office and measurement service fees assessed. See 2-CP for completing FSA-409 and FSA-409A.

250 Staking and Referencing

A Definition of Staking and Referencing

Staking and referencing is measurement service to identify by field visit specific locations and mark points on permanent and temporary boundaries on a farm. Staking and referencing can be completed by navigating to geospatial data uploaded to a GPS unit or by other means provided in subparagraph D when GPS is not available.

This service is conducted at the request of a producer or per program requirements such as CRP enrollment allowing the producer to accurately plant, designate, or adjust acreage.

B Additional Definitions

The following definitions apply to staking and referencing.

Term	Definition
Temporary boundary	A boundary that is easy to identify and easily moved, such as a crop line or turn area between fields.
Permanent boundary	A boundary that is easy to identify but not readily moved, such as a property line, ditch, road, fence, or hedgerow.
Temporary fixed point	A point that is easy to identify and easily movable. **Note:** A stake referenced to a permanent point or a permanent point on a permanent boundary is a fixed point.
Permanent point or object	A point that is easy to identify and not easily moved, such as a boulder, tree, pole, or fence post.

251 Staking and Referencing Procedure

A How to Mark Points on Boundaries

Locate and mark points on:

- temporary boundaries with stakes
- permanent boundaries using either of the following:
    - paint the object
    - place a stake close to the permanent boundary to locate the point but far enough from the cultivated area to avoid interference with field operations.

Note: All marked boundaries should be identified with a GPS point.

B Where to Mark Points on Boundaries

Mark points on boundaries by placing stakes at:

- both ends of the field
- each change in direction in temporary boundary lines
- each junction of temporary and permanent boundaries.

Stake only 1 end of a field if measuring a row crop with the same number of rows planted for the length of the field and if planting begins along a straight line.

Note: All marked boundaries should be identified with a GPS point.

C Staking

To reference where the stake is placed a GPS point should be marked identifying the location of the stakes and provide the following information on the photocopy:

- the GPS points collected identifying the staked locations
- a description of the points
- identification of the relationship between the points
- the measurement between the points.

Note: Do not reference stakes placed as a guide for deductions. For information about deductions, see 2-CP.

251 Staking and Referencing Procedure (Continued)

D Procedure for Staking and Referencing When GPS Is Not Available

Use the steps in this table for staking and referencing in the field when use of a GPS unit is not available or does not obtain the accuracy needed for official measurement service. The use of a chain or wheel is still authorized.

Step	Action
1	Identify a minimum of 2 permanent points. One point must be on a permanent boundary.
2	Physically mark or place stakes on or near identified permanent points.
3	Mark these permanent points on the sketch or photocopy. If a photocopy is used in the field, a second photocopy may be needed for official files.
4	• Measure the distance between these points. • Record the distance and mark the stake reference on the sketch or photocopy.
5	Place a stake at a point along the boundary of the area to be measured. Each stake must be referenced to either of the following: • 2 fixed, recognizable points or objects, which are not necessarily visible on the photograph • a stake placed along a permanent boundary.
6	Mark the point in step 5 on the sketch or photocopy.
7	• Measure and record distance. • Mark the stake reference on the sketch.
8	Continue to place stakes at permanent and temporary points, marking and recording on the sketch or photocopy until the area to be measured is covered.
9	In Office, delineate measurements and staked locations using the Acreage Toolbar within the CLU Maintenance Tool in Citrix.
10	Create and print a map of the measurements. Include the following: • field number • acreage in the measured field.
11	Attach a copy of the map and any field notes to FSA-409 and file in FSA-409 folder.
12	If needed for documentation for reported acreage on FSA-578, include the map with the acreage report.

251 Staking and Referencing Procedure (Continued)

E Procedure for Staking and Referencing Using GPS

Use the steps in this table for staking and referencing using GPS.

For this example, the "F:\geodata\measurement_services\navigation" directory will contain the files for a measurement service field visit.

Note: Archive files by program year.

Example: F:\geodata\measurement_services\navigation\2017

The geodata folder and file naming convention identified can be used for all measurement services.

Step	Action
1	Identify the CLU field polygon or polygons by farm, tract, and CLU field number and notify the State GIS Specialist by e-mail of the needed polygons. **Note:** Other polygons or points can also be used. Work with the State GIS Specialist, to identify those.
2	The State GIS Specialist will use the GPS Automation Tool to convert the CLU field polygons into points at each vertex and at a specified interval. The State GIS Specialist will e-mail a map and the point shapefiles back to the County Office for upload to the GPS unit. See **Exhibit 44**.
3	After receiving the CLU field points' shapefile or shapefiles from the State GIS Specialist they can be uploaded to the GPS unit for navigation. Save the files to the "F:\geodata\measurement_services\navigation" directory. Prepared point shapefiles shall be uploaded to the GPS unit before leaving the office.
4	Shapefiles uploaded or transferred to the GPS unit can then be used to navigate to the points.
5	Physically mark or place stakes on or near identified permanent points.
6	Mark these points on the sketch or digital hard-copy map to be used for field notes.
7	Continue to place stakes at permanent and temporary points, marking and recording on the digital map until the area to be measured is covered.

251 Staking and Referencing Procedure (Continued)

E Procedure for Staking and Referencing Using GPS (Continued)

Step	Action
8	Ensure that the following are recorded on the GPS Measurement Service Map Template: • name of requestor • FSN • tract • field • measured acres • date measured • horizontal accuracy • GPS unit used • differential method used • reference station • by whom the measurement is performed.
9	Attach the field notes sketch or digital map and the official GPS Measurement Service digital map to FSA-409 and file in the FSA-409 folder. Attach a copy of the field notes sketch or digital map and the official GPS Measurement Service digital map to FSA-578. **Note:** Save the FSA-409 file to the "F:\geodata\measurement_services\navigation" directory. Name the file "nav_<program>_p_<stnnn>_<producername>".

252 Collecting GPS Data for Measurement Service Requests

A Collecting GPS Measurements

Refer to the application instructions for collecting GPS measurements in a point, line, or area format as follows.

GPS Collection Device	Paragraph Reference
Garmin GPSMap 76 Unit	See **paragraph 311**.
Trimble Juno 5B Enhanced	See **paragraph 328**.

B Storage and Archive of Collected GPS Measurements

The geodata folder and file naming convention identified can be used for all measurement services.

For this example, the "F:\geodata\measurement_services\collection" directory will contain the files for a measurement service field visit.

Note: Archive files by program year.

Example: F:\geodata\measurement_services\collection\2017

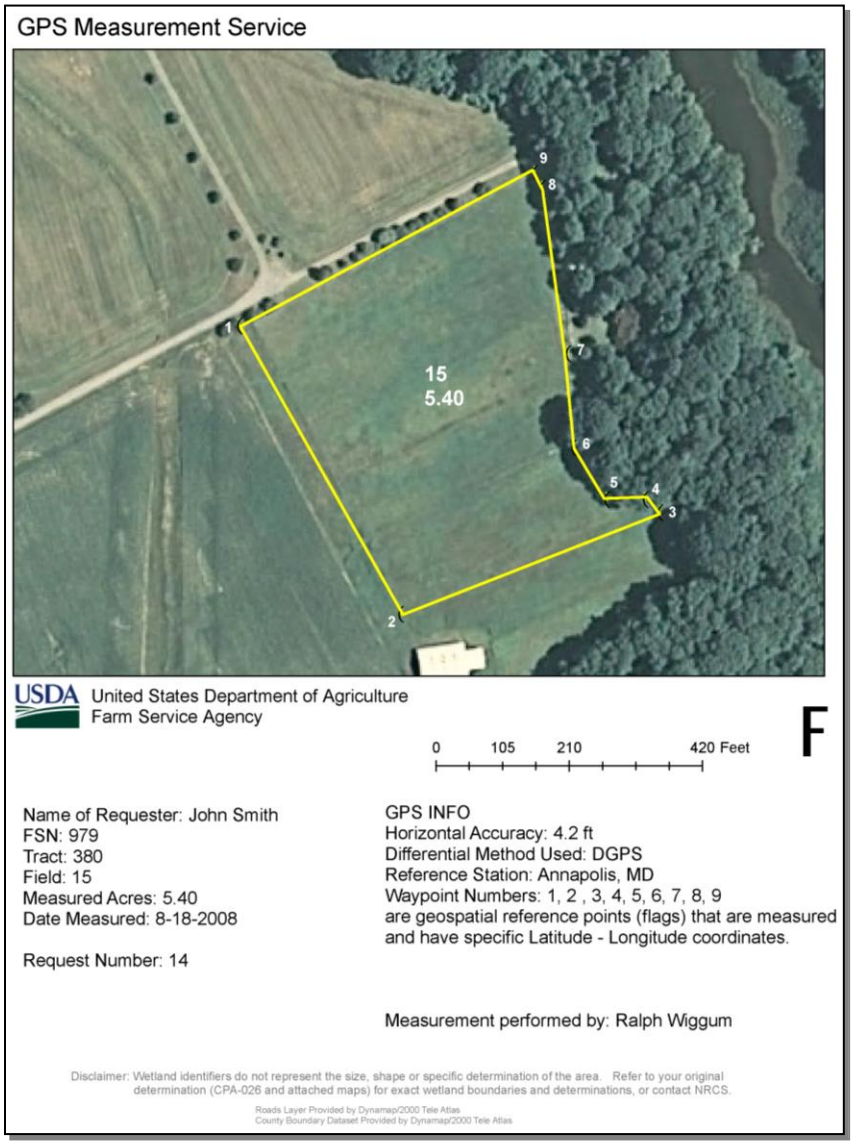
253 Documenting Completed Measurement Service

A Measurement Service Map

Measurement service completed should be documented on the GPS Measurement Service Map and included with all other measurement service records.

B Example of GPS Measurement Service Map Template

The following is an example of the GPS Measurement Service Map Template.



Note: This GPS Measurement Service Map Template example can be used for all measurement services. Adding a section of labeled points on the map is optional. The numbered points are GPS waypoint numbers with specific latitude and longitude coordinates.

254-275 (Reserved)

Part 6 Mobile Devices

Section 1 Management Practices and Standards

276 Overview

A Mobile Devices Overview

Mobile Devices such as handheld GPS units and digital cameras are used for FSA business activities, including:

- Measurement Services
- Spot Checks
- Disaster Assessment
- Identifying FSA Service Center Locations.

B GPS Overview

GPS is a satellite-based navigation system developed by the Department of Defense. GPS consists of 3 different segments – a space segment, a control segment, and a user segment.

The space segment consists of a network of 24 satellites that each transmit signals with the current satellite position and time.

The control segment of GPS is made up of worldwide monitor and control stations that maintain the satellites in proper orbits and maintain health and status of the GPS constellation.

The user segment consists of antennas and receivers that provide positioning information to a user.

Additional general information on GPS can be found at **http://www.gps.gov/systems/gps/**. GPS devices are used to determine the location, shape and size of features on the ground. Depending on the device, field data can be collected as points, lines, or polygons.

*--C Personal Mobile Phones for Business Use

Employees' private mobile phones can be legally subject to confiscation, searches, and similar actions if used in the course of official government business. Moreover, the Department strongly discourages the use of personal electronic devices.**--***

277 Responsibilities

A National Office Responsibilities

The National Office is responsible for:

- ensuring that mobiles devices and related software are available to each Service Center
- evaluating new technology to assess its suitability for FSA
- coordinating training on mobile devices and related software
- ensuring that mobile device software is certified and available on workstations.

B State Office Responsibilities

The State GIS Specialist is responsible for:

- maintaining inventory of mobile devices for their respective State or States
- providing training to certify mobile device users and monitoring proficiency on using GPS units
- ensuring that digital cameras meet the minimum requirements
- managing the creation and archival of GPS data and georeferenced photos
- coordinating with State Office Program Specialists on mobile device integration in program areas
- collaborating with National and State GIS Specialists to ensure consistency.

C County Office Responsibilities

The County Office is responsible for:

- following the standards and accuracy requirements for the collection and navigation of data
- maintaining proficiency in using mobile devices
- coordinating with the State GIS Specialist on creation and archival of GPS data and georeferenced photos.

278 GPS Location Data Collection Standards

A Horizontal Accuracy Standard

Location data acquired using GPS units will be collected using a minimum horizontal accuracy standard of 3 meters (9.8 feet). Real-time differential correction using WAAS or nationwide DGPS will be used for all acreage measurements.

Uncorrected (or autonomous) position data will not be used.

Note: When a Trimble Juno 5 B GPS unit is used and where WAAS is not available for real-time correction, data may be post-processed to achieve the 3 meter horizontal accuracy standard. Post-processing is not available for Garmin GPSMap 76 units. See **paragraph 330**.

B GPS Receiver Requirements

GPS receivers used for data collection for FSA must:

- routinely achieve 3 meter or better horizontal accuracy, using real time differential corrections
- operate in a 3D mode, where the receiver requires signals from a minimum of 4 satellites to determine latitude, longitude, and elevation. Locations calculated based on fewer than 4 satellites are not permitted for acreage measurements
- have enough data storage to store a typical day's worth of data collection.

C GPS Processing Software Requirements

GPS data processing software must:

- be capable of exporting data to ESRI shapefile format
- include projection information with exported data.

To use GPS data in the CRM Farm Records GIS Info window, data must:

- be stored in ESRI Shapefile format
- not contain elevation or route (Z or M) data
- be projected in WMAS
- be smaller than 2MB in size.

Note: See **Exhibit 49** for proper projection of data.

278 GPS Location Data Collection Standard (Continued)

D Field Notes

Field notes are recommended for each feature collected and as applicable, associated with the appropriate Agency form. The notes may document the following:

- date of collection
- GPS file name
- begin data logging time
- end data logging time
- PDOP value or level of accuracy
- name of GPS receiver operator
- comments.

E QC

All GPS data shall be visually inspected with the official imagery to ensure positional accuracy before use in FSA program determinations.

F Metadata

All GPS data collected for FSA use will have accompanying metadata.

GPS metadata will include the following attributes.

All Features	Point Features	Line and Area Features
Maximum PDOP	Everything in All Features plus:	Everything in All Features plus:
Receiver Type	Standard deviation	Average horizontal precision
Correction Status	Horizontal Precision	Worst horizontal precision
Date of Collection	Elevation	Average vertical precision
Time of Collection	Vertical Precision	Worst vertical precision
Data file name		
Total positions		
Filtered positions		

279 Accepting GPS Data From Outside Sources

A Overview

Other USDA Agencies or entities may collect geospatial data with mobile devices that may be used by FSA for program purposes. FSA must ensure that outside data meets minimum accuracy standards before use.

B Accepting GPS Data From Outside Sources

Data collected by an outside agency or entity for FSA program use must include:

- Metadata
- all GPS field data files.

Data should be provided to FSA in a compressed .ZIP format and be organized into a logical directory structure when received by e-mail.

Acceptance of outside data will be according to agency security guidelines.

280 Mobile Device Training for County Offices

A Overview

The State GIS Specialist will provide training to FSA employees, including field reporters and contract loss adjusters, in the following areas:

- familiarity with the GPS unit assembly, power sources, menus, and functions
- record and save points, tracks, or areas for acreage or distance measurements
- properly determine GPS unit settings, such as mode, map datum, time zone, units of measure, and orientation
- initiate a differential correction method
- download data from the GPS unit to the office workstation
- use the downloaded data in CRM Farm Records or Citrix applications to determine acreage or distance
- upload points to the GPS Unit and navigate to them in the field.

280 Mobile Device Training for County Offices (Continued)

B Trained Employee List

--The State Office will maintain a listing of employees who have successfully completed-- GPS training including the dates and times of the training.

281 Equipment Management

A New Units and Configurations

Research and purchase of new location enabled mobile devices including GPS units and GPS-enabled cameras will be coordinated by the National Office. State Offices and County *--Service Centers are not authorized to purchase new GPS unit product lines or other mobile devices for the purpose of collecting location data. However, State Offices and County Service Centers may supplement equipment supplies using the same manufacturer and model types purchased by the National Office.

Example: Through a National Office coordinated purchase, a State Office received 5 Garmin Montana 750i GPS units. The State Office may purchase an additional Montana 750i. The State Office would **not** be authorized to purchase a Garmin Oregon 700 because it does not match the product line coordinated by the National Office.--*

B Inventory and Registration

The GIS Specialist will maintain an inventory of all GPS location-enabled mobile devices including GPS units and location enabled digital cameras. The inventory must include the following:

- make/model
- serial number
- location
- device point of contact
- functional/operational status.

Location-enabled digital cameras must be inventoried on the FSA GIS SharePoint site. This will not only provide an inventory of FSA resources, but will also serve as a resource for purchasing new devices.

Note: Digital cameras without GPS capability do not need to be inventoried on the FSA GIS SharePoint Site.

* * *

281 Equipment Management (Continued)

* * *

C Equipment Repair and Replacement

The State GIS Specialist will coordinate repairs or replacement of GPS units with the *--National Office. Repairs and replacements will be handled on a case-by-case basis. If a GPS unit is not repairable, a replacement device should be coordinated by reallocating inventory within a State. If no replacement is available within the State, contact the National Office before purchasing additional equipment.--*

* * *

D Equipment Disposal

Broken or nonfunctioning GPS equipment should be inspected by the State GIS Specialist to determine whether any parts can be salvaged for use with other GPS units. Parts that cannot be reused should be properly disposed of according to State and local laws. Many States prohibit the disposal of electronic equipment. If not disposed of properly, these components can threaten the environment because of their hazardous ingredients.

*--Electronics recycling facilities can be found at **https://www.epa.gov/recycle/electronics-donation-and-recycling**.

After equipment is properly disposed of, remove the item from all inventory lists. Follow FPAC, MSD's Personal Property Management Program Policy for guidance on equipment disposal.--*

E Software Updates

Mobile devices often require software installation on the workstation and the devices to use the location enabled features. The State GIS Specialist will coordinate with the National *--Office and local OCIO-CEC staff:

- ensure that only approved software is installed
- download and install software as directed by the National Office and OCIO-CEC--*
- ensure that devices and workstations are updated when software version updates are available.

282-295 (Reserved)

Section 2 Digital Cameras

296 Digital Camera Standards

A Overview

Digital cameras are used to support FSA programs to document current conditions or events. Digital cameras have multiple uses, including:

- compliance spot checks, including RCO spot checks
- natural disaster damage assessment
- emergency management preparation
- farm loan chattel appraisals
- property inspections and environmental reviews
- outreach
- identifying CRP practices.

Each Service Center and State Office must have access to a digital camera. No specific camera model has been specified for FSA use. State Offices are permitted to replace cameras with the model of their choice, pending available funds. Existing cameras purchased by FSA are acceptable, however, when replacing, minimum requirements must be met.

The State GIS Specialist must maintain an inventory of digital cameras. County Offices must supply camera information to the GIS Specialist as requested or as changes occur.

Note: Location enabled cameras need to be approved by the National Office.

B Minimum Requirements

All new cameras must:

- have optical zoom capability
- have EXIF image and audio file specifications
- have watermark capabilities that include time and date
- have image size of 4 megapixels or above
- **not** require additional software to download photos (plug and play).

State Offices may opt for location-enabled digital cameras. Location-enabled cameras should have watermark capabilities that include latitude and longitude in addition to date and time.

296 Digital Camera Standards (Continued)

C Purchasing a Digital Camera

FSA State Offices are authorized to coordinate the purchase of new digital cameras for State and county Service Centers. State GIS Specialist will work with both the local OCIO-CTS-TSD staff and State Office purchasing specialist to select a digital camera that meets the minimum requirements. Fill out and submit AD-700 to **FSA-BAO-Requests@wdc.usda.gov**. Once funding has been approved, a State Office FSA Federal purchase card holder will conduct the purchase.

297-307 (Reserved)

Section 3 GPS Configurations

308 (Withdrawn--Amend. 3)

309 WAAS

A WAAS Overview

WAAS is a system of satellites and ground stations that provide real time GPS signal corrections, improving position accuracy. FAA and DOT operate the WAAS program for use in precision flight approaches. WAAS corrects for GPS signal errors caused by ionospheric disturbances, timing and satellite orbit errors, and provides vital integrity information regarding the health of each GPS satellite.

B WAAS Availability

WAAS works well only if the sky is unobstructed. In the northern United States, an obstruction to the south elevation of more than 15 degrees above the horizon can degrade the WAAS signal reception. WAAS specifications require a positional accuracy of 7.6 meters (25 ft) or better at least 95 percent of the time. WAAS accuracy can and will vary based on location, day, and time.

WAAS signal reception is ideal for open land and marine applications. WAAS provides extended coverage both inland and offshore compared to the land-based DGPS. WAAS does not require additional receiving equipment, while DGPS does.

* * *

* * *

310-313 (Withdrawn--Amend. 3)

314-323 (Reserved)

324-330 (Withdrawn--Amend. 3)

331-499 (Reserved)

Part 7 GIS Tool Support

Section 1 Enterprise Applications

500 Overview

A GIS Tools Overview

FSA has developed custom tools and applications to manage its Geospatial Data Portfolio. These tools and applications are used to create standardized datasets and maintain uniformity between States. Tools and applications are developed and distributed through a variety of methods, including enterprise web-based applications, customizations of existing commercial software, or scripts.

B CRM Farm Records

*** * *** CRM Farm Records *** * *** is an enterprise application that integrates Farm Records, CLU, and wetland point data. Farm Records and the CLU are maintained through *** * *** CRM Farm Records *** * ***. FSA wetland point data maintenance is performed using the Wetlands Toolbar in the Citrix CLU Maintenance Tool.

Edits to the CLU in CRM Farm Records *** * *** occur based on a variety of FSA program tasks, including:

- farm transfers
- reconstitutions
- adding new participating farms
- changes in program participation
- NRCS HELC or WC determinations
- land use changes
- measurement services
- corrections for topological errors.

See 10-CM for further information on CRM Farm Records maintenance.

501 Citrix

A Overview

The Citrix Environment provides access to an individual virtual desktop on an application server. The hosted desktop environment allows users to access published applications without requiring advanced end-user equipment and allows centralized administration of software and data.

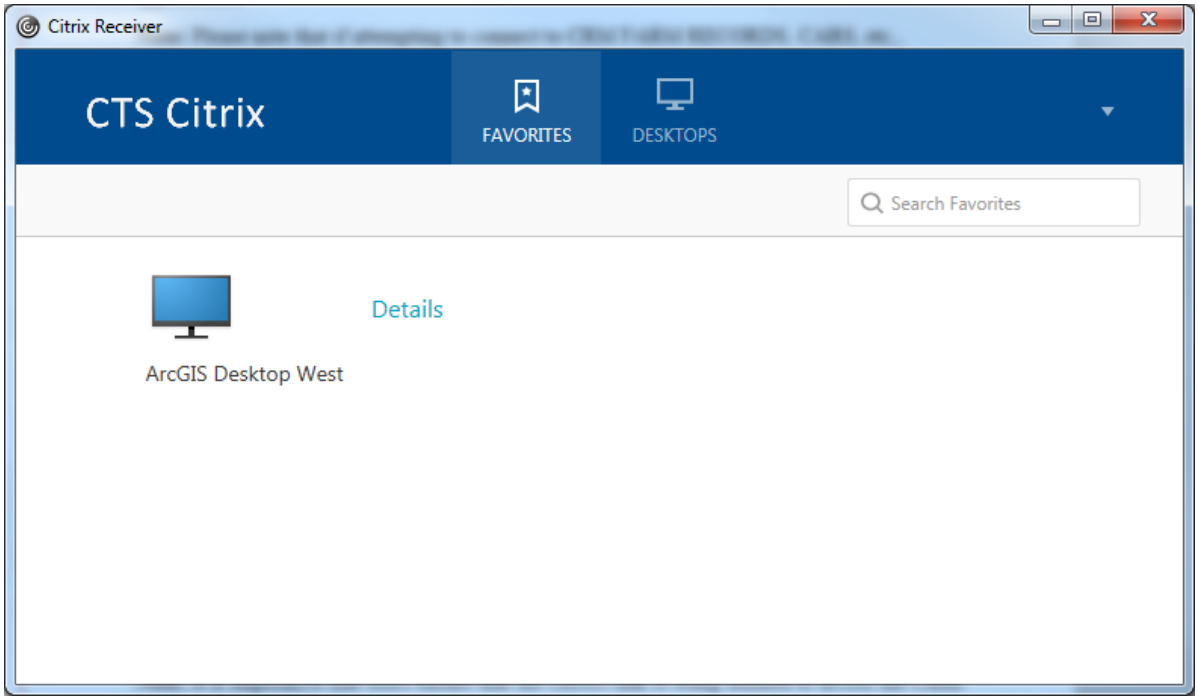
The Citrix Environment provides access to ArcGIS, Microsoft Office and other applications.

Note: Users will not access FSA Web Applications through Citrix. Use the locally installed version of Internet Explorer to access these applications.

To access the Citrix Environment, users must have the latest version of Citrix Receiver installed on their workstation. The latest version of Citrix Receiver can be installed from the Application Catalog at **http://aagmokcc3db3/CMApplicationCatalog/#/SoftwareLibrary/AppListPageView.xaml**.

Elevated permissions are not required to install Citrix Receiver.

The following is an example of the Citrix Receiver Screen.



501 Citrix (Continued)

B Citrix Access

Users with appropriate permissions access the Citrix Environment through 1 of 3 methods. Each method requires logging in with the user's LincPass.

The following are methods of access.

Access Method	Description
Internet Browser	Access the Citrix Storefront through **https://storefront-kcc.usda.net/Citrix/WestWeb**.
System Tray	Open the Citrix Receiver through the Windows System Tray. Use **https://storefront-kcc.usda.net/Citrix/West**.
Start Menu	CLICK "Start > All Programs > ArcGIS Desktop West".

Notes: URL's to access the Citrix Environment are not interchangeable. If **https://storefront-kcc.usda.net/Citrix/West URL** is used in an Internet browser, a blank screen will result and users will not be able to access the site. Similarly, if users attempt to use the Citrix Receiver with the **https://storefront-kcc.usda.net/Citrix/WestWeb** URL, users will not be able to sign in.

For further information, see **Exhibit 86**.

502 GET

A Overview

GET allows end users to define system variables within the Citrix to allow access to the CLU Maintenance Tool and TERRA. Once the variables are set, the user does not need to change the information unless access to another administrative county is needed or as directed by the State GIS Specialist.

B GET Settings

GET must be configured before CLU Maintenance Tool or TERRA can be used. See **Exhibit 87** for configuration instructions.

503 CLU Maintenance Tool

A Overview

The CLU Maintenance Tool is a custom ArcGIS tool developed by FSA and accessed through the Citrix environment. The CLU Maintenance Tool provides view access to the CLU and view and edit access to wetlands outside of CRM Farm Records.

Before migration to the integrated CRM Farm Records application, the CLU Maintenance Tool was used to edit the CLU based on changes in Farm Records. CLU editing is no longer available in CLU Maintenance Tool. The primary functions of the CLU Maintenance Tool are:

- editing wetland points
- creating subsets of CLU for producers or other authorized uses
- performing QC checks as directed by the State GIS Specialist
- performing acreage measurements
- custom map creation
- creating custom GIS data.

Administrative counties available to CLU Maintenance Tool users are based on settings defined in GET.

B CLU Maintenance Tool Access

Follow instructions in **Exhibit 88** to access the CLU Maintenance Tool.

The CLU Maintenance Tool menu provides access to the following toolbars in ArcGIS:

- CLU Maintenance Toolbar
- Acreage Toolbar
- Wetland Toolbar
- Utility Toolbar.

503 CLU Maintenance Tool (Continued)

C CLU Maintenance Toolbar

The following is an example of the CLU Maintenance Toolbar.



The following tools are available on the CLU Maintenance Toolbar.

Tool	Tool Name
	CLU Control Panel
	Multi-Item Label
	Search CLU and PLSS
	Measure Tool
	Delete Measure Graphics Tool
	Measure Tool Graphics
	Refresh
	Maintenance Tool About

Specific instructions for each tool are found in **Exhibit 89**.

503 CLU Maintenance Tool (Continued)

D Acreage Toolbar

The Acreage Toolbar contains tools to calculate and display acreage for CLU's and user-defined areas.

The following is an example of the Acreage Toolbar.



The following tools are available on the Acreage Toolbar.

Tool	Tool Name
	Draw New Acreage Graphic
	New Circular Acreage Graphic
	Acreage Graphic Vertex Editor
	Change Acreage Graphic Symbols
	Tool for Deleting Acreage Graphics
	Acreage Value

Specific instructions for each tool on the Acreage Toolbar are found in **Exhibit 90**.

503 CLU Maintenance Tool (Continued)

E Wetland Toolbar

The Wetland Toolbar enables authorized users to create, update and delete wetland points from the Wetland Point feature class. See **Exhibit 21**.

The following is an example of the Wetland Toolbar.



The following tools are available on the Wetland Toolbar.

Tool	Tool Name
	Add Point
	Modify Point
	Delete Feature(s)
	Move Point
	Bulk Attribute Wetland Points

503 CLU Maintenance Tool (Continued)

F Utility Toolbar

The Utility Toolbar contains miscellaneous tools that allow CLU Maintenance Tool users to create custom datasets, subsets of existing data, and other tasks.

The following is an example of the Utility Toolbar.



The following tools are available on the Utility Toolbar.

Tool	Tool Name
	FSA Inventory Tools
	Image Display
	Lat/Long Tool
	Subset Tool
	Toggle Selection Fill
	Cropland Acres Tool
	Export CLU Data

Specific instructions for the Utility Toolbar are located in **Exhibit 91**.

504 TERRA

A Overview

TERRA enables FSA County Office employees to create CRP scenarios to assess wildlife and environmental benefits specific to land offered for CRP. A TERRA report is generated to inform participants of these benefits and the potential rental payment based on the signup and practices included in the scenario. The CRP scenario generated in TERRA is uploaded into COLS to process the CRP offer.

B GET Settings

The TERRA application uses parameters set in GET to connect to CLU, Conservation and imagery web services, and to define folders used by the application. See **Exhibit 87**.

505 State Office SAP Backend Database Support

A DRT

The Thin Client ArcGIS DRT is used to correct synchronization errors between CLU data and Farm Records. DRT access is limited to State GIS Specialists and select backups. The DRT allows access to the CLU through Citrix to perform limited edits to the CLU, including:

- change farm number
- change tract number
- change CLU number
- delete CLU's.

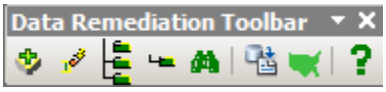
Note: After editing is done in DRT, the farm must be edited in CRM Farm Records (see 10-CM) so all edits can be synchronized. State GIS Specialists will coordinate with County Office employees to ensure that CRM edits on a farm are not done at the same time as DRT work. See **Exhibit 98**.

505 State Office SAP Backend Database Support (Continued)

B Data Remediation Toolbar

The ArcGIS DRT adds a pull-down menu to the main ArcMap menu bar.

The following is an example of the Data Remediation Toolbar.



The following tools are available on the Data Remediation Toolbar.

Tool	Tool Name
	CLU Control Panel
	Delete Features
	CLU Bulk Attribution
	Iterate Through CLU's
	Search CLU and PLSS
	Refresh
	Display Adjacent Counties
	About DRT

C DRT Authorized Uses

DRT will not be used to circumvent existing procedures such as reconstitutions or farm inactivations according to 10-CM. DRT will only be used to remediate discrepancies between GIS and CRM Farm Records Authorized DRT uses are:

- correcting failed reconstitutions
- correcting duplicate or overlapping CLU's created through editing in CRM Farm Records
- renumbering duplicate CLU numbers
- correcting erroneous farm and tract numbers
- deleting orphaned CLU's that are not associated with an active farm in MIDAS that cannot be removed through normal farm inactivation.

505 State Office SAP Backend Database Support (Continued)

D Failed Farm Reconstitutions

System errors within CRM Farm Records may cause farm combinations and divisions to fail. When a farm reconstitution fails, an e-mail notification will be sent to the approver. To correct a failed farm reconstitution, the DRT administrator will work with the County Office to identify which tracts were associated with each parent farm to reset the data to its original status. See 10-CM.

To correct a failed farm reconstitution, do the following.

IF CLU's…	THEN…
are attributed with the child farm numbers	use DRT to revert CLU's to the parent farm and tract numbers.
are attributed with the parent farm number	CED should try approving the reconstitution workflow again.

The DRT Administrator must know the parent farm structure before correcting data in DRT. The parent farm and tract structure can be identified by:

- discussing with the County Office employee
- accessing the legacy FRS and viewing tracts associated with the parent farm.

E Failed Tract Reconstitutions

System errors within CRM Farm Records may cause tract combinations or divisions to fail, creating a mismatch between CRM Farm Records and CLU data. Because there are no approval workflows for tract reconstitutions, users will not be notified that the reconstitution failed. Any attempt to edit the farm or tract after a failed tract reconstitution may result in a Tract Inconsistency Error.

To correct the Tract Inconsistency Error, the DRT administrator must:

- correct the CLU attributes in DRT to match the CRM Farm Records farm hierarchy

- submit a request to the GIS Remediation SharePoint site to reset the Tract Inconsistency flag.

505 State Office SAP Backend Database Support (Continued)

F Duplicate or Overlapping CLU's

Internal errors within CRM Farm Records may create duplicate or overlapping CLU's. Causes of duplicate or overlapping CLU's include:

- using multiple editing tools before saving and syncing
- renumbering fields after splitting or merging CLU's in the same edit session
- closing CRM Farm Records or being "timed out" while edits are being saved.

Duplicate or overlapping CLU's can be identified using the Select or Identification Tools in either CRM Farm Records or DRT.

To correct duplicate CLU's, use DRT to delete the duplicate CLU.

To correct overlapping CLU's, users will need to determine whether the overlap should be corrected using the Vertex editor tool in CRM farm records or if the CLU needs to be deleted with DRT.

CLU's with duplicate field numbers may not be able to be corrected in CRM farm records since 1 of the fields cannot be selected. In these cases, DRT should be used to renumber the CLU's.

G CLU and Farm Records Cleanup

CLU's may be deleted using DRT when CLU's are duplicated between counties because of a farm transfer before CRM Farm Records implementation or CLU's are not associated with a current farm in CRM Farm records.

CLU attributes may be corrected using DRT when CLU's were missed during a tract division. During a tract division, users create groups representing each new Child Tract to be created. Users must manually select CLU's and assign them to the correct resulting child tract. Small fields may be missed or incorrectly assigned to the wrong child tract during the process of selecting CLU's. Use of DRT to reassign the CLU's to the correct child tract is authorized.

Additional instructions on the use of DRT can be found in **Exhibit 98**.

506 National Office SAP Backend Database Support

A Background

Customized tools are available to authorized National Office users to facilitate data management within the CRM FRS. Common uses of the backend SAP-CRM support addresses requests such as:

- workflow redirects
- ARCPLC change election requests
- farm full extracts.

B Compare SAP/GIS Farm Data

The "Compare SAP/GIS Farm Data" tool gives a tabular display of all tracts and fields associated with a farm both from the GIS and the CRM perspective and allows the user to quickly identify discrepancies between the 2 sides of the record.

C Farm Status Change Into In-Creation

The "Farm Status Change Into In-Creation" tool is used to change the status of a farm from active, inactive, or pending to In-Creation. This tool is typically used when a tract has lost its GIS representation.

Temporarily changing the status of the farm to in-creation, combined with deleting the fields from the CRM side of the record allows the user to redraw the tract as if it were a new tract being created for the first time.

This tool is also used for certain farm level reconstitution remediation when pending status tracts need to be returned to active status. A farm's status cannot be changed directly from pending to active, but can be changed from pending to in creation and from there the status can be changed to active through the normal user interface.

Changing a farm's status from inactive to in-creation is rarely used because once a farm has been inactivated that farm number can never replicate to FRS as an active farm again, but in certain rare instances changing a farm's status from inactive to in-creation and then back to active is necessary for complicated data remediation usually performed in conjunction with a script to the FRS database.

506 National Office SAP Backend Database Support (Continued)

D Farm Full Extract Program

This program has 2 sub-tools:

- The "Validate Tract Inconsistencies" tool resets the tract inconsistency flag for a farm. This process makes the farm editable after a tract inconsistency error occurs. Users should be aware that even if the data condition causing the tract inconsistency error is corrected, the tract inconsistency error will continue to display during subsequent edit attempts until the CRM admin resets the flag.

- The "Manually Trigger Full Extract" tool resolves data discrepancies between GIS and CRM by populating the CRM hierarchy with any fields present in GIS but not present in CRM and by removing any fields present in CRM that do not have GIS representation.

Note: This tool only works within the existing tracts that are displayed in the CRM hierarchy. The full extract process will not add fields from GIS that are associated with a tract not present in the farm hierarchy and the full extract process will not delete a tract from the CRM hierarchy if no fields are present for that tract in GIS.

E ZMI_SYNCHRONIZE

This program synchs the CRM farm status with FRS and is primarily used to inactivate parent farms of reconstitutions in FRS when the inactivate status of the parent farm fails to replicate to FRS at the time the recon is approved.

F IB52

This is used to delete unwanted fields or tracts from the CRM side of the record. Typically used in conjunction with the "Farm Status Change to In-Creation" tool when GIS representation has been lost for a tract and needs to be redrawn. This tool is also used to add or delete business partners to farms, fields, or tracts from the back end application when characteristics of the farm prevent these edits from being processed through the user interface.

506 National Office SAP Backend Database Support (Continued)

G IB54

This is used to move tracts or fields from 1 farm to another. Typically used to perform manual reconstitutions when the size of the farm or tract record is so large that software is unable to successfully process the reconstitution.

H SE16

This is used to research workflows (reconstitutions, transfers, CCC-505, and CCC-517) to determine workflow status and recipients.

I SWIA

This is used to forward workflows to a designated recipient. Typically used when a recipient is not found in Org Structure or the intended recipient is not available to process the workflow so a request is made to forward the workflow to another recipient.

507-509 (Reserved)

Section 2 Custom Geospatial Tools

510 Custom ArcGIS Tools

A Overview

ArcGIS allows custom development of tools within ArcToolbox to automate tasks and provide advanced analysis of data. The National Office provides State GIS Specialists with a number of custom tools to compile and analyze data to support FSA business operations. Current tools are available in the following categories:

- Common Land Unit Tools
- Conservation Tools
- County Summary Tools
- Crop Data Tools
- Farm Records Tools
- Native Sod Tools
- Quality Control Tools
- Reconstitution Tools
- Batch Export Tools.

B National Office Responsibilities

The National GIS Team will:

- ensure that custom ArcGIS tools meet FSA business requirements to access and maintain geospatial data

- provide training for State GIS Specialists on custom ArcGIS Tool usage

- analyze best practices and State tool development for effectiveness and inclusion within the State GIS toolbox

- encourage collaboration with State GIS Specialists to reduce duplication of efforts in tool development

- ensure that datasets required to run custom ArcGIS tools are available.

510 Custom ArcGIS Tools (Continued)

C State GIS Specialist Responsibilities

The State GIS Specialist will:

- follow the provisions of this handbook
- coordinate with other State Office staff as needed to evaluate the tool outputs
- provide training and support on FSA geospatial data output
- use the results of custom GIS tools, as applicable to support data remediation and QC efforts
- coordinate with other State GIS Specialists and National Office staff as needed to evaluate best practices for new tool development
- archive all data required to run the tools as well as all data outputs that represent the end of the FY data.

Note: Many of these tools required users to download data from either the GIS SharePoint site or the Common Reports site. For detailed instructions see **Exhibit 16**.

511 Citrix Only Tools

A Overview

The Python Map Series toolbox requires an exported file geodatabase containing CLU and wetland point data for an administrative county. The Citrix Only Tools provide a user interface to export CLU data to file geodatabase format without requiring access to the CLU Maintenance Tool.

B Batch Export to GDB

For State GIS Specialist use only. CLU data is accessed through an ArcSDE instance in Citrix. The CLU data will be exported to a file geodatabase for use in Python Map Series or for other uses in ArcGIS Desktop. The Batch Export to GDB tool creates file geodatabases that are compressed into ZIP files. The ZIP file allows for faster copying from the Citrix environment to a local computer and reduces storage space requirements for archiving.

For further information on the use of this tool, see **Exhibit 99**.

512 Common Land Unit Toolset

A Create SHP for USDA

For State GIS Specialist use only. CLU data exported from the Citrix Environment using the Bulk Export to GDB tool contains different attributes than the original CLU specification. The "Create SHP for USDA" tool creates shapefiles with translated column names that are compatible with NRCS Customer Toolkit.

Exported shapefiles will be transmitted to County Office servers by the State GIS Specialist.

Note: The ZIP files created by the Bulk Export to GDB tool must be extracted before running this tool. For further information on the use of this tool, see **Exhibit 100**.

B Merge CLU GDB's

For State GIS Specialist use only. County CLU's in file geodatabase format can be merged together to create a single statewide dataset. Statewide CLU data will be analyzed to identify QC issues, create derived layers, and for other purposes.

The Merge CLU GDBs tool will create a file geodatabase containing CLU and, optionally, wetland point data for an entire State.

Note: The ZIP files created by the Bulk Export to GDB tool must be extracted before running this tool.

For further information on the use of this tool, see **Exhibit 17**.

512 Common Land Unit Toolset (Continued)

C Copy CLU to Server

For State GIS Specialist use only. NRCS and other USDA agencies use local copies of CLU in shapefile format for conservation planning and other purposes. CLU data will be distributed from the State Office to County Office servers through a Python script.

The CopyCLUtoServer.py script relies on a text file listing server names, county FIPS codes and county names to move files to the appropriate location. The serverlist.csv file can be reused for other copy processes.

Note: The CopyCLUtoServer.py script is not part of the Statewide CLU Tools Python toolbox and is available as a separate file.

For further information on the use of this script, see **Exhibit 101**.

513 Conservation Toolset

A Create CRP Layer

For State GIS Specialist use only. CRP contract information is added at the field level in the CRM Farm Records CRP Data assignment block. CRP Data entered in CRM Farm Records is available as a downloadable report from EDW on an as-needed basis.

The Create CRP Layer tool joins the exported data to CLU using a unique key comprised of the administrative State, administrative county, farm number, tract number, and field number. Joined CRP data can be used for QC and to analyze CRP participation.

A CRP layer can be created for an individual county using the exported CLU file geodatabase or as a statewide layer using a merged file geodatabase created using the Merge CLU GDBs tool. A Statewide CLU Layer must be created before running the Compare MIDAS CRP to CCMS tool.

Download the Farm Records Conservation Contract report from EDW before running this tool. See **Exhibit 16**.

For further information on the use of this tool, see **Exhibit 24**.

B Compare MIDAS CRP to CCMS

For State GIS Specialist use only. CRP contract information stored in CCMS should be compared to data loaded in the CRP Data assignment block in CRM Farm Records on a regular basis. The "Compare MIDAS CRP to CCMS" tool compares a statewide CRP layer to CCMS data distributed through the Common Reports SharePoint site and creates a report of discrepancies.

For further information on the use of this tool, see **Exhibit 25**.

514 Crop Data Toolset

A Build Crop Data Polygons

For State GIS Specialist use only. The Build Crop Data Polygons Tool joins tabular crop reporting data entered in CARS by County Offices and joins it to the CLU data at the field level to create a geographic representation of crops planted in a county.

The tabular crop reporting data must be downloaded from the GIS SharePoint site before using the Crop Data Tool. Once downloaded the crop data is joined with CLU at the field level. In cases where subfields are reported, the field will be duplicated with a record for each crop.

It may be necessary to update the crop code lookup table used by the Build Crop data polygons tool if changes have been made to the crop table. Instructions for updating the crop data table can be found in **Exhibit 102**.

Note: The Build Crop Data Polygons Tool can only be run for 1 county at a time. To automate the process of creating the crop data polygons for all counties in a State, a Python script is available to batch process all counties. Detailed instructions for the Build Crop Data Polygons tool can be found in **Exhibit 27**. Detailed instructions for the batch script can be found in **Exhibit 28**.

B Build Crop Data Polygons – EDW

For State GIS Specialist use only. The Build Crop Data Polygons – EDW Tool joins tabular crop reporting data entered in CARS by County Offices downloaded from EDW and joins it to the CLU data at the field level to create a geographic representation of crops planted in a county.

The tabular crop reporting data must be downloaded from EDW before using the Crop Data Tool. Once downloaded the crop data is joined with CLU at the field level. In cases where subfields are reported, the field will be duplicated with a record for each crop.

Unlike the Build Crop Data Polygons tool, the EDW version does not rely on an additional crop data table to determine crop names.

Note: The Build Crop Data Polygons EDW Tool can only be run for 1 county at a time. To automate the process of creating the crop data polygons for all counties in a State a Python script is available to batch process all counties. Detailed instructions for the Build Crop Data Polygons tool can be found in **Exhibit 27**. Detailed instructions for the batch script can be found in **Exhibit 28**.

514 Crop Data Toolset (Continued)

C Merge Cropland Feature Dataset

For State GIS Specialist use only. Detailed Crop Data feature dataset can be merged together to create a statewide crop acreage report layer using the "Merge Cropland Feature Classes" tool. The crop data feature dataset can be used to support several FSA program areas, including but not limited to:

- disaster designations, by providing better estimates of crops affected by a natural disaster
- Program Compliance by comparing field level HEL determinations to reported crops
- disaster programs, such as NAP, by showing crops affected by a disaster and similar crops by location
- farm loans, including emergency loans, by showing similar crops by location for purposes of establishing yields
- Farm Storage Facility Loans, by showing similar crops by location for purposes of establishing yields or comparing CLU to soil productivity data
- miscellaneous program administration by displaying crops that may be affected by policy changes
- administration, by displaying certification dates for workload reporting.

For further information on the use of this tool, see **Exhibit 29**.

515 Farm Records Toolset

A Split Farm Records Contact File by County

For State GIS Specialist use only. The "Split Farm Records Contact File By County" tool splits EDW contact reports for all operators, owners and other producers into individual county files in CSV format. The resulting data may be used to create letters or labels through a mail merge process or may be joined to CLU data.

Follow instructions in **Exhibit 16** to download files from EDW before running the tool.

For further information on the use of this tool, see **Exhibit 118**.

B Combine Similar CSV Files

For State GIS Specialist use only. The "Combine Similar CSV Files" tool combines 2 or more CSV files with identical header rows into a single output file. This tool is primarily used for combining CSV files downloaded from EDW when the total of all records exported would exceed 500,000 records.

Follow instructions in **Exhibit 16** to download data from EDW before running this tool.

For further information on the use of this tool, see **Exhibit 119**.

C Join Addresses to Selected Farms

For State GIS Specialist use only. The "Join Addresses to Selected Farms" tool creates a table of names and addresses of operators that match a selected set of farms. Selected farms may come from a selection set in a feature layer, such as CLU data or Crop Report data, or a CSV spreadsheet with a list of farm numbers.

Name and address tables may be used to create mail merge documents or contact lists for targeted outreach. Data created using this tool is considered PII and cannot be disclosed to a third party.

For further information on the use of this tool, see **Exhibit 120**.

515 Farm Records Toolset (Continued)

D Join Addresses to Selected Tracts

For State GIS Specialist use only. The "Join Addresses to Selected Tracts" tool creates a table of names and addresses of owners and other tenants that match a selected set of tracts. Selected tracts may come from a selection set in a feature layer, such as CLU data or Crop Report data, or a CSV spreadsheet with a list of tract numbers.

Name and address tables may be used to create mail merge documents or contact lists for targeted outreach. Data created using this tool is considered PII and cannot be disclosed to a third party.

For further information on the use of this tool, see **Exhibit 121**.

E Split Tract Base Acres by County

For State GIS Specialist use only. The "Split Tract Base Acre by County" tool splits farm records data, including base acres and HEL determinations exported from CRM Farm Records into individual county files in CSV format. Base acre data is primarily used at the State Office level to create reports for program administration.

For further information on the use of this tool, see **Exhibit 122**.

F Summarize Base Acres by County

For State GIS Specialist use only. This tool will create a summary of tract base acres by county. Files output by this tool will summarize the number of farms and tracts with bases by county, total number of base acres by county, and a breakdown of base acres by crop for each county.

Follow instructions in **Exhibit 16** to download the Farm Tract – Crop Level Tract Data file from EDW before running this tool.

For further information on the use of this tool, see **Exhibit 123**.

515 Farm Records Toolset (Continued)

G Summarize ARCPLC Election by County

For State GIS Specialist use only. Crop-level tract data is exported from EDW as a comma-separated text file for an entire State. Exported data may be used to identify farms and tracts with specific crop and program elections. The "Summarize ARCPLC Election by County Tool" aggregates tract data to a county level and creates a report for the State that identifies the number of farms in a county and the number of farms electing to participate in ARC-County, ARC-Individual, and PLC.

The summary table created by this tool can be joined to a county boundary dataset to create a map of participation by county.

Follow instructions in **Exhibit 16** to download the Farm Tract – Crop Level Tract Data file from EDW before running this tool.

For further information on the use of this tool, see **Exhibit 124**.

516 Quality Control Toolset

A Find Overlaps Tool

For State GIS Specialist use only. The Find Overlaps tool identifies overlapping geometry within the CLU and creates outputs identifying errors. Errors identified with this tool will be corrected using the GIS info assignment block in CRM Farm Records.

The Find Overlaps tool can be run on a county or statewide CLU file geodatabase.

Note: Running the Find Overlaps tool on individual county CLU feature datasets will not identify overlapping data between administrative counties.

Data created by this tool can be mapped at the State level to identify areas requiring additional attention.

For further information on the use of this tool, see **Exhibit 125**.

B Wetland Point Review

For State GIS Specialist use only. The "Wetland Point Review" tool reviews wetland points for incorrect administrative State and county codes. Results are stored in a text file. This tool is intended to be run by State GIS Specialists and is not for distribution to County Offices.

Corrections to erroneous administrative State and county codes are made using the CLU Maintenance Tool in Citrix.

For further information on the use of this tool, see **Exhibit 126**.

*--C Find Gaps in CLU Layer

For State GIS Specialist use only. The "Find Gaps in CLU Layer" tool compares a State or county CLU feature class to the minimum boundary rectangle of the data to identify potential gaps or missing polygons. The minimum boundary rectangle is a system-generated feature that represents the maximum extents of the CLU feature class. Results are stored in a feature class in the same geodatabase as the source CLU. This tool is intended to be run by State GIS Specialists and is not for distribution to County Offices.

For further information on the use of this tool refer to **Exhibit 126.1**.--*

517 Reconstitution Tools

A Find Non-Contiguous Tracts Tool

For State GIS Specialist use only. The "Find Non-Contiguous Tracts Tool" examines the spatial relationship between all parts of a tract to determine contiguity. Tracts that are not contiguous should be divided. See 10-CM.

For further information on the use of this tool, see **Exhibit 127**.

B Find Required Farm Combinations

For State GIS Specialist use only. The "Find Required Farm Combinations" tool uses farm partner, tract partner, CCMS and ARCPLC election data to examine farm and tract owner relationships to identify farms required to be combined based on requirements in 10-CM.

For further information on the use of this tool, see **Exhibit 128**.

*--C Identify Tracts Split by County Boundary Tool

For State GIS Specialist use only. The "Identify Tracts Split by County Boundary Tool" compares CLU boundaries to county boundaries to identify tracts that contain land physically located in multiple counties and is both greater than 10 acres in all physical locations and greater than 5 percent of the overall tract acreage. See 10-CM.

For further information on the use of this tool, see **Exhibit 128.1**.--*

518 Miscellaneous Tools

A Create Native Sod Layer

For State GIS Specialist use only. Native sod data is required to be tracked in the following States:

- Iowa
- Minnesota
- Nebraska
- Montana
- North Dakota
- South Dakota.

The "Create Native Sod Layer" tool joins native sod attributes collected in CRM Farm Records with CLU data to create a feature class that can be included on producer maps to identify fields subject to native sod provisions. See 1-NAP.

The State GIS Specialist can create the State Native Sod file geodatabase using the Create Native Sod tool to create a geographic representation of fields flagged as native sod.

518 Miscellaneous Tools (Continued)

A Create Native Sod Layer (Continued)

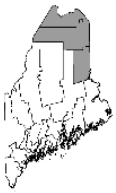
Data used and created by this tool is considered PII and is not for distribution.

For further information on the use of this tool, see **Exhibit 129**.

B Create County Summary Pages

For State GIS Specialist use only. The "Create County Summary Pages" uses CLU, CCMS, CARS and CRM Farm Records data to create information sheets that summarize FSA program participation for a county. A State summary option is available. The summary pages are output as HTML files which can be converted to PDF format.

The following is an example of a county summary page.



Common Land Unit Statistics

Farms in County	1,795
Tracts in County	2,744
Farm Operators and Other Tenants	1,144
Tract Owners	1,546
All Customers	1,803
Cropland Acres	144,846
Other Digitized Acres	225,385
Polygons in CLU	25,357

Common Land Unit data last updated August 03, 2016

Conservation Data

Number of Farms with CRP	55
Number of CRP Contracts	73
CRP Contract Acres	1,448

Expiration Year	Expiring Contracts	Expiring Acres
2016	2	2
2017	7	148
2018	5	6
2019	1	3
2020	7	232

Conservation data current as of August 05, 2016

Compliance Data

Highly Erodible Acres		20,624
Non-Highly Erodible Acres		92,583
Wetlands in County		4,951
	Inventoried	1,104
	Certified	3,586
	Unknown	261

Top 10 Commodities Reported to FSA

Crop	Farms	Acres
Potatoes	365	29,112
Grass	475	19,303
Rye	192	12,855
Barley	164	12,356
Oats	200	12,119
Broccoli	58	5,872
Clover	83	4,844
Turn Areas	240	2,726
Mixed Forage	6	2,595
Soybeans	19	1,250

CRP acres are not included in reported commodities
Crops reported for the 2016 Crop Year as of August 01, 2016

Base Acres

Farms with Base Acres	735
Farms with Bases Reduced to 0	23
Fully Based Farms	2
Total Base Acres	33,700
Total CRP Reduction Acres	0

Crop	Farms	Acres	Average Yield
Barley	504	19,220	53
Oats	466	12,225	65
Soybeans	68	891	24
Wheat	42	840	45
Canola	40	418	1,105
Corn	9	82	89
Mustard	4	21	608
Sunflowers	4	4	950

Base data current as of August 01, 2016

ARC/PLC Participation Summary

Farms with ARC/PLC Elections	738
ARC-CO Farms	143
ARC-IC Farms	0
PLC Farms	372
Farms with ARC-CO and PLC	223

The County Summary tool is intended as an annual report and should not be created before the final acreage reporting date for the crop year.

For further information on the use of this tool, see **Exhibit 130**.

519 Python Map Series Tool

A Overview

A critical component of GIS is the ability to provide usable information to customers on demand. Traditionally, FSA has provided maps to producers for use in reporting crop acreage for program eligibility purposes. Maps provided to producers must provide easy to understand information with PII redacted at the farm or tract level as appropriate.

By using ArcGIS 10's Data Driven Pages functionality, large volumes of maps may be rapidly created for all farms or tracts in a county. The Python Map Series Toolbox contains 3 tools to support map creation:

- Map Series –STO
- Map Series – STO – Combine PDFs by Operator
- Map Series – STO – Combine PDFs by Other Tenant.

Note: See **Exhibit 131** for specific instruction on use of these tools.

B Map Series – STO

The "Map Series – STO" tool creates producer maps needed for a variety of program operations. Each map is created as a PDF using either farm or tract numbers and contains only the information associated with the respective farm or tract. See **Exhibit 131** for specific instruction on use of this tool.

Note: GIS specialists are required to ensure that 1 set of new PDF's is generated before acreage reporting in each County Office.

C Map Series – STO – Combine PDFs by Operator

The "Combine PDFs by Operator" tool combines existing farm or tract maps created by Python Map Series into PDF's grouped by operator. Before running this tool, run the "Split Farm Text File by County" tool.

Note: See **Exhibit 132** for specific instruction on use of this tool.

519 Python Map Series Tool (Continued)

D Map Series – STO – Combine PDFs by Other Tenant

The "Combine PDFs by Other Tenant" tool combines existing farm or tract maps created by Python Map Series into PDF's grouped by other tenant. Before running this tool, run the "Split Tract Text File by County" tool.

Note: See **Exhibit 133** for specific instruction on use of this tool.

E Python Map Series - Citrix

Python Map Series Citrix is a variation of Python Map Series for CLU Maintenance Tool in the Citrix. MapSeries Citrix provides the same functionality as regular Map Series but with limitations on the number of maps that can be created at a time.

Note: See **Exhibit 134**.

520-599 (Reserved)

Part 8 Cartographic Standards

Section 1 National Map Standards

600 Cartographic Standards

A Background

Cartographic standards give maps and related FSA products a consistent appearance and ensure that each map contains relevant information that identifies the source, purpose, data sources, and geographic extent of the map.

Note: Cartographic standards are meant to establish a baseline for map quality. Some situations may require creation of maps that do not follow the cartographic standards established in this handbook.

Maps may be created for a number of agency purposes, including maps to show:

- payments by State or county
- program participation
- program eligibility by State or county
- FSA administrative information
- meeting locations.

B National Office Responsibilities

GIS Specialists at the National Office are responsible for providing cartographic services for a variety of purposes to support FSA mission areas. GIS Specialists creating national maps will use the guidelines established in this handbook to create consistent map products. In general, maps created for National Office use can be created using either of the following:

- National Program Map Template (**paragraph 601**)
- National Disaster Map Template (**paragraph 602**).

600 Cartographic Standards (Continued)

C State GIS Specialist Responsibilities

State GIS Specialists will develop 1 or more State-specific map templates to improve consistency in creating map products. Page orientation will be set at the discretion of the State GIS Specialist to accommodate the shape of the State and required map elements.

General guidelines for State map templates are provided in **paragraph 629**.

State GIS Specialists will also develop and use or make available a standard producer map template for County Office use. General guidelines for producer map templates are provided in **paragraph 655**.

D Access and Use Constraints

When creating maps using FSA program information, all static maps (printed or digital) will include disclaimer stating “For Internal Use Only” unless approval has been granted by the business owner.

601 National Program Map Template

A Required Map Elements

At a minimum, national maps will have the following elements:

- map title
- data frame showing the contiguous United States
- legend identifying thematic data
- official USDA logo
- agency identifying information: Farm Service Agency (text)
- date map created
- access and use constraints when applicable (ex., “For Internal Use Only”).

Note: No other USDA agency logos except for the official USDA logo will be used.

B Optional Map Elements

National maps may also include the following elements if needed:

- additional data frames showing Alaska, Hawaii and U.S .Territories as needed
- additional map explanation
- most recent revision date of data
- north arrow
- scale bar
- disclaimer.

C Page Layout Specifications

National maps are created in landscape format and are designed to print on letter-sized paper (8.5” x 11”).

601 National Program Map Template (Continued)

D Contiguous United States Data Frame Specifications

The data frame displaying the contiguous United States will be formatted with the following specifications.

Data Frame Property	Setting	Additional notes
Data Frame Name	CONUS	
Height	6.75 inches	
Width	10.5 inches	If additional data frames for Alaska, Hawaii or U.S. Territories are needed, set the width to 8.5”.
Horizontal (X) Position	0.25 inches	Position is measured from the lower-left corner of the data frame.
Vertical (Y) Position	1 inch	Position is measured from the lower-left corner of the data frame.
Border color	Black	
Border width	1 point	
Data Frame Projection	USA Contiguous Albers Equal Area Conic (WKID 102003)	
Data Frame Scale	1:20,000,000	If additional data frames for Alaska, Hawaii or U.S. Territories are needed, set the CONUS data frame scale to 1:22,000,000.

601 National Program Map Template (Continued)

E Map Element Specifications

The map element displaying the contiguous United States will be formatted with the following specifications.

Map Element	Setting	Additional Notes
Title	Position: Centered at the top of the page Size: 24 point Font: Arial Bold	
Scale Indicator	Position: Lower-right corner of the data frame	
Legend	Position: Lower-left corner of the data frame, positioned and sized so that the legend does not cover any data.	If additional data frames for Alaska, Hawaii or U.S. Territories are needed, position the legend on the right side of the page beneath the additional data frames.
USDA Logo	Position: Lower-left corner anchored .25” from the left and .25” from the bottom of the page Size: 0.73” wide, 0.5” high	
Agency Identifying Information	Font: Arial Size: 9 point Leading: -1 Alignment: Left Position: The top of the first line of text is aligned with the top of the USDA logo, with the lower-left corner anchored 1.125” inches from the left side of the page.	In ArcGIS, individual words or lines can be formatted in bold font separately from the rest of the text in the same text element by using the <BOL> and </BOL> tags to enclose the text.

601 National Program Map Template (Continued)

E Map Element Specifications (Continued)

Map Element	Setting	Additional Notes
Agency Identifying Information (Continued)	Text: "United States Department of Agriculture" displays on the first line in bold font. "Farm Service Agency" displays on the second line in bold font. Division name displays on the third line.	
Date	Date displays on the fourth line of the agency identifying information text block.	
Nondiscrimination Disclaimer	Include the USDA Nondiscrimination Statement as space allows. The mini-NDS "USDA is an equal opportunity provider, employer, and lender." may be used.	
Access and Use Constraint	Include text: "Internal Use Only" when applicable.	

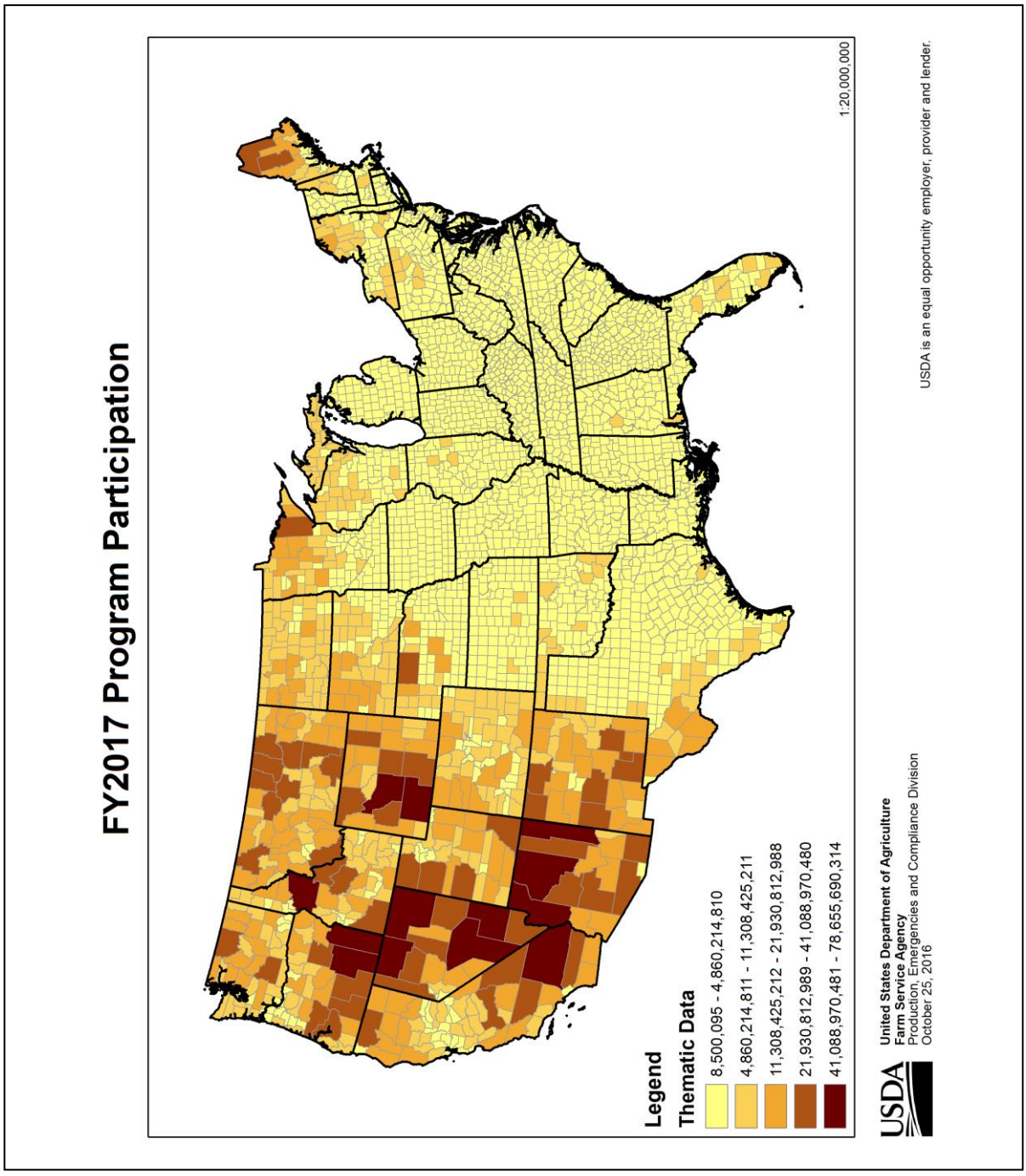
F Map Content Specifications

Content in the map data frame for national maps will vary based on the purpose of the map, however all national maps will display State boundaries. State boundaries will be represented as a black boundary with a 1.5 point width. County boundaries will be added to the map when representing data at a county level. County boundary width will not exceed 0.5 point width. County boundary color may vary dependent on other data represented on the map, but should display as light- to medium-gray.

601 National Program Map Template (Continued)

G National Program Map Example

The following is an example of a national program map.



602 National Disaster Map Template

A Background

The National Disaster Map template provides a consistent format for maps that document natural disasters or other emergencies. Disaster maps are designed to clearly identify the event, location of the event, and counties eligible for assistance through various FSA programs.

B Required Map Elements

The National Disaster Map Template will be used to identify:

- Secretarial disaster designations
- APLN's
- quarantine designations
- disaster program eligibility.

At a minimum, national disaster maps will have the following elements:

- map title
- data frames showing the contiguous United States, Alaska, Hawaii, Puerto Rico, and the U.S. Virgin Islands

  Note: As necessary, the Puerto Rico and U.S. Virgin Islands data frames may be replaced with other U.S. Territories.

- legend identifying county designation or available assistance
- USDA logo
- agency identifying information
- date map created
- access and use constraints when applicable (ex., "For Internal Use Only").

Note: No other USDA agency logos except for the official USDA logo will be used.

602 National Disaster Map Template (Continued)

C Optional Map Elements

National disaster maps may also include the following elements if needed:

- additional data frames showing other U.S. Territories as needed
- additional map explanation
- most recent revision date of data
- north arrow
- scale bar
- disclaimer.

D Page Layout Specifications

National maps are created in landscape format and are designed to print on letter-sized paper (8.5" x 11").

E Contiguous United States Data Frame Specifications

The data frame displaying the contiguous United States will be formatted with the following specifications.

Data Frame Property	Setting	Additional notes
Data Frame Name	CONUS	
Height	7.25 inches	
Width	7.675 inches	
Horizontal (X) Position	0.25 inch	Position is measured from the lower-left corner of the data frame.
Vertical (Y) Position	0.425 inch	Position is measured from the lower-left corner of the data frame.
Border color	Black	
Border width	1 point	
Background color	No color	
Data Frame Projection	USA Contiguous Albers Equal Area Conic (WKID 102003)	
Data Frame Scale	1:25,000,000	Data should be positioned within the data frame so the center coordinates of the data align with 31.5 degrees North, 96.5 degrees west. Set the data frame scale, then se the "Go To XY" toolbar in ArcMap to enter the coordinates. Use the "Pan To" tool to align the data.

602 National Disaster Map Template (Continued)

F Alaska Data Frame Specifications

The data frame displaying Alaska will be formatted with the following specifications.

Data Frame Property	Setting	Additional notes
Data Frame Name	Alaska	Data frame name displays in the lower-left corner of the data frame in black 9 point Arial font.
Height	2.375 inches	
Width	2.75 inches	
Horizontal (X) Position	10.75 inches	Position is measured from the upper-right corner of the data frame.
Vertical (Y) Position	7.675 inches	Position is measured from the upper-right corner of the data frame.
Border color	Black	
Border width	1 point	
Background color	No color	
Data Frame Projection	Alaska Albers Equal Area Conic (WKID 3338)	
Data Frame Scale	1:50,000,000	Data should be positioned within the data frame so the center coordinates of the data align with 62.5 degrees North, 155.5 degrees west. Set the data frame scale, then se the "Go To XY" toolbar in ArcMap to enter the coordinates. Use the "Pan To" tool to align the data. Data frame scale text displays in the lower-right corner of the data frame.

602 National Disaster Map Template (Continued)

G Hawaii Data Frame Specifications

The data frame displaying Hawaii will be formatted with the following specifications.

Data Frame Property	Setting	Additional notes
Data Frame Name	Hawaii	Data frame name displays in the lower-left corner of the data frame in black 9 point Arial font.
Height	2.375 inches	
Width	2.75 inches	
Horizontal (X) Position	3 inches	Position is measured from the upper-right corner of the data frame.
Vertical (Y) Position	3.575 inches	Position is measured from the upper-right corner of the data frame.
Border color	Black	
Border width	1 point	
Background color	No color	
Data Frame Projection	Hawaii Albers Equal Area Conic (WKID 102007)	
Data Frame Scale	1:10,000,000	Data should be positioned within the data frame so the center coordinates of the data align with 20.5 degrees North, 157.5 degrees west. Set the data frame scale, then se the “Go To XY” toolbar in ArcMap to enter the coordinates. Use the “Pan To” tool to align the data. Data frame scale text displays in the lower-right corner of the data frame.

602 National Disaster Map Template (Continued)

H Puerto Rico Data Frame Specifications

The data frame displaying Puerto Rico will be formatted with the following specifications.

Data Frame Property	Setting	Additional notes
Data Frame Name	Puerto Rico	Data frame name displays in the lower-left corner of the data frame in black 9 point Arial font.
Height	2.375 inches	
Width	2.75 inches	
Horizontal (X) Position	10.75 inches	Position is measured from the upper-right corner of the data frame.
Vertical (Y) Position	5.2375 inches	Position is measured from the upper-right corner of the data frame.
Border color	Black	
Border width	1 point	
Background color	No color	
Data Frame Projection	Puerto Rico UTM Zone 20N (WKID 3920)	
Data Frame Scale	1:5,000,000	Data should be positioned within the data frame so the center coordinates of the data align with 18.25 degrees North, 66.5 degrees West. Set the data frame scale, then se the “Go To XY” toolbar in ArcMap to enter the coordinates. Use the “Pan To” tool to align the data. Data frame scale text displays in the lower-right corner of the data frame.

602 National Disaster Map Template (Continued)

I Other Territories Data Frame Specifications

The data frame displaying the U.S. Virgin Islands or other territories as appropriate will be formatted with the following specifications.

Data Frame Property	Setting	Additional notes
Data Frame Name	U.S. Virgin Islands (or name of other territory)	Data frame name displays in the lower-left corner of the data frame in black 9 point Arial font.
Height	2.375 inches	
Width	2.75 inches	
Horizontal (X) Position	10.75 inches	Position is measured from the upper-right corner of the data frame.
Vertical (Y) Position	2.8 inches	Position is measured from the upper-right corner of the data frame.
Border color	Black	
Border width	1 point	
Background color	No color	
Data Frame Projection	Territories in the Pacific Ocean use WMAS.	
Data Frame Scale	1:2,000,000 (or appropriate scale for territory)	Data should be centered within the data frame. Data frame scale text displays in the lower-right corner of the data frame.

602 National Disaster Map Template (Continued)

J National Disaster Map Element Specifications

The map element displaying the contiguous United States will be formatted with the following specifications.

Map Element	Setting	Additional Notes
Title	Position: Centered at the top of the page Size: 24 point Font: Arial Bold	Color may be changed between black and white depending on map type. Dark title frames, e.g. blue or green, should use white text.
Title Frame	Position: Centered at the top of the page Width: 10.5 inches Height: 0.5 inch	The title frame provides color coding to easily identify the type of map: • Secretarial Disaster Designations use Autunite Yellow (RGB 255-255-115) • Presidential Declarations use Lapis Lazuli Blue (RGB 0-92-230) • APLN use Leaf Green (RGB 56-168-0) • Quarantine Designation use Mars Red (RGB 255-0-0).
Legend	Position: Lower-right corner of the data frame, positioned and sized so that the legend does not cover any data.	
USDA Logo	Position: Lower-left corner anchored .375” from the left and .625” from the bottom of the page Size: 0.73” wide, 0.5” high	

602 National Disaster Map Template (Continued)

J National Disaster Map Element Specifications (Continued)

Map Element	Setting	Additional Notes
Agency Identifying Information	Font: Arial Size: 9 point Leading: -1 Alignment: Left Position: The top of the first line of text is aligned with the top of the USDA logo, with the lower-left corner anchored 1.125" inches from the left side of the page. Text: "United States Department of Agriculture" displays on the first line in bold font. "Farm Service Agency" displays on the second line in bold font. Division name displays on the third line.	In ArcGIS, individual words or lines can be formatted in bold font separately from the rest of the text in the same text element by using the <BOL> and </BOL> tags to enclose the text.
Date	Date displays on the fourth line of the agency identifying information text block.	
Disclaimer	Include the USDA Nondiscrimination Statement as space allows. The mini-NDS "USDA is an equal opportunity provider, employer, and lender." may be used.	
Access and Use Constraints	Include "For Internal Use Only" when applicable.	

602 National Disaster Map Template (Continued)

K Disaster Map Content Specifications

Content in the map data frame for national disaster maps may vary based on the event, however all national disaster maps will display State boundaries. State boundaries will be represented as a black boundary with a 1.5 point width. County boundaries will be added to the map when representing data at a county level.

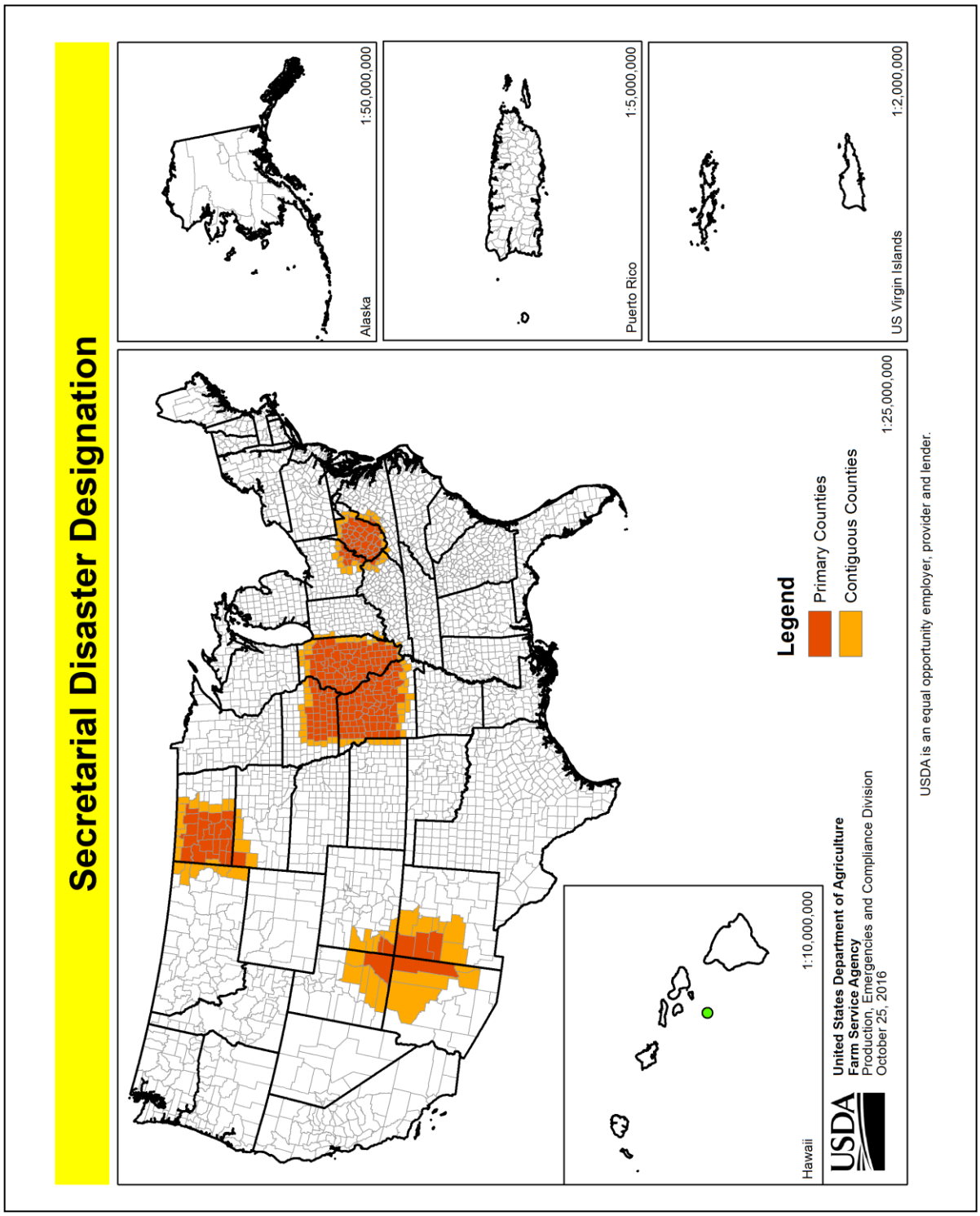
County boundary width will not exceed 0.5 point width. County boundary color may vary dependent on other data represented on the map, but should display as light- to medium-gray.

Primary counties in secretarial disaster designations, presidential declarations, APLN's, and quarantine designations are symbolized with "Mars Red" fill (RGB 255-0-0). Contiguous counties are symbolized with "Electron Gold" fill (RGB 255-170-0).

602 National Disaster Map Template (Continued)

L National Disaster Map Template Example

The following is an example of a national disaster map template.



603-628 (Reserved)

Section 2 State Map Standards

629 State Map Template

A Required Map Elements

At a minimum, State maps will have the following elements:

- map title
- data frame showing the full extent of the State
- legend identifying thematic data, as needed
- official USDA logo
- agency identifying information
- date map created
- USDA Nondiscrimination Statement (see 16-AO).

Note: No other USDA agency logos except for the official USDA logo will be used.

B Optional Map Elements

State maps may also include the following elements if needed:

- additional data frames
- additional map explanation
- most recent revision date of data
- north arrow
- scale bar
- disclaimer.

C Data Frame Specifications

The State GIS Specialist should choose a projected coordinate system for the State map template that minimizes distortion. Acceptable coordinate systems include:

- the majority UTM zone for the State

- State plane

- equal Area or Conformal Conic projections where the central meridian is adjusted to match the longitude at the approximate center of the State.

629 State Map Template (Continued)

C Data Frame Specifications (Continued)

Map templates should not use GCS (Plate Carrée) or Web Mercator projections.

For instructions on how to create a State map template, see **Exhibit 165**.

D Create a Data Driven Pages Map Document

Data Driven pages allows the quick and easy creation of a series of layout pages from a single map document. A feature layer, or index layer, divides the map into sections based on each index feature in the layer and generates 1 page per index feature. An example of a feature or index layer is a county dataset.

For instructions on how to create a data driven pages map document, see **Exhibit 166**.

630-654 (Reserved)

Section 3 Producer Maps

655 Producer Maps

A Providing Maps to Producers

Maps will be provided to any producer with an interest in the farm under the following circumstances:

- upon the producer's request
- when new official imagery is received
- each time a reconstitution is completed
- when changes in the owner or operator occur
- when changes to CLU boundaries occur
- when changes to official acreage occur
- before filing an acreage report.

Note: Producers will not be charged for maps of farms in which they have an interest.

See **Exhibits 131** and **134** for information on how to create producer maps.

B Required Producer Map Elements

Maps provided to producers will include the following elements:

- Agency identifying information
- Administrative State
- Administrative county
- farm number
- tract number
- field (CLU) number
- CLU calculated acreage (official acreage)
- field-level HEL status
- cropland status
- CLU boundaries
- wetland point data
- CRP participation

655 Producer Maps (Continued)

B Required Producer Map Elements (Continued)

- most recent official imagery and year acquired
- legend
- program year
- physical location county
- scale indicator
- north arrow
- disclaimer
- USDA Nondiscrimination Statement.

C Optional Map Elements

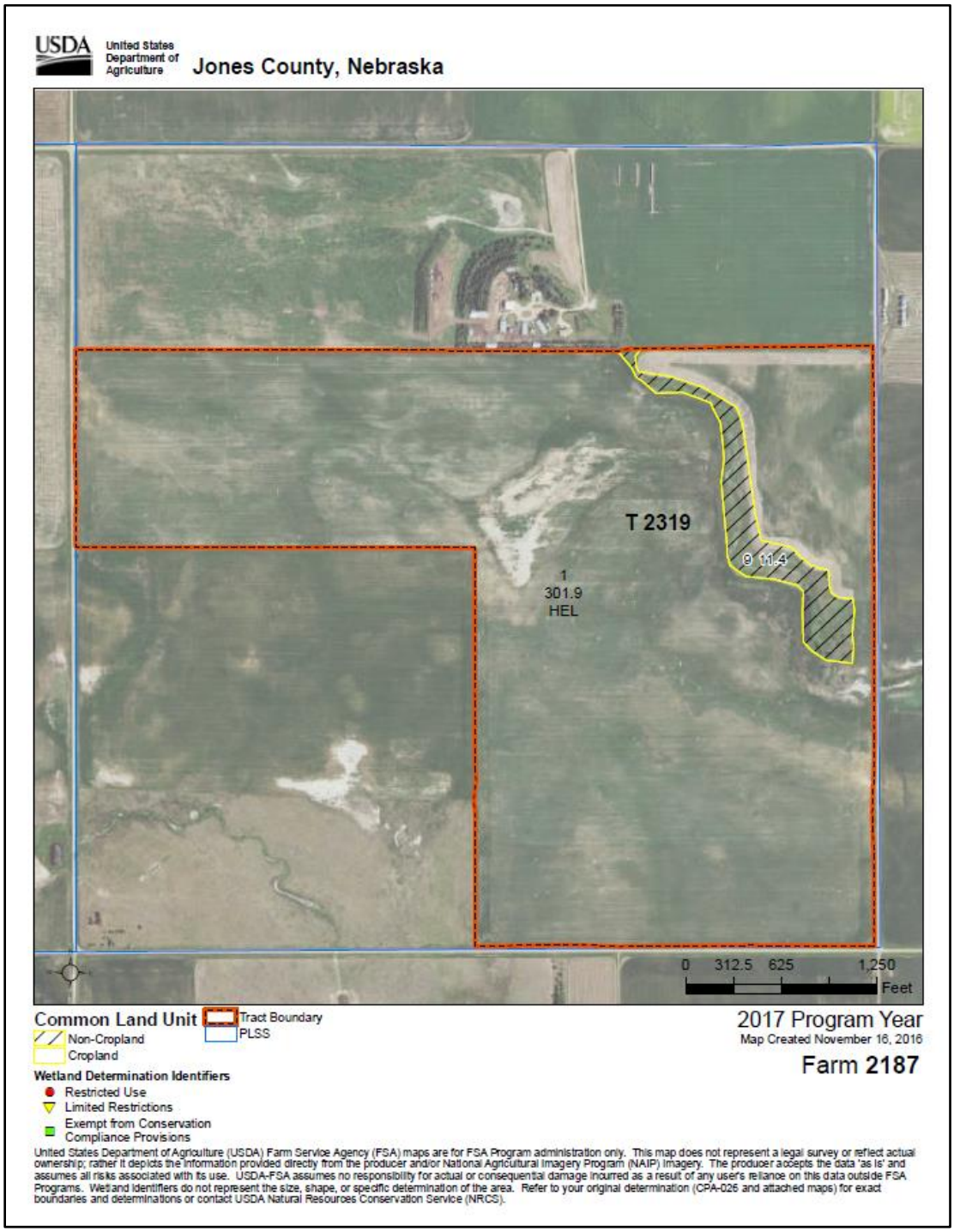
Optional map elements include:

- section, township, and range
- roads
- other contextual geographic data to assist in identifying location
- other program participation information.

655 Producer Maps (Continued)

D Producer Map Example

This is an example of a producer map with neighboring farm and tract data redacted.



655 Producer Maps (Continued)

E Identifying CLU on Producer Maps

The following specifications are used to identify CLU information on a map.

Area	Symbology	
	Color	**Line Thickness or Point Size**
CLU (field boundary)	Yellow (Outline)	0.5
Tract Boundary (optional) The tract boundary is an optional layer and should display above the CLU in the table of contents if used. Additional line symbology, e.g. black or white dash marks, may be used to increase contrast when reproducing maps in black and white.	Red (Outline)	3
PLSS Boundary (if available)	Blue (Outline)	0.5
Wetlands	Varies based on type of wetland. See **paragraph 113** for wetland symbols and definitions.	8

F Labeling Areas on Producer Maps

Use the following table to label or otherwise identify producer information on the map. All text will use Arial or Helvetica typeface.

Label	Placement
Farm Number	Farm number will be shown in the margins of the map.
Tract Number	Tract number will be shown in the margins of the map. If a map depicts multiple tracts belonging to the same farm, each tract should be enclosed by a tract boundary and labeled individually on the map.

655 Producer Maps (Continued)

F Labeling Areas on Producer Maps (Continued)

This table represents a description of the required elements for producer maps.

Label	Placement
CLU (field) Number	CLU number will be labeled on the map in black or white depending on imagery background color.
CLU Calculated Acres	CLU Calculated Acres will be labeled on the map in the same text block as the CLU number.
NRCS Classified Areas: • HEL • NHEL • EHEL • UHEL	All NRCS HEL statuses will be labeled on the map in the same text block as the CLU number. "HEL" to show a "highly erodible" determination. "NHEL" to show a "not highly erodible" determination. "EHEL" to show a "exempt from" determination. "UHEL" to show an "undetermined" status.
Non-cropland	Non-cropland will be labeled "NC" within the delineated area on the map, or clearly identified using unique symbology with the symbology clearly indicated in the map legend.
CRP	Land currently enrolled in CRP will be labeled "CRP" within the delineated area on the map, or clearly identified using unique symbology with the symbology clearly indicated in the map legend.
Agency identifying information	Follow USDA Visual Design Standards to identify the agency. The USDA logo will display in the margin with the full text "United States Department of Agriculture". No other agency logos will display on the map.
Administrative county and State	The full name of the administrative county and State will display near the top of the page in the margin, e.g. "Jones County, Nebraska".
Program year	The program year for the map will display in the map margin.
North arrow	
Physical location	

655 Producer Maps (Continued)

F Labeling Areas on Producer Maps (Continued)

Label	Placement
Most recent official imagery and year acquired	
Legend	A legend for all uniquely symbolized data on the map will be provided. RGB values for imagery data will not display in the legend.
Scale indicator	
Disclaimer	The following disclaimer will display at the bottom of the map page: "United States Department of Agriculture (USDA) Farm Service Agency (FSA) maps are for FSA Program administration only. This map does not represent a legal survey or reflect actual ownership; rather it depicts the information provided directly from the producer and/or National Agricultural Imagery Program (NAIP) imagery. The producer accepts the data 'as is' and assumes all risks associated with its use. USDA-FSA assumes no responsibility for actual or consequential damage incurred as a result of any user's reliance on this data outside FSA Programs. Wetland identifiers do not represent the size, shape, or specific determination of the area. Refer to your original determination (CPA-026 and attached maps) for exact boundaries and determinations or contact USDA Natural Resources Conservation Service (NRCS)."
USDA Nondiscrimination Statement	Include the shortened USDA Nondiscrimination Statement "USDA is an equal opportunity employer, lender and provider" at the bottom of the page.

Note: Differences in geography may require variation from the labeling requirements in this subparagraph. In situations where fields are too small to have all required elements labeled clearly, a table may be added to the template. When using a table, fields will be labeled with the CLU number and the CLU number will be included on the table with the balance of the required elements.

656 Disaster Map Attachments to Situation Reports

A Overview

SITREP is a vital instrument to support, communicate, coordinate, and maintain details (situational awareness) of the situation activities and resources during situations and circumstances that could directly or indirectly impact or influence FSA resources or mission.

FSA uses SITREP to keep senior management informed, updated, and advised on emergency situations and associated follow-up activities.

B SITREP Map Specifications

See 1-SEM for SITREP Map Specifications.

657-760 (Reserved)

Part 9 Agency Support

761 Using GIS to Support FSA

A Overview

FSA uses GIS to support the implementation, delivery, and management of FSA programs. The State Office GIS Specialist has the tools and skill sets to provide support to program and division needs. The GIS Specialist will provide geospatial support to the State Office, Service Centers, as well as other State GIS Specialists, and the National Office in all areas related to geospatial information, tools, technical support or reports. This will facilitate standardization and overall geospatial coordination internally for FSA between States and the National Office.

B Support Opportunities

GIS Specialist will provide geospatial support to other FSA staff and program applications as applicable. Support includes but is not limited to:

- spatial analysis concepts – building relationships between tabular data and spatial data
- basic image interpretation
- limitations of datasets
- definition of geospatial terms
- interpreting QC findings.

The GIS Specialist will work and coordinate efforts with the:

- SED and Executive staff
- Farm Program staff
- Farm Loan Program staff
- Administrative staff
- County Office reviewers.

762 Examples of GIS Support

A Overview

This paragraph provides examples of GIS support for FSA operations.

B SED and Executive Staff Support Examples

The SED and Executive staff, including Public Relations staff and District Directors, can used GIS to assess State resources, outreach, and provide tools for decision making.

Example 1: County Summary Pages (**Exhibit 130**)

SED and STC are asked by outside sources to provide program information and farm details corresponding to agriculture in the State. The GIS Specialist runs the County Summary Report tool to create a report that details farm, producer, conservation, crop acreage, and ARCPLC data for county and 1 for the State. This report is used as reference when talking about the picture of agriculture and FSA for the State or a specific county.

State Summary

Common Land Unit Statistics

Farms in State	
Tracts in State	
Farm Operators and Other Tenants	
Tract Owners	
All Customers	
Cropland Acres	
Other Digitized Acres	
Highly Erodible Acres	
Non-Highly Erodible Acres	
Polygons in CLU	

Conservation Data

Number of Farms with CRP	
Number of CRP Contracts	
CRP Contract Acres	

Expiration Year	Expiring Contracts	Expiring Acres
2017		
2018		
2019		
2020		
2021		

Top 20 Commodities Reported to FSA

Crop	Acres
Corn	
Soybeans	
Alfalfa	
Grass	
Mixed Forage	
Wheat	
Oats	
Rye	
Beans	
Potatoes	
Clover	
Trees	
Peas	
Barley	
Fallow	
Maple Sap	
Honey	
Triticale	
Wetland Reserve Program	
Radishes	

CRP acres are not included in reported commodities
Crops reported for the 2016 Crop Year as of October 03, 2016

Base Acres

Farms with Base Acres	
Farms with Bases Reduced to 0	
Fully Based Farms	
Total Base Acres	

Crop	Base Acres	Avg Yield
Corn		
Soybeans		
Oats		
Wheat		
Barley		
Sunflowers		
Grain Sorghum		
Canola		
Peas		
Safflower		
Flax		
Rapeseed		

ARC/PLC Participation Summary

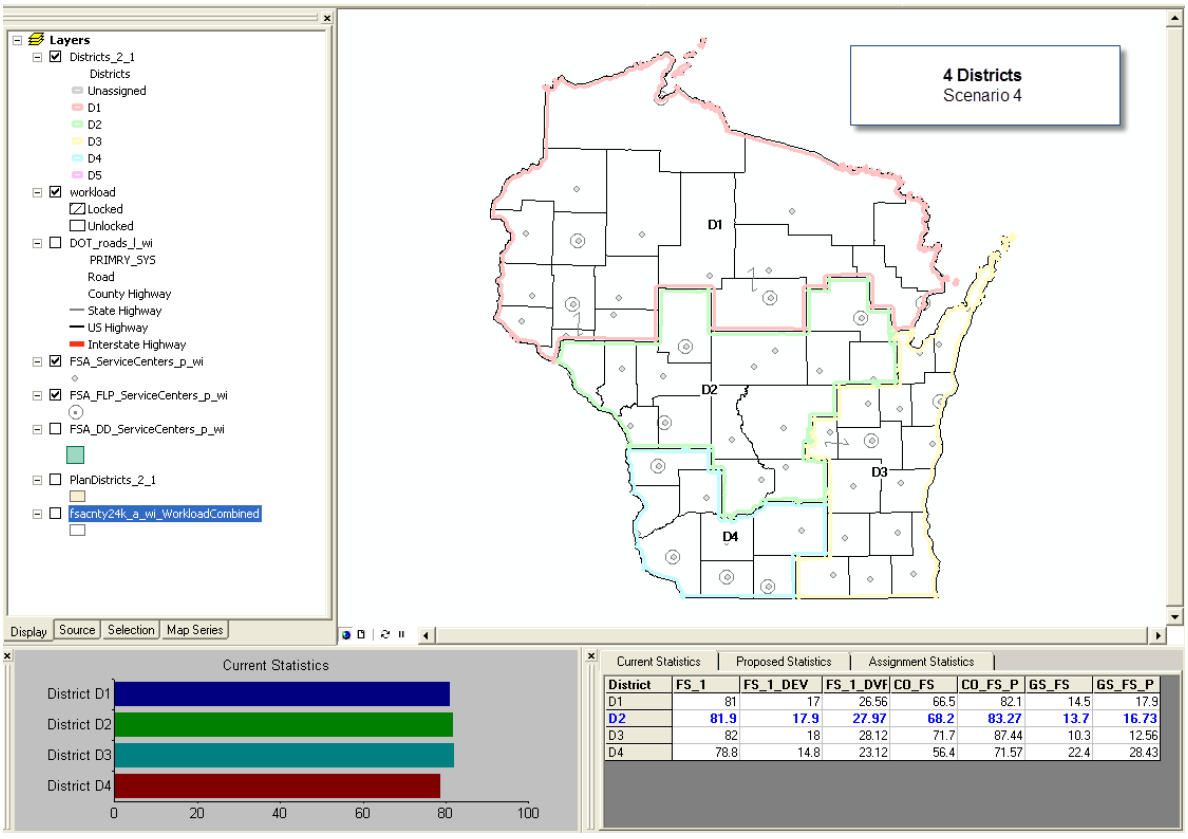
Farms with ARC/PLC Elections	
ARC-CO Farms	
ARC-IC Farms	
PLC Farms	
Farms with ARC-CO and PLC	

762 Examples of GIS Support (Continued)

B SED and Executive Staff Support Examples (Continued)

Example 2: Evaluating District Director Boundaries by Workload

There is a change in the number of districts and the State GIS Specialist is asked to assist with determining new district boundaries. SED would like to equalize workload and staffing to the best extent possible while also considering drive time. The GIS Specialist obtained workload and staffing data from the Administration staff and joined the workload values to the county boundary layer. Using the ESRI Districting tool and ESRI Help the GIS Specialist created maps of district scenarios including major highways to present to the executive staff for decision making.



District	FS_1	FS_1_DEV	FS_1_DVF	CO_FS	CO_FS_P	GS_FS	GS_FS_P
D1	81	17	26.56	66.5	82.1	14.5	17.9
D2	81.9	17.9	27.97	68.2	83.27	13.7	16.73
D3	82	18	28.12	71.7	87.44	10.3	12.56
D4	78.8	14.8	23.12	56.4	71.57	22.4	28.43

762 Examples of GIS Support (Continued)

C Farm Program Staff Support Examples

The Farm Program Staff, including Conservation, Price Support, Production, and Compliance staff, can use GIS to evaluate and implement programs.

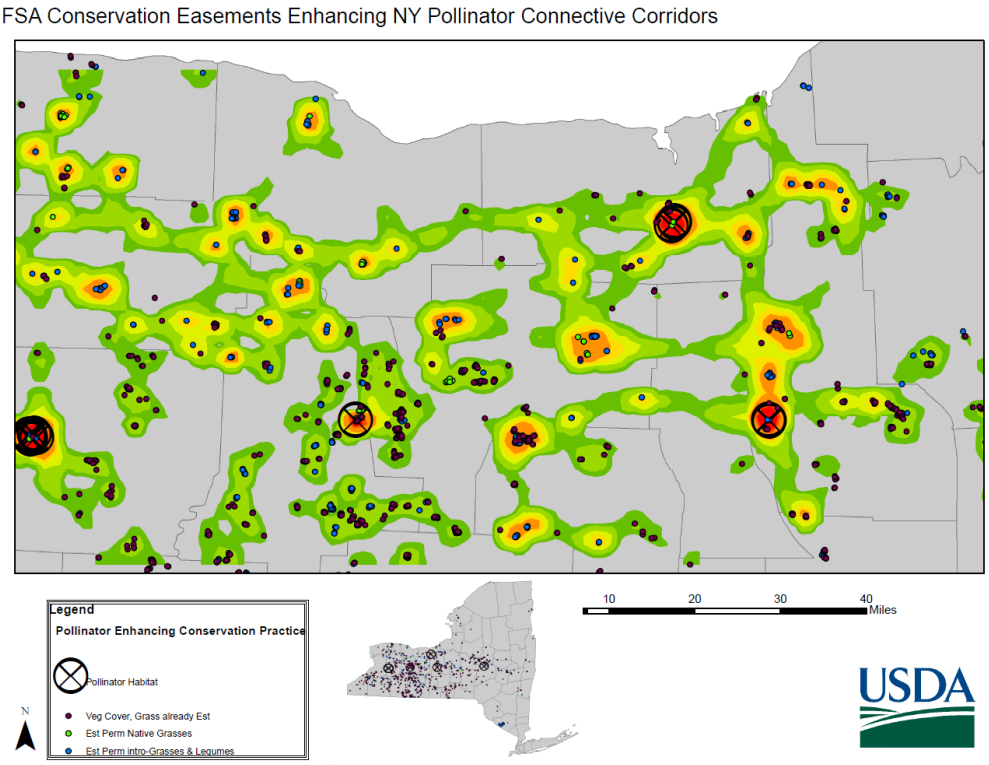
Example 1: Price Support - Identifying Producers Potentially Eligible for LDP's

The State would like to identify producers eligible for LDPs. Using the detailed crop acreage report data, provided to the GIS Specialist monthly, the farms with the crop or crops triggering LDP's can be identified.

The list of farms can then be linked to the aggregate name and address data to identify producers who potentially have an interest in the reported crop eligible for LDP.

Example 2: Conservation – Identifying Pollinator Habitats to Evaluate Connectivity of Habitats

The Conservation Chief for the State would like to evaluate the locations of pollinator habitats established through CRP enrollment. Using the CRP layer compiled by the GIS Specialist the pollinator conservation practices are identified and mapped on a State map. Using the map, the Conservation staff can visually identify areas where pollinator habitats are not connected to initiate outreach in those areas.



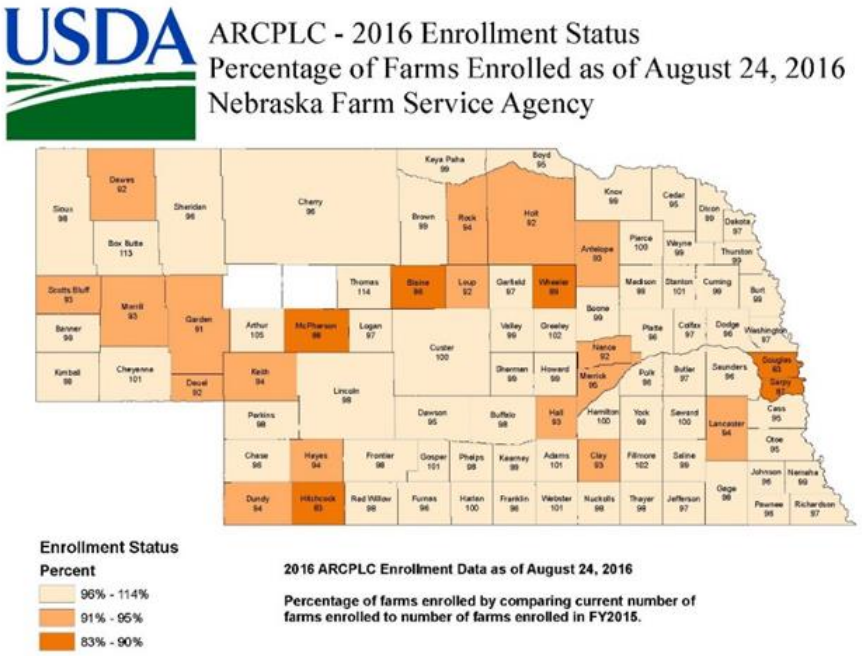
762 Examples of GIS Support (Continued)

C Farm Program Staff Support Examples (Continued)

Example 3: Production – Evaluating ARCPLC Enrollment Status by County

The ARCPLC specialist receives a weekly report from the National Office listing the ARCPLC enrollment status for each county compared to the prior year enrollment. The ARCPLC specialist would like to review the State enrollment status with SED and District Directors. The GIS Specialist is asked if this data can be visualized on a map rather than the spreadsheet.

Using the National Office report and the county boundary layer, the data can be linked. The symbology of the map is set to a gradient based on the county percentage completed. The GIS Specialist discussed with the ARCPLC Specialists details of the map including the color of the map and gradient scales. Each county is labeled with the county name and the completion percentage.



762 Examples of GIS Support (Continued)

C Farm Program Staff Support Examples (Continued)

Example 4: Compliance – Evaluating HEL Determinations Compared to Cropland Determinations

The conservation compliance specialist is trying to determine the number and acres of HEL in each county. Using the State CLU layer, the GIS specialist assisted with querying the CLU layer for all fields with a determination of HEL. During this review, it was identified that multiple fields flagged as cropland were missing HEL determinations in the CLU layer. A listing of cropland fields with a UHEL status for each county was created and provided to the local County Office staff for review. This listing was also compared to the detailed crop data to identify if the cropland field had been planted to an annual crop requiring an HEL determination.

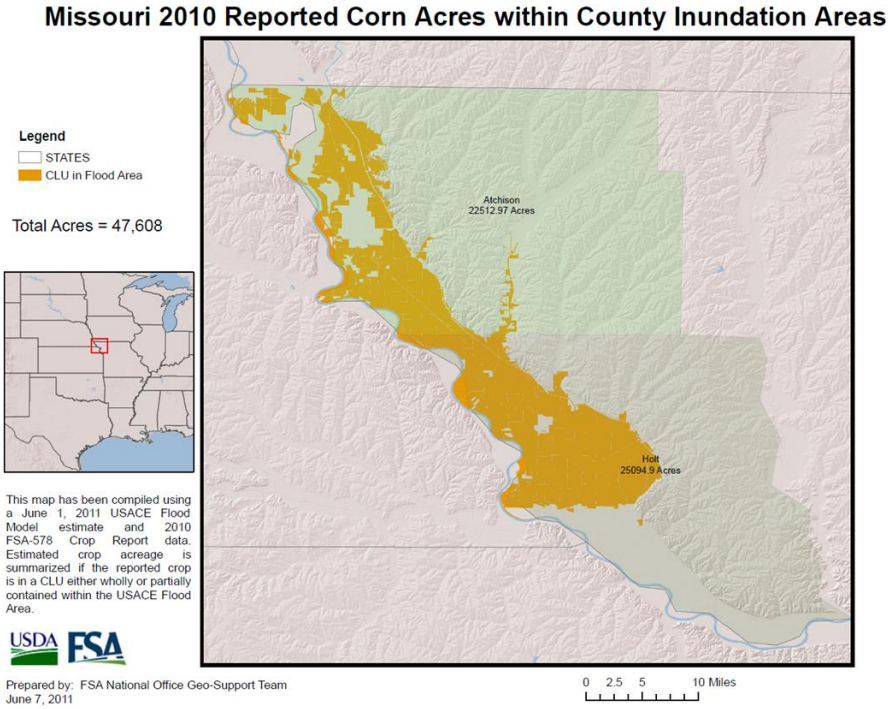
Example 5: Disaster Assessment – Identifying Farms, Producers, and Crops Effected by a Disaster Event

A flood has occurred effecting areas within several counties in the State. To assess the extent and impact of the flood, the program staff would like to identify the farms, associated producers, and crops within the flooded area. The extent of the flood is received from the Army Corp of Engineers. The GIS Specialist is asked to help identify the farms and crops impacted by the flood area. The GIS Specialist intersected the flood footprint and the detailed crop data layer to identify the farms and crops within the flood area. The extracted listing of farms and crops was then linked to the name and address data to identify the producers impacted. The specific crop types and the number of acres potentially impacted were also extracted to assist CEB's with a base level crop damage summary to beginning field inspections. This process can be used for many disaster or emergency response activities including but not limited to disaster designations, emergency loans, and ECP.

762 Examples of GIS Support (Continued)

C Farm Program Staff Support Examples (Continued)

Example 5: Disaster Assessment – Identifying Farms, Producers, and Crops Effected by a Disaster Event (Continued)



762 Examples of GIS Support (Continued)

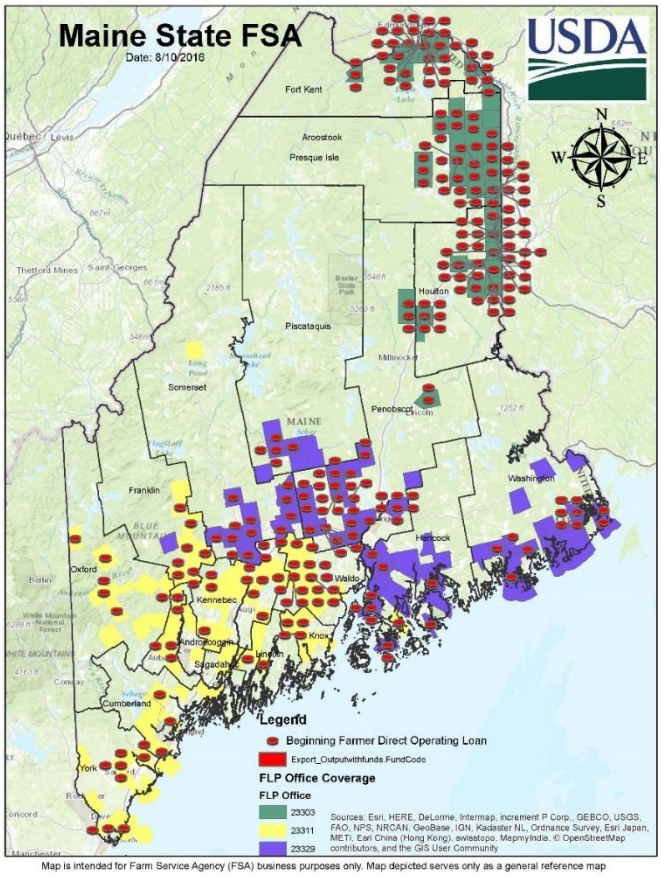
D Farm Loan Staff Support Examples

The farm loan staff can use GIS to visually show borrowers, lenders, and loan programs to assist with outreach, program implementation, and servicing staff and as well as locations.

Example 1: Assessing Beginning Farmer Borrower Locations

The farm loan staff wanted to evaluate the effectiveness of the Beginning Farmer Loan Program. The GIS Specialist was asked to identify the locations of producers that had received a beginning farmer loan. FLP provided the GIS Specialist with the general information report and the name and address report from Farm Business Plan along with the DLS540 report. The GIS Specialist created a common field between the 3 reports using the borrowers tax ID to join the reports.

The joined Farm Loan data was then joined with a city layer using the borrower's hometown. The GIS Specialist worked with the farm loan staff to determine the correct fund code and type of assistance code to create a definition query that would accurately represent the number of beginning farmer loans on a State map.

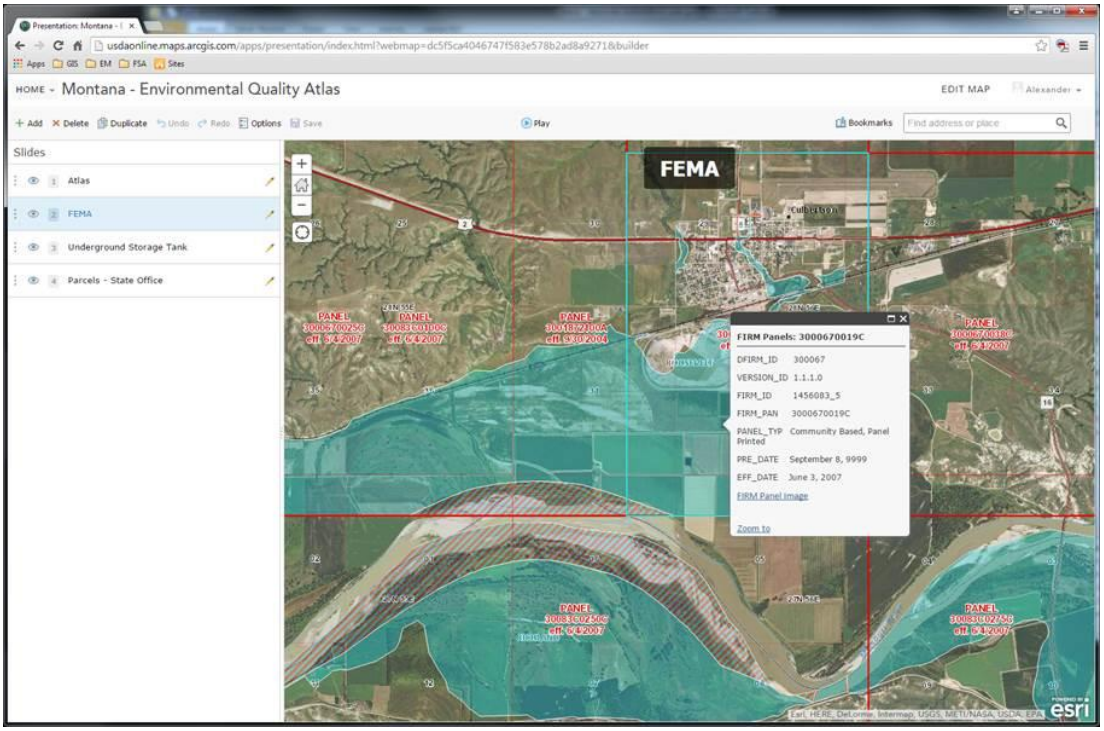


762 Examples of GIS Support (Continued)

D Farm Loan Staff Support Examples (Continued)

Example 2: Assessing Environmental Quality

The farm loan staff wanted use maps to highlight areas that can be mapped related to environmental reviews. The GIS Specialist was asked to collect and identify layers that can support better decisions as they relate to environmental reviews such as floodplains, wellhead locations, national landmarks, etc. FLP provided a list of additional layers they would like to see addressed. The GIS Specialist created a summary report of the availability, format and location of the data that was then used to create a viewer in AGOL for supporting environmental reviews.



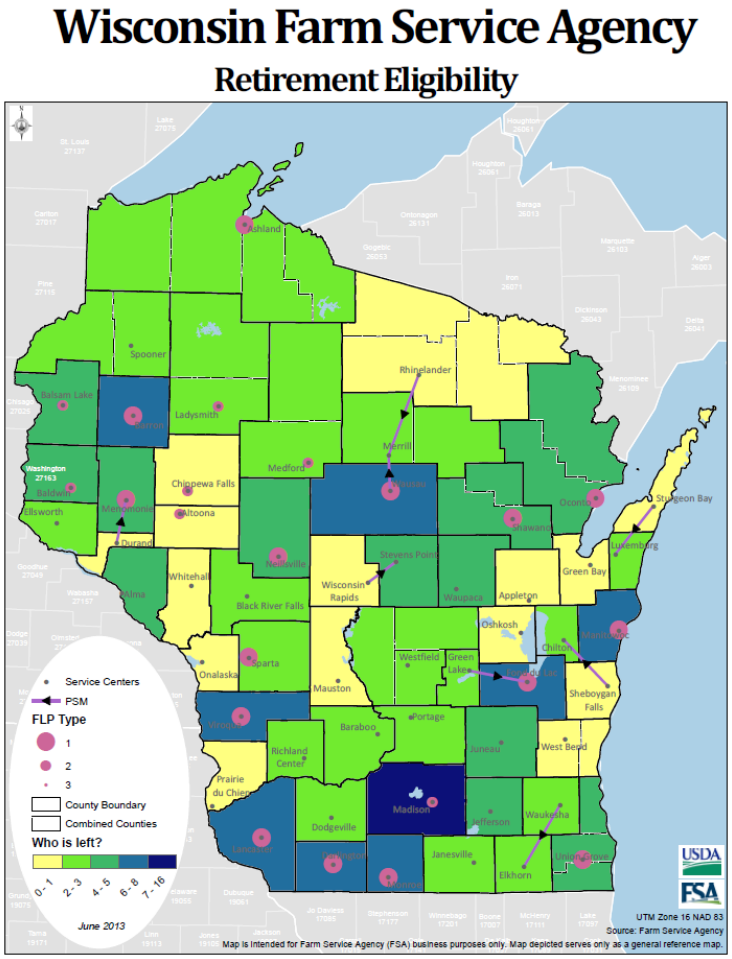
762 Examples of GIS Support (Continued)

E Administrative Staff Support Examples

The Administrative staff can use GIS to assess staffing, budget, travel, leasing, and equipment needs for the State and nation.

Example 1: Planning for Retirements

The Administrative section wanted to visualize the retirement eligibility in each County Office. The Administrative section shared aggregate staffing and retirement eligibility data with the GIS Specialist. The GIS Specialist was able to join the staffing and retirement eligibility data with the county boundary layer to show the number of employees eligible to retire in each office as well as the number of staff that would remain in an office if those employees eligible to retire would retire. These maps were shared back only to the Administrative Section to be used as a hiring tool.



762 Examples of GIS Support (Continued)

E Administrative Staff Support Examples (Continued)

Example 2: Evaluating Closest Facility Analysis for State Training Locations

The State is evaluating training locations for upcoming State farm programs training. The State GIS specialist was approached by SED to identify a consistent method to quickly calculate travel costs for a series of training sessions to be held around the State. The GIS specialist recently attended a State GIS user meeting and learned about the availability of a publicly available statewide transportation dataset and downloaded the data from the State Government's geospatial data clearing house.

After downloading, the GIS specialist used ESRI's Network Analyst to build a network and ESRI's geocoding tools to create an address locator. Potential meeting locations were geocoded using the address locator.

Next, the GIS specialist reviewed the FSA County Office point dataset to ensure that recent office moves had been updated.

Using Network Analyst, the GIS specialist performed an Origin-Destination Cost Matrix analysis with meeting locations as origins and the County Offices as destinations. The analysis determined the closest meeting location for each office and calculated the number of miles driven for each meeting. The GIS specialist provided SED with a list of County Offices for each meeting location and an estimated mileage cost for each meeting.

F County Office Reviewer Example

Imagery, CLU, maps, and farm records data are often needed by a County Office reviewer to assess program implementation related to County Office operations.

Example 1: County Office Reviewer Review of LFP Program Payments

The County Office reviewer is reviewing LFP to determine whether proper payments were made to producers. To assess payments for LFP, the accuracy of the acreage reports loaded for grazed perennial forage are also assessed. The GIS Specialist can assist the County Office reviewer with imagery interpretation on farms reviewed. This may include assessment of current or prior year imagery and review of CLU delineation rules according to 10-CM and this handbook.

763-815 (Reserved)

Part 10 Web Mapping

816 AGOL for Organizations

A Overview

AGOL is a cloud based GIS platform that allows for the development of maps and to perform analysis in a browser setting without additional software installation. AGOL functions as a content management system for maps, apps, and data that can be shared across the agency using the FSA subscription tied to the USDA ELA with ESRI. See paragraph 817 for information about access management in AGOL.

AGOL has 2 levels of service. The levels of service are described in the following table.

Level of Service	Description
Personal Account	The free personal account allows users to: • create and publish online maps • store up to 2GB of data • access to content shared publically by ESRI and other GIS users.
Organizational Account	The Organizational account provides the ability to: • set user types • create hosted feature services • analyze data • integrate with Microsoft Office and other extended functionality.

B Services

AGOL is a collection of web services that provide a variety of GIS utilities including data, base maps, mapping templates, map viewers, image services and feature analysis capabilities accessible through the AGOL hosted content environment. For more information about AGOL, go to **http://doc.arcgis.com/en/arcgis-online/**.

816 AGOL for Organizations (Continued)

C Training Resources

Training resources prepared for GIS Specialists are available on the FSA GIS SharePoint's AGOL Content Center located at **https://sharepoint.fsa.usda.net/mgr/FSA_GIS/FSA-GIS/SitePages/ArcGIS%20Online%20Content%20Center.aspx**.

In addition to the training resources provided on SharePoint, ESRI offers free ESRI E-Learning to all FSA employees. Training content is available at **https://www.esri.com/training/** for all levels of users. The content includes web courses, training seminars, and ESRI videos. See **Exhibit 177** for more information about ESRI E-Learning.

D USDA Connect ArcGIS OnLine Community

A USDA Connect ArcGIS Online Community has been developed to help engage users and provide a platform for sharing knowledge and ideas. Individual users can acquire access through their own individual USDA Connect account.

The AGOL Community is available at **https://connections.usda.gov/communities/service/html/communityview?communityUuid=50ac123a-cb74-4184-bc9d-7b3acb5b6051**.

817 Administration of AGOL

A National Office Responsibilities

National Office Responsibilities:

- administers national level geospatial datasets used for FSA programs
- sets national authoritative datasets and usage rules in AGOL that are used by all States related to address farm programs
- works in coordination with FSA AGOL Administrator to review and approve any outward facing web applications or datasets that are available to the public.

AGOL Administrator Responsibilities:

- responsible for coordinating the FSA subscription for AGOL
- serves as the Credit Manager for all AGOL activities for FSA
- coordinates with National Office to review and approve any outward facing web applications or datasets that are available to the public
- completes the registration and signup of new users, removal of users, and other user role updates requested by the State GIS Specialists
- coordinates all AGOL Bulk Geocoding activities for each State with the State GIS Specialist
- responsible for annual GIS Specialist training and updates related to the use and application development in AGOL
- provide monthly updates on AGOL developments on the Monthly GIS teleconference. Coordinates the update and maintenance of the Information Guide: ArcGIS Online for Organizations, Notes for FSA Users.

817 Administration of AGOL (Continued)

B State Office Responsibilities

The State GIS Specialist:

- coordinates user requests for their assigned State or States
- coordinates and trains State and County Offices on the use and opportunities of AGOL as needed
- ensures that FSA Geodata management procedures are followed
- coordinates and tracks all State and county level users by their respective State
- serves as the main contact for all AGOL data and mapping application development at the State/county level
- is responsible for all data content loaded to AGOL for their assigned State for State level data only
- manages all State level groups created within the AGOL environment.

C Administration and User Roles

AGOL for organizations is included with FSA's ELA, but it requires administration beyond what is required for the Desktop and Server licenses. The organization consists of anyone in FSA who has an AGOL organizational account specifically created for them.

The following table describes the 3 main roles in the organization.

Role	Description
View Only	The view only role allows one to view maps already created in AGOL.
User	The user role allows one to view, create, share content, participate in groups, and add items within the FSA AGOL organization.
Publisher	The publisher role has the added functionality of being able to publish hosted feature and tiled services.

817 Administration of AGOL (Continued)

C Administration and User Roles (Continued)

Role	Description
Administrator	The Administrator role is required to: • add users • create their roles in the organization • oversee the FSA subscription content and credit usage. An administrator can also: • track the credit usage in the organization • define custom roles for the organization which aggregate unique combinations of user and publisher functionality. **Note:** For security purposes, only the administrator can make maps and data (items) public.

D Managing and Requesting User Roles

All requests for AGOL access will be managed by the State GIS Specialist. The State GIS Specialist will:

- determine the experience level and the functionality the requesting user will need, such as view only, user, publisher

- requesting information will include FSA employee name, e-mail address, and access level

- ***--send requests for access to the FSA AGOL Administrator at patsy.hudson@usda.gov--***

- keep a list of all requests for access in each State.

Note: Occasionally, new users will not be able to respond to e-mail AGOL invites within the 2-week activation period. This may require several rounds of invitations.

817 Administration of AGOL (Continued)

E Groups

Groups are a feature of AGOL that provide access control. Groups can be set up within the organizational account. Maps and the data they contain can be shared to specific groups only, to the entire organization, or to everyone (public). Note for security purposes only the administrator can make items public. See subparagraph F for information about requesting to make items public.

A group in AGOL for organizations can be created by 1 of the following:

- user
- publisher
- administrator.

Each member of a group must have an AGOL account.

Example: A Division, Branch, Section, program, or project workgroup might have data that should not be shared with anyone outside their group. Each group can then be open to the account holders appropriate to that group, and closed to everyone else. The map publisher decides who can view the map by selecting the "share" the map a specific group or groups, or only FSA's organizational subscription (anyone in FSA who has an FSA AGOL account).

F Requesting Approval to Publish

For any item to be shared publicly, the State GIS Specialist should contact the FSA AGOL administrator. All items will be reviewed by the AGOL administrator and National Office before publishing.

818 Managing and Publishing (Sharing) Data in AGOL

A Overview

Publishing maps and certain types of data is reserved for the GIS Specialist. When publishing (sharing) feature services for enterprise program data, some research and coordination should be done to ensure that there is not duplication in effort.

Example: User A publishes an FSA tornado damage feature service. User B also publishes an FSA tornado damage feature service. If both services show up in a search, other users must decide which service to use.

B Credits and Credit Usage

Hosting maps and services, storing data in the cloud, data transfers, spatial analysis, routing, data enrichment, and geocoding activities consume credits. Credit limits for individual users are set by the FSA AGOL administrator to mitigate unintended or accidental credit consumption.

If credit limits are exceeded, the user will contact the FSA AGOL administrator to have more credits added to account.

C Usage Best Practices

Data not optimized for web viewing can cause a very poor user experience. The common consideration are described in the following table.

Best Practice	Description
Publish data in the same spatial reference as the intended basemap.	Feature services should be in the same spatial coordinate system and projection as the basemap. Usually, this will be WMAS (WGS84). Otherwise, the client application must re-project the data on the fly. This adds unnecessary load to the client machine.

818 Managing and Publishing (Sharing) Data in AGOL (Continued)

C Usage Best Practices (Continued)

Best Practice	Description
Create generalized feature classes for viewing at smaller-scale views.	Polygons can be simplified for view when zoomed out, and the full-detail polygons can be viewed when zoomed in. This practice involves setting appropriate view scales, and creating multiple feature classes. Point feature classes present a different problem. Consider setting scale dependencies for large point feature classes.
Reduce size and complexity whenever possible.	Applying many minor optimizations such as those in this subparagraph will help to improve user experience by decreasing load and draw-times of maps. These tweaks to the data are in addition to the variety of best practices for web-mapping design, such as limiting the number of operational layers when possible.

Note: All State GIS Specialists and FSA users need to be familiar with the following living document: **ArcGIS OnLine for Organizations, Notes for FSA Users** available at **https://sharepoint.fsa.usda.net/mgr/FSA_GIS/FSA-GIS/SitePages/ArcGIS%20Online%20Content%20Center.aspx**.

819 Using AGOL

A Overview

This paragraph references a listing of necessary skills for using and publishing maps and items in AGOL. Some of the skills listed also assume familiarity and a reasonable level of competence with ArcGIS Desktop.

B Creating a Folder Structure in My Content

The 'My Content' area of AGOL is the GIS Specialist's work space. My Content is where all files are stored. It is a best practice to keep this area organized. For instructions on how to create a folder structure in My Content, see **Exhibit 178**.

C Joining Tabular Data

Joining tabular data to a base layer such as a statewide county dataset is a common strategy for creating content for a map, including AGOL.

For instructions on how to join tabular data to a base layer, see **Exhibit 179**.

D Adding a Shapefile to AGOL

Adding shapefiles created from ArcGIS desktop is a simple way of creating content for a web map. For instructions on how to upload a shapefile to the AGOL environment, see **Exhibit 180**.

E Saving a Map in AGOL

AGOL publishers can create new maps or save maps from existing maps. Saving maps is based on privileges, this action applies only to GIS Specialists.

For instructions on how to save a map in AGOL, see **Exhibit 181**.

819 Using AGOL (Continued)

F File Geodatabases for AGOL

A best practice for GIS Specialists to manage data efficiently in AGOL, is through the use of file geodatabases. File geodatabases allow the map creator to create tile packages which allow for faster online rendering. In general, data will be streamlined and excess fields need to be removed. If possible, data should be dissolved on the most important field, while taking care not to change the necessary spatial features. This helps reduce the file size for increasing performance and reducing the amount of storage space.

Within the AGOL File Geodatabase, all Feature Classes will be projected in WMAS.

For instructions on how to upload and apply a file geodatabase within the AGOL environment see **Exhibit 182**. The instructions assume the file geodatabase has been created or available.

See **Exhibit 183** for instructions on how to create a statewide county dataset in a file geodatabase for AGOL.

G Adding Web Mapping Services in AGOL

There are many web mapping services available to incorporate into a web map which can be used to enhance the content of an end user's map. For example, real time weather data is a web mapping service that is available. For more information about web services, go to **http://desktop.arcgis.com/en/arcmap/10.3/map/publish-map-services/what-is-a-map-service.htm**.

For instructions on how to add a web mapping service to a map in AGOL, see **Exhibit 184**.

H Creating a Tile Package for AGOL

A tile package:

- allows user to use a set of tiles/images to create a base map
- can be shared abroad with other users once it is bundled into a tile package (.tpk)
- displays in AGOL very quickly compared to other base maps.

For instructions on how to create a tile package for use in AGOL, see **Exhibit 185**.

819 Using AGOL (Continued)

I Adding a Hosted Feature Service to AGOL

Hosted Feature Services:

- by default, are private when published and are only accessible to the person who pushed the web layer
- do not display in search results and are not part of any group by default
- allows users to publish maps and data as hosted web layers, which can be shared with other members of the organization
- are designed for map visualization, editing and to complete a query
- are most appropriate for visualizing data on top of a basemap
- can publish maps directly from a desktop without relying on a server
- upon approval, maps can be shared with the public via the Internet
- will be loaded to AGOL as a single feature service. This allows for greater flexibility within AGOL.

  Example: A State's CPA's will be broken into multiple layers; such as the Wildlife CPA and Water Quality CPA, and a single layer for each respective Priority Zone. If there are two CPA's and two Priority Zones, then there will be 4 individual feature services in AGOL.

For instructions on how to create a hosted feature web service for use in AGOL, see **Exhibit 186**.

820-871 (Reserved)

Part 11 Additional Geospatial Resources

872 Geospatial Resources

A Purpose

Geospatial data created and maintained by outside organizations can be used to support FSA programs and administration. Geospatial data may be distributed as online geospatial services, downloadable data, or through physical distribution such as compact disc or hard drive. The following identifies commonly used outside sources of geospatial data.

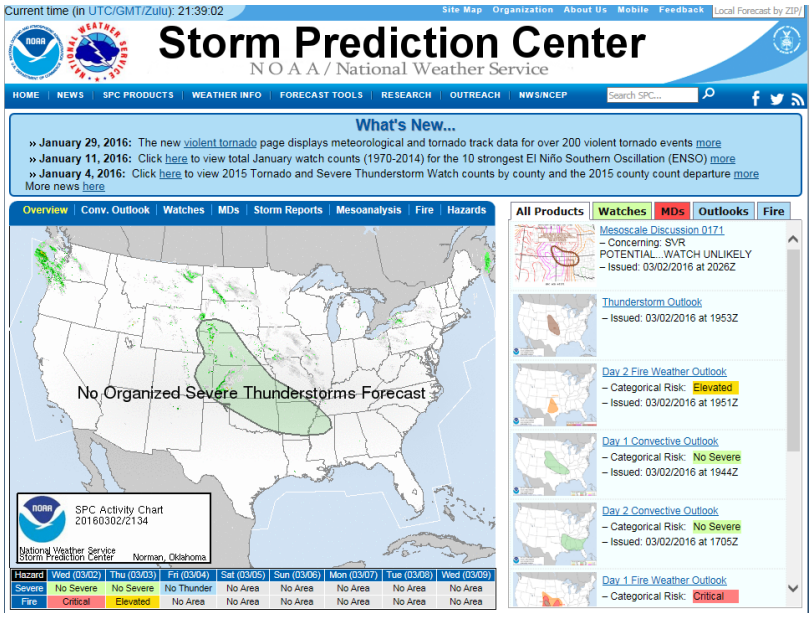
Note: Official FSA handbook guidance for the applicable program will be followed first when using these supplemental resources.

B Using SPC

SPC provides an important resource for managing storm reports at all levels of FSA. SPC can serve as a visual and geospatial awareness tool for storm events, including durations and types of storms. Additional information is also provided for watches of all types, fire warnings, and hazards currently impacting the United States. The site is updated with information 24 hours a day and provides both forecasts and historical data from past events that can be viewed in ArcMap (XY Event theme) or AGOL.

SPC can be used to clearly identify storm dates and times to identify the correct date or range of dates needed to collect geospatial information from NEXRAD or other NWS geospatial resources. SPC and NEXRAD data are provided in Zulu time – Greenwich Mean Time.

Note: See **Exhibit 201** for instructions on using SPC.



872 Geospatial Resources (Continued)

C NWS River Forecast

The NWS River Forecast is a website in which live data from 7,689 gauges found in the U.S. will show where various stages of flooding or near flooding are occurring. The default data is displayed on a nationwide basis but the scale of the maps can be set to a particular State for more precise locations of river gauges. When the tool is set to a particular State, river forecasts are available from 1 to 12 days (depending on the particular site). This allows users to identify sites where various levels of flooding and near flooding are predicted to occur. To access, go to **http://www.weather.gov/marfc/Forecasts**.

This information is useful to FSA for preparing for flooding events, emergency preparedness, and disaster recovery.

D USGS Water Watch

The USGS Water Watch has websites showing where flood and real-time streamflow conditions are. The data is displayed on a nationwide basis but the scale of the maps can be set to a particular State allowing users to identify where levels of flooding and near flooding are occurring.

The site is able to generate a map showing the locations of streamflow gauges but also provides easy access to current tabular data identifying the station ID, name, NWS flood stage (ft), most recent stage (ft), most recent flow (cfs), and historical peaks (cfs). The exact position of each recording station and current data can be downloaded in a shapefile format.

This information will allow GIS users to demonstrate the exact location of these recording stations, which will allow other information to be merged and displayed. Historical data from each particular station can be gathered as well. Information from USGS Water Watch can be used for flood impact awareness at the State and county level as well as for Emergency Response Coordination. To access, go to **https://waterwatch.usgs.gov/**.

This information is useful to FSA for downloading historic information to overlay with FSA Geospatial data.

Note: See **Exhibit 202** for more detailed instructions.

872 Geospatial Resources (Continued)

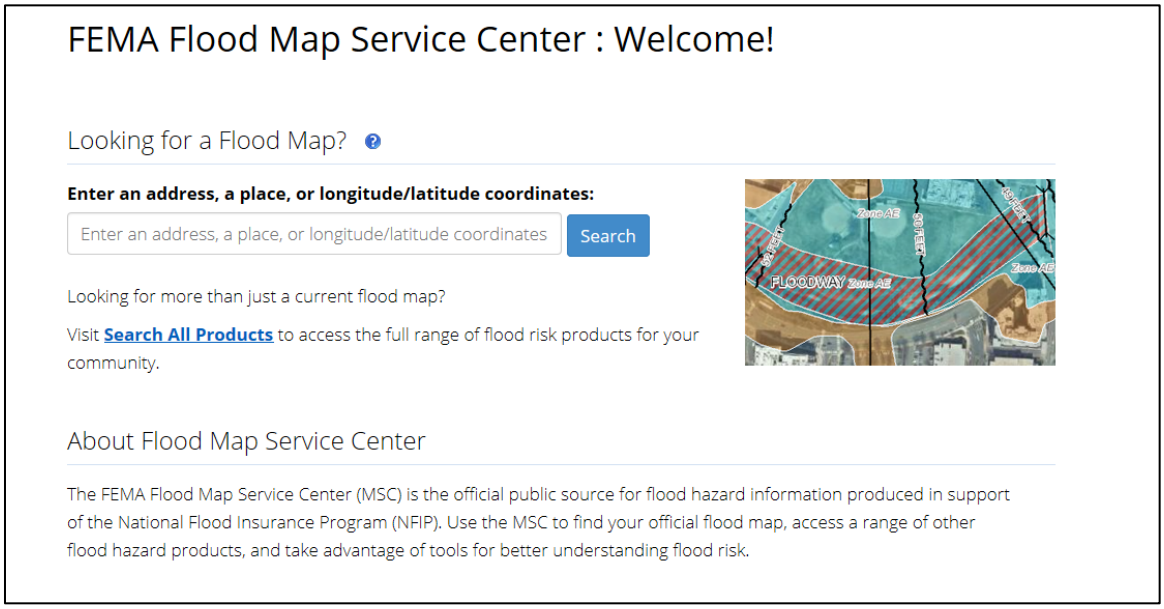
E FEMA Flood Map Service Center

The FEMA Flood Map Service Center is the official public source for flood hazard information produced in support of the National Flood Insurance Program. Use the Map Service Center to find official flood maps, access a range of other flood hazard products, and take advantage of tools for better understanding flood risk.

The site allows users to get current FEMA flood plain maps or FIRM's (FIRMettes) on specific locations nationwide. To access, go to **https://msc.fema.gov/portal**.

This information is useful to FSA for completing environmental evaluations for a variety of FSA business needs, including leasing and loans.

Note: See **Exhibit 203** for instructions that are more detailed.



F U.S. Drought Monitor

The U.S. Drought Monitor is a weekly map of drought conditions produced jointly by the National Oceanic and Atmospheric Administration, USDA, and the National Drought Mitigation Center at the University of Nebraska-Lincoln. Information from this website is key for many FSA programs.

This information is useful to FSA for determining eligibility for FSA disaster programs.

For more information, go to
http://droughtmonitor.unl.edu/AboutUSDM/Background.aspx.

872 Geospatial Resources (Continued)

G USGS HDDS

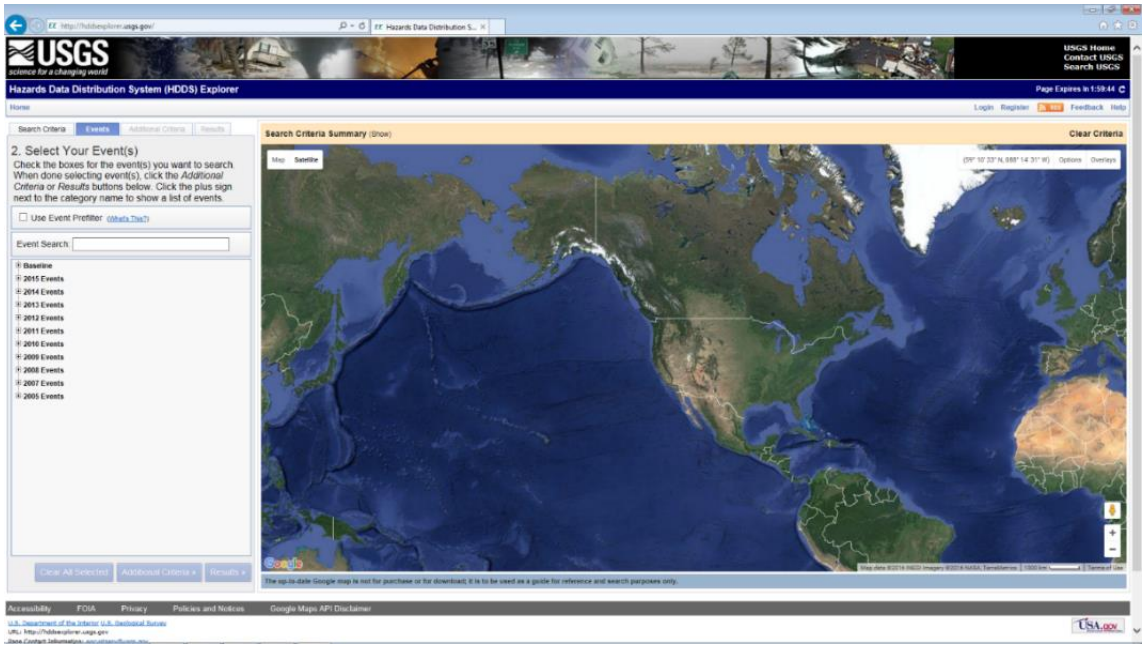
HDDS is a unique collection of imagery and documents designed to assist in the response to natural and man-made disasters. A web-based interface to an imagery archive, HDDS provides geographic search capabilities based on latitude and longitude boundaries and other criteria. HDDS contains imagery acquired in the aftermath of a disaster as well as imagery of the same region before the event. To access, go to **https://hddsexplorer.usgs.gov/**.

For additional information on the use of HDDS, see **Exhibit 204**.

This information is useful to FSA for estimating the extent of natural disasters, such as wildfires. It can also be useful in assisting with disaster recovery.

Key features in HDDS Explorer include:

- fast, geospatial search engine
- map viewer for viewing overlay footprints and browse overlays
- simple, fast Graphical User Interface
- data access tool to search and discover data
- text based query capability
- input Keyhole Markup Language or shape files to define area of interest



872 Geospatial Resources (Continued)

G USGS HDDS (Continued)

- Keyhole Markup Language browse/metadata export capability to interface with Google Earth
- save or export queries, results, and map overlay for reuse
- access to browse imagery
- user authentication service for access to restricted events and tools
- standard product downloads
- user notifications of new acquisitions and available products through subscription services.

H NOAA's NowCoast Web Mapping Portal

This is a real-time mapping service of coastal observations, forecasts and warnings. The website can be used as a map viewer or can be added in as a mapping service to ArcGIS Desktop. Users are able to display and animate observational data for the past few hours and forecasts and model guidance for several days in the future.

This information is useful to FSA for emergency preparedness.

NOAA's Now Coast is available at **https://nowcoast.noaa.gov/**.

I USGS EarthExplorer

EarthExplorer is a service that provides access to the USGS EROS Center archive. The EROS archive is a comprehensive collection of land remote-sensing data that spans more than 70 years for national coverage. The current EarthExplorer data collections include aerial photography, satellite imagery, elevation data, landcover products, and digitized maps as well as remotely sensed data. EarthExplorer uses Landsat 8 and provides date of acquisition access to the images.

This information is useful to FSA for wildfire assessment, water analysis, flooding, and hailstorm assessment.

To access, go to **https://earthexplorer.usgs.gov/**.

For additional information on the use of EarthExplorer, see **Exhibit 205**.

872 Geospatial Resources (Continued)

J USGS Topos

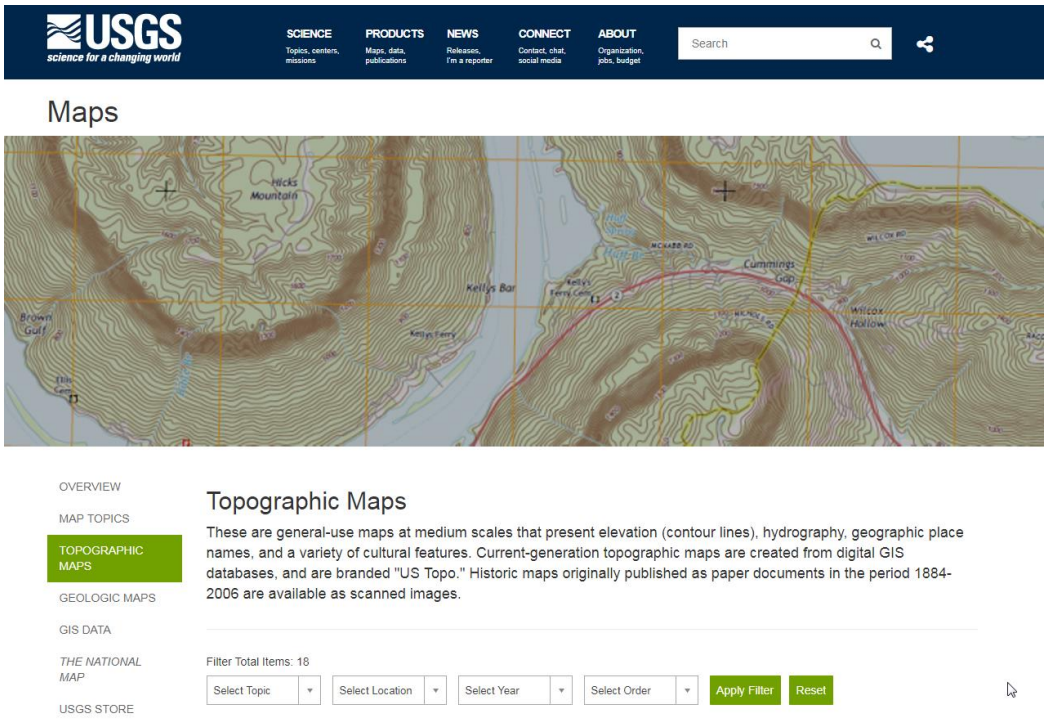
USGS Topos is an online resource that allows users the ability to access topographic maps from the National Map database. It will give users access to the most current topographic maps that are available and can be found by visiting the National Map website. The project was launched in 2009, and the term "U.S. Topo" refers specifically to topographic maps published in 2009 and later. These maps are modeled on the familiar 7.5-minute quadrangle from 1947-1992.

U.S. Topo maps repackaged (GIS) data in traditional map form; this benefits nonspecialist map users, as well as applications that need traditional maps.

This resource provides maps that can be used as reference for many USDA FSA programs such as Livestock Programs, Farm Loan Purposes, and site visits. The maps are available in GeoTIFF format allowing for further GIS analysis. Easier for data management and for sending to counties.

The GIS Specialist should manage the process for the County Offices and can provide additional training on how to download these for quick access. To access, go to **https://www.usgs.gov/products/maps/topo-maps**.

Note: See **Exhibit 206** for more detailed instructions.



872 Geospatial Resources (Continued)

K Digital Globe Imagery

DigitalGlobe is a web-based application to quickly and easily view, analyze and download DigitalGlobe data that is available via the EnhancedView Web Hosting Service. A login account is required to access Digital Globe. All FSA employees are able to obtain access using a valid FSA e-mail address. To obtain an account, use the "Register without a CAC" link available on the homepage.

DigitalGlobe is an NGA service. Releasing or posting the DigitalGlobe imagery or imagery-derived products in the public domain without prior NGA review does not comply with the use license and may result in loss of access to this imagery.

DigitalGlobe can be accessed at **https://evwhs.digitalglobe.com/myDigitalGlobe/**.

This information is useful to FSA for accessing multiple years of imagery, which can help with change detection discovery.

For further information on the use of DigitalGlobe, refer to the User Guide located in the Documents section of the DigitalGlobe Login page.

L Census Data Mapper

The Census Data Mapper is a tool that allows users access to 2010 census data quickly and efficiently. The tool can generate maps displaying county-by-county different demographics or tabular data based on commonly requested themes to the Census Bureau such as "age and sex", "population and race", and "family and housing". Each data theme can be available as tables such as Percent White, Percent Black or African American, Percent American Indian and Alaska Native, Percent Asian, Percent Some Other Race, and Percent Hispanic or Latino.

This information is useful for FSA to help identify areas where underserved producers reside and where outreach efforts could be focused.

To access, go to **https://www.census.gov/geo/maps-data/maps/datamapper.html**.

Note: See **Exhibit 207** for more detailed instructions

872 Geospatial Resources (Continued)

M Census Geocoder

The Census Geocoder is a tool that processes street addresses located within the nation and provides a set of X/Y coordinates showing the location of that address. Not all addresses can be processed (e.g. P.O. boxes) but the tool gives us a means to identify where owners, operators, and other tenants live. The tool can process a single address or in batches up to 1,000.

The U.S. Census GIS data center is a site in which publically available GIS data can be obtained. Data includes boundaries, roads, address information, and other data sets including 2010 census information and various 5-year estimates of demographic data.

This information is useful for FSA to help identify:

- producers that live or have farms in disaster stricken areas for outreach efforts
- different program participation density to help identify effectiveness of promotional activities
- where underserved producers reside for outreach efforts
- where program dollars are paid across the Nation or State.

To access, go to **https://geocoding.geo.census.gov/**.

N Geospatial Wetlands Mapper

The Wetlands Mapper provides easy public access to wetland data maintained by the U.S. Fish and Wildlife Agency. The Wetlands Mapper integrates digital map data with additional resource information to produce timely and relevant program management and decision support tools.

The current dataset is not 100 percent nationwide. The resource provides the most current wetland data available in a geospatial format. This resource can also direct users to other potential sources of information.

872 Geospatial Resources (Continued)

N Geospatial Wetlands Mapper (Continued)

This web resource is not intended to provide legal or regulatory information. It simply provides spatial information related to wetlands in the United States. The wetlands provided in this resource do not represent NRCS-determined wetlands contained in the wetland point layer and are not to be used for comparison against the NRCS-determined wetlands.

This tool is used as part of the FSA-858 environmental review process for making wetland determinations that do not fall under the Food Security Act.

Note: See **Exhibit 208** for more detailed instructions.

O FSA GIS SharePoint

The FSA GIS SharePoint site is a permissions based informational depot for GIS-related activities conducted by FSA. State GIS Specialists and other approved users can access data, training documentation, videos, and other information through the site. Links to outside GIS resources are also provided through the FSA GIS SharePoint site.

The FSA GIS SharePoint site is accessed through **https://sharepoint.fsa.usda.net/mgr/FSA_GIS/FSA-GIS/default.aspx**.

P FSA EDW

EDW is an agency-wide reporting warehouse that provides on-demand reports of FSA data such as Farm Records, Business Partner, and Acreage Reporting data. EDW data can be used by the State GIS Specialist to create maps and reports to assist in QC and visualization of FSA data. See **Exhibit 16** for instructions to access EDW and download reports.

Q USDA GDG

USDA's GDG provides access to a map library of over 100 high resolution vector and raster layers in the Geospatial Data Warehouse. GDG is FSA's primary source of USDA-managed data. Most of the Service Center Agency datasets originate from this data source with certain exceptions. Limited data access is available without a login. USDA users may use a LincPass login for expanded access.

For more information, go to **https://gdg.sc.egov.usda.gov/**.

872 Geospatial Resources (Continued)

R ArcGIS On-Line

AGOL is a collection of web services that provide a variety of GIS utilities including data, base maps, mapping templates, map viewers, image services and feature analysis capabilities accessible through the AGOL hosted content environment. See **Part 10** for basic information and usage.

S GeoPlatform

GeoPlatform.gov is an online geospatial data sharing marketplace hosted by the FGDC to improve data sharing between local, State, and Federal government agencies. Access to data on GeoPlatform is available through a free registration process.

For more information, go to **https://www.geoplatform.gov/about**.

T Data.gov

Data.gov is an open data resource managed and hosted by the U.S. General Services Administration, Office of Citizen Services and Innovative Technologies. Both spatial and tabular public data assets are available for download.

For more information, go to **https://www.data.gov**.

U USGS Data Products and Services

USGS offers a variety of USGS authoritative hydrography themed data products available for download or as map services.

For more information, to go **https://nhd.usgs.gov/data.html**.

873-924 (Reserved)

Part 12 GIS in Emergency Preparedness and Response

Section 1 Roles and Responsibilities

925 GIS Specialist Duties for Emergency Management Overview

A Overview: The Role of GIS in Emergency Preparedness

All phases of emergency preparedness depend on data from a variety of sources. During an actual emergency it is critical to have the right data, at the right time, displayed logically, to respond and take appropriate action. GIS provides a mechanism to centralize and visually display critical information during an emergency. State GIS Specialists have critical job functions relevant to emergency events.

B The Role of the Geospatial Officer

1-SEM has established National and State Emergency Response Teams, including a Geospatial Officer. Unless otherwise designated by SED, the GIS specialist will serve as the Geospatial Officer as part of the State Emergency Response Team. The Geospatial Officer provides geospatial support to the State Office, Service Centers, and emergency response teams at the National, State, and local levels for emergency planning, response, and recovery.

The geospatial officer will work and coordinate efforts with the:

- CEB, as needed
- National Geospatial Officer
- SEB
- SED
- State Emergency and Homeland Security Offices
- other FSA GIS specialists, as appropriate
- other Federal Agencies supporting a large scale event in the respective State.

926 Responsibilities

A National Office Responsibilities

The National Office is responsible for:

- ensuring that GIS tools and software are available
- ensuring that national databases are maintained
- providing training for GIS emergency management as needed.

B State Office Responsibilities

The State Office GIS Specialist will use geospatial information and GIS software to support emergency management activities. Responsibilities for emergency management include, but are **not** limited to:

- assessing possible structural impacts or damage effecting agriculture
- assisting in activities for preparedness, response, recovery, and mitigation efforts
- assisting in coordinating efforts with Field Offices, SEB's, and CEB's in assessing and completing LAR's using GIS
- evaluating the location and spatial extent of damage
- identifying affected areas of damage within the CLU.

C County Office Responsibilities

The County Office is responsible for using the Geospatial Officer.

927 GIS Specialist Duties for Emergency Management

A Preparedness

The Geospatial Officer's responsibilities to emergency management directly concerns GIS operations and will be employed in each State. These operations support day-to-day program activity and are also paramount for data preparation and overall readiness for response and recovery efforts during an emergency. The geospatial officer will ensure that the data requirements in the following table are met.

Activity	Program Area	Timeframe to Complete	Notes
Bookmark Geodata and Disaster Resources	Security and Emergency Management	Update as needed.	Best practice
Create County Emergency Management Map Template	Security and Emergency Management	Update yearly.	Prepare a county template with basic legend, disclaimers, title, and logos that is ready to use.
Create State Emergency Management Map Template	Security and Emergency Management	Update yearly.	Prepare a State template with basic legend, disclaimers, title, and logos that is ready to use.
Create Tract Emergency Management Map Template	Security and Emergency Management	Update yearly.	1-SEM, paragraph 127 provides map standards. Prepare a tract template with basic legend, disclaimers, title, and logos that is ready to use.
Geocode FSA Employee Home Locations	Security and Emergency Management	Update quarterly.	Used for identification of impacted employees.
Install and Prepare HAZUS-MH Software	Security and Emergency Management	Update as needed.	CTS distributes. Also load State-level data.
Install HURREVAC Software	Security and Emergency Management	Update yearly before hurricane season.	CTS distributes. Not required in all States.
Maintain External Geodata Access Login Accounts	Security and Emergency Management	Update as needed.	Ensure that data access accounts and passwords are current for external emergency data sites.
Setup and Bookmark NCDC Weather and Climate Toolkit	Security and Emergency Management	Update as needed.	No CTS permissions required. Ensure that bookmark is available.

For instructions on basic data management for severe weather and hazards incidents, see **Exhibit 209**.

927 GIS Specialist Duties for Emergency Management (Continued)

B Response

The geospatial officer must be able to quickly respond to an event, using data and resources either already staged or available through outside sources at the time of the event. Successful response during disaster events is directly linked to effective preparation. The following table identifies general tasks the geospatial officer is responsible for during an emergency event.

Activity	Knowledge Areas	Timetable	Notes
Create Maps and Reports	Apply MXT files, spatial statistics, and tabular reports.	Updated throughout the event.	Numerous map types may be required for each event that include State, county, and tract level maps.
Identify Area of Impact (Scope)	Digitize, create shapefile, and theme selections.	Create Immediately.	Create a shapefile and begin taking notes of event for metadata.
Imagery Prioritization	Data transfers from external websites.	**High Priority** - Satellite sources vary in timing, availability, and usability.	Provides a picture to identify the impact and severity of event.
Incorporate External Geodata (Magnitude)	GPS data, NEXRAD, HURRIVAC, HAZUS-MH, SPC, plot locations, and hot linking.	**High Priority** - Make requests for external data after location and data is established.	Begin augmenting disaster response with data from external sources showing magnitude of the event.
Locate Service Center Locations	Geocode, spatial selection, and intersect.	As needed for SEB and National Office.	**Required** for major event situations.
Metadata Maintenance	ArcCatalog, XML, projections, and attributes.	Create for each event and shapefile.	Need to archive files.
Spatial Analysis	Intersect, spatial selections, predictive models, image comparisons, image interpretation, overlay operations, buffer, and query.	As needed.	This will vary by event type.

927 GIS Specialist Duties for Emergency Management (Continued)

C Recovery

Recovery activities provide an opportunity for the Geospatial Officers to summarize the overall event and create maps that display/designate damaged areas, county eligibility for a Secretarial disaster designation, APLN, and Presidential disaster declarations. Tasks in the following table will be considered for each event and completed as appropriate.

Activity	Timeframe	Audience	Notes
Archive Event Geospatial Data	1 week after event completion.	GIS specialists and National Office.	Archives and finalizes data developed for event response/recovery.
Complete Process and Event Notes	1 week after event completion.	GIS specialists and National Office.	Identifies what worked, what did not work, and details steps used for the event.
Finalize Metadata	1 calendar day after completion of event.	GIS specialists and National Office.	Helps in updating the geospatial data and developing geospatial data in the future.
Identify Needs And Key Recovery Areas Through Shapefile	Throughout recovery phase.	SEB, National Office, and CEB.	Maps created with this information are primarily used after major damage events, such as floods, hurricanes, tornadoes, and wildfires.
Map Creation (includes maps showing Presidential, Secretarial, and APLN)	Throughout event.	SEB, SED, State Office, National Office, and CEB.	Provide overview maps (such as State, county, and area maps) that define the scope, extent, and magnitude of the event.
Obtain Post-Event Satellite Imagery	Approximately 1 month after event, as needed.	GIS specialists and SEB.	Image comparisons of the event before, during, and after, as needed.

927 GIS Specialist Duties for Emergency Management (Continued)

C Recovery (Continued)

Activity	Timeframe	Audience	Notes
Geospatial Data Coordination	During and after the event.	Government Agencies addressing Emergency Management	FSA may only share aggregate data (totals, generalized statistics, State- or county-level reference maps), and will not share actual FSA geospatial data, such as CLU, CRP, or wetlands, with non-USDA Federal, State, or local agencies during an event. All maps for public release must be cleared by SED. If additional guidance is needed, contact EPD for emergency management issues or the FSA FOIA officer for privacy concerns.

927 GIS Specialist Duties for Emergency Management (Continued)

D Mitigation

Mitigation efforts are a core component of geospatial officer responsibilities. Effective mitigation improves FSA's ability to respond to disaster events. Mitigation tasks should be considered ongoing and are summarized in the following table.

Activity	Timeframe	Notes/Examples
County Agricultural Assets and Mapping	Review for each SEB meeting.	Identify Service Center points locations with elevation, prime farmland, soils susceptible to flooding, CLU cropland, CRP, FLP easements, employee locations, etc.
Develop County Risk Maps	Develop and maintain.	Create a set of State maps that show counties thematically for overall risk, flood risk, prevent plant claims, tornado touchdowns, drought, etc.
Develop Service Center Risk Maps	Develop and maintain.	Use NAIP and Service Center location to overlay risks, such as flood zones, seismic zones, sink hole locations, etc.
GIS Drill Exercises	After every 3 years.	Participate in State and FSA emergency drills run by FEMA, State, or local emergency groups. **Note:** FSA may only share aggregate data (totals, generalized statistics, State- or county-level reference maps), and will not share actual FSA geospatial data, such as CLU, CRP, or wetlands, with non-USDA Federal, State, or local agencies during an event. All maps for public release must be cleared by SED. If additional guidance is needed, contact EPD for emergency management issues or the FSA FOIA officer for privacy concerns.
Identify Risk Areas/Hazard Identification for the State	Ongoing updates.	Flood risks, earthquake zones, inundation zones, high risk areas, and prevent plant areas.

927 GIS Specialist Duties for Emergency Management (Continued)

E Emergency Training Requirements

To successfully prepare for and respond to an emergency or disaster events, some specialized training is necessary. Free, online and self-paced emergency preparedness and response training resources are available to FSA employees and will be added to the GIS specialist/Geospatial Officer IDP in consultation with their supervisor. The courses in the following table are part of a curriculum that will build overall skill sets in emergency management. Optional courses discussed later further strengthen skills in emergency management and geospatial concentration. Skills acquired, particularly in the geospatial arena, translate into GIS support for other FSA program areas. Listed classes are free resources provided by USDA (AgLearn or USDA ESRI ELA). See **Exhibit 177** for ESRI E-Learning courses.

FEMA classes are available at **http://training.fema.gov/is/crslist.asp**. The classes last an average of 1 hour and the curriculum can be spread out over 2 calendar years for the core emergency management classes identified.

Year 1			
Course Number	**Course Title**	**Training Location**	**Contact Hours**
	Emergency and Disaster Preparedness	AgLearn	0.5
	Reading and applying the national grid	**http://publicintelligence.net/us-national-grid-training-information-and-maps/**	1.0
	SEB and CEB Training	AgLearn	0.5
ICS-100	Introduction to the Incident Command System	AgLearn	3.0
ICS-200	Incident Command System	AgLearn	1.5
ICS-288	The Role of Voluntary Agencies in Emergency Management	AgLearn	0.5
IS-271	Anticipating Hazardous Weather & Community Risk	FEMA EMI at **http://training.fema.gov/IS/crslist.asp**	1.0
SEC-NIMS-001	Introduction to National Incident Management System	AgLearn	1.0
IS-103	Geospatial Information Systems Specialist	FEMA EMI at **http://training.fema.gov/IS/crslist.asp**	0.2

927 GIS Specialist Duties for Emergency Management (Continued)

E Emergency Training Requirements (Continued)

Year 2			
Course Number	**Course Title**	**Training Location**	**Contact Hours**
IS-1	Emergency Manager: An Orientation to the Position	AgLearn	10.0
IS-111	Livestock in Disasters	FEMA EMI at **http://training.fema.gov/IS/crslist.asp**	3.5
IS-120	An Introduction to an Exercise		1.0
IS-230	Fundamentals of Emergency Management		1.0
IS-241	Decision Making and Problem Solving		0.5
IS-331	Introduction to Radiological Emergency Preparedness		1.0
IS-800	National Response Framework		0.3
IS-811	Emergency Support Functions #11 Agriculture and Natural Resource Annex		.25

The following table provides additional courses beyond the 2-year curriculum for consideration for IDP's.

Course Number	**Course Title**	**Training location**	**Contact Hours**
IS-10	Animals in Disasters: Awareness and Preparedness	FEMA EMI at **http://training.fema.gov/IS/crslist.asp**	0.4
IS-11	Animals in Disasters: Community Planning	FEMA EMI	0.6
IS-102	Deployment Basics for FEMA Response Partners	**http://training.fema.gov/IS/docs/IS%20Brochure.pdf**	1.0
IS-241	Decision Making and Problem Solving	FEMA EMI	0.8
IS-393	An Introduction to Hazard Mitigation	AgLearn	1.0
IS-546	**Continuity of Operations Awareness Course**	FEMA EMI at **http://training.fema.gov/IS/crslist.asp**	1.0
IS-547	Introduction to Continuity of Operations	FEMA EMI	2.0

927 GIS Specialist Duties for Emergency Management (Continued)

E Emergency Training Requirements (Continued)

The USDA ESRI ELA offers free online GIS courses through the ESRI and should be considered a resource when IDP's are developed. ESRI courses provide the geospatial officer an opportunity to refine existing GIS skill sets and develop new GIS skill sets as they relate both to emergency management and daily activities for GIS responsibilities within FSA. Some course examples are as follows:

- Basics of the Geodatabase Data Model
- Geocoding with ArcGIS Desktop
- Geoprocessing with ArcGIS Desktop
- HAZUS-MH Flood Model Output and Applications
- Introduction to the HAZUS-MH Comprehensive Data Management System
- Introduction to Using HAZUS-MH for Earthquake Loss Estimation
- Introduction to Using HAZUS-MH for Hurricane Loss Estimation
- Introduction to Using HAZUS-MH to Assess Losses from a Riverine Flood Hazard
- Learning ArcGIS Spatial Analyst
- The 15-Minute Map: Creating a Basic Map in ArcMap
- Understanding GIS Queries
- Using LiDAR Data in ArcGIS.

F Software

The following software, available from CTS, directly supports emergency management and can be installed on all GIS specialist/geospatial officer workstations/laptops:

- ArcGIS for Desktop

- FEMA HAZUS-MH

- HURREVAC (all States with hurricane risk, or as needed, if providing support/assistance).

927 GIS Specialist Duties for Emergency Management (Continued)

G Outreach for Emergency Management

State and local groups in both emergency management and geospatial fields have resources, training, and information that are beneficial for FSA. Opportunities to partner with and develop an awareness of State-based activities occur at both State and regional meetings and conferences throughout the year. The Geospatial Officer will engage in outreach efforts to build partnerships with outside groups and agencies as they relate to emergency management and GIS. Examples of these activities include the following.

Activity	Frequency	Benefit/ Considerations	Notes
State or local GIS Consortium Conference	Once per year.	Valuable partnership opportunities, resource awareness, and ongoing education.	Opportunities for FSA presentations about how GIS is used in the State for FSA.
HAZUS User Group	Throughout the year	Valuable partnership opportunities, social networking	**https://www.fema.gov/hazus-user-groups**
State Emergency Management Associations	Once or twice per year.	Allows FSA to develop and maintain contacts in the emergency management area Statewide.	Outreach opportunity to educate emergency management groups of USDA, FSA role in disaster recovery and available resources.
State GIS Committees and Regional GIS Groups	Periodic throughout the year.	Allows FSA to have a visible role in GIS nationwide.	Powerful partnership opportunities for NAIP and other FSA- and GIS-based programs.
Table Top Exercises	Once per year with Executive Board and once every 3 years for FSA.	Develop and practice response and recovery plans for FSA to protect and serve producers. Ensure readiness for FSA, when needed.	Required in 1-SEM.

928-952 (Reserved)

Section 2 Supporting Geospatial Hazards

953 Hail

A Overview

Hail may cause damage to crops, livestock, buildings, and equipment, including:

- complete destruction of crops from large amounts of hail
- damage to USDA buildings
- damage to USDA employee homes
- damage to farm buildings, such as roof damage, broken windows, or damaged siding
- severe injuries or death of livestock because of very large hail
- yield losses to crops that are damaged, but not destroyed, by hail.

B Recommended Data Sources

Hail events can be mapped based on reports from the public, observations by FSA personnel, analysis of radar data, or analysis of post-event satellite imagery.

Potential data sources for hail location and estimated size include the following:

- NOAA NCDC at **http://www.ncdc.noaa.gov/nexradinv**
- NOAA NWS at **http://www.nws.noaa.gov**
- NOAA SPC at **http://www.spc.noaa.gov**.

For instructions on how to:

- use **SPC**, see **Exhibit 201**
- obtain and use **hail data**, see **Exhibit 210**.

C Best Practices for Analysis

GIS analysis can be effective in determining the location and estimated size of hail damage, but **cannot** be used in place of a field visit to determine actual damage. Typical analysis of hail data may require the GIS specialist to complete the following processes and tasks:

- provide preliminary location data to CED based on storm reports cataloged on the SPC website

953 Hail (Continued)

C Best Practices for Analysis (Continued)

- extract hail index data from NCDC archives to identify more refined point locations of potential hail storms
- extract storm total precipitation data from NCDC archives to identify areal extents of potential hail storms
- heads-up digitizing of aerial extents of hail storms
- create attribute and spatial queries
- union and intersect overlay operations
- data manipulation
- process GPS data.

When a hail storm has occurred in an area, the GIS specialist will determine the best available data to use in analysis. Preliminary data within 24 hours of a storm tends to be less refined and may be limited to SPC reports, but as data becomes available through NCDC, location data may become more usable. Extreme hailstorms that cause large amounts of defoliation may be visible on satellite images acquired after the storm event.

D Presentation of Analysis Results

Maps generated in response to a hail event are generally designed to provide CEB with spatial information to assist in locating damage and completing LAR. Hail maps should be designed to:

- depict the general location and extent of a hail storm in relation to known landmarks like roads or cities
- differentiate between radar-estimated hail size and location and observer reports
- support local and national reporting requirements.

953 Hail (Continued)

D Presentation of Analysis Results (Continued)

Datasets that should be included on hail analysis maps include:

- city locations
- CLU's
- county boundaries
- highway or other road data
- other farm data as available
- section and/or township boundaries
- storm total precipitation
- USDA Office locations
- hail report locations (points).

Note: Maps containing CLU data are for internal distribution **only**. Cropland and other land use data may be included on maps for use outside of Service Center Agencies **only** if data has been sufficiently aggregated to protect sensitive data covered under 2008 Farm Bill, Section 1619. Guidance about protected data can be found in 2-INFO.

954 Heavy Precipitation

A Overview

Heavy precipitation events can cause significant property, soil, and crop damage or loss. This type of event can occur in very short bursts or over a more prolonged period of time. The damage from these events can be modeled over a couple hours, a 24-hour period, a 48-hour period, a week, or longer accumulations. Crops, feed, and hay supplies are the most susceptible to heavy precipitation events. Doppler weather radar can be used for the detection of heavy precipitation within a storm system.

Common agricultural losses for heavy precipitation include:

- crops
- feed and hay supplies
- fence damage
- transportation infrastructure damage or loss.

GIS analysis can be very effective in assessing damage and losses caused by heavy precipitation events. State Office GIS specialists will use GIS analysis to assist with program administration for heavy precipitation in disaster, conservation, and prevented plant program requirements. This includes tracking and compiling weather events, imagery analysis, and map development.

B Recommended Data Sources

The following are heavy precipitation data sources/resources for GIS specialists.

Note: In addition to the following resources, local data is often available from many State agencies and may provide more detailed information.

Data Source/ Resource	Purpose	Resource Location	Notes
AHPS	Single-day shapefile archive for precipitation data that are quality-controlled, multi-sensor (radar and rain gauge) precipitation estimates obtained from NWS River Forecast Centers.	**http://water.weather.gov/ precip/download_.php**	The original data are in XMRG format and projected Hydrologic Rainfall Analysis Project grid coordinate system.
USGS GloVis	Access to several types of imagery, including Landsat and MODIS.	**http://glovis.usgs.gov/**	

954 Heavy Precipitation (Continued)

B Recommended Data Sources (Continued)

Data Source/ Resource	Purpose	Resource Location	Notes
USGS HDDS Explorer	Access to pre- and post-event imagery for selected disaster events.	**https://hddsexplorer.usgs.gov/**	A log-in account **must** be established to access restricted data and can be requested on the website. See **Exhibit 204**.
NCDC Data Inventory Search	Access and download NEXRAD data files in shapefile format by national Doppler Radar sites.	**http://www.ncdc.noaa.gov/nexradinv/**	1-hour precipitation (N1P/78), 3-hour precipitation (N3P/79), and Digital Precipitation Array (DPA/81).
NCDC NEXRAD Data Inventory Search	Documentation and summary reports for all weather-related events for the entire U.S.	**https://www.ncdc.noaa.gov/nexradinv/**	Users can query State, county, date, and type of weather event.
NCDC Weather Station Results	Summary reports for the weather stations throughout the U.S.	**https://www.ncdc.noaa.gov/crn/**	Users can select, State, county, city, or latitude and longitude, if known.
NEXRAD National Mosaic Reflectivity Images	Archival mosaicked reflective images from NEXRAD that can be searched by day, month, and year.	**https://radar.weather.gov/Conus/index_lite.php**	
NOAA Heavy Precipitation	U.S. climate monitoring weekly products that summarize NCDC for weekly temperatures map, weekly precipitation maps, and the Palmer Crop Moisture Index Map.	**http://www.wpc.ncep.noaa.gov/qpf/qpf2.shtml**	
NOAA Heavy Rainfall Frequencies	Archival information for summaries of major precipitation events in the U.S.	**http://www.wpc.ncep.noaa.gov/qpf/excess_**	Summaries occur for the entire country and can be isolated by State.

954 Heavy Precipitation (Continued)

B Recommended Data Sources (Continued)

Data Source/ Resource	Purpose	Resource Location	Notes
NOAA Satellite and Information Services for Temperature and Precipitation Maps	Information and summary maps for both temperature and precipitation based by 1-month to 1-year increments.	**https://www.weather.gov/dvn/dailycoopmaps**	
NOAA U.S. State Climate Extremes Committee	Summarizes major weather events for all-time extremes for temperature, precipitation, and snow depth.	**https://www.ncdc.noaa.gov/extremes/scec/**	
NWS CPS	Various outlook forecasts for temperature and precipitation.	**http://www.cpc.ncep.noaa.gov/**	
USDA FAS Crop Explorer	Access to daily MODIS imagery.	**http://www.pecad.fas.usda.gov/cropexplorer/modis_summary**	
USGS Earth Explorer	Access to several types of imagery including Landsat and SPOT.	**http://earthexplorer.usgs.gov/**	A log-in account **must** be established to access restricted data and can be requested on the website. See **Exhibit 205**.
USGS Landsat Acquisition Schedule	Landsat 7 and Landsat 8 acquisition schedule.	**http://landsat.usgs.gov/tools_acq.php**	

For instructions on how to:

- use **SPC**, see **Exhibit 201**
- obtain and use **precipitation data**, see **Exhibit 211**.

954 Heavy Precipitation (Continued)

C Best Practices for Analysis

Heavy precipitation events are characterized by point data that can be interpolated to define the severity and extent using spatial analysis techniques in GIS. The damage for heavy precipitation events is often characterized by saturated soils, washouts, and standing water that can often be further identified using satellite imagery, and ground truthing using GPS and digital cameras. Typical analysis requires the State Office GIS specialist to complete the following geospatial techniques:

- create thematic maps to summarize data by State, county, and tract
- Inverse Distance Weight, Trend, and Kriging interpolations
- perform attribute and spatial queries
- perform table manipulations
- perform union and intersect overlay operations
- plot and project precipitation point data
- rasterize data
- use cartographic displays to depict precipitation intensity
- use spatial selections to identify impacted CLU's.

The State Office GIS specialist will use the following table to better understand and depict damage for heavy precipitation.

Note: The period of time that is covered and spatial analysis techniques that need to be used are often determined by the severity of the event and the amount of damage that has occurred. A combination of multiple days of worth of data to possibly weeks or months of data may be needed depending on the situation. The following table is a guide.

IF...	**THEN...**			
heavy precipitation events occurs	follow steps 1 through 5.			
	Step	**Action**	**Purpose**	**Notes**
	1	Obtain the precipitation shapefile for the past days event.	Needed to create rainfall interpolation map.	Data source is AHPS at **https://water.weather.gov/precip/download.php**.
	2	Interpolate rainfall data.	Creates a gridded shapefile to display rainfall.	ArcToolbox - Interpolation - Inverse Distance Weight.

954 Heavy Precipitation (Continued)

C Best Practices for Analysis (Continued)

IF...	THEN...			
heavy precipitation events occurs (Continued)	**Step**	**Action**	**Purpose**	**Notes**
	3	Request Field Offices to obtain GPS points and digital photos.	Support information for disaster requests.	Used in APLN requests and Secretarial disasters.
	4	Plot field GPS points and add to Map Document (Hot Links).	Assists in developing damage reports.	
	5	Determine whether imagery is available and needed.	Assists in identifying areas of standing water or flooding.	Improves data accuracy and assists the field in addressing standing water issues in fields. Possible data sources are SPOT, LandSat TM (30-Meter), AWiFS (56-Meter), or MODIS (250-Meter).
exceptional precipitation is sustained over time	complete steps 1 through 5 and continue with the following steps.			
	6	Obtain imagery to show standing water over time.	Valuable support information for heavy precipitation events.	Requires a number of satellite images to show length of time water inundated fields or impacted land. Possible Data Sources are SPOT, LandSat TM (30-Meter), AWiFS (56-Meter), or MODIS (250-Meter).
	7	Use AHPS.	Obtain the gridded rainfall data for length of time precipitation has occurred.	Data source is AHPS at **http://water.weather.gov/precip/download.php**.
	8	Use imagery analysis to show standing water.	Show concentrations of water standing on the ground or flooded areas.	Used in APLN requests and Secretarial disasters. Look for Bands 5 and 3 combine to a numeric grid. High values will reflect water reflectivity.

954 Heavy Precipitation (Continued)

C Best Practices for Analysis (Continued)

IF...	THEN...			
exceptional precipitation is sustained over time (Continued)	**Step**	**Action**	**Purpose**	**Notes**
	9	Request additional GPS points and digital images of impacted areas.	Streamline field data collection and document event.	Used in APLN requests and Secretarial disasters.
	10	Check NCDC NEXRAD inventory.	Create additional documentation of rainfall event, if needed.	Can create a base weather image of event path using Level II data. Useful for SEB and CEB discussions of rain events to make factual decisions on storm paths.
	11	CLU intersect or overlay.	Identify areas impacted by a heavy precipitation event.	Allows for identification and statistical summary of total farmland impacted.

D Reports and Maps

At the conclusion of heavy precipitation events, the State Office GIS specialist shall create a series of reports and maps that assist in the local Field Offices, SEB's, CEB's, and the National and State Offices in assessing the scope, magnitude, and extent of the event. Reports and maps can be created to determine the scale of damages and the impact to agriculture. To evaluate the location and spatial extent of damage:

- assess possible structural impacts or damage concerning agriculture
- assist in coordinating efforts with Field Offices, SEB's, and CEB's in completing LAR's
- identify areas in the State or county that are highly susceptible to crop damage because of standing water, hydric soils, and/or flooding conditions
- pinpoint areas of damage that include CLU.

954 Heavy Precipitation (Continued)

D Reports and Maps (Continued)

The following table provides examples of reports and maps that will be prepared for heavy precipitation depending on the damage impact and situation.

Note: Maps containing CLU data are for internal distribution **only**. Cropland and other land use data may be included on maps for use outside of Service Center Agencies **only** if data has been sufficiently aggregated to protect sensitive data covered under 2008 Farm Bill, Section 1619. Guidance about protected data can be found in 2-INFO.

Heavy Precipitation Event	Base Tasks to Accomplish	Timeframe to Complete	Primary Product Recipients	Primary Data Sources/Resources
Multi-Day Events	FSA Map Series Emergency Management	Defines farms impacted by standing or flood water.	CED and producers impacted.	Current NAIP, CLU, national grid.
Multi-Day Events	Landsat Map Comparisons	Approximately 16 calendar days after event. Requires before and after satellite images.	GIS specialist/ geospatial officer.	Satellite imagery, county boundary, and digitized path location.
Single-Day Events	County Precipitation Extent Maps (Use FSA map series to create individual county maps based on the Precipitation Extent State Map.)	Next workday after event.	CED and CEB.	AHPS, county boundary, national grid, major roads, Service Center locations, and major geographical features.
Single-Day Events	Damage Point Map (If needed, based on the situation.)	Completed and updated as field data is provided.	CEB and SEB.	County boundary, major roads, Service Center locations, national grid, and major geographical features.

954 Heavy Precipitation (Continued)

D Reports and Maps (Continued)

Heavy Precipitation Event	Base Tasks to Accomplish	Timeframe to Complete	Primary Product Recipients	Primary Data Sources/Resources
Single-Day Events	Precipitation Extent State Map	Next workday after event.	SED and CED.	AHPS and county boundary.
Single-Day or Multi-Day Events	PowerPoint Overview of Storm Damage Report	Compiled before SEB Meeting.	SEB.	Maps in this table, statistics from analysis, digital photos, news articles, and other related information.

955 Floods

A Overview

Flooding is the most common natural disaster in the U.S. and can negatively impact both agriculture and USDA business functions. Potential negative impacts from flooding include:

- losses to crops because of prolonged inundation, inability to plant, or inability to access fields
- losses to dairy production because of the inability to deliver product because of inundated roads
- losses to farms, including damaged or destroyed buildings, fences or livestock feed supplies
- losses to livestock either because of inundation or inability to graze
- damage or destruction of homes of FSA employees
- damage or destruction of USDA buildings
- inability of FSA employees to report to work because of inundated roads.

955 Floods (Continued)

B Recommended Data Sources

Floods are classified according to whether they are slow- or fast-rising. The type of flood may dictate the data used to perform flood impact analysis. For preliminary situation reports, modeled flood extents may be the most accurate data available. For slow-rising flood events, remotely sensed data (satellite imagery, radar data, or aerial photography) may be available to determine actual flood extents after the event has occurred.

Potential data sources for modeled flood extents include:

- FEMA floodplain maps at **http://msc.fema.gov/portal**
- flood extents developed by local emergency management groups or engineering firms
- HAZUS-MH-generated flood extents
- U.S. Bureau of Reclamation at **https://water.usbr.gov/**
- USACE modeled discharges (for rivers managed by USACE).

Analysis of flood extents should be performed using the best available data.

The geospatial officer should communicate with local emergency managers to identify availability of modeled data.

Data sources for remotely sensed data include:

- GloVis at **http://glovis.usgs.gov** for access to several types of imagery, including Landsat and MODIS

- HDDS at **http://hdds.usgs.gov** for access to pre- and post-event imagery for selected disaster events, see **Exhibit 204**

  Note: A log-in account **must** be established to access restricted data and can be requested on the website.

- USDA FAS Crop Explorer - MODIS Rapid Response at **http://www.pecad.fas.usda.gov/cropexplorer/modis_summary** for access to daily MODIS imagery.

USGS Landsat Acquisition Schedule at **https://landsat.usgs.gov/acquisition** provides the Landsat 7 and Landsat 8 acquisition schedule.

For instructions on how to:

- use SPC, see **Exhibit 201**
- obtain and use precipitation data, see **Exhibit 211**
- create a 100-year flood plain shapefile, see **Exhibit 212**.

955 Floods (Continued)

C Best Practices for Analysis

GIS analysis can be effective in assessing impacts of flooding to agriculture. Typical analysis may require the GIS specialist to complete the following processes and tasks:

- attribute and spatial queries
- data manipulation
- heads-up digitizing
- processing GPS data
- processing satellite imagery
- union and intersect overlay operations.

When flooding is predicted for an area, preliminary analysis will be done to determine potential flood impacts, as follows:

- if modeled flood extent data is available for the area that may be affected, use the modeled flood extent data that corresponds with the forecast flood magnitude (for example 100-year flood, 500-year flood)

- if no modeled flood extent data is available, but historical imagery from a flood event of similar magnitude is available, use the historical imagery for analysis

- use the Intersect Tool in ArcToolbox to "cut" CLU polygons based on the flood extent

- update the "Calculated Acres" column of the resulting CLU data to reflect the updated geometry based on the clipped extent of the flood area

- summarize the attribute table of the resulting data by land classification code, including the sum of the calculated acres as a summary statistic

- use a spatial query to identify all Service Centers, within the affected area.

955 Floods (Continued)

C Best Practices for Analysis (Continued)

When flooding has occurred in an area, the GIS specialist will determine the best available data for use in analysis. Data sources, in preferred order, may include:

- high resolution imagery (for example SPOT satellite imagery, FEMA aerial photography, etc.)
- medium resolution imagery (LandSat TM 30-Meter satellite imagery and AWiFS 56-Meter satellite imagery)
- low resolution imagery (MODIS 250-Meter satellite imagery)
- modeled flood-extent data from USACE or other authoritative source
- modeled flood-extent data from HAZUS-MH
- observations from field personnel.

Note: Observations from field personnel may be impossible to obtain for a large flood area and do not necessarily lend themselves to large-scale analysis.

After a flood extent has been obtained for the flood event:

- use the Intersect Tool in ArcToolbox to "cut" CLU polygons based on the flood extent
- update the "Calculated Acres" column of the resulting CLU data to reflect the updated geometry
- summarize the attribute table of the resulting data by land classification code, including the sum of the calculated acres as a summary statistic
- use a spatial query to identify all Service Centers, within the affected area.

955 Floods (Continued)

D Presentation of Analysis Results

Maps and reports generated in response to a flood event should be designed to:

- depict the general location and extent of flooding
- distinguish flooded cropland from other agricultural land
- identify other impacts to agriculture, including farm buildings, and USDA offices
- support local and national reporting requirements.

Datasets that should be included on flood analysis maps include:

- CLU
- flood extent
- satellite imagery
- USDA office locations
- other farm data as available.

Note: Maps containing CLU data are for internal distribution **only**. Cropland and other land use data may be included on maps for use outside of Service Center Agencies **only** if data has been sufficiently aggregated to secure data according to 2008 Farm Bill, Section 1619. Guidance about protected data can be found in 2-INFO.

Because flood-extent data of riverine floods may not be suited for detailed presentation (for example, the flood extent is extremely narrow in relation to the length of the river), textual summaries and charts are useful for identifying flooded cropland totals.

956 Tornadoes

A Overview

Tornadoes are violent storms that arrive with little or no notice. The damage inflicted by tornadoes can be devastating in the areas that are directly impacted by the event. Crops, farm buildings, equipment, infrastructure, and lives can be wiped out in an instant. Doppler weather radar can detect rotation and indicate the likely presence of a strong mesocyclone that is in some stage of tornadic development. This data can be used to further address tornado impacts when combined with satellite imagery.

Common agricultural losses for tornadoes include:

- barns and other structures
- crops
- equipment and machinery
- feed and hay supplies
- fences
- forests
- grazing/pasture losses
- homes
- livestock
- transportation infrastructure
- utilities.

GIS analysis is very effective in assessing damage and losses caused by tornadoes. GIS specialists will assist in tornado-related program administration by tracking tornado events, compiling imagery, and develop maps in support of emergency management efforts for tornado events impacting agriculture.

956 Tornadoes (Continued)

B Recommended Data Sources

Potential data sources for tornado analysis are provided in the following table.

Note: In addition to the following resources, local data is often available from many State agencies and may provide more detailed information.

Data Source	Purpose	Resource Location	Notes
GloVis	Access to several types of imagery including Landsat and MODIS.	**http://glovis.usgs.gov/**	
HDDS	Access to pre- and post-event imagery for selected disaster events.	**http://hdds.usgs.gov/hdds2/**	A log-in account **must** be established to access restricted data and can be requested on the website. See **Exhibit 204**.
NCDC Data Inventory Search	Access and download NEXRAD data files in shapefile format by National Doppler Radar Sites.	**http://www.ncdc.noaa.gov/nexradinv/**	Mesocyclone (NME/60) and Tornadic Vortex Signature (NTV/61).
NCDC NEXRAD Data Inventory Search	Documentation and summary reports for all weather-related events for the entire U.S.	**http://www.ncdc.noaa.gov/nexradinv/**	Users can query by State, county, date and type of weather event.
NCDC Weather Station Results	Summary reports from weather stations throughout the U.S.	**https://www.ncdc.noaa.gov/crn/**	Users can select by State, county, and city, or latitude and longitude, if known.
NOAA Severe Weather for Tornadoes	Information for tornado activity in the U.S. Includes recent tornadic activity and historical information.	**http://www.spc.noaa.gov/products/watch/**	

956 Tornadoes (Continued)

B Recommended Data Sources (Continued)

Data Source	Purpose	Resource Location	Notes
NOAA State of the Climate Tornadoes	Access monthly tornado reports by month and year.	**http://www.ncdc.noaa.gov/sotc/tornadoes/**	
SPC	Access to preliminary storm reports for hail, tornadoes, and high winds for the past 24 hours.	**http://www.spc.noaa.gov/climo/reports/yesterday.html**	CSV files can be downloaded and plotted using latitude and longitude.
USDA FAS Crop Explorer	Access to daily MODIS imagery.	**https://www.pecad.fas.usda.gov/cropexplorer/imageview.aspx?regionid=us**	
USGS Earth Explorer	Access to several types of imagery, including Landsat and SPOT.	**http://earthexplorer.usgs.gov/**	A log-in account **must** be established to access restricted data and can be requested on the website. See **Exhibit 205**.
USGS Landsat Acquisition Schedule	Landsat 5 and Landsat 7 acquisition schedule.	**http://landsat.usgs.gov/tools_acq.php**	

For instructions on how to:

- use SPC, see **Exhibit 201**
- use National Warning GIS Shapefiles, see **Exhibit 213**.

956 Tornadoes (Continued)

C Best Practices for Analysis

GIS analysis can be effective in assessing the damage inflicted by a tornado for agriculture. Analysis may require the following tasks be completed:

- create thematic maps to summarize various aspects of the data
- heads-up digitizing
- hot link digital photos of the area
- imagery comparisons
- insert buffer zones around line and area layers
- perform attribute and spatial queries
- perform table manipulations
- perform union and intersect overlay operations
- process GPS data
- process satellite imagery
- process XY event theme data from NWS.

The following table of spatial analysis options can be used to understand and depict damage from tornadoes.

Note: The amount of damage inflicted by a tornado will dictate the spatial analysis techniques that will need to be applied.

IF…	**THEN…**			
a tornado with EF0 to EF2 winds occurs	follow steps 1 through 4.			
	Step	**Action**	**Purpose**	**Notes**
	1	Plot the latitude and longitude of the tornado in a shapefile/geodatabase.	Identifies touchdown locations.	Data source is SPC.
	2	Request Field Offices collect GPS points and digital photos.	Supporting information for disaster requests.	Supports APLN requests and Secretarial disaster designations.
	3	Plot GPS points and add to map document.	Assists in developing damage reports.	
	4	Use hot links to include GPS point data linked with digital photos.	Overview information for overall damage.	

956 Tornadoes (Continued)

C Best Practices for Analysis (Continued)

IF…	THEN…			
a tornado with winds exceeding EF3 or greater occurs	complete steps 1 through 4 and continue with the following steps.			
	Step	**Action**	**Purpose**	**Notes**
	5	Determine best imagery available before and after tornado.	Imagery analysis.	Possible data sources are SPOT, LandSat TM (30-Meter), AWiFS (56-Meter) or MODIS (250-Meter).
	6	Create tornado path (shapefile) based on imagery comparison.	Identify tornado damaged areas.	See tornado methodology using imagery. Use pan sharpening or principle component analysis.
	7	Obtain weather warning polygons.	Narrow down and verify tornado location.	Data source at **http://www.nws.noaa.gov/regsci/gis/shapefiles/**.
	8	Intersect CLU with tornado path.	Quantify damage to cropland.	See tornado methodology. Intersect in ArcToolbox.
	9	Summarize CLU to define damage based on land class codes and total farms/tract impacted.	Provide CED and CEB statistical support for LAR.	Used as supporting documentation for STORM Reports.
	10	Use spatial query to identify all Service Centers, in tornado path.	Identify agricultural resources impacted by tornado.	Used as supporting documentation for STORM Reports.

D Presentation of Analysis Results

In the aftermath of a tornado, the geospatial officer will create a series of reports and maps that assist local Field Offices, SEB's, CEB's, and the National Office in assessing the scope, magnitude, and extent of the tornado. This information can be used to:

- assess possible structural damage concerning agriculture
- assist in coordination efforts of Field Offices, SEB's, and CEB's in assessing and completing LAR's
- evaluate the location and spatial extent of damage
- pinpoint CLU in damage areas.

956 Tornadoes (Continued)

D Presentation of Analysis Results (Continued)

Use the following table as a guide for reports and maps for tornadoes:

Note: Maps containing CLU data are for internal distribution **only**. Cropland and other land use data may be included on maps for use outside of Service Center Agencies **only** if data has been sufficiently aggregated to secure data according to 2008 Farm Bill, Section 1619. Guidance about protected data can be found in 2-INFO.

Tornado Scale	Tasks to Accomplish	Timeframe to Complete	Primary Product Recipients	Primary Data Sources and Resource Sites
EF0 - EF5	Tornado Touchdown Map	Day of or next workday after event.	SED and CED.	SPC and national grid.
EF1 - EF5	Damage Point Map	Completed and updated as local offices provide field data.	CEB and SEB.	County boundary, major roads, Service Center locations, national grid, and major geographical features.
EF1 - EF5	Initial Tornado Path Overview Map	Day of or next workday after event.	SED, CED, and CEB.	SPC, county boundary, national grid, major roads, Service Center locations, major geographical features, and bin locations.
EF2 - EF5	PowerPoint Overview of Storm Damage Report	Compiled before SEB meeting.	SEB.	Maps listed in this table, statistics from analysis, digital photos, news articles, and other related information.
EF3 - EF5	FSA Map Series Emergency Management	After the path has been delineated.	CED and producers impacted.	Current NAIP, CLU, tornado path, national grid.
EF3 - EF5	Landsat Map Comparisons	Approximately 16 calendar days after event. Requires before and after satellite images.	GIS specialist.	Satellite imagery, county boundary, and digitized path location.
EF3 - EF5	Updated Tornado Path Overview Map	After the path has been delineated.	CEB and SEB.	County boundary, national grid, tornado path, major geographical features, and CLU.

957 Hurricanes

A Overview

Hurricanes are predictable, seasonal, maritime storms that arrive with significant advance warning. Hurricanes largely affect the Gulf of Mexico and southern Atlantic Coast regions. They occur less frequently in the northeast Atlantic coastal region and rarely in the Hawaiian Islands. Although a hurricane is primarily a coastal event, the powerful storms can travel deep inland causing far reaching negative impact. The widespread damage caused by hurricanes can affect crops, livestock, structures, and equipment. Damage can be because of high winds, tornadoes, excessive precipitation, storm surge, and flooding.

Hurricane can cause damage or destruction to:

- barns and other structures
- crops
- equipment and machinery
- feed and hay supplies
- fences
- forests
- grazing lands/pasture
- homes
- levees and dams
- livestock
- soils
- transportation infrastructure
- utilities.

GIS analysis can be effective in assessing hurricane damage. It can assist in storm-tracking, disaster-related program administration, disaster recovery, and provide analysis and supporting documentation for Secretarial disaster declaration or APLN.

957 Hurricanes (Continued)

B Data Sources

In addition to the following resources, local data is often available and may provide more detailed information.

Data Source/ Resource	Purpose	Resource Location
GloVis		**http://glovis.usgs.gov/**
HAZUS-MH	Nationally applicable standardized methodology that contains models for estimating potential losses from hurricanes and floods.	**http://hazus.org/**
HDDS		**https://hddsexplorer.usgs.gov/**
HURREVAC	Software used by emergency managers to track hurricanes and assist in decision-making.	**http://www.hurrevac.com/**
NOAA Historical Hurricane Tracks	Comprehensive historical hurricane and typhoon track data worldwide.	**https://oceanservice.noaa.gov/news/historical-hurricanes/**
NOAA, NWS, AHPS	Archived precipitation data.	**http://water.weather.gov/precip/**
NWS, NHC	Continually updated alerts, warnings, and status of tropical storm activity.	**http://www.nhc.noaa.gov/**
The National Association of Radio Distress		**http://hisz.rsoe.hu/alertmap/index2.php**
USDA FAS Crop Explorer		**https://www.pecad.fas.usda.gov/cropexplorer/imageview.aspx?regionid=us&product=modis**
USGS Earth Explorer		**http://earthexplorer.usgs.gov/**
USGS Landsat Acquisition Schedule		**http://landsat.usgs.gov/tools_acq.php**

957 Hurricanes (Continued)

C Best Practices for Analysis

Hurricane data can be used effectively before and after the storm occurs. It can assist in making agriculture-related damage assessments within a hurricane affected area. Typical analysis may require the geospatial officer to complete the following tasks:

- classify soil types
- create thematic maps to summarize various aspects of the data
- insert buffer zones around line and area layers
- perform attribute and spatial queries
- perform table manipulations
- perform union and intersect overlay operations
- use HAZUS-MH to model hurricane scenarios
- use NWS AHPS to provide precipitation data
- use NWS NHC and HURREVAC to provide geospatial data (tracks, wind).

Note: The damage inflicted by a hurricane will often dictate the spatial analysis techniques that need to be used and the time needed to complete them. Pre-staged data **paragraph 927** is particularly important in hurricane prone areas.

The following spatial analysis steps can be used to better understand and depict damage from hurricanes.

Follow these steps **before** a significant hurricane is expected.

Step	Action	Purpose	Notes
1	Plot hurricane track using latitude and longitude.	Needed to track hurricane path and predict landfall sceneries.	
2	Complete HAZUS-MH scenarios for review.	Scenarios should have already been run as part of an exercise and testing process for FSA according to 1-SEM.	HAZUS–MH hurricane module.
3	Use HURREVAC to track predicted path.	Support information for disaster requests.	

957 Hurricanes (Continued)

C Best Practices for Analysis (Continued)

Follow these steps **after** landfall of a hurricane.

Step	Action	Purpose	Notes
1	Obtain imagery to show standing water over time.	Valuable support information for heavy precipitation events.	Requires a number of satellite images to show length of time water inundated fields or impacted land. Possible data sources are SPOT, LandSat TM (30-Meter), AWiFS (56-Meter), or MODIS (250-Meter).
2	Use AHPS.	Obtain the gridded rainfall data for length of time precipitation has occurred.	Data source at **http://water.weather.gov/precip/download.php**.
3	Use imagery analysis to show standing water.	To show concentrations of water standing on the ground or flooded areas.	Used in APLN requests and Secretarial disasters. Look for Bands 5 and 3 combine to a numeric grid. High values will reflect water reflectivity.
4	Use imagery comparison from previous month for damage assessments.	Assists in addressing high damage areas and crop losses.	Used in APLN requests and Secretarial disasters.
5	Request additional GPS points and digital images of impacted areas, as appropriate, from County Offices.	To streamline field data collection and document event.	
6	Check NCDC NEXRAD inventory.	To create additional documentation of rainfall event, if needed.	Can create a base weather image of event path using Level II data. Useful for SEB and CEB discussions of rain events to make factual decisions on storm paths.
7	CLU intersect or overlay.	To identify areas impacted by heavy precipitation from hurricane.	Allows for identification and statistical summary of total farmland impacted.
8	Identify proximity risk to Service Centers.	For status reports.	

957 Hurricanes (Continued)

D Presentation of Analysis Results

The geospatial officer will create maps and reports to assist local Field Offices, SEB's, CEB's, and the National Office in assessing the scope, magnitude, and extent of the event. Maps and reports should be designed to:

- assess possible structural impacts or damaged concerning agriculture
- assist in coordinating efforts with Field Offices, SEB's, and CEB's in assessing and completing LAR's
- evaluate the location and spatial extent of damage
- identify areas of risk for Service Center employees
- identify areas of risk for Service Centers
- implement and support State and County Emergency Operations Plans and cooperative activities
- pinpoint affected areas of damage.

957 Hurricanes (Continued)

D Presentation of Analysis Results (Continued)

GIS can also be used to create maps and reports to assist SEB's and CEB's in damage assessments and National and State Offices with information dissemination.

Note: The types and number of maps and reports needed, and the updates required to properly assess the situation, will be based on the severity of the hurricane.

Hurricane Maps	Purpose	Completion Timeframe	Primary Recipients	Primary Data Sources
Before Landfall				
Track Maps	Depicts potential hurricane path.	Days to hours before landfall.	National Office, SED, and CED	County boundary and wind speeds.
HAZUS-MH Scenario Maps	Defines possible damage expected from a landfall event.	Months to days before event.	SED, CED, and CEB	HAZUS-MH scenario, county boundary, national grid, major roads, Service Center locations, and major geographical features.
Destruction Point Map	Compiles field information from GPS and digital photos defining the hurricane impact.	Completed and updated as Field Offices provide data.	CEB and SEB	County boundary, major roads, Service Center locations, national grid, and major geographical features.
After Landfall				
Landsat Comparisons	Compares previous month imagery by county or localized areas of concern.	Approximately 16 calendar days after event. Requires before and after satellite images.	GIS specialist	Satellite imagery, county boundary, and digitized path location.
FSA Map Series	Identifies farms impacted by standing or flood water.	If needed based on the situation.	CED and producers impacted	Current NAIP, CLU, and national grid.
Report	PowerPoint overview of Hurricane Damage Report.	Compiled before SEB Meeting.	SEB	Maps in this table, statistics from analysis, digital photos, news articles, and other related information. Includes images submitted by local offices to document extent, scope, and magnitude of the event.

958 Droughts

A Overview

Although defining a drought event can be difficult, the basic premise is the deficiency of precipitation over a period of time compared to normal conditions. Drought conditions take time to develop and can last for long periods. In addition, drought conditions may be localized in a small area or persist across many States.

Determining impact to agriculture can be complicated. Many factors must be considered, such as timing of precipitation in relation to the growing season, wind, and temperature. Common agricultural losses for drought include:

- crops
- grazing/pasture losses
- water resources.

GIS analysis is effective in assessing impacts of a drought event. GIS specialists will assist by monitoring drought events and developing maps and reports in support of emergency management efforts and program administration.

B Data Sources

The following are core data sources for drought.

Note: In addition to the following resources, local data is often available and may provide more detailed information.

Data Source/ Resource	Purpose	Resource Location	Notes
CPC	Various precipitation and drought outlook maps.	**http://www.cpc.ncep.noaa.gov**	
Crop Moisture Index	Weekly crop moisture index.	**http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/regional_monitoring/cmi.gif**	
NASS Vegetation Condition	Vegetation condition images derived from AVHRR NDVI data.	**https://nassgeodata.gmu.edu/VegScape/**	Includes comparison map from previous year.

958 Droughts (Continued)

B Data Sources (Continued)

Data Source/ Resource	Purpose	Resource Location	Notes
National Integrated Drought Information System, U.S. Drought Portal	Comprehensive source of drought information and data.	**https://www.drought.gov/drought/**	
NWS AHPS	Multiple gridded precipitation products. Cumulative data is based on various timeframes.	**http://water.weather.gov/precip/download.php**	Use the following datasets: • Normal • Departure • Percent.
Palmer Drought Severity Index	Access to weekly Palmer Drought Severity Index.	**http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/regional_monitoring/palmer.gif**	
U.S. Drought Monitor	Access to weekly drought level shapefiles and tabular data.	**http://droughtmonitor.unl.edu/MapsAndData/MapArchive.aspx**	
U.S. Drought Monitor Graphics	Customized drought monitor statistics in a time-series chart format.	**https://www.drought.gov/drought/drought-monitor-graphics**	
USDA FAS Crop Explorer, MODIS NDVI Image Gallery	Download access to regional NDVI composites and NDVI departure from 5-year average.	**https://www.pecad.fas.usda.gov/cropexplorer/imageview.aspx?regionid=us&product=modis**	

958 Droughts (Continued)

C Best Practices for Analysis

Typical analysis requires the GIS specialist to complete the following processes and tasks:

- attribute and spatial queries
- data manipulation
- spatial interpolation
- union and intersect overlay operations.

The following table provides specific analysis steps associated with disaster response and reporting during a drought event.

Note: The extent and duration of a drought event will often dictate the time period and spatial analysis techniques to be applied.

Step	Action	Purpose	Notes
1	Download USDM weekly shapefile.	• To evaluate the extent and intensity of the drought event. • For requests for managed haying and grazing on CRP and prevented planting purposes.	Archive in F:\geodata\disaster_events\ USDM folder.
2	Clip CLU based on the weekly USDM shapefile.	Overview of the types of acreage affected.	Display CLU's by land class code.
3	Join acreage report data to CLU.	Allows for displaying specific crops and acreage reported as failed.	For large events, summarize failed acreage at the county level.
4	Interpolate NWS AHPS precipitation data.	Displays percent of normal and departure from normal precipitation estimates.	Use "Departure" and "Percent" datasets. Timeframes available are previous 7, 14, 30, 60, 90, and 180 calendar days. Month, year, and water year to date is also available. Determine appropriate timeframe based on time of year, length of drought, and local conditions.

958 Droughts (Continued)

D Maps and Reports

Maps and reports are needed to assess impacts to agriculture and support various reporting requirements at the local, State, and national level. See 1-SEM for guidance when including maps with disaster situation reports.

Note: Maps containing CLU, CRP, or acreage report data are for internal FSA distribution **only**. Cropland and other land use data may be included on maps for use outside of Service Center Agencies only if data has been sufficiently aggregated to secure data according to the 2008 Farm Bill, Section 1619. Guidance about protected data can be found in 2-INFO.

See this table for maps and reports as they relates to drought events.

Map/Report Description	Timeframe	Primary Recipient	Notes
General overview of areas impacted by drought.	Update weekly.	SED and CED.	
Assemble supplemental maps and graphics from other sources.	Bi-weekly.	SED and CED.	CPC drought outlook, NASS vegetation condition, CPC precipitation outlook, Crop Moisture Index, etc.
Precipitation (percent of normal and departure from normal).	Monthly.	SED and CED.	More frequent updates may be needed depending on normal precipitation amounts.
NDVI and NDVI departure from average.	Monthly.	SED.	
Land use map based on CLU, identifying failed acreage.	Update throughout growing season.	SEB and CEB.	For large events, summarize failed acreage at the county level.
Map of approved haying and grazing on CRP.	Update as needed.	SEB.	Include effective dates.
Tabular report of failed acreage by crop type and intended use.	Update throughout growing season.	SEB and CEB.	

959 Wildfires

A Overview

Wildfires are a major threat to agriculture and generally occur with little or no notice. Wildfires vary in size, are unpredictable, and have the potential to spread quickly. While row crops are usually not affected, grass, rangeland, and timber losses can be significant.

Common agricultural losses for wildfires include:

- barns and other structures
- equipment and machinery
- feed and hay supplies
- fences
- grazing/pasture losses
- livestock
- timber
- watering systems.

GIS analysis is effective in assessing damage and losses caused by wildfires. GIS specialists will assist in wildfire-related activities by tracking wildfire events, compiling imagery, and developing maps and reports in support of emergency management efforts and program administration.

B Data Sources

The following are wildfire data resources for GIS specialists.

Note: In addition to the following resources, local data is often available and may provide more detailed information.

Data Source	Purpose	Resource Location	Notes
FS Active Fire Mapping	Access to daily MODIS imagery and fire detection shapefiles. Available shapefiles include MODIS fire detections for the previous 7 days, and cumulative fire detections for the year, are updated hourly.	**https://fsapps.nwcg.gov/afm/**	

959 Wildfires (Continued)

B Data Sources (Continued)

Data Source	Purpose	Resource Location	Notes
Fire Data Web Services	Access to several WMS and WFS for MODIS fire-related products.	**https://fsapps.nwcg.gov/afm/wms.php**	Create a WMS or WFS server connection in ArcMap.
FS Burned Area Reflectance Classifications	Access to burn severity data for selected fires. Burned area reflectance classifications data has 4 classes; high, moderate, low, and unburned.	**https://fsapps.nwcg.gov/afm/baer/download.php**	
GeoMAC	Access to fire perimeter shapefiles.	**http://rmgsc.cr.usgs.gov/outgoing/GeoMAC**	
GeoMAC WMS and WFS Service	Access to several wildfire related datasets through ArcMap including satellite detected fires and fire perimeters.	**http://www.geomac.gov**	Create a WMS server connection in ArcMap using 1 of the services listed at **https://fsapps.nwcg.gov/afm/wms.php**
GloVis	Access to several types of imagery including Landsat.	**http://glovis.usgs.gov**	
USGS HDDS Explorer	Access to pre- and post-event imagery for selected disaster events.	**https://hddsexplorer.usgs.gov/**	A log-in account **must** be established to access restricted data and can be requested on the website. See **Exhibit 204**.

959 Wildfires (Continued)

B Data Sources (Continued)

Data Source	Purpose	Resource Location	Notes
NOAA	Access to several fire-related datasets through ArcMap, including satellite analyzed fires.		Create a server connection in ArcMap.
USDA FAS Crop Explorer, MODIS Rapid Response	Access to daily MODIS imagery.	**https://www.pecad.fas.usda.gov/cropexplorer/imageview.aspx?regionid=us&product=modis**	
USGS Earth Explorer	Access to several types of imagery including Landsat and SPOT.	**http://earthexplorer.usgs.gov**	A log-in account **must** be established to access restricted data and can be requested on the website. See **Exhibit 205**.
USGS Landsat Acquisition Schedule	Landsat 5 and Landsat 7 acquisition schedule.	**http://landsat.usgs.gov/tools_acq.php**	

C Best Practices for Analysis

Typical wildfire analysis requires the GIS specialist to complete the following tasks:

- attribute and spatial queries
- data manipulation
- heads-up digitizing
- process GPS data
- process satellite imagery
- union and intersect overlay operations.

959 Wildfires (Continued)

C Best Practices for Analysis (Continued)

The following table provides specific analysis steps associated with disaster response and reporting during and after a wildfire event.

Note: The location and size of a wildfire will often dictate the time period involved and spatial analysis techniques to be applied.

Step	Action	Purpose	Notes
1	Acquire and process satellite imagery.	To evaluate the location and spatial extent of the wildfire. Higher resolution imagery can also be used in program implementation, such as ECP.	MODIS should only be used when preparing initial estimates and maps when other imagery is not available. Do not use in detailed analysis or program administration. When using MODIS, the 7, 2, 1 False Color product is recommended. When using Landsat imagery, the 7, 4, 2 band combination is recommended.
2	Determine the fire perimeter.	Essential for detailed analysis.	This task is typically accomplished by heads-up digitizing from satellite imagery. Accuracy may be supplemented or validated with GPS data collected by field personnel. Perimeters for larger fires are often available from GeoMAC.
3	Clip CLU based on the fire perimeter layer.	Necessary to determine affected acreage.	When possible, join acreage report data to the CLU layer before intersecting with the fire perimeter layer. Depending on the location and scale of the event, join acreage report data at either the tract or field level.
4	Calculate affected acreage and summarize by land class code.	Data and statistics to support various reporting requirements.	If using acreage report data, also summarize by crop and intended use.
5	Intersect other layers such as grazing allotments or CRP with the fire perimeter, as needed.	Data and statistics to support various reporting requirements.	

959 Wildfires (Continued)

D Maps and Reports

Maps and reports are needed to assess impacts to agriculture and support various reporting requirements at the local, State, and National level. Since wildfires have the potential to last several weeks, maps and reports should be updated as needed. See 1-SEM for additional requirements when including maps with disaster situation reports.

Note: Maps containing CLU, CRP, or acreage report data are for internal FSA distribution **only**. Cropland and other land use data may be included on maps for use outside of Service Center Agencies only if data has been sufficiently aggregated to secure data according to the 2008 Farm Bill, Section 1619. Guidance about protected data can be found in 2-INFO.

See this table for maps and reports for wildfire events.

Map/Report Description	Timeframe	Primary Recipient	Notes
General overview of wildfire activity (State or county level, as appropriate).	Day of or next workday after event.	SED and CED.	Display initial wildfire activity as point data until fire perimeter is available.
Initial fire perimeter.	One or 2 calendar days after event.	SED, CED, and CEB.	Can be estimated using MODIS imagery.
Land use map based on CLU.	When wildfire perimeter is determined.	SEB and CEB.	When possible, include acreage report data.
Maps showing other acreage affected, such as CRP and grazing allotments.	When wildfire perimeter is determined.	SEB and CEB.	
Tabular report of affected acreage by land class code.	When wildfire perimeter is determined.	SEB and CEB.	When possible, acreage should also be summarized by crop type and intended use.
Updated fire perimeter.	After imagery is available or perimeter data is provided from other sources.	SEB and CEB.	Use Landsat, SPOT, or AWiFS 56-Meter imagery.

960 Earthquakes

A Overview

Earthquakes are destructive events that arrive with little or no notice. The damage inflicted by an earthquake can be devastating in areas that are directly impacted by the event in terms of infrastructure damage. Crop damage for most types of earthquakes is a secondary concern because only those directly adjacent to the epicenter are typically destroyed. Damage moving out from the epicenter is moderated by distance and terrain type. Crops, farms, equipment, infrastructure, and lives can be wiped out in an instant during an earthquake, but the major damage is also associated with secondary events such as levee breaks, flooding, fires, and loss of infrastructure connections.

Common agricultural losses for earthquakes include:

- barns and other structures
- crops
- ditches
- equipment and machinery
- feed and hay supplies
- fences
- fish hatcheries
- forests
- grazing/pasture losses
- homes
- infrastructure damage or destruction
- irrigation infrastructure
- levees and dams
- livestock
- nurseries
- pipelines
- ranches
- transportation infrastructure
- utilities.

GIS analysis is very effective in assessing damage and losses caused by earthquakes. GIS specialists will assist in earthquake-related program administration, disaster recovery, and tracking. The assistance will include tracking and compiling earthquake data, imagery analysis, HAZUS-MH support, and map development in support of emergency management efforts for FSA support and recovery of events impacting agriculture.

960 Earthquakes (Continued)

B Data Sources

The following are earthquake data resources for GIS specialists.

Note: In addition to the following resources, local data is often available from many State agencies and may provide more detailed information.

Data Source	Purpose	Resource Location	Notes
Advanced National Seismic System	Access to accurate and timely information products for seismic events, including their effects on buildings and structures, and employing modern monitoring methods and technologies.	**http://earthquake.usgs.gov/monitoring/anss**	
USGS Latest Earthquakes	Shows an interactive web map of the latest earthquakes.	**https://earthquake.usgs.gov/earthquakes/map/**	
USGS Earthquake Lists, Maps and Statistics	USGS historic inventory of earthquakes, including maps, statistics, and history of earthquakes in the U.S.	**https://earthquake.usgs.gov/earthquakes/browse/**	
GloVis	Access to several types of imagery, including Landsat and MODIS.	**http://glovis.usgs.gov**	
HAZUS-MH	HAZUS-MH data disks have seismic zones and software models for assessing earthquake damage.		HAZUS-MH information at **http://hazus.org**.
USGS HDDS Explorer	Access to pre- and post-event imagery for selected disaster events.	**https://hddsexplorer.usgs.gov/**	A log-in account **must** be established to access restricted data and can be requested on the website. See **Exhibit 204**.

960 Earthquakes (Continued)

B Data Sources (Continued)

Data Source	Purpose	Resource Location	Notes
HSIP Gold	A unified homeland infrastructure geospatial data inventory assembled by NGA in partnership with the Homeland Infrastructure Foundation-Level Data community for common use by the Homeland Security, Homeland Defense and Emergency Preparedness, and response and recovery communities.	**https://gii.dhs.gov/HIFLD/**	
The National Association of Radio Distress	Map and tabular placement of major events occurring and ongoing around the world.	**http://hisz.rsoe.hu/alertmap/index2.php**	
USGS Earthquake Information by Region	State-level summaries of earthquake information, maps, and other earthquake-related data or links.	**https://earthquake.usgs.gov/earthquakes/byregion/**	
USDA FAS Crop Explorer	Access to daily MODIS imagery.	**http://www.pecad.fas.usda.gov/cropexplorer/modis_summary**	
USGS Earth Explorer	Access to several types of imagery, including Landsat and SPOT.	**http://earthexplorer.usgs.gov**	A log-in account **must** be established to access restricted data and can be requested on the website. See **Exhibit 205**.
USGS Earthquakes	USGS general information following current earthquake events.	**http://earthquake.usgs.gov/earthquakes**	Provides links to really simple syndication feeds, maps, earthquake reporting, notifications signups, and seismogram displays.

960 Earthquakes (Continued)

B Data Sources (Continued)

Data Source	Purpose	Resource Location	Notes
USGS Earthquakes Regional	USGS general information following current earthquake events displayed regionally.	**https://earthquake.usgs.gov/earthquakes/byregion/**	
USGS Seismic Hazard Mapping	Data for past events that document historical earthquakes.	**https://earthquake.usgs.gov/hazards/hazmaps/**	
USGS Landsat Acquisition Schedule	Landsat 5 and Landsat 7 acquisition schedule.	**http://landsat.usgs.gov/tools_acq.php**	
USGS Shakemap Products	USGS information and summary data for earthquake information collected by year and event.	**https://earthquake.usgs.gov/data/**	
USGS Earthquake Scenarios	Maps that depict shaking intensity.	**https://earthquake.usgs.gov/scenarios/**	

C Best Practices for Analysis

Earthquakes typically exhibit damage along a slipped fault that radiates damage from the epicenter. Damage and strength of the earthquake are correlated with the earthquake's measured Richter Magnitude Scale. Events with magnitudes of over 4.5 are measured worldwide and typically result in damage that can be quantified. The damage inflicted by an earthquake can be analyzed and correlated using geospatial techniques that assist FSA in addressing damage assessments for the agricultural community within a given area impacted by an earthquake. Typical earthquake analysis may require that the GIS specialist complete the following tasks:

- classify soil types
- create epicenter analysis based on earthquake locations
- create thematic maps to summarize various aspects of the data
- identify seismic zones and fault lines
- identify slope risks using triangulated irregular network, digital elevation model, or LiDAR data

960 Earthquakes (Continued)

C Best Practices for Analysis (Continued)

- insert buffer zones around line and area layers
- perform attribute and spatial queries
- perform table manipulations
- perform union and intersect overlay operations
- use HAZUS-MH to model earthquake scenarios.

The geospatial officer will use spatial analysis to better understand and depict damage for earthquakes by completing the following steps.

Note: The damage inflicted by an earthquake will often dictate the period of time and spatial analysis techniques that will need to be applied. GIS specialists should have staged data and scenarios based on real-time exercises completed in preparation for the eventual need to respond to an earthquake event. See **paragraph 927**.

Complete the following steps to **prepare** for an event.

Step	Action	Purpose	Notes
1	Identify Seismic zones and known fault lines Statewide.	Identifies what areas to focus HAZUS-MH earthquake scenarios.	
2	Run HAZUS-MH scenarios for earthquake in high risk areas.	Prepare State and County Offices with scenarios.	GIS specialists may practice using the HAZUS-MH software to become proficient.
3	Identify areas of high risk from previous earthquakes.	Identifies areas of high risk in a county.	Targets focus areas for planning purposes.
4	Assemble earthquake monitoring websites.	Preload the websites so they can be used.	

960 Earthquakes (Continued)

C Best Practices for Analysis (Continued)

Complete the following steps **after** an event.

Step	Action	Purpose	Notes
1	Identify area impacted by earthquake and intensity.		
2	Plot earthquake epicenter.		
3	Identify earthquake damage areas.		
4	Complete HAZUS-MH scenario real-time using actual data.		
5	Request Field Offices to collect GPS points and digital photos.	Support information for disaster requests.	Used in APLN requests and Secretarial disasters.
6	Plot field GPS points and add to map document.	Assists in developing damage reports.	
7	Use hot links to include GPS point data linked with digital photos.	Overview information for overall damage.	Used in APLN requests and Secretarial disasters.
8	Determine best imagery available before and after.	Imagery analysis.	Possible data sources are SPOT, LandSat TM (30-Meter), AWiFS (56-Meter), or MODIS (250-Meter).
9	Intersect CLU with earth quake area.	Quantify damage to cropland and agricultural structures.	Intersect in ArcToolbox.
10	Identify proximity risk to Service Centers.	Status reports.	
11	Identify proximity risk to FSA staff home locations.	Status reports.	

D Presentation of Analysis Results

In the aftermath of an earthquake, maps and reports can be used to help assess impacts to agriculture and support various reporting requirements at the local, State, and National level. The purposes of the maps and report analysis are to:

- assess possible structural impacts or damaged concerning agriculture
- assist in coordinating efforts with Field Offices, SEB's, and CEB's in assessing and completing LAR's

960 Earthquakes (Continued)

D Presentation of Analysis Results (Continued)

- evaluate the location and spatial extent of damage
- identify areas of risk for Service Center employees
- identify Service Center areas of risk
- implement and support State and County Emergency Operations Plans and cooperative activities
- pinpoint affected areas of damage as they relates to CLU.

Note: Maps containing CLU and CRP are for internal FSA distribution **only**. If data is sufficiently aggregated, cropland and other land use data may be included on maps for use outside of Service Center Agencies. Guidance about protected data can be found in 2-INFO.

This table provides maps and reports for earthquakes.

Earthquake Severity	Task	Completion Timeframe	Primary Product Recipients	Primary Data Sources and Resource sites
3.0 magnitude and greater	Complete Earthquake Epicenter Map.	Next workday after event.	SED and CED.	County boundaries.

960 Earthquakes (Continued)

D Presentation of Analysis Results (Continued)

Earthquake Severity	Task	Completion Timeframe	Primary Product Recipients	Primary Data Sources and Resource sites
5.0 magnitude and greater with impacts to agriculture	Complete Earthquake Event Overview Map, if needed based on the situation.	Next workday after event.	CED and CEB.	HAZUS-MH scenario, county boundary, national grid, major roads, Service Center locations, and major geographical features
	Complete Damage and Destruction Point Map, if needed based on the situation.	Completed and updated as local offices provide field data.	CEB and SEB.	County boundary, major roads, Service Center locations, national grid, and major geographical features
	Complete Landsat Map, if needed based on the situation.	Approximately 16 calendar days after event. Requires before and after satellite images.	GIS specialist.	Satellite imagery, county boundary, and digitized path location.
	Complete FSA Map Series, if needed based on the situation.	Defines farms impacted by standing or flood water.	CED and producers impacted.	Current NAIP, CLU, tornado path, national grid.
	PowerPoint overview of Earthquake Damage Report.	Compiled before SEB Meeting.	SEB.	Maps in this table, statistics from analysis, digital photos, news articles, and other related information.

Reports, Forms, Abbreviations, and Redelegations of Authority

Reports

None.

Forms

This table lists all forms referenced in this handbook.

Number	Title	Display Reference	Reference
AD-700	Procurement Request		296
AD-2017	Service Center Information Management System (SCIMS) Access Form		Ex. 9, 10
CCC-505	Voluntary Permanent Base Acres Reduction		506, Ex. 130
CCC-517	Tract Redistribution Form		506
FSA-13-A	System Access Request Form		51, Ex. 9, 10
FSA-156EZ	Abbreviated 156 Farm Record		Ex. 98
FSA-159	Request for Supplies, Forms, and/or Publications		310
FSA-409	Measurement Service Record		249
FSA-409A	Measurement Service Request Register		249
FSA-578	Report of Acreage		50, 134, 136, 146, 251
FSA-858	Determining if a Wetland May Be Present		872
NRCS-CPA-026	Highly Erodible Land and Wetland Conservation Determination		71, Ex. 14, 23
NRCS-CPA-026E	Highly Erodible Land and Wetland Conservation Determination		Ex. 21

Abbreviations Not Listed in 1-CM

The following abbreviations are not listed in 1-CM.

Approved Abbreviation	Term	Reference
AD	Active Directory	46, 48, 102, Ex. 5, 8
ADUC	Active Directory Users and Computers	48, Ex. 8
AGOL	ArcGIS Online	Text and Exhibits

Reports, Forms, Abbreviations, and Redelegations of Authority (Continued)

Abbreviations Not Listed in 1-CM (Continued)

Approved Abbreviation	Term	Reference
AHPS	Advanced Hydrologic Prediction Service	954, 957, 958, Ex. 211
AMT	Access Management	Ex. 9, 10
APLN	Administrator Physical Loss Notification	602, 927, 954, 956, 957, 960
ARCPLC	Agriculture Risk Coverage and Price Loss Coverage	506, 515, 517, 762, Ex. 5, 16, 124, 128
BWEP	Boll Weevil Eradication Program	146-149
CARS	Crop Acreage Reporting System	Text, Ex. 21, 27
CCMS	Conservation Contract Maintenance System	104, 121-123, 513, 517, 518, Ex. 5, 6, 16, 25, 128, 130
CEB	County Emergency Board	762, 925-927, 953, 954, 956-960
CEC	Client Experience Center	281
COLS	Conservation On-Line System	504, Ex. 2
CPC	Climate Prediction Center	958
CRM	Customer Relationship Management	Text and Exhibits
CSDGM	Content Standard for Digital Geospatial Metadata	Ex. 11
CSV	comma-separated values	48, 515, 956, Exhibits
CTS	Client Technology Services	Text and Exhibits
DFS	Distributed File System	49
DGPS	Differential Global Positioning System	278, 308-311, Ex. 2
DNRGPS	Department of Natural Resources (MN) GPS Application	312, Ex. 2
DOQ	Digital Ortho-Photography	Ex. 2, 13, 14
DRT	Data Remediation Tool	102, 505, Ex. 2, 9, 98
EAD	Enterprise Active Directory	46
EAS	Extensible Authorization System	48
EDW	Enterprise Data Warehouse	71, 513-515, 872, Exhibits
EHEL	exempt from highly erodible land	102, 655
ELA	Enterprise License Agreement	816, 817, 927
EROS	Earth Resources Observation and Science	872
ERSR	Electronic Repository for Security Request	48

Reports, Forms, Abbreviations, and Redelegations of Authority (Continued)

Abbreviations Not Listed in 1-CM (Continued)

Approved Abbreviation	Term	Reference
ESRI	Environmental Systems Research Institute	61, 278, 313, 762, 816, 927, Exhibits
EXIF	exchangeable image file format	296
FIRM	flood information rate map	872, Ex. 203
FGDC	Federal Geographic Data Committee	2, 26, 150, 872, Ex. 2, 12-14, 204, 205
FPAC	Farm Production and Conservation	105, 159, 160, 281
FRS	Farm Records System	505, 506, Ex. 2, 120, 121, 129
GAD	Geospatial Authoritative Dataset	8, Ex. 8
GCS	Geographic Coordinate System	39, 174, 629, Ex. 165, 212
GDG	Geospatial Data Gateway	872
GDMT	Geodata Management Team	7, 26, 27, 38, Ex. 5
GEO	Geospatial Enterprise Operations Branch	159, 160
GET	GIS Environment Tool	39, 502-504, Ex. 2, 19, 87, 89, 98
GloVis	Global Vision	954-957, 959, 960
GNSS	Global Navigation Satellite System	324, 326-328, Ex. 2
GPS	Global Positioning System	7, 8, 37, 39, 46, Exhibits
HDDS	Hazards Data Distribution System	872, 954-957, 959, 960, Ex. 204
HUC	hydrologic unit code	37, 39, 172, 174, 175, Ex. 31
IDP	Individual Development Plan	927
ISO	International Organization for Standardization	61, 63, 105, 116, 125, 140, 176, Ex. 2, 11-15
LAR	Loss Assessment Report	926, 953, 954, 956, 957, 960
LCC	land classification code	Ex. 18, 166
MESH	maximum estimated size of hail	Ex. 210
NAD83	North American Datum of 1983	37, 100, Ex. 13, 165, 212
NAIP	National Agricultural Imagery Program	Text, Ex. 5, 89
NCDC	National Climatic Data Center	Ex. 210

Reports, Forms, Abbreviations, and Redelegations of Authority (Continued)

Abbreviations Not Listed in 1-CM (Continued)

Approved Abbreviation	Term	Reference
NGA	National Geospatial-Intelligence Agency	872, 960
NHEL	nonhighly erodible land	102, 655, Ex. 130
NW	nonwetlands	113, 114, Ex. 14, 21
NWS	National Weather Service	872, 953, 954, 956-958, Ex. 201, 211, 213
OS	operating system	48, Ex. 2
PDD	Program Delivery Division	8, 101, 189, Ex. 16
PDOP	position of dilution of precision	278
PLSS	Public Land Survey System	7, 39, 503, 505, 655, Ex. 89, 98, 131, 134, 166, 209
QC	quality control	Text, Ex. 2, 5, 13, 21, 22, 24, 26, 126
SAAR	System Authorization Access Request	48, Ex. 9, 10
SAFE	State Acres for Wildlife Enhancement	39, Ex. 186
SAP	systems, applications, and products	102, 104, 123, 124, 505, 506, Ex. 2, 5, 26
SBAS	Satellite-Based Augmentation System	309, 328, Ex. 2
SEB	State Emergency Board	925-927, 954, 956-960
SGA	State Geodata Administrator	26, 27, 30, 38, 46, 47, 49, Ex. 2
SLR	Security Liaison Representative	7, 51, Ex. 9, 10
SNR	signal to noise ratio	308, Ex. 2
SPC	Storm Prediction Center	872, 927, 953-956, Ex. 201, 210
SSURGO	Soil Survey Geographic	37, 39, Ex. 2
STORM	Systematic Tracking for Optimal Risk Management	1, 71, 138, 956
TERRA	Tool for Environmental Resource Results Assessment	Text, Ex. 2, 87, 212
TIGER	topologically integrated geographic encoding and referencing	39, 174, 175, Ex. 31
TSD	Technical Services Division	296

Reports, Forms, Abbreviations, and Redelegations of Authority (Continued)

Abbreviations Not Listed in 1-CM (Continued)

Approved Abbreviation	Term	Reference
UHEL	undetermined highly erodible land	102, 655, 762, Ex. 18
URL	uniform resource locator	501, Ex. 184, 206, 210, 213
USB	universal serial bus	312, 325
USGS	Unites States Geological Survey	Text, Ex. 202, 204, 205
UTM	Universal Transverse Mercator	37, 39, 100, 325, 602, 629, Exhibits
WAAS	Wide Area Augmentation System	278, 308-311, Ex. 2
WBD	Watershed Boundary Dataset	174, 175, Ex. 31, 32
WFS	Web Feature Services	959
WMAS	Web Mercator Auxiliary Sphere	278, 313, 602, 818, 819, 890, Ex. 49, 183, 186
WMS	Web Map Services	959, Ex. 184
WGS	World Geodetic System	190, 818, Ex. 49, 183, 186, 201, 210, 212

Redelegations of Authority

None

Definitions of Terms Used in This Handbook

Aggregate Data

Aggregate data refers to information that is collected from multiple sources, variables, or individuals and is compiled into data summaries or summary reports, typically for the purposes of public reporting or statistical analysis.

ArcGIS

ArcGIS is GIS for working with maps and geographic information. It is used for creating and using maps, compiling geographic data, analyzing mapped information, sharing and discovering geographic information, and managing geographic information in a database.

ArcGIS Online (AGOL)

AGOL is an online, collaborative web GIS service that allows users to use, create, and share maps, scenes, apps, layers, analytics, and data. Users can access ready-to-use maps, apps, and ESRI's secure cloud.

Archive

Archive is to place or store data in a data center. Archiving is typically done for long-term preservation of the data and to promote discovery and use of the data.

ArcMap

ArcMap is a desktop GIS mapping software that runs the CLU Maintenance Tool.

ArcSDE

ArcSDE (Spatial Database Engine) is a server software system that aims to enable the usage of relational database management system for spatial data. The spatial data may then be used as a part of a geodatabase.

Assignment Block

An assignment block is how information is organized in CRM Farm Records.

Definitions of Terms Used in This Handbook (Continued)

Attribute

Attribute is data that is related to a geographic feature, such as farm number, tract number, or system calculated acres.

Attribute Field

An attribute field is a single column of information contained in an attribute table.

Attribute Table

An attribute table is a database, or other tabular file, containing rows and columns. It is used to store nongeospatial data, such as cropping history and system calculated acres, in precise fields that allow the system to quickly find, retrieve, and query the data when prompted by the user.

Authoritative Dataset

An authoritative dataset production data that USDA agencies produce, or have statutory responsibility for and curate for the purpose of the Agencies' mission.

Boll Weevil Data Feature Dataset

The Boll Weevil data feature dataset is a geospatial representation of all cotton acreage data linked to the corresponding CLU as reported in the CARS application. A detailed crop feature dataset and crop data tables are created by the State GIS Specialist that related the crop data obtained from CARS to CLU using a unique attribute comprised of the administrative State, administrative county, farm number, tract number, and field number.

Cartography

Cartography is the science or practice of drawing maps.

Citrix

Citrix Desktop provides access to an individual virtual desktop on an application server. The hosted desktop environment allows users to access published applications without requiring advanced end-user equipment and allows centralized administration of software and data.

CLU Maintenance Tool

The CLU Maintenance Tool is a custom ArcGIS tool developed by FSA and accessed through the Citrix environment. The CLU Maintenance Tool is used to access the CLU and wetlands outside of CRM Farm Records.

Definitions of Terms Used in This Handbook (Continued)

Common Data

Common data is defined as data jointly owned, used, and managed by the Service Center partners.

- is common to more than 1 of the Service Center Agencies
- originates outside the Service Centers and is maintained for all Agencies by the Service Center data steward or system administrator.

An example of common data include the base geospatial themes, such as NAIP data.

Common Land Unit (CLU)

CLU or field is the smallest unit of land that has a:

- permanent, contiguous boundary
- common land cover and/or land management
- common owner
- common producer association.

Configuration Files

Configuration files contain the TerraSync software configuration information which determines how data is collected, entered, and communicated with external devices. Configuration files are used to ensure that data collected in different ways is consistent. FSA has created configuration files for each U.S. UTM zone.

Conservation Priority Area (CPA)

CPA is a region designated by DAFP that has actual significant adverse water quality, wildlife habitat, air quality, or other natural resource impacts related to agricultural production activities or if the designation helps agricultural producers to comply with Federal and State environmental laws. CPA designations expire after 5 years unless redesignated or can be withdrawn before 5 years at the request of the appropriate State water quality agency or as determined appropriate by DAFP.

Coordinate System

A coordinate system is a system which uses 1 or more numbers, or coordinates, to uniquely determine the position of a point.

Definitions of Terms Used in This Handbook (Continued)

CRP Feature Dataset

The CRP feature dataset is a subset of CLU that represents land currently enrolled in CRP. The CRP feature dataset is created by joining tabular conservation data maintained in CRM Farm Records to CLU using a unique attribute comprised of the administrative State, administrative county, farm number, tract number, and field number.

CRP Scenario

A CRP scenario is used to assess wildlife and environmental benefits specific to land offered into CRP. CRP scenarios are generated in TERRA and are uploaded into COLS to process the CRP offer.

Customer Relationship Management (CRM)

CRM refers to the system within MIDAS which houses the majority of FSA business processes. CRM is designed to offer solutions to improve management of important customer-focused issues and provide superior operational efficiencies.

Data Management

Data management is the development, execution and supervision of plans, policies, programs and practices that control, protect, deliver and enhance the value of data and information assets.

Data Remediation Tool (DRT)

DRT was created in Citrix to assist in the process of synchronizing data between GIS and CRM Farm Records. GIS Specialists will be the administrators of this tool and be able to perform limited edits in Citrix.

Data Remediation Tool (DRT) Administrator

GIS Specialists will be the DRT Administrator of DRT and be able to perform limited edits in Citrix to remediate discrepancies between GIS and CRM Farm Records.

Data Steward

A data steward is the person most knowledgeable about the resource or program who ensures that pertinent data meets any defined data standards and accurately describes the resource for which they have responsibility. Data stewards are responsible managing data with regard to the informational needs of others.

Definitions of Terms Used in This Handbook (Continued)

Data Stewardship

Data stewardship is the process of taking responsibility for a set of data for the well-being of the larger organization, and operating in service to, rather than in control of, those around us.

Database

A database is a logical collection of interrelated information, managed and stored as a unit, usually on some form of mass-storage system such as a magnetic tape or disk. A GIS database includes data about the spatial location and shape of geographic features recorded as points, lines, areas, pixels, grid cells, or tins as well as their attributes.

Delineate

Delineate is to indicate the exact position of a border or boundary.

Department of Natural Resources GPS Application (DNRGPS)

DNRGPS software was built to transfer data between the Garmin handheld GPS receivers and GIS software.

Detailed Crop Data Feature Dataset

The Detailed Crop Data feature dataset is a geospatial representation of all reported crop acreages linked to the corresponding CLU as reported in the CARS application. A detailed crop feature dataset and crop data tables are created by the State GIS Specialist that relates the crop data obtained from CARS to CLU using a unique attribute comprised of the administrative State, administrative county, farm number, tract number, and field number.

Differential GPS (DGPS)

DGPS is an enhancement to GPS that provides improved location accuracy. It uses a network of fixed, ground-based reference stations to broadcast the difference between the positions indicated by the GPS satellite systems and the known fixed positions.

Digital Ortho-Photography (DOQ)

DOQ is a digital representation (map) of an aerial photograph. Ground and land features are accurately located in their true map positions on DOQ. Distortions caused by differences in terrain relief and aerial camera tilt have been removed. Service Centers will use DOQ's as the base map in their GIS.

Definitions of Terms Used in This Handbook (Continued)

Digital Photographs

Digital photographs are digital representations of an aerial photograph.

Digitizing

Digitizing is encoding map features, such as points, lines and polygons, as coordinates in a digital form, that is, using the computer to draw lines and points on a digital map. Field Service Agencies will be digitizing tract/CLU boundaries on top of the digital aerial photography.

***--DR 3465-001, Enterprise Geospatial Data Management**

DR 3465-001, Enterprise Geospatial Data Management identifies ADS as production data that**--*** USDA agencies produce, or have statutory responsibility for and curate for the purpose of the Agencies' mission.

Farm Records

Farm Records is all tabular data and spatial data associated with a specific FSA farm.

Feature Class

A feature class in ArcGIS is a collection of geographic features with the same geometry type (point, line, or polygon), the same attributes, and the same spatial reference. Feature classes allow homogeneous features to be grouped into a single unit for data storage purposes, and can also store annotation and dimensions.

Field

A field is a part of a farm that is separated from the balance of the farm by a permanent boundary, such as; fences, permanent waterways, woodlands, croplines in cases where farming practices make it probable that this cropline is not subject to change, and other similar features.

File Format

File format is the specific organization of information in a digital computer file.

File Geodatabase

A file geodatabase is a collection of files that can be stored, queried, and managed both spatial and nonspatial data. These are created in ArcGIS.

Definitions of Terms Used in This Handbook (Continued)

Firmware

Firmware is a type of software that provides control, monitoring, and data manipulation of engineered products and systems (i.e. GPS units use firmware).

Garmin Waypoints

Garmin waypoints are used to store and remember locations that are of interest to the Garmin GPS user. They are often use to store intermediate turns and intersections that help define a route to a particular destination.

Geo-Reference

Geo-reference is to establish the relationship between coordinates on a paper map (2-dimensional) and known real-world coordinates using longitude and latitude.

Geographic Information System (GIS)

GIS is an application software capable of manipulating, analyzing, and storing spatial or geographic referenced data. GIS will automatically compute distances and acres using imbedded calculation models.

Geospatial

Geospatial is the relative position of things on the earth's surface.

Geospatial Data Lifecycle Plan

The Geospatial Data Lifecycle Plan is a matrix that establishes a framework of standard terminology and processes for 7 stages of the lifecycle plan, which are Define, Inventory/Evaluate, Obtain, Access, Maintain, Use/Evaluate, and Archive.

The stages associated with the management of the data lifecycle allow stakeholders to assess whether National Geospatial Data Asset data production activities meet business requirements and use best practices that enable shared or common services. The quality assurance and/or QC functions for the data should be included at every stage of the Geospatial Data Lifecycle.

Geospatial Data Portfolio

The Geospatial Data Portfolio, according to OMB Circular A-16 Supplemental Guidance, is the coordination of Federal geospatial data assets and investments of most efficiently support national priorities and government missions. The data assets are the first component of the standard core set of digital spatial information for the Nation that serve as a foundation of users of geographic information.

Definitions of Terms Used in This Handbook (Continued)

Geospatial Dataset

A geospatial dataset is a group of similar (geospatial data that has the same spatial reference system) spatial phenomena in a geospatial dataset category and is related to 1 metadata set. A geospatial dataset is often referred to as a feature class, shapefile, layer, theme, or coverage. For example, the geospatial dataset category "hydrography" could contain several geospatial datasets such as hydro (line), water bodies (polygon), and/or gauges (points). Geospatial datasets are defined as either local or national depending on where the standards are established.

GIS Assignment Block

The GIS assignment block is how GIS attributes are organized in CRM Farm Records.

GIS Environment Tool (GET)

GET allows end users to define system variables within Citrix to allow access to GIS data.

Global Navigation Satellite System (GNSS)

GNSS is the standard term for satellite navigation systems that provide geospatial positioning with global coverage. GNSS allows receivers to determine their location accurately using signals transmitted along a line-of-sight path from the satellites to terrestrial receivers. GNSS systems include the United States' GPS, Russian Federation's Global Navigation Satellite System, the European Union's Galileo, and China's Compass system.

Global Positioning System (GPS)

GPS is a satellite-based system developed by the Department of Defense. The GPS consists of 3 segments – a space segment, a control segment, and a user segment. A GPS receiver compares the time a signal was received with the time is was transmitted. The time difference tells the receiver how far away from the satellite it is. By computing the time difference from several satellites, the receiver's position can be triangulated.

GPS Unit

A GPS unit is a device that uses satellite positioning to determine points on the earth and is authorized for all compliance measurement purposes.

Ground Compliance

Ground compliance is an onsite method for determining acreage and updating aerial photography.

Note: Ground compliance is done by actually going to the field and measuring the acreage using equipment that can determine the acreage.

Definitions of Terms Used in This Handbook (Continued)

Ground Measurement

Ground measurement is the technique of find the distance between 2 points on the ground using the chain and is expressed in chains and links.

Hosted Feature Service

A hosted feature service is feature data or non-spatial tables stored in AGOL that can be accessed through web, desktop, or mobile applications. Hosted feature services may be accessed by one or more users or published for public viewing.

Legacy Farm Records System (FRS)

The Legacy FRS refers to the system where historical farm records are stored and used by FSA.

Local Data

Local data is defined as data for which the standards governing its collection, naming and documentation are set locally, (i.e. below the national level). However, nationally defined data can be collected locally; but it is not called "local" data because the standards for its collection were set above the State level. County tax assessor data is an example of a local data type.

Map Projection

Map projection is the conversion of the Earth's 3-dimensional coordinates into a 2-dimensional plane. Since the Earth is round, when it is displayed as a flat map, map projections maintain the integrity of data by shifting the 2-dimensional map to correlate with 3-dimensional longitude and latitude locations.

Measurement Service

Measurement service is the act of identifying the length or area of land using either in-office measurement tools or field ground compliance equipment. A measurement service request is a producer request for any in-office measurement or acreage determination, or any field measurement or acreage determination that is not required by procedure.

Definitions of Terms Used in This Handbook (Continued)

Measurement Service Fee

A measurement service fee is a fee set by COC to cover the cost of providing a specific producer service; such as, acreage determinations, bin measurements, and crop appraisals.

Measurement Service Request

A measurement service request is a producer request for any in-office measurement or acreage determination, or any field measurement or acreage determination that is not required by procedure. Included are farm visits to:

- determine exact area designated for specific crop land or land use by the owner, operator, or other tenant
- determine quantity of farm-stored commodities, according to price support procedure
- re-determine measurements of farm-stored production
- make determinations not required to administer a program, such as a crop appraisal.

Measuring Wheel

A measuring wheel is an instrument composed of a handle, wheel, and counter, and is used to measure ground area. As the wheel is moved along the ground, the counter measures the number of revolutions of the wheel.

Metadata

Metadata is information that describes a dataset, such that a dataset can be understood, re-used, and integrated with other datasets.

Metadata Standard

Metadata standard requirements that are intended to ensure correct use and interpretation of the data by its owners and users. Different scientific communities use different set of metadata standards; common examples are FGDC standard and ISO 19115 (ISO geographic information metadata).

Definitions of Terms Used in This Handbook (Continued)

Mobile Devices

A small computing device, typically small enough to be handheld, having a display screen. Mobile devices typically weigh less than 2 pounds and have OS, can run mobile apps, may come equipped wi-fi, Bluetooth, GPS, and picture capabilities, and may play digital video or audio. These devices are typically powered by a lithium battery. For FSA purposes, mobile devices include GPS units and digital cameras.

Mosaicked DOQ

Mosaicked DOQ is a seamless mosaic of all the DOQ's in a single county that has been reformatted to remove visible seam lines, misalignment, and color variations between DOQ's.

National Agricultural Imagery Program (NAIP)

NAIP is an aerial photography program that acquires ortho-rectified imagery during the "leaf on" peak growing season. Imagery is provided to APFO within 1 month of the end of the flying season for a given State. Service Centers shall use this imagery as a base layer for GIS and to maintain CLU boundaries and complete compliance spot checks.

National Data

National data is defined as data for which the standards for its collection, naming, and documentation have been set at a national level by an agency or jointly by several agencies, or according to the standards of an external agency or organization. National data:

- has international, national, USDA, or agency-wide application
- contains information that is used and/or shared directly in making national program decisions
- is used or shared in multiple agencies, offices, States, or other internal or external organizations. USDA SSURGO soils data is an example of a national data type.

Definitions of Terms Used in This Handbook (Continued)

Official Acreage

Official acreage is acreage established by FSA as an accurate measure for an area. This acreage is recorded and maintained on photography.

Note: Until CLU is certified, the acreage designated official on the hard copy map will be the official acreage. See paragraph 497 if official acreage changes as a result of new photography.

Parcel Map

A parcel map is a basic drawing of the land cadaster for all public and private lands. These are created using information filed at the Town Clerks Office where deeds and surveys are the most commonly found information available.

Permanent Boundary

A permanent boundary is a boundary that is easy to identify but not readily moved, such as a property line, ditch, road, fence, or hedgerow.

Permanent Point or Object

A permanent point or object is a point that is easy to identify and not easily moved, such as a boulder, tree, pole, or fence post.

Pin, Flag, or Stake

A pin, flag, or stake is an object placed in the ground to mark a point to be surveyed.

Plat Map

A plat map is drawn to scale, showing the divisions of a piece of land. U.S. General Land Office surveyors drafted township plats of public lands surveys to show the distance and bearing between section corners.

Polygon

A polygon is a figure having multiple line segments connected to form a plane. Polygons are the GIS term for a CLU's boundary.

Definitions of Terms Used in This Handbook (Continued)

Program Specific Data

Program specific data is used and maintained by 1 Field Service Center Agency.

Provenance

Provenance is the History of a data file or data set, including collection, transformations, QC, analyses, or editing.

Quality Control (QC)

QC is testing or other activities designed to identify problems in the data. It is intended to ensure that the data adhere to a defined set of quality criteria.

Raster Data

Raster data consists of a matrix of cells (or pixels) organized into rows and columns (or a grid) where each cell contains a value representing information.

Reconstitution Workflow

Reconstitution workflow is an internal message initiated in CRM Farm Records while performing a reconstitution that requires action by the user.

Record

A record is a single row of data in an attribute table. Users can define the exact record (row) and field (column) to locate exact program information in the automated system.

Relational Database Management System

A relational database management system has the ability to access data organized in tabular files that may be related together by a common field (item). It has the capability to recombine the data items from different files, thus providing a powerful tool for locating, updating, and querying information stored in the computer.

Satellite-Based Augmentation System (SBAS)

SBAS supports wide-area or regional augmentation through the use of additional satellite-broadcast messages. This system is commonly composed of multiple ground stations, located at accurately-surveyed points. The ground stations take measurements of 1 or more of the GNSS satellites, the satellite signals, or other environmental factors which may impact the signal received by the users. Using these measurements, information messages are created and sent to 1 or more satellites for broadcast to the end users.

Definitions of Terms Used in This Handbook (Continued)

Service Center Location Feature Dataset

The Service Center Location feature dataset identifies the location of a Service Center, State Office, or Program Delivery Point. A single point is used to identify the location regardless of the number of agencies or staff at the location.

Shapefile

The shapefile format is a geospatial vector storage format for storing geometric location and associated attribute information. The shapefile format can spatially describe vector features such as points, lines, and polygons. Each item has attributes that describe it.

Shared Data

Shared data is defined as data owned or managed by a specific Service Center partner, and shared by other partners (i.e., 1 agency maintains the data, while other partner agencies access and use the data). The CLU dataset is an example of the shared data type as it is owned and managed by FSA but shared with NRCS.

Signal to Noise Ratio (SNR)

SNR describes beacon receiver performance and can be used to determine whether the unit is processing differential corrections properly. The minimum type of SNR reception should be at least in the 'good' (15-20 SNR) range for all acreage measurements.

Site Inspection

A site inspection is the act of completing a field visit to verify or inspect field, land, or stored crop conditions. Measurement service for a site inspection may or may not be completed; however, digital pictures, GPS points, and other documentation may be obtained to describe and verify the inspection results.

Spatial Data

Spatial data is information about the location, shape, and relationships of map features, such as roads, fences, barns, feed lots, and other details contained on maps. Spatial data stores the geographic location of features, usually in a longitude and latitude numbering system, with attribute information describing what these features represent.

Staking and Referencing

Staking and referencing is measurement service to identify by field visit specific locations and mark points on permanent and temporary boundaries on a farm. Staking and referencing can be completed by navigating to geospatial data uploaded to a GPS unit or by other means provided in subparagraph 250 D when GPS is not available.

Definitions of Terms Used in This Handbook (Continued)

State Geodata Administrator (SGA)

SGA will have access to all geospatial data for the State on the network servers at the Service Centers and State Office, excluding any "sensitive" data identified in the Permissions Matrix. This group will have permissions to read, write, change, and delete folders, subfolders, or individual files by making global changes or changes to individual elements within them. SGA's can create folders and subfolders as necessary.

Symbology

Symbology, in the context of cartography, is the use of graphical techniques used to represent geographic information on a map.

Systems, Applications, and Products (SAP)

SAP is a software product designed to manage business data, applications and agreements, and streamline business processes.

Tabular Data

Tabular data is descriptive information that is stored in rows and columns in a database and can be linked to spatial data.

Temporary Boundary

A temporary boundary is a boundary that is easy to identify and easily moved, such as a crop line or turn area between fields.

Temporary Fixed Point

A temporary fixed point is a point that is easy to identify and easily movable.

Note: A stake referenced to a permanent point or a permanent point on a permanent boundary is a fixed point.

Definitions of Terms Used in This Handbook (Continued)

Tool for Environmental Resource Results Assessment (TERRA)

TERRA enables FSA employees to create CRP scenarios to assess wildlife and environmental needs specific to land offered into CRP.

TerraSync

TerraSync is software designed for efficient field GIS data collection and maintenance when using the Trimble Juno 5b Enhanced unit.

TerraSync Data Dictionary File

A TerraSync Data Dictionary file is a description of the objects to be collected for a particular project or job. It is used by FSA field staff to control the collection of spatial information. Elements of the data dictionary could include point, line and area features, along with their associated attributes.

Theme

A theme consists of a collection of geographic features (such as roads, rivers, parcels, wildlife sightings, schools, or parks) and the attributes for those features.

3D Differential Location

When GPS units are used for FSA compliance purposes (measurement service), 3D differential location is when the receiver is using at least 4 satellites and a form of differential correction to calculate horizontal position and altitude.

Tile Package

A tile package allows a user to create a set of tiles (images) from a map, then use the set of tiles as a base map in ArcGIS applications.

*** * ***

Definitions of Terms Used in This Handbook (Continued)

Unique Data

Unique data is defined as data owned and managed by a specific Service Center partner but not shared. The data is usually specific to a particular program administered by only 1 agency. Disaster events\fsa_facilities is an example of a subfolder that contains unique data that is only accessed by a small number of FSA employees.

Vector Data

Vector data is a representation of the world using points, lines, and polygons.

Vertex

A vertex is a point where 2 or more curves, lines, or edges meets. The point where 2 lines meet to form an angle and the corners of a polygon are vertices.

Views

Views are projected maps that allow the user to display, explore, query, and analyze geographic data in GIS.

Wide Area Augmentation System (WAAS)

WAAS is an air navigation aid developed by the Federal Aviation administration to augment the GPS, with the goal of improving its accuracy, integrity, and availability. WAAS uses a network of ground-based reference stations in North America and Hawaii to measure small variations in GPS satellites' signals in the western hemisphere. Measurements from the reference stations are routed to master stations, which queue the received deviation correction and send the correction message to WAAS satellites in a timely manner (every 5 seconds or better). Those satellites broadcast the correction messages back to Earth, where WAAS-enabled GPS receivers use the corrections while computing their positions to improve accuracy.

Windows Mobile Device Center

Windows Mobile Device Center is a synchronization software program developed by Microsoft. It is designed to synchronize various content between Windows Mobile devices and the Microsoft Windows OS. GIS Specialists must work with a CTS Specialist to install Windows Mobile Device Center software on the workstation before connecting the Trimble Juno 5B Enhanced handheld to it.

GIS Specialist Task Checklist

A Introduction

State GIS Specialists have tasks to complete on a weekly, monthly, and yearly basis. These tasks will ensure data availability and the data integrity of the CLU and Farm Records information. This exhibit can be used as a printed or digital checklist to record completion dates of each task. Indicate by date completed when each task is complete.

B Required Weekly Tasks

The following tasks shall be completed by the State GIS Specialist weekly.

Step	Data Delivery Tasks	*--Refer to:--*	Week 1	Week 2	Week 3	Week 4
1	Export CLU	Ex. 99				
2	Convert CLU to Shapefile	Ex. 100				
3	Deliver CLU to County Servers	Ex. 101				
4	Archive CLU	Par. 71				
	Emergency Preparedness Tasks					
5	During drought events update U.S. Drought Monitor files to F:\geodata\Disaster_events\USDM	Par. 39				

GIS Specialist Task Checklist (Continued)

C Required Monthly Tasks

The following tasks shall be completed by the State GIS Specialist monthly.

Step	Data Preparation Tasks	Date of Data	*--Refer to:--*	Date Complete
1	Merge Statewide CLU		Ex. 17	
2	Download Farm Records Data to c:\geodata\project_data\fsa\frs • Farm Records Contact All View Download Report.csv • Farm Records by Crop Level Farm (EDW0005CFR).csv • Farm Records by Crop Level Tract (EDW0005DFR).csv • Farm_SOD_State_<ST>_<YYYYMMDD> •*--Farm Records Field Level Report (EDW0005EFR).csv • Farm Records by Tract Level (EDW0005BFR).csv • Farm Records by Farm Level (EDW0005AFR).csv--*		Ex. 16	
3	Download Conservation Data to c:\geodata\conservation • Farm Records Conservation Contract Report (EDW008FR).csv • * * * •*--CCMS All Contract EDW0001CCMS 1.1.csv--*		Ex. 16 Ex. 25	
4	Download and Unzip Crop Data from GIS SharePoint site or EDW • CropData<YYYY>_<YYYYMMDD>_<ST> • BollWeevil_Cotton_<YYYYMMDD>_<ST>		Ex. 16 Ex. 30	

GIS Specialist Task Checklist (Continued)

C Required Monthly Tasks (Continued)

Step	Data Preparation Tasks	Date of Data	*--Refer to:--*	Date Complete
5	Process Files with State Office CLU Tools • Split Farm Records Contact Files • Split Tract Base Acres by County • Summarize Base Acres by County • Summarize ARCPLC Election County		Ex. 118 Ex. 122 Ex. 123 Ex. 124	
6	Create CRP Layer		Ex. 24	
7	Create Native SOD geodatabase and update Map		Ex. 129	
Step	**Farm Records and CLU Attributes QC Tasks**	**Date of Data**	**Refer to:**	**Date Complete**
8	Out of Balance Tracts Report		10-CM	
9	Failed Replication Report		10-CM	
10	Find Required Farm Combinations		Ex. 128	
11	Non-Contiguous Tracts		Ex. 127	
12	Find Overlaps and update Map		Ex. 125	
13	Find Gaps		*--Exhibit 126.1--*	
14	Run CLU Attribute Queries • 3CM and Cropland Land Classification • Zero or Null Attributes • Missing HEL Determinations • Check for Orphans or zero acreage polygons • Check Geometry		Ex. 18	
15	Wetland Point Review		Ex. 126	
16	Wetland Attribute Queries • Find Null Wetland Label Code • Find Null Wetland Status Code • Find Missing Admin FIPS Codes		Ex. 22	
17	Tract Level Wetland Determination Data Review		Ex. 23	
18	Coordinate with State Specialists to provide CRM Data Reconciliation Maps and Reports		Par. 101, 112	

GIS Specialist Task Checklist (Continued)

C Required Monthly Tasks (Continued)

Step	Conservation QC Tasks	Date of Data	*--Refer to:--*	Date Complete
19	CRP Attribute Queries • Find Expired Contracts • Find Invalid Expiration Dates • Find Invalid Contract or Practice Numbers • Find Missing or Incorrect SAP CRP Flags		Ex. 26	
20	Compare MIDAS CRP to CCMS		Ex. 25	
21	Coordinate with Conservation Specialist to Review and Provide Data to County Offices		Par. 121	
Step	**Crop Data QC Tasks**	**Date of Data**	**Reference**	**Date Complete**
22	Create County Crop Detail layers Run Iterate Crop Data Script		Ex. 27 Ex. 28	
23	Merge State Crop layer (as needed)		Ex. 29	
24	Coordinate with Compliance Specialist to Review and Provide Data to County Offices		Par. 135	
Step	**Geodata Management Tasks**	**Date of Data**	**Reference**	**Date Complete**
25	Archive Data		Par. 71	
26	Review shared State geodata folder (K:\) in Citrix • Delete obsolete data • Ensure required datasets are available • Refresh existing data as needed • Remove duplicate datasets		Par. 30	
27	Review O drive space report and coordinate with employees to resolve storage issues		Par. 39	
Step	**Emergency Preparedness Geodata Tasks**	**Date of Data**	**Reference**	**Date Complete**
28	Create backups of critical datasets for disaster readiness • C:\geodata replicated to local drive and external drive • Critical datasets updated monthly include: statewide CLU, CRP, and crop data layer		Par. 927	

GIS Specialist Task Checklist (Continued)

D Required Annual Tasks

The following tasks will be completed by the State GIS Specialist annually.

Note: Some tasks may need to be completed more frequently if changes occur throughout the year. For example, district director boundaries were updated mid-year and a new map and layer need to be created.

Step	Task	Complete By	Reference	Date Completed
1	Create and Submit Annual GIS Plan	January 1	Par. 8	
2	Create County Summary Report	October 15 for prior FY	Ex. 130	
3	Update State Map Template	January 1	Ex. 165	
4	Update District Director Layer and Map	January 1	TBD	
5	Update Farm Loan Credit Teams layer Map	January 1	TBD	
6	Update Service Center locations layer and Map	January 1	Part 4, Section 8	
7	Update County Boundary Map	January 1	TBD	
8	Update other Program Maps **Example:** Expiring CRP	January 1	Part 8	
9	Update County Map Template	January 1	Par. 165	
10	Update County LAA layers and Maps	April 1	TBD	
11	Archive Name and Address	End of FY	Par. 71	
12	Archive Conservation Data	End of FY	Par. 71	
13	Archive Statewide CLU	End of FY	Par. 71	
14	Archive Crop Data	After last download of crop year	Par. 71	
15	Coordinate with CTS to ensure that AD is updated to reflect staffing changes	January 1 or as needed	Par. 48	
16	Meet with State GDMT to discuss relevant geodata issues • Review server space needs • Identify duplicate or deprecated datasets for removal • Identify new data needs • Identify datasets requiring updates • Review and update metadata	Annually or more often as needed	Par. 26	
17	Coordinate with APFO for NAIP acquisition	As directed by APFO		

GIS Specialist Task Checklist (Continued)

D Required Annual Tasks (Continued)

Step	Emergency Preparedness Tasks	Completed By	Reference	Date Completed
18	Update State Emergency Management Map Template	January 1	Par. 927	
19	Update County Emergency Management Map Template	January 1	Par. 927	
20	Update Tract Emergency Map Template	January 1	Par. 927	
21	Maintain External Geodata Access Login Accounts • Ensure that data access accounts and passwords are current for external emergency data sites.	Update as needed.	Par. 927	
22	Bookmark Geodata and Disaster Resources	Update as needed.	Par. 927	

Annual State GIS Plan Template

The following table is an example of an Annual State GIS Plan.

State Name	*<State Name>*
Plan Submitted by:	*<GIS Specialist Name>*
State Executive Director:	*<SED Name>*
Date:	*<Data>*
Section 1 – Responsibilities	
GIS Specialist	Complete quality control of CLU, Wetlands, CRM Farm Records, and CRP data on a regular basis.
	Compile a summary of issues identified through quality control and or provided by the National Office to accompany the State GIS Plan.
	<Detail additional responsibilities to be completed by the GIS Specialist as needed by SED and the quality control of the State geospatial data>
District Directors	Review all reports provided by the State Office. Monitor the County Office status for any issues identified.
	Provide feedback to the State Office concerning issues or training needs.
	<Detail additional responsibilities to be completed by the District Directors as required by SED to maintain the accuracy of the State geospatial data>
CED and County Office Staff	CED and County Office field staff should review the reports provided by the State Office and take the corrected action timely.
	<Detail additional responsibilities to be completed by the County Office field staff as required by SED to maintain the accuracy of the State geospatial data.>

Annual State GIS Plan Template (Continued)

Section 2 – Summary of State Data Integrity		
Dataset	**Quality Control Assessment**	**Number of Issues**
Common Land Unit	Overlaps	
	Gaps	
	3-CM and Cropland Land Classification Comparison	
	Missing HEL Determinations	
	Zero or Null CLU Attributes	
	Orphan CLU's	
Wetland	Incorrect Administrative State and County Codes	
	Zero or Null Attributes	
CRP Data	Mismatched Records between CCMS and CRM	
Farm Records	Out-of-Balance Tracts	
	Failed Farm Replications	
	Non-Contiguous Tracts	
	Tract Level Wetland Determinations	
Section 3 – Corrective Action Plan		
<Detail all corrective action needed concerning the summarized State data integrity issues. This may include prioritization of County Office corrections needed, identifying any training needs, and identifying any concerns resulting from the inaccurate data identified.>		
Section 4 – State Plan for Creating and Accessing Producer Maps		
<Detail the State plan for creating and maintaining current producer maps. This should include State Office and County Office responsibilities, how maps are to be created, and timing of creating maps for acreage certification.>		
Section 5 – State Training Plan		
<Detail the State plan to address any training needs. CED, with assistance from the State Office and the GIS Specialist, is responsible for identifying training needs, and reviewing work completed by all County Office employees engaged in GIS work.>		

Annual State GIS Plan Template (Continued)

Section 6 – GPS Unit Inventory Management

- *<Maintain the number and type of GPS units available to the State.>*
- *<Identify the number of working and non-working GPS units.>*
- *<Identify counties or areas where a GPS unit is either not accessible or is not in working condition.>*
- *<Detail the State training plan for using GPS units to complete measurement service or inspections as requested or required by program provisions.>*

Section 7 – Data Management

- *<Detail the State plan for archiving geospatial data, including CLU, wetlands, and conservation data.>*
- *<Identify archive locations and frequency of data backups.>*
- *<Identify geospatial data that needs to be refreshed, including but not limited to conservation priority areas, wellhead protection areas, soils, and floodplain boundaries.>*

Section 8 – Aerial Imagery

- *<Identify current official aerial imagery, including acquisition year and resolution>*
- *<Identify estimated replacement schedule for aerial imagery>*
- *<Identify potential cost share partners for imagery>*

Section 9 – Special Projects

- *<Identify special geospatial projects completed in previous year>*
- *<Identify future special geospatial projects for the upcoming year>*

Section 10 – Outreach

<Detail outreach efforts to be undertaken by GIS specialist, including attending local GIS conferences, providing maps or other data to support other outreach efforts, etc.)>

Section 11 – Web Mapping

<Identify usage of web mapping applications, including ArcGIS Online>

Show AD Group Members

A Introduction

The AD Show Group Members script allows users to export a .csv file of all AD accounts and permissions for their State.

B Requirements

This script uses Powershell and the AD Users and Computers snap-in. The AD Users and Computers snap-in must be loaded by a CTS Specialist, it is not installed unless specifically requested by the user. See ITS Newsflash 20131212A - Workstation - Common - ADUC snap-in for installation information.

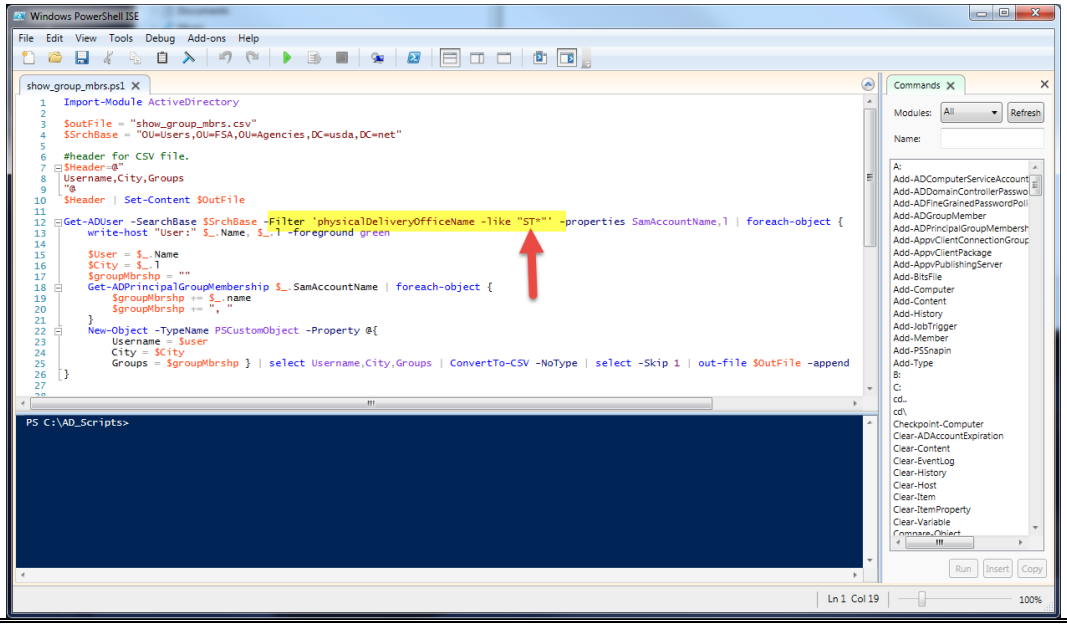
C Instructions

Use the following instructions to export a .csv file of all AD accounts and permissions for a State.

Step	Instructions
1	Download the show_AD_group_mbrs.zip file from the FSA GIS SharePoint site.
2	Save and store the unzipped .psl and .bat file to the same folder. **Suggested:** Create a folder on C:\geodata\scripts\AD_Scripts.
3	Right-click the show_group_mbrs.psl file and select “Edit” from the pop-out menu.

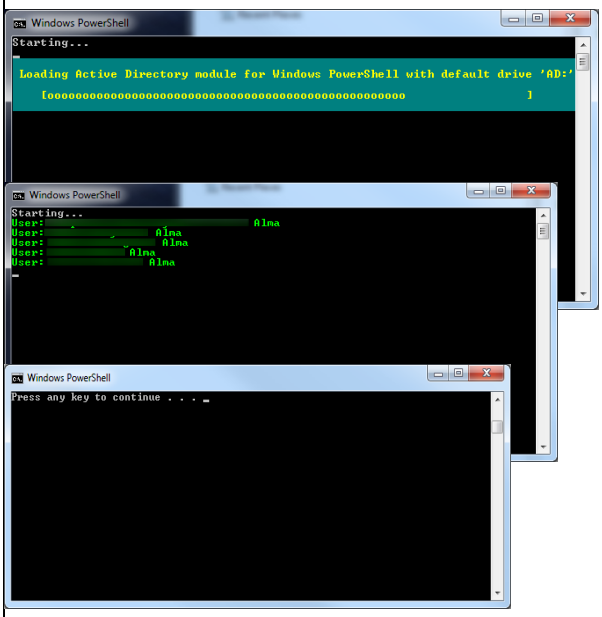
Show AD Group Members (Continued)

C Instructions (Continued)

Step	Instructions
4	Windows PowerShell ISE will open. Locate the line in the script that looks like: … . –Filter ‘physicalDeliveryOfficeName –like “ST*””…. 

Show AD Group Members (Continued)

C Instructions (Continued)

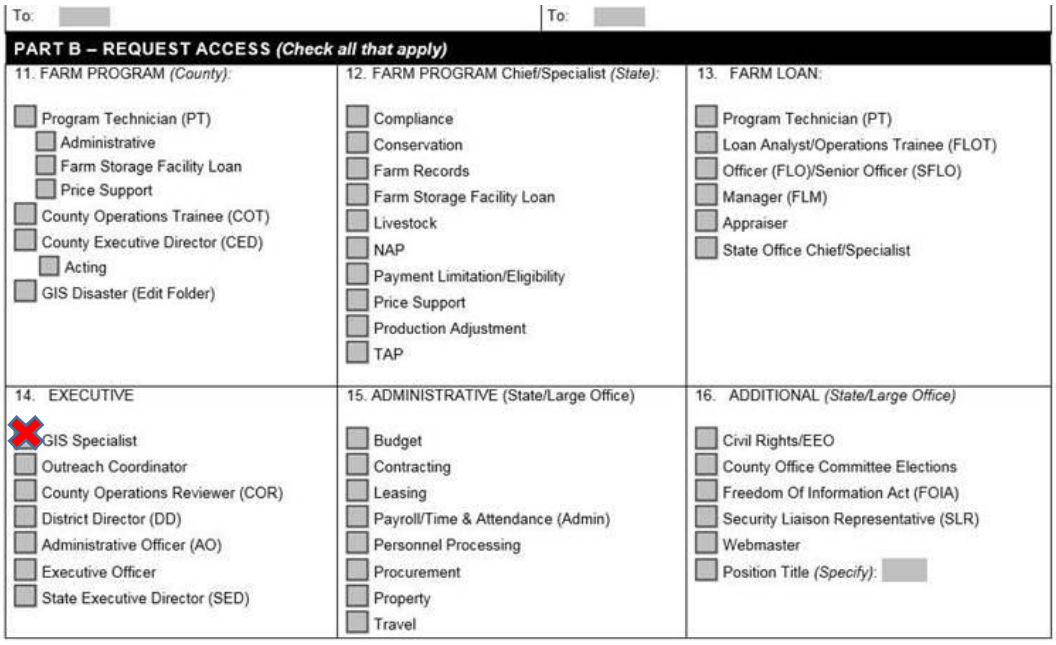
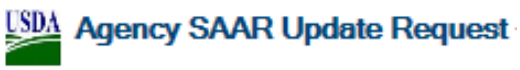
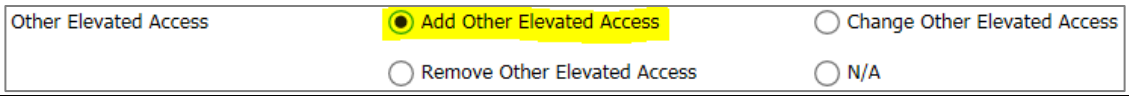
Step	Instructions
5	Change -like "ST*"' to the abbreviation for the State. **Examples:** New York would use: -like "NY*"' Texas would use: -like "TX*"' **Note:** This line extracts only the users in a particular State. This is based on the 5-character code for all offices. For example, set the filter to "WIA*" to just get the cities that start with the letter A in WI.
6	Do not change or add any other characters in the script.
7	CLICK "File" and "Save" to save the PowerShell script.
8	CLICK "File" and "Exit" to close the script and the Windows PowerShell ISE window.
9	To run the script, double-click the show_group_mbrs.bat file. 
10	When the script is finished running, press any key when prompted to close the window.
11	A show_group_mbrs.csv file has been created. Open this file to view a list of all AD accounts and their permissions.

GIS Specialist: New Employee Remedy FSA-13-A/SAAR Ticket Process

A Instructions for Setting Permissions for the GIS Specialist

A GIS Specialist is provided required system access through a SAAR ticket submitted through Remedy and FSA-13-A. The SLR will do the following to provide the GIS specialist with the correct server and geodata folder permissions access.

These instructions identify the process for getting appropriate access for a new GIS Specialist.

Step	Instructions
1	Complete FSA-13-A. In the "Executive" box, CLICK "GIS Specialist".  To: To: **PART B – REQUEST ACCESS *(Check all that apply)*** 11. FARM PROGRAM *(County)*: ☐ Program Technician (PT) ☐ Administrative ☐ Farm Storage Facility Loan ☐ Price Support ☐ County Operations Trainee (COT) ☐ County Executive Director (CED) ☐ Acting ☐ GIS Disaster (Edit Folder) 12. FARM PROGRAM Chief/Specialist *(State)*: ☐ Compliance ☐ Conservation ☐ Farm Records ☐ Farm Storage Facility Loan ☐ Livestock ☐ NAP ☐ Payment Limitation/Eligibility ☐ Price Support ☐ Production Adjustment ☐ TAP 13. FARM LOAN: ☐ Program Technician (PT) ☐ Loan Analyst/Operations Trainee (FLOT) ☐ Officer (FLO)/Senior Officer (SFLO) ☐ Manager (FLM) ☐ Appraiser ☐ State Office Chief/Specialist 14. EXECUTIVE ☒ GIS Specialist ☐ Outreach Coordinator ☐ County Operations Reviewer (COR) ☐ District Director (DD) ☐ Administrative Officer (AO) ☐ Executive Officer ☐ State Executive Director (SED) 15. ADMINISTRATIVE (State/Large Office) ☐ Budget ☐ Contracting ☐ Leasing ☐ Payroll/Time & Attendance (Admin) ☐ Personnel Processing ☐ Procurement ☐ Property ☐ Travel 16. ADDITIONAL *(State/Large Office)* ☐ Civil Rights/EEO ☐ County Office Committee Elections ☐ Freedom Of Information Act (FOIA) ☐ Security Liaison Representative (SLR) ☐ Webmaster ☐ Position Title *(Specify)*:
2	In Remedy, CLICK "Agency SAAR Update Request".  USDA Agency SAAR Update Request
3	Fill out the basic information about the user's supervisor, location, etc.
4	In the SAAR Update Request form, select the "Add Other Elevated Access" radio button.  Other Elevated Access ◉ Add Other Elevated Access ○ Change Other Elevated Access ○ Remove Other Elevated Access ○ N/A

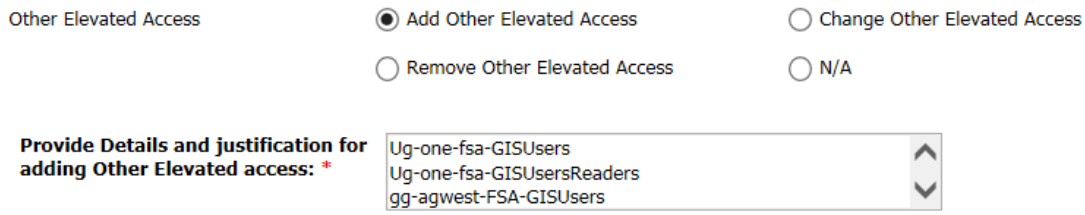
GIS Specialist: New Employee Remedy FSA-13-A/SAAR Ticket Process (Continued)

A Instructions for Setting Permissions for the GIS Specialist (Continued)

Step	Instructions
5	Insert the following information in the "Provide Details and Justifications for Adding Other Elevated Access" box for providing the following server group permission details: • Ug-one-fsa-GISUsers (Citrix) • Ug-one-fsa-GISUsersReaders (Citrix) • gg-(**agXX**)-FSA-GISUsers • gg-(**agXX**)-FSA-GISUsersReaders • gg-(**agXX**)-FSA-GISUsersEditors **Note:** **agXX** = Choose appropriate group (agwest, agcentral, ageast, or aglo). Ask local CTS if there are any questions regarding region. • AIOG<ST>SGA • ASAG<st>SGU • AIOG<stcity>USERS (State Office). *Replace the <st>, <ST>, <stcity> with the appropriate codes. Ask local CTS if there are any questions regarding State and city alpha character codes.* **Example: Idaho State Office** Ug-one-fsa-GISUsers Ug-one-fsa-GISUsersReaders gg-**agwest**-FSA-GISUsers gg-**agwest**-FSA-GISUsersReaders gg-**agwest**-FSA-GISUsersEditors ASAG<**ID**>SGU AIOG<**ID**>SGA AIOG<**IDBOI**>USERS (State Office) ASAG< **IDBOI** > ASAG< **IDBOI** >CLU ASAG< **IDBOI** >LGE ASAG< **IDBOI** >de

GIS Specialist: New Employee Remedy FSA-13-A/SAAR Ticket Process (Continued)

A Instructions for Setting Permissions for the GIS Specialist (Continued)

Step	Instructions
6	The following roles are needed for all County Offices within the State jurisdictions for which the State GIS Specialist is to manage: • ASAG<**stcity**> • ASAG<**stcity**>CLU • ASAG<**stcity**>LGE • ASAG<**stcity**>de
7	The end result of the SAAR ticket software will look something like following: 
8	Complete other non-GIS permissions if applicable. **Examples:** New e-mail address, phone number, 30-day exemption, etc.
9	CLICK “Submit”. This action by SLR submits FSA-13-A to the AMT group.

GIS Specialist: New Employee Remedy FSA-13-A/SAAR Ticket Process (Continued)

B AMT Process

After submitting the SAAR Request, the AMT group will provide the access (with conditions) to the following areas.

Web	Notes
State OIP app.fsa.frs.ac app.fsa.storm.user	Web application access items.
eAuth	**Notes**
FSA_FSA_MIDAS-GIS_EDITOR FSA_BTO_USER (Training Required)	The MIDAS GIS Editor role is automatically applied to all users who need access to MIDAS. Assuming all of the CRM training courses have been addressed, no special action is required here.
CRM	**Notes**
Grantor Process Specialist- All ZCXCU_COMMON_USER_ROLE (CRM Role)	Access will not be granted until registration and training are complete.
SCIMS	**Notes**
Read Only	Access will not be granted until AD-2017 and training are complete. AMT requires SCIMS training documentation (the signed AD-2017).

Note: AMT will e-mail the SLR explaining the new employee needs additional training in AgLearn, if training is needed. Additional training depends on what MIDAS training the employee has already completed. Once that training is completed the SLR will respond to AMT noting all training has been completed for these roles. The new employee will then be granted those MIDAS roles. Automatically, the eAuth MIDAS-GIS EDITOR role will also be applied to the new employee.

To view the most up-to-date version of the Access Reference Table, go to ***--https://usdagcc.sharepoint.com/sites/FBC-IAB/SitePages/Home.aspx.--***

GIS Specialist: New Employee Remedy FSA-13-A/SAAR Ticket Process (Continued)

C Required AgLearn MIDAS Courses

For the new employee to receive the MIDAS role of "**Grantor Process Specialist – All**" AgLearn training is required. The following AgLearn courses must be completed:

- R2FN100 Introduction to MIDAS Portal
- FN200 Basic Navigation of MIDAS CRM
- FN220 Managing the MIDAS Universal Worklist
- FN240 Basic Navigation of GIS in MIDAS
- R2BP320 Create Business Partner in CRM
- R2BP400 Maintain Business Partner in CRM
- R2B003 Maintain Representative Capacity
- CT300 Product Master
- CT310 Product
- Master- Product Request (Compliance Specialists only)
- BP302 Business Partner
- FR400 Farm Records
- R2BP500 Business Partner for State Specialist.

D Systems Not Provisioned by AMT: DRT Access

If the new employee needs DRT access (this is not provisioned by FSA-13-A or AMT), contact *--Billie Jo Smith by e-mail to billiejo.smith@usda.gov. DRT training and guidance for requesting access will then be provided.--*

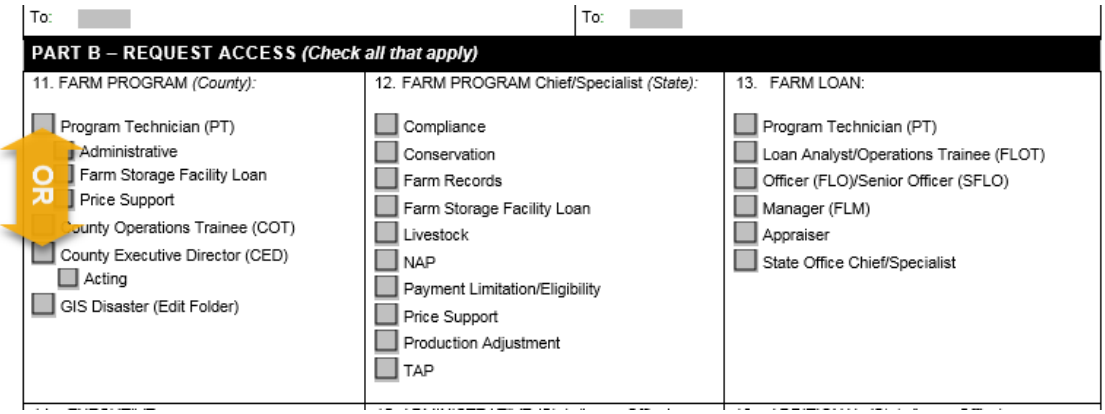
CED or PT: New Employee Remedy FSA-13-A/SAAR Ticket Process

A Instructions for Setting Permissions for CED or PT

A CED or PT require the following network access for GIS tasks. This access is provided via a SAAR ticket through Remedy and FSA-13-A. The SLR will do the following to provide the CED or PT with the correct server and geodata folder permissions access after receiving a completed FSA-13-A.

These instructions identify the process for getting appropriate GIS access for a new CED or PT.

Step	Instructions
1	Receive the completed FSA-13-A from the Local Supervisor. The "Farm Program (County)" box is checked with either "Program Technician (PT)" or "County Executive Director (CED)".


To:

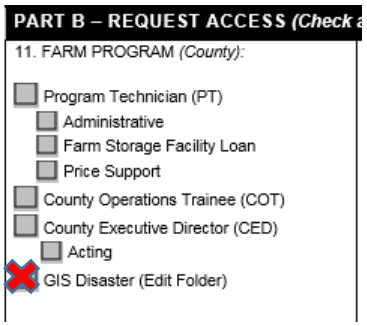
To:

PART B – REQUEST ACCESS *(Check all that apply)*

11. FARM PROGRAM *(County)*:	12. FARM PROGRAM Chief/Specialist *(State)*:	13. FARM LOAN:
☐ Program Technician (PT) ☐ Administrative ☐ Farm Storage Facility Loan ☐ Price Support ☐ County Operations Trainee (COT) ☐ County Executive Director (CED) ☐ Acting ☐ GIS Disaster (Edit Folder)	☐ Compliance ☐ Conservation ☐ Farm Records ☐ Farm Storage Facility Loan ☐ Livestock ☐ NAP ☐ Payment Limitation/Eligibility ☐ Price Support ☐ Production Adjustment ☐ TAP	☐ Program Technician (PT) ☐ Loan Analyst/Operations Trainee (FLOT) ☐ Officer (FLO)/Senior Officer (SFLO) ☐ Manager (FLM) ☐ Appraiser ☐ State Office Chief/Specialist

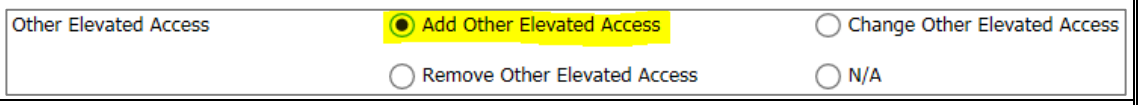
CED or PT: New Employee Remedy FSA-13-A/SAAR Ticket Process (Continued)

A Instructions for Setting Permissions for CED or PT (Continued)

Step	Instructions
1 (Cntd.)	The "Farm Program (County)" box may also be checked for "GIS Disaster (Edit Folder)".  **Note:** **Only** 2 employees per server may receive these permissions, coordinate with the State GIS Specialist.
2	In Remedy, CLICK "Agency SAAR Update Request". 

CED or PT: New Employee Remedy FSA-13-A/SAAR Ticket Process (Continued)

A Instructions for Setting Permissions for CED or PT (Continued)

Step	Instructions
3	Fill out the basic information about the user's supervisor, location, etc.
4	In the SAAR Update Request form, select the "Add Other Elevated Access" radio button. 
5	Insert the following information in the "Provide Details and Justifications for Adding Other Elevated Access" box for providing the following server group permission details: • Ug-one-fsa-GISUsers (Citrix) • Ug-one-fsa-GISUsersReaders (Citrix) • gg-(**agXX**)-FSA-GISUsers • gg-(**agXX**)-FSA-GISUsersReaders • gg-(**agXX**)-FSA-GISUsersEditors **Note:** **agXX** = Choose appropriate group (agwest, agcentral, ageast, or aglo). Ask local CTS if there are any questions regarding region. • ASAG<st>SGU • AIOG<stcity>USERS (County Office). *Replace the <st>, <ST>, <stcity> with the appropriate codes. Ask local CTS if there are any questions regarding State and city alpha character codes.*
6	The following roles are needed for each County Office the CED or PT will work within: • ASAG<**stcity**> • ASAG<**stcity**>CLU • ASAG<**stcity**>LGE • ASAG<**stcity**>de (**only** 2 employees per server and if box is checked, see step 1). *Replace the <stcity> with the appropriate codes. Ask local CTS if there are any questions regarding State and city alpha character codes.*

CED or PT: New Employee Remedy FSA-13-A/SAAR Ticket Process (Continued)

A Instructions for Setting Permissions for CED or PT (Continued)

Step	Instructions
6 (Cntd.)	**Example: CED with Shared Management of 2 County Offices** Ug-one-fsa-GISUsers Ug-one-fsa-GISUsersReaders gg-**agcentral**-FSA-GISUsers gg-**agcentral**-FSA-GISUsersReaders gg-**agcentral**-FSA-GISUsersEditors ASAG<**WI**>SGU AIOG< **WILUX** >USERS (County Office) ASAG< **WILUX** > ASAG< **WILUX** >CLU ASAG< **WILUX** >LGE ASAG< **WILUX** >de AIOG< **WISTU** >USERS (County Office) ASAG< **WISTU** > ASAG< **WISTU** >CLU ASAG< **WISTU** >LGE ASAG< **WISTU** >de
7	The end result of the SAAR ticket software will look something like following: Other Elevated Access ◉ Add Other Elevated Access ○ Change Other Elevated Access ○ Remove Other Elevated Access ○ N/A **Provide Details and justification for adding Other Elevated access:** * Ug-one-fsa-GISUsers Ug-one-fsa-GISUsersReaders gg-agwest-FSA-GISUsers
8	Complete other non-GIS permissions if applicable. **Examples:** New e-mail address, phone number, 30-day exemption, etc.
9	CLICK “Submit”. This action by SLR submits FSA-13-A to the AMT group.

CED or PT: New Employee Remedy FSA-13-A/SAAR Ticket Process (Continued)

B AMT Process

After submitting the SAAR Request, the AMT group will provide the access (with conditions) to the following areas.

eAuth	Notes
FSA_MIDAS-GIS_EDITOR FSA_BTO_USER (Training Required)	The MIDAS GIS Editor role is automatically applied to all users who need access to MIDAS. Assuming all of the MIDAS training courses have been addressed, no special action is required here.
CRM	**Notes**
PT: Grantor Process User ZCXCU_COMMON_USER_ROLE (CRM Role) **CED:** Grantor Process Manager ZCXCU_COMMON_USER_ROLE (CRM Role)	Access will not be granted until registration and training are complete.
SCIMS	**Notes**
Read Only	Access will not be granted until AD-2017 and training are complete. AMT requires SCIMS training documentation (the **signed AD-2017**).

Note: AMT will e-mail the SLR explaining the new employee needs additional training in AgLearn, if training is needed. Additional training depends on what MIDAS training the employee has already completed. Once that training is completed the SLR will respond to AMT noting all training has been completed for these roles. The new employee will then be granted those MIDAS roles. Automatically, the eAuth MIDAS-GIS EDITOR role will also be applied to the new employee.

To view the most up-to-date version of the Access Reference Table, go to **https://sharepoint.apps.fsa.usda.net/iso/public/Wiki%20Pages/Forms.aspx**.

CED or PT: New Employee Remedy FSA-13-A/SAAR Ticket Process (Continued)

C Required AgLearn MIDAS Courses

For the new PT to receive the MIDAS role of "**Grantor Process User**", AgLearn training is required. The following AgLearn courses must be completed:

- R2FN100 Introduction to MIDAS Portal
- FN200 Basic Navigation of MIDAS CRM
- FN220 Managing the MIDAS Universal Worklist
- FN240 Basic Navigation of GIS in MIDAS
- R2BP320 Create Business Partner in CRM
- R2BP400 Maintain Business Partner in CRM
- R2B003 Maintain Representative Capacity
- CT300 Product Master
- BP302 Business Partner
- FR400 Farm Records.

For the new CED to receive the MIDAS role of "**Grantor Process Manager**", AgLearn training is required. The following AgLearn courses must be completed:

- R2FN100 Introduction to MIDAS Portal
- FN200 Basic Navigation of MIDAS CRM
- FN220 Managing the MIDAS Universal Worklist
- FN240 Basic Navigation of GIS in MIDAS
- R2BP320 Create Business Partner in CRM
- R2BP400 Maintain Business Partner in CRM
- R2B003 Maintain Representative Capacity
- CT300 Product Master
- CT310 Product Request (CED's only)
- BP302 Business Partner
- FR400 Farm Records.

Setting the Metadata Environment

A Background

--Following DR-3465-001, FSA will use FGDC-endorsed metadata standards per the Geospatial Data Act. To properly work with metadata in ArcGIS, the FGDC CSDGM must be set before using the metadata tools.--

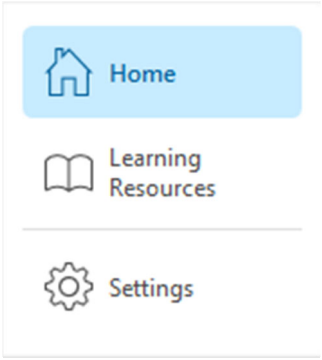
B Requirements

--These steps must be completed in ArcGIS Pro.--

* * *

C Instructions

The following instructions are required to set up the Metadata Environment before using the metadata tools.
*--

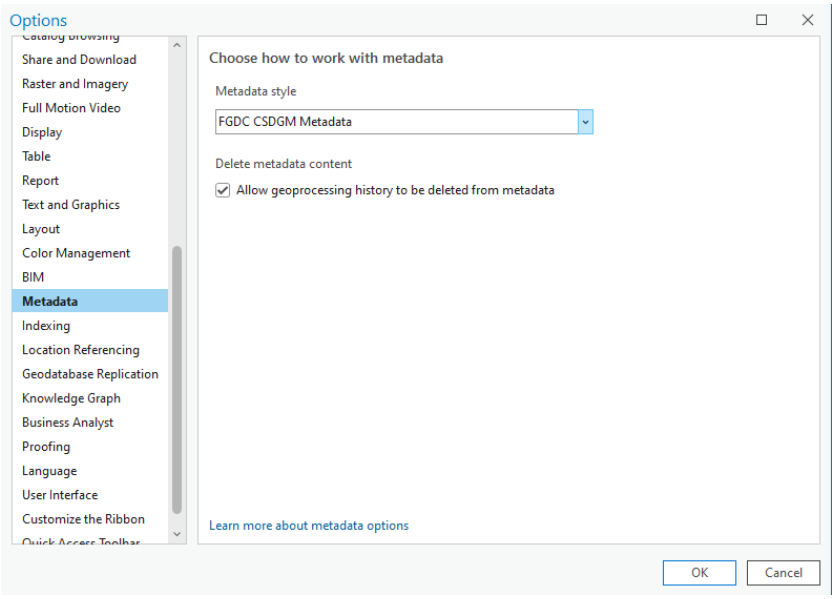
Step	Instructions
1	Open ArcGIS Pro.
2	Before opening or creating a project, CLICK "**Settings**".  **Note**: If a project is already open, CLICK "**Project**" to access the "Options" menu.
3	CLICK "**Options**".
4	In the "Options" window, CLICK "**Metadata**".

--*

Setting the Metadata Environment (Continued)

C Instructions (Continued)

*--

Step	Instructions
5	In the "Metadata style" drop-down menu, SELECT "**FGDC CSDGM Metadata**". 
6	CLICK "**OK**" to close the Options dialog box.

--*

Customizing Metadata Templates

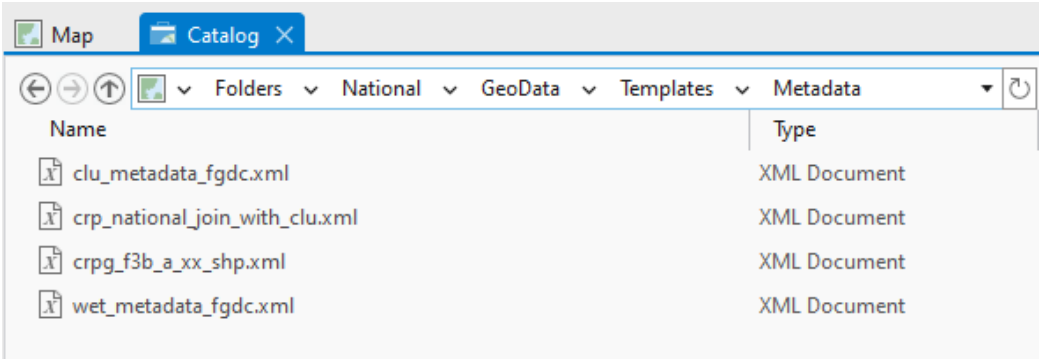
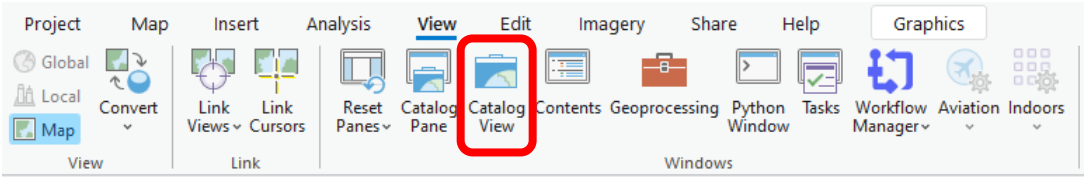
A Background

State GIS Specialist must customize information within metadata templates including dates, location, and point of contact information before distributing geographic data. All templates use *--FGDC CSDGM style metadata.--*

Note: Screen prints in this exhibit show the metadata template example for Wetlands data. The same instructions are used for all FSA datasets. Use the appropriate metadata template for each dataset, as data descriptions and definitions are different for each type of data.

B Importing a National Template

The following instructions display how to import a national template.
*--

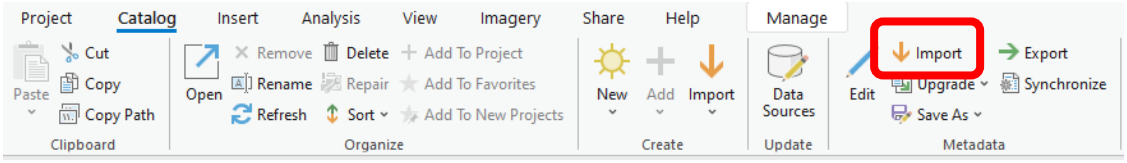
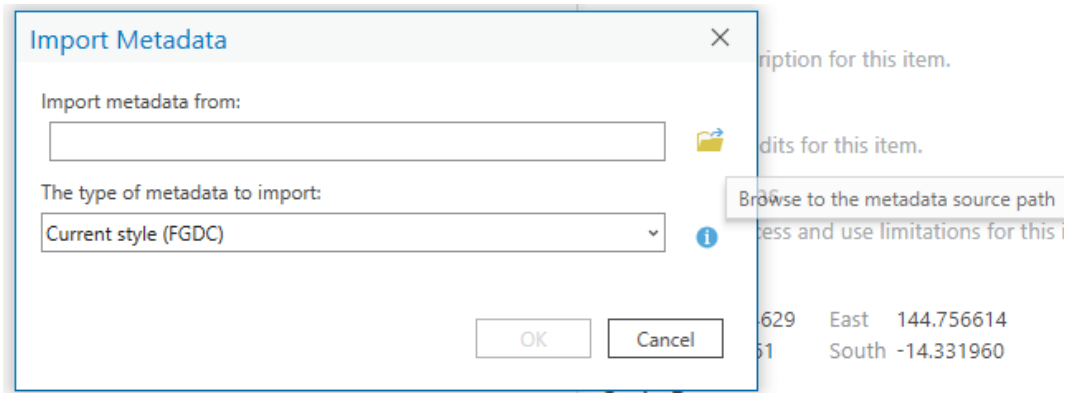
Step	Instructions
1	Copy the prepared metadata template files from Citrix: **I:\Templates\Metadata** 
2	Paste the prepared metadata template files to the following locations: • K\<ST>\Geodata\Project_Data\metadata • F:\geodata\project_data\fsa\metadata • C:\geodata\metadata Remove any previous metadata template files that were created in the FGDC CDGSM format.
3	Open ArcGIS Pro.
4	Open the ArcCatalog View. CLICK "**View**" then CLICK "**Catalog View**". 

--*

Customizing Metadata Templates (Continued)

B Importing a National Template (Continued)

*--

Step	Instructions
5	Navigate to the location where the dataset is saved.
6	Click once on the item within the Catalog window to select it.
7	From the **Metadata** section on the Catalog ribbon, CLICK "**Import**". 
8	In the "Import Metadata" window, CLICK the "Browse" button next to "Import metadata from". 
9	Navigate to the location of the copied national metadata template. **Example:** "C:\geodata\metadata\"
10	Select the appropriate metadata XML file and CLICK "**OK**".
11	Ensure "The type of metadata to import" is set to "**Current Style (FGDC)**".
12	CLICK "**OK**".
13	Review the metadata and update information as necessary.

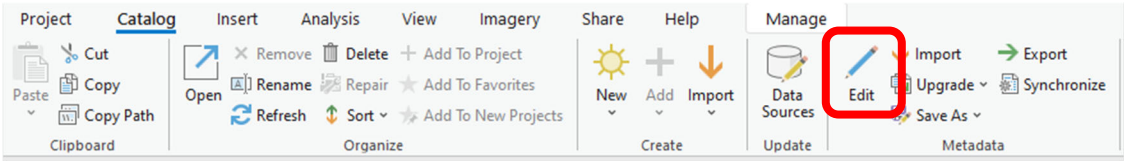
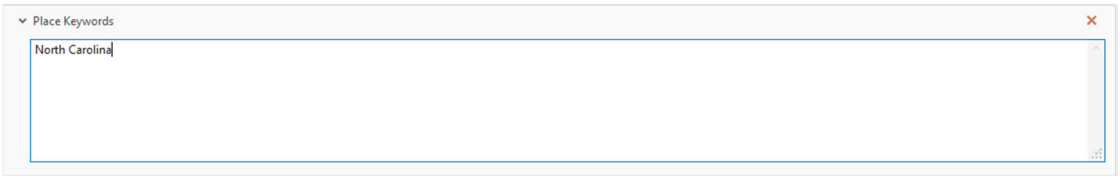
--*

Customizing Metadata Templates (Continued)

C Editing the Metadata Template

The following instructions display how to edit an ArcGIS item's metadata from an imported template.

*--

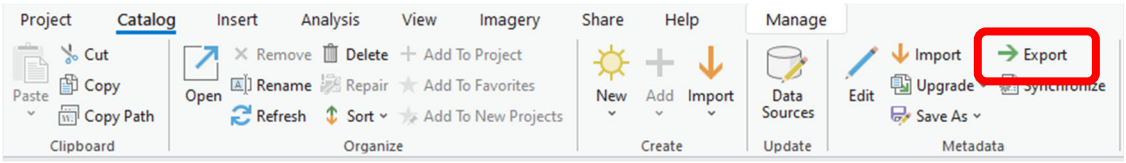
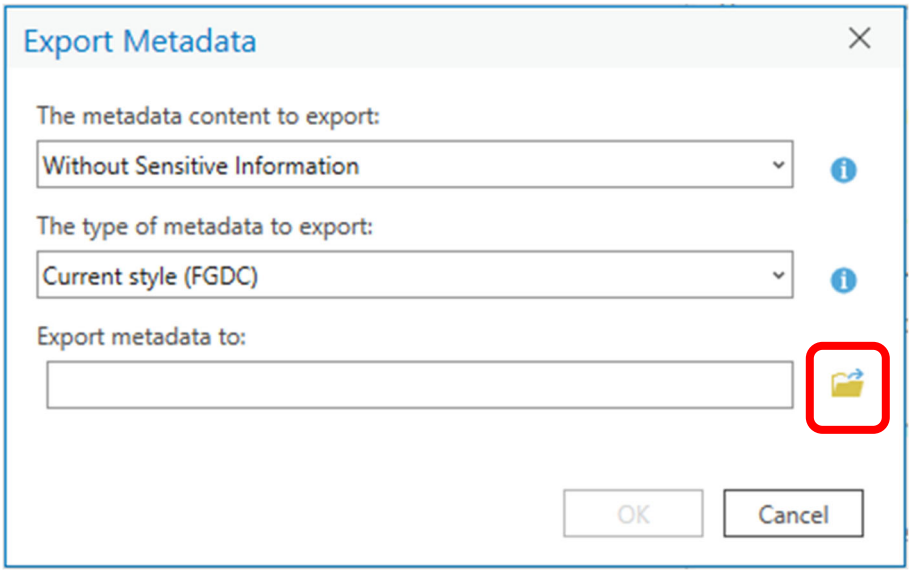
Step	Instructions
1	In the Catalog window, navigate to the item. This item is the item that was recently updated using this subparagraph.
2	From the Metadata section on the Catalog ribbon, CLICK "**Edit**". 
3	Example, begin the metadata editing process with the Topics and Keywords element: • CLICK "**Topics and Keywords**" • CLICK "**New Place Keywords**" • in the Place Keywords text box, type a comma separated list of place descriptors as applicable. For State-level datasets, include the name of the State. For county-level datasets, include both the state and county names. 
4	Save edits as changes are made. On the "Metadata" ribbon, CLICK "**Save**". 

--*

Customizing Metadata Templates (Continued)

D Exporting a Customized Metadata Template

*--The following instructions display how to export an item's customized metadata to a standard XML format file (template).

Step	Instructions
1	Open ArcGIS Pro.
2	From the Metadata section on the Catalog ribbon, CLICK "**Export**". 
3	Click the "Browse" button to set the browse destination and file name. 
4	After setting the folder location and file name, CLICK "**Save**".
5	CLICK "**OK**" to export the metadata file.

--*

Example CLU Metadata Content

A Background

ArcGIS Metadata is divided into 3 categories:

- Overview
- Metadata
- Resource.

B ArcGIS Metadata - Overview Section

The following table lists all the metadata contents for CLU as read in ArcGIS. Text noted in **bold** must be updated by the State GIS Specialist after importing the metadata template.

Name	Description
Shapefile	**clu_a_st<ccc>**
Tags	Agriculture, Farm Service Agency, Fields, **State name**, CLU, State Abbreviation, USDA, **FIPS Code**, Common Land Unit, boundaries, Tracts, farming, **County name**
Summary	CLU's are used to identify and delineate farm, tract, and field boundaries needed to administer USDA farm commodity support and conservation programs in a GIS environment.

Example CLU Metadata Content (Continued)

B ArcGIS Metadata - Overview Section (Continued)

Name	Description
Description	The CLU dataset consists of digitized farm, tract, and field boundaries and associated attribute data. An individual CLU is the smallest unit of land that has a permanent, contiguous boundary, common land cover and/or land management, common owner and common producer association. Permanent boundaries may be defined by visible features, differences in management, differences in ownership, or by FSA program requirements. A tract is defined in 7 CFR 718.2 as a unit of contiguous land that is all of the following: • 1 or more fields • under 1 common ownership • operated as a farm or a part of a farm. A farm is made up of tracts that have the same owner and the same operator. CLU data was created using heads-up digitizing methods to capture farm, tract, and field boundaries that were originally drawn on 24" x 24" aerial photographs that were maintained in USDA Service Centers. CLU was digitized at a scale of 1:4800 using NAD83 and UTM Grid System.
Credits	United States Department of Agriculture Farm Service Agency
Use limitations	For use only by FSA or agency partnerships. If digitizing, use a scale of 1:4800 or 1 inch equals 300 feet. This will maintain the proper digitizing accuracy.
Extent	
West	**-99.453759**
North	**48.029220**
East	**-98.309047**
South	**47.426645**
Scale Range	
Maximum (zoomed in)	**1:5,000**
Minimum (zoomed out)	**1:150,000,000**

Example CLU Metadata Content (Continued)

B ArcGIS Metadata - Overview Section (Continued)

Name	Description
Topics and Keywords	
Themes or categories of the resource	farming, boundaries
***** Content type	Downloadable Data
Export to FGDC CSDGM XML format as Resource Description	No
Place keywords	**State name, State Abbreviation, FIPS Code, County name**
Thesaurus	
Temporal keywords	**2016**
Temporal keywords	**10/26/2016**
Theme keywords	boundaries, farming
Thesaurus	
Title	ISO 19115 Topic Category
Theme keywords	Agriculture, Farm Service Agency, Fields, CLU, USDA, Common Land Unit, Tracts
Citation	
Citation Contacts	

C ArcGIS Metadata - Metadata Section

The following table lists all the metadata contents for CLU as read in ArcGIS. Text noted in **bold** must be updated by the State GIS Specialist after importing the metadata template.

Name	Description
Responsible Party	
Organization's name	USDA Farm Service Agency **State or County Office**
Contact's role	publisher
Contact information	
Address	
type	
delivery point	**State or County Office location**
Responsible Party	
Organization's name	USDA Farm Service Agency **State or County Office**
Contact's role	originator

Example CLU Metadata Content (Continued)

D ArcGIS Metadata - Resource Section

The following table lists all the metadata contents for CLU as read in ArcGIS. Text noted in **bold** must be updated by the State GIS Specialist after importing the metadata template.

Name	Description
Resource Details	
Dataset languages	English (UNITED STATES)
status	completed
Spatial representation type	vector
***** Processing environment	Microsoft Windows 7 Version 6.1 (Build 7601) Service Pack 1; ESRI ArcGIS 10.4.0.5524
Credits	United States Department of Agriculture Farm Service Agency
ArcGIS item properties	
***** Name	clu_a_nd027
***** Size	3.661
***** Location	file://\\ASANDFA35000043\D$\geodata\common_land_unit\fsa_clu\shp\clu_a_nd027.shp
***** Access protocol	Local Area Network
Extents	
Extent	
Geographic extent	
West longitude	**-114.0471**
East longitude	**-112.1446**
South latitude	**39.9032**
North latitude	**41.0767**
Extent contains the resource	Yes
Extent	
Geographic extent	
Bounding rectangle	
Extent type	Extent used for searching
***** West longitude	-99.453759
***** East longitude	-98.309047
***** North latitude	48.029220
***** South latitude	47.426645
***** Extent contains the resource	Yes
Resource Points of Contact	
Point of contact	
Organization’s name	USDA Farm Service Agency **County or State Office**
Contact's role	point of contact
Contact information	
phone	
voice	**xxx-xxx-xxxx**

Example CLU Metadata Content (Continued)

D ArcGIS Metadata - Resource Section (Continued)

Name	Description
Address	
delivery point	**2222 W 2300 S**
City	**Salt Lake City**
Administrative Area	**Utah**
Postal Code	**84119**
Country	U.S.
E-mail Address	**apfo.sales@slc.usda.gov**
Resource Maintenance	
Resource maintenance	
Update Frequency	as needed
Resource Constraints	
Legal constraints	
Limitations of use	In no event shall the creators, custodians, or distributors of this information be liable for any damages arising out of its use (or inability to use it).
Other constraints	Access is currently limited to FSA and agency partnerships.
Constraints	
Limitations of use	For use only by FSA or agency partnerships. If digitizing, use a scale of 1:4800 or 1 inch equals 300 feet. This will maintain the proper digitizing accuracy.
Spatial Reference	
ArcGIS coordinate system	
***** Type	Projected
***** Geographic coordinate reference	GCS_North_American_1983
***** Projection	NAD_1983_UTM_Zone_14N
***** Coordinate reference details	
Projected coordinate system	
Well-known identifier	26914
X origin	-5120900
Y origin	-9998100
XY scale	450445547.3910538
Z origin	-100000
Z scale	10000
M origin	-100000
M scale	10000
XY tolerance	0.001
Z tolerance	0.001
M tolerance	0.001
High precision	true
Latest well-known identifier	26914

Example CLU Metadata Content (Continued)

D ArcGIS Metadata - Resource Section (Continued)

Name	Description
Well-known text	PROJCS["NAD_1983_UTM_Zone_14N",GEOGCS["GCS_North_American_1983",DATUM["D_North_American_1983",SPHEROID["GRS_1980",6378137.0,298.257222101]],PRIMEM["Greenwich",0.0],UNIT["Degree",0.0174532925199433]],PROJECTION["Transverse_Mercator"],PARAMETER["False_Easting",500000.0],PARAMETER["False_Northing",0.0],PARAMETER["Central_Meridian",-99.0],PARAMETER["Scale_Factor",0.9996],PARAMETER["Latitude_Of_Origin",0.0],UNIT["Meter",1.0],AUTHORITY["EPSG",26914]]
Reference system identifier	
Dimension	horizontal
***** Value	26914
***** Codespace	EPSG
***** Version	6.13(3.0.1)
Spatial Data Properties	
Vector	
***** Level of topology for this dataset	geometry only
Geometric objects	
Feature class name	clu_a_nd027
***** Object type	composite
***** Object count	11321
Indirect spatial referencing	**County, State**
Vector	
***** Level of topology for this dataset	geometry only
Geometric objects	
Feature class name	**clu_a_nd027**
***** Feature type	Simple
***** Geometry type	Polygon
***** Has topology	FALSE
***** Feature count	11321
***** Spatial index	FALSE
***** Linear referencing	FALSE
Data Quality	
Scope of quality information	
Resource Level	dataset
Data Quality Report – Topological consistency	

Example CLU Metadata Content (Continued)

D ArcGIS Metadata - Resource Section (Continued)

Name	Description
Evaluation method	Polygon and chain-node topology present, no additional checks for topological consistency were performed on this data set. Attribution of the digital data set includes polygon areas that define agricultural and nonagricultural lands.
Conformance test results	
test passed	No
Data Quality Report – Conceptual consistency	
Measure description	Polygon and chain-node topology present, no additional checks for topological consistency were performed on this data set. Attribution of the digital data set includes polygon areas that define agricultural and nonagricultural lands.
Data Quality Report – Completeness omission	
Measure description	This information reflects land that is enrolled in or participating in FSA business programs.
Data Quality Report – Quantitative attribute accuracy	
Measure description	Polygon attributes cannot be checked for accuracy because of the absence of the original photomaps with original boundary and attribute information. All attribute data was collected and transferred from the aerial photographs, which were maintained by the county FSA office, to the computerized attribute table. Certain attributes were verified using QC procedures. The CLU layer is searched for duplicate CLU numbers, duplicate tract numbers, and acreage differences between system calculated acreage and official FSA acreage.
Data Quality Report – Absolute external positional accuracy	
Dimension	Horizontal
Measure description	All features digitized shall be within 3 meters of their locations as depicted on a display of the digital ortho-imagery. Positional accuracy standard is applicable only to delineated tract and field boundaries that follow visible features.

Example CLU Metadata Content (Continued)

D ArcGIS Metadata - Resource Section (Continued)

Name	Description
Lineage	
Process step	
When the process occurred	
Indeterminate date	Unknown
Description	Tract and field boundaries were digitized on-screen with DOQ using ESRI's ArcGIS products. Creation and last change dates are in the attribute table.
Geoprocessing history	
Process	
Process name	
Date	**2016-10-26 08:26:10**
Tool location	c:\program files (x86)\arcgis\desktop10.4\ArcToolbox\Toolboxes\Data Management Tools.tbx\CreateFeatureclass
Command issued	CreateFeatureclass D:\geodata\common_land_unit\fsa_clu\shp clu_a_nd027 POLYGON # DISABLED DISABLED "PROJCS['NAD_1983_UTM_Zone_14N',GEOGCS['GCS_North_American_1983',DATUM['D_North_American_1983',SPHEROID['GRS_1980',6378137.0,298.257222101]],PRIMEM['Greenwich',0.0],UNIT['Degree',0.0174532925199433]],PROJECTION['Transverse_Mercator'],PARAMETER['False_Easting',500000.0],PARAMETER['False_Northing',0.0],PARAMETER['Central_Meridian',-99.0],PARAMETER['Scale_Factor',0.9996],PARAMETER['Latitude_Of_Origin',0.0],UNIT['Meter',1.0]];-5120900 -9998100 10000;-100000 10000;-100000 10000;0.001;0.001;0.001;IsHighPrecision" # 0 0 0
Include in lineage when exporting metadata	No
Distribution	
Distributor	
Contact information	
Organization's name	USDA Farm Service Agency **County or State Office**
Contact's role	Distributor
Contact information	
Phone	
Voice	**435-882-3018**
Address	
Type	**Both**
Delivery point	**185 N Main St**
City	**Tooele**

Example CLU Metadata Content (Continued)

D ArcGIS Metadata - Resource Section (Continued)

Name	Description
Administrative area	**Utah**
Postal code	**84074**
Country	U.S.
e-mail address	**apfo.sales@slc.usda.gov**
Distribution format	
***** Name	Shapefile
Version	None
Transfer options	
***** Transfer size	3.661
Fields	
Details for object clu_a_nd027	
Overview Description	
Entity and Attribute Overview	Name Type Length Precision ---------- ---------- ---------- ---------- Shape Integer NA OBJECTID Integer NA clu_identifier String 36 0 clu_number String 7 0 tract_number String 7 0 clu_classification_code String 2 0 clu_calculated_acres Double 9 2 highly_erodible_land_type_code String 4 0 comments String 80 state_code String 2 0 county_code String 3 data_source_site_identifier Integer NA creation_date Date 0 last_change_date Date data_source String 20 admin_state String 2 0 admin_county String 3 0 cropland_indicator_3CM Integer NA sap_crp Integer NA 0 clu_status String 30 0 cdist_fips String 4 0 edit_reason String 60 Shape_STArea_ Double Shape_STLength_ Double clu_alt_id String NA last_chg_user_nm String 50 0 S
Entity and Attribute Detail Citation	8-CM

Example CLU Metadata Content (Continued)

D ArcGIS Metadata - Resource Section (Continued)

Name	Description
Metadata Details	
Metadata language	English (UNITED STATES)
Metadata character set	utf8 - 8 bit UCS Transfer Format
Metadata identifier	FCDA27A2-2B79-4222-858E-5EC48945D63D
Scope of the data described by the metadata	dataset
Scope name	***** dataset
***** Last update	**2016-10-26**
ArcGIS metadata properties	
Metadata format	ArcGIS 1.0
Metadata style	North American Profile of ISO19115 2003
Standard or profile used to edit metadata	NAP
Created in ArcGIS for the item	**2016-10-26 08:26:10**
Last modified in ArcGIS for the item	**2016-10-26 13:36:27**
Automatic updates	
Have been performed	Yes
Last update	**2016-10-26 13:36:27**
Metadata Contacts	
Metadata contact	
Organization's name	USDA Farm Service Agency **State or County Office**
Contact's role	point of contact
Contact information	
Phone	
Voice	**801-844-2922**
Address	
Delivery point	**185 N Main St.**
City	**Tooele**
Administrative area	**Utah**
Postal code	**84074**
Country	U.S.
e-mail address	**apfo.sales@slc.usda.gov**
Metadata Constraints	
Security constraints	
Classification	unclassified
Classification system	None
Additional restrictions	None

Example Wetland Metadata Content

A Background

ArcGIS Metadata is divided into 3 categories:

- Overview
- Metadata
- Resource.

B ArcGIS Metadata - Overview Section

The following table lists all the metadata contents for the FSA Wetland Point Layer as read in ArcGIS. Text noted in **bold** must be updated by the State GIS Specialist after importing the metadata template.

Name	Description
Title	**wet_p_st<ccc>**
Tags	Wetland Determination Identifiers, Farm Service Agency, USDA, **FIPS Code**, Section 404 of the Clean Water Act, County Name, Food Security Act of 1985, **State Name**, environment, biota, **State Abbreviation**, Agriculture, FSA, NRCS, Natural Resources Conservation Service
Summary	The wetland points are used to administer USDA farm commodity support and conservation programs in a GIS environment.

Example Wetland Metadata Content (Continued)

B ArcGIS Metadata - Overview Section (Continued)

Name	Description
Description	The wetland dataset consists of digitized wetland point identifiers and associated attribute data. The points are both inventoried and certified, at locations determined by NRCS. The wetland points were digitized on-screen using ESRI ArcGIS software. NRCS-CPA-026 and associated maps are the official authoritative source documents concerning the approximate location of the wetland type. Red, yellow, and green symbols represent different categories of wetland determinations. Red octagons represent "Restricted Use" determinations; upside-down yellow triangles represent "Limited Restrictions" determinations; and green circles represent "Exempt from Conservation Compliance Provisions" determinations. Restricted Use = W (Wetland); CW, CW+YR (Converted Wetland +Year); AW/W (Artificial Wetland/Wetland); GFW, GFW+YR (Good Faith Wetland + Year); RSW, RSW+YR (Restored Wetland + Year); RPW (Replacement Wetland) Limited Restrictions = FW (Farmed Wetland); FWP (Farmed Wetland Pasture); CWNA (Converted Wetland, Non-ag Use); AW/FW (Artificial Wetland/Farmed Wetland); CWTE (Converted Wetland Technical Error); TP (Third Party Conversion); WX (Manipulated Wetland);MW; CMW (Minimal Effect Wetlands); MIW, MWM (Mitigated Wetlands); NI (Not Inventoried); OW (Other Waters); Easement
Credits	United States Department of Agriculture Farm Service Agency and Natural Resources Conservation Service
Use limitations	For use only by FSA or agency partnerships. Wetland identifiers do not represent the size, shape, or specific determination of the area. See the original determination (NRCS-CPA-026 and attached maps) for exact wetland boundaries and labels, or contact NRCS. If digitizing, use a scale of 1:4800 or 1 inch equals 300 feet. This will maintain the proper digitizing accuracy.

Example Wetland Metadata Content (Continued)

B ArcGIS Metadata - Overview Section (Continued)

Name	Description
Extent	
West	**-99.453759**
North	**48.029220**
East	**-98.309047**
South	**47.426645**
Scale Range	
Maximum (zoomed in)	**1:5,000**
Minimum (zoomed out)	**1:150,000,000**
Topics and Keywords	
Themes or categories of the resource	farming, boundaries
***** Content type	Downloadable Data
Export to FGDC CSDGM XML format as Resource Description	No
Place keywords	**State name, State Abbreviation, FIPS Code, County name**
Thesaurus	
Temporal keywords	**2016**
Temporal keywords	**10/26/2016**
Theme keywords	boundaries, farming
Thesaurus	
Title	ISO 19115 Topic Category
Theme keywords	Agriculture, Farm Service Agency, Wetland Determination Identifiers, USDA, NRCS, Wetland Points
Citation	
Citation Contacts	

C ArcGIS Metadata - Metadata Section

The following table lists all the metadata contents for the FSA Wetland Point Layer as read in ArcGIS. Text noted in **bold** must be updated by the State GIS Specialist after importing the metadata template.

Name	Description
Responsible Party	
Resource Details	
Organization's name	USDA Farm Service Agency **State or County Office**
Contact's role	publisher
Contact information	
Address	
Type	

Example Wetland Metadata Content (Continued)

C ArcGIS Metadata - Metadata Section (Continued)

Name	Description
Delivery point	**State or County Office location**
Responsible Party	
Organizationts name	USDA Farm Service Agency **State or County Office**
Contact's role	originator

D ArcGIS Metadata - Resource Section

The following table lists all the metadata contents for the FSA Wetland Point Layer as read in ArcGIS. Text noted in **bold** must be updated by the State GIS Specialist after importing the metadata template.

Name	Description
Dataset languages	English (UNITED STATES)
Status	completed
Spatial representation type	vector
***** Processing environment	Microsoft Windows 7 Version 6.1 (Build 7601) Service Pack 1; ESRI ArcGIS 10.4.0.5524
Credits	United States Department of Agriculture Farm Service Agency
ArcGIS item properties	
***** Name	wet_a_nd027
***** Size	3.661
***** Location	file://\\ASANDFA35000043\D$\geodata\common_land_unit\fsa_clu\shp\wet_p_nd027.shp
***** Access protocol	Local Area Network
Extents	
Extent	
Geographic extent	
West longitude	**-114.0471**
East longitude	**-112.1446**
South latitude	**39.9032**
North latitude	**41.0767**
Extent contains the resource	Yes
Extent	
Geographic extent	
Bounding rectangle	

Example Wetland Metadata Content (Continued)

D ArcGIS Metadata - Resource Section (Continued)

Name	Description
Extent type	Extent used for searching
***** West longitude	-99.453759
***** East longitude	-98.309047
***** North latitude	48.029220
***** South latitude	47.426645
***** Extent contains the resource	Yes
Resource Points of Contact	
Point of contact	
Organization's name	USDA Farm Service Agency **County or State Office**
Contact's role	point of contact
Contact information	
phone	
voice	**801-844-2922**
Address	
delivery point	**2222 W 2300 S**
City	**Salt Lake City**
Administrative Area	**Utah**
Postal Code	**84119**
Country	U.S.
E-mail Address	**apfo.sales@slc.usda.gov**
Resource Maintenance	
Resource maintenance	
Update Frequency	as needed
Resource Constraints	
Legal constraints	
Limitations of use	In no event shall the creators, custodians, or distributors of this information be liable for any damages arising out of its use (or inability to use it).
Other constraints	Access is currently limited to FSA and agency partnerships.
Constraints	
Limitations of use	For use only by FSA or agency partnerships. Wetland identifiers do not represent the size, shape, or specific determination of the area. See the original determination (NRCS-CPA-026 and attached maps) for exact wetland boundaries and labels, or contact NRCS. If digitizing, use a scale of 1:4800 or 1 inch equals 300 feet. This will maintain the proper digitizing accuracy.

Example Wetland Metadata Content (Continued)

D ArcGIS Metadata - Resource Section (Continued)

Name	Description
Spatial Reference	
ArcGIS coordinate system	
***** Type	Projected
***** Geographic coordinate reference	GCS_North_American_1983
***** Projection	NAD_1983_UTM_Zone_14N
***** Coordinate reference details	
Projected coordinate system	
Well-known identifier	26914
X origin	-5120900
Y origin	-9998100
XY scale	450445547.3910538
Z origin	-100000
Z scale	10000
M origin	-100000
M scale	10000
XY tolerance	0.001
Z tolerance	0.001
M tolerance	0.001
High precision	true
Latest well-known identifier	26914
Well-known text	PROJCS["NAD_1983_UTM_Zone_14N",GEOGCS["GCS_North_American_1983",DATUM["D_North_American_1983",SPHEROID["GRS_1980",6378137.0,298.257222101]],PRIMEM["Greenwich",0.0],UNIT["Degree",0.0174532925199433]],PROJECTION["Transverse_Mercator"],PARAMETER["False_Easting",500000.0],PARAMETER["False_Northing",0.0],PARAMETER["Central_Meridian",-99.0],PARAMETER["Scale_Factor",0.9996],PARAMETER["Latitude_Of_Origin",0.0],UNIT["Meter",1.0],AUTHORITY["EPSG",26914]]
Reference system identifier	
Dimension	horizontal
***** Value	26914
***** Codespace	EPSG
***** Version	6.13(3.0.1)

Example Wetland Metadata Content (Continued)

D ArcGIS Metadata - Resource Section (Continued)

Name	Description
Spatial Data Properties	
Vector	
***** Level of topology for this dataset	geometry only
Geometric objects	
Feature class name	wet_p_nd027
***** Object type	composite
***** Object count	11321
Indirect spatial referencing	**County, State**
Vector	
***** Level of topology for this dataset	geometry only
Geometric objects	
Feature class name	wet_p_nd027
***** Feature type	Simple
***** Geometry type	Polygon
***** Has topology	FALSE
***** Feature count	11321
***** Spatial index	FALSE
***** Linear referencing	FALSE
Data Quality	
Scope of quality information	
Resource Level	dataset
Data Quality Report – Topological consistency	
Evaluation method	No additional checks for topological consistency were performed on this data set. Attribution of the digital data set includes points that define wetland locations.
Conformance test results	
test passed	No
Data Quality Report – Conceptual consistency	
Measure description	No additional checks for topological consistency were performed on this data set. Attribution of the digital data set includes points that define wetland locations.
Data Quality Report – Completeness omission	
Measure description	This information reflects land that is enrolled in or participating in FSA business programs.

Example Wetland Metadata Content (Continued)

D ArcGIS Metadata - Resource Section (Continued)

Name	Description
Data Quality Report – Quantitative attribute accuracy	
Measure description	No additional checks for topological consistency were performed on this data set. Attribution of the digital data set includes points that define wetland locations.
Data Quality Report – Absolute external positional accuracy	
Dimension	Horizontal
Measure description	All features digitized shall be within 3 meters of their locations as depicted on a display of the digital ortho-imagery. Positional accuracy standard is applicable only to delineated tract and field boundaries that follow visible features.
Lineage	
Process step	
When the process occurred	
Indeterminate date	Unknown
Description	Points were digitized on-screen with DOQ using ESRI's ArcGIS products. NRCS-CPA-026's and associated maps were also used to digitize the wetland location and attributes.
Geoprocessing history	Automated information. Section intentionally left out.
Distribution	
Distributor	
Contact information	
Organization's name	USDA Farm Service Agency **County or State Office**
Contact's role	Distributor
Contact information	
Phone	
Voice	**435-882-3018**
Address	
Type	**Both**
Delivery point	**185 N Main St**

Example Wetland Metadata Content (Continued)

D ArcGIS Metadata - Resource Section (Continued)

Name	Description
City	**Tooele**
Administrative area	**Utah**
Postal code	**84074**
Country	U.S.
e-mail address	**apfo.sales@slc.usda.gov**
Distribution format	
***** Name	File Geodatabase Feature Class
Fields	
Details for object wet_p_nd027	
***** Type	Feature Class
***** Row count	2474
Definition	A shapefile is a simple, nontopological format for storing the geometric location and attribute information of geographic features. Geographic features in a shapefile can be represented by points, lines, or polygons (areas). The workspace containing shapefiles may also contain dBASE tables, which can store additional attributes that can be joined to a shapefile's features.
Definition source	ArcGIS 10.2 Help
Field OBJECTID	
***** Alias	FID
***** Data type	OID
***** Width	4
***** Precision	0
***** Scale	0
***** Field description	Internal feature number
***** Description source	ESRI
***** Description of values	Sequential unique whole numbers that are automatically generated
Field Shape	
***** Alias	Shape
***** Data type	Geometry
***** Width	0
***** Precision	0
***** Scale	0
Field description	Digitized point representing the wetland
Description source	ESRI
***** Description of values	Coordinates defining the features

Example Wetland Metadata Content (Continued)

D ArcGIS Metadata - Resource Section (Continued)

Name	Description
Field ID	
***** Alias	Id
***** Data type	Integer
***** Width	6
***** Precision	6
***** Scale	0
Field description	Refers to a unique identifier of an object within DBF table
Description source	ESRI
***** Description of values	int
Field STATECD	
***** Alias	STATECD
***** Data type	String
***** Width	2
***** Precision	0
***** Scale	0
Field description	The FIPS numeric code associated with the State where the point feature is located.
Description source	1-GIS
* Description of values	varchar(2)
Field COUNTYCD	
* Alias	COUNTYCD
* Data type	String
* Width	3
* Precision	0
* Scale	0
Field description	The FIPS numeric code associated with the county where the point feature is located.
Description source	1-GIS
* Description of values	Varchar(3)
Field CERTDATE	
* Alias	CERTDATE
* Data type	String
* Width	8
* Precision	0
* Scale	0
Field description	The wetland certification date derived from the original NRCS-CPA-026.
Description source	1-GIS
* Description of values	datetime

Example Wetland Metadata Content (Continued)

D ArcGIS Metadata - Resource Section (Continued)

Name	Description
Field WETLABEL	
* Alias	WETLABEL
* Data type	String
* Width	100
* Precision	0
* Scale	0
Field description	A wetland acronym type label as outlined in 1-GIS.
Description source	1-GIS
List of values	
Value	AW
Description	Artificial or Irrigation Induced Wetland
Enumerated domain value definition source	1-GIS
Value	AW/FW
Description	Artificial or Irrigation Induced Wetland and Farmed Wetland
Enumerated domain value definition source	1-GIS
Value	AW/W
Description	Artificial or Irrigation Induced Wetland and Wetland
Enumerated domain value definition source	1-GIS
Value	CC
Description	Commenced conversion exemption
Enumerated domain value definition source	1-GIS
Value	CMW
Description	Categorical Minimal Effect
Enumerated domain value definition source	1-GIS
Value	CW
Description	Wetland converted between December 23, 1985, and November 28, 1990
Enumerated domain value definition source	1-GIS
Value	CW=Yr
Description	Wetland converted after November 28, 1990
Enumerated domain value definition source	1-GIS

Example Wetland Metadata Content (Continued)

D ArcGIS Metadata - Resource Section (Continued)

Name	Description
Value	CWNA
Description	Wetland converted to other than agricultural commodity production
Enumerated domain value definition source	1-GIS
Value	CWTE
Description	Wetland converted or commenced based on an incorrect NRCS determination
Enumerated domain value definition source	1-GIS
Value	Easement
Description	A wetland easement exists on the land
Enumerated domain value definition source	1-GIS
Value	FW
Description	A farmed wetland that was manipulated and planted before December 23, 1985, but still meets wetland criteria
Enumerated domain value definition source	1-GIS
Value	FWP
Description	Pasture or hayland converted before December 23, 1985, that still meets wetland criteria and is not abandoned
Enumerated domain value definition source	1-GIS
Value	MIW
Description	A frequently cropped wetland area that is converted under an agreement that another wetland, that was converted before December 23, 1985, is restored to replace it. The restored area may be protected by an easement.
Enumerated domain value definition source	1-GIS
Value	MW
Description	Conversion activity was determined to have a minimal effect.
Enumerated domain value definition source	1-GIS

Example Wetland Metadata Content (Continued)

D ArcGIS Metadata - Resource Section (Continued)

Name	Description
Value	MWM
Description	Minimal Effect Mitigation
Enumerated domain value definition source	1-GIS
Value	NI
Description	Area that is not inventoried by NRCS
Enumerated domain value definition source	1-GIS
Value	NW
Description	The field does not contain wetland.
Enumerated domain value definition source	1-GIS
Value	NW/NAD
Description	Non Wetland per National Appeals Decision
Enumerated domain value definition source	1-GIS
Value	OW
Description	Other Waters of the United States
Enumerated domain value definition source	1-GIS
Value	PC
Description	Land converted before December 23, 1985, to make agricultural production possible.
Enumerated domain value definition source	1-GIS
Value	PC/NW
Description	Prior Converted and Non Wetland
Enumerated domain value definition source	1-GIS
Value	TP
Description	Wetland converted by a third-party
Enumerated domain value definition source	1-GIS

Example Wetland Metadata Content (Continued)

D ArcGIS Metadata - Resource Section (Continued)

Name	Description
Value	W
Description	Wetland or wetland farmed under natural conditions and no drainage has occurred
Enumerated domain value definition source	1-GIS
Value	WX
Description	Wetland manipulated after December 23, 1985, but agricultural production was not made possible
Enumerated domain value definition source	1-GIS
Value	GFW
Description	CW that has been restored under the good faith provision
Enumerated domain value definition source	1-GIS
Value	GFW+Yr
Description	CW + YR that has been restored under the good faith provision
Enumerated domain value definition source	1-GIS
Value	RPW
Description	A not frequently cropped wetland area that is converted to improve efficiency under an agreement that another wetland, that was converted before December 23, 1985, is restored to replace it.
Enumerated domain value definition source	1-GIS
Value	RSW
Description	A wetland area that was not converted between December 23, 1985, and November 28, 1990, that is restored to preconversion conditions. No violation by planting on the converted wetland has occurred.
Enumerated domain value definition source	1-GIS
Value	RVW+YR
Description	A wetland converted after December 23, 1985, on which NRCS determined a violation occurred and restoration to preconversion conditions has been completed.
Enumerated domain value definition source	1-GIS

Example Wetland Metadata Content (Continued)

D ArcGIS Metadata - Resource Section (Continued)

Name	Description
Field WETACRES	
***** Alias	WETACRES
***** Data type	Double
***** Width	10
***** Precision	9
***** Scale	2
Field description	The acreage of wetland determined by NRCS
Description source	1-GIS
Minimum value	0.01
Maximum value	99999999999999999.99
Units of measure	acres
Field STATUS	
***** Alias	STATUS
***** Data type	String
***** Width	16
***** Precision	0
***** Scale	0
Field description	The status type name assigned to wetland based on NRCS-CPA-026 information. There are 3 status types: inventoried, certified, and unknown.
Description source	1-GIS
List of values	
Value	1
Description	Inventoried
Enumerated domain value definition source	1-GIS
Value	2
Description	certified
Enumerated domain value definition source	1-GIS
Value	3
Description	unknown
Enumerated domain value definition source	1-GIS

Example Wetland Metadata Content (Continued)

D ArcGIS Metadata - Resource Section (Continued)

Name	Description
Field ADMNSTATE	
***** Alias	ADMNSTATE
***** Data type	String
***** Width	3
***** Precision	0
***** Scale	0
Field description	The FSA code associated with the county that administers the point feature
Description source	1-GIS
***** Description of values	Varchar(2)
Field ADMNCOUNTY	
***** Alias	ADMNSTATE
***** Data type	String
***** Width	3
***** Precision	0
***** Scale	0
Field description	The FSA code associated with the county that administers the point feature
Description source	1-GIS
***** Description of values	Varchar(3)
***** Metadata language	English (UNITED STATES)
Metadata character set	utf8 - 8 bit UCS Transfer Format
Metadata identifier	FID
Scope of the data described by the metadata	***** dataset
Scope name	***** dataset
***** Last update	2016-12-12
ArcGIS metadata properties	
Metadata format	ArcGIS 1.0
Metadata style	North American Profile of ISO19115 2003
Standard or profile used to edit metadata	NAP
Created in ArcGIS for the item	**2016-12-09 12:46:39**
Last modified in ArcGIS for the item	**2016-12-12 16:06:40**
Automatic updates	
Have been performed	Yes
Last update	**2016-12-12 16:06:40**
Metadata Maintenance	
Maintenance	
Update frequency	As needed

Importing Metadata From a Customized State Metadata Template

A Background

Customized State metadata templates for CLU and Wetlands will be used when providing metadata for all producer and third-party requests for data. All statewide authoritative datasets also require metadata. The import tool allows a user to quickly populate an ArcGIS item (or file) with standard metadata content such as the description of the data, legal restrictions and point of contact information.

B Requirements

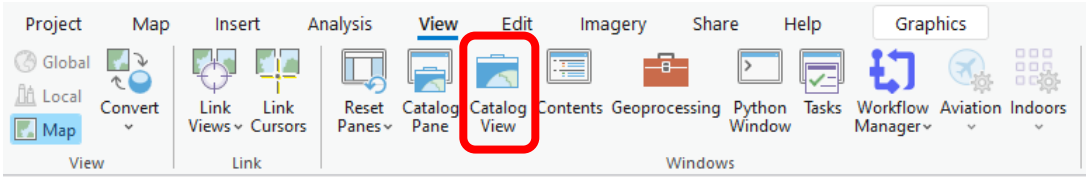
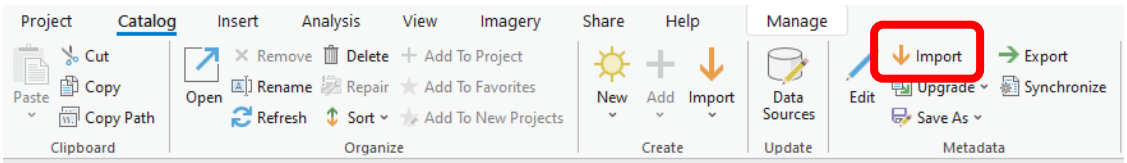
--Ensure the metadata settings have been modified to FGDC CSDGM Metadata.--

The State GIS Specialist must have created the customized State metadata templates. The State metadata templates are found in:

- F:\geodata\project_data\fsa\metadata
- K:\<ST>\GeoData\templates\metadata

C Instructions

The following instructions import Metadata from a customized State Metadata template.
*--

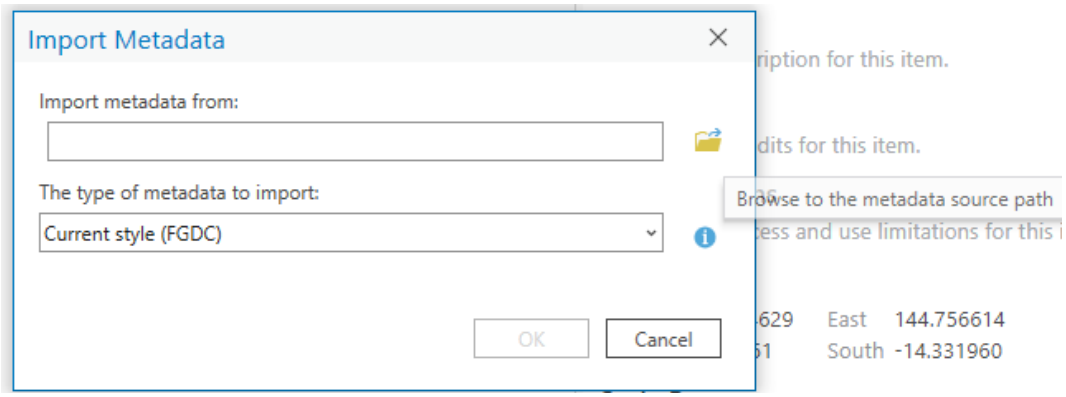
Step	Instructions
1	Open ArcGIS Pro.
2	Open the ArcCatalog View. CLICK "**View**" then CLICK "**Catalog View**". 
3	Navigate to the location where the dataset that needs metadata is saved.
4	Click once on the item within the Catalog window to select it.
5	From the Metadata section on the Catalog ribbon, CLICK "**Import**". 

--*

Importing Metadata From a Customized State Metadata Template (Continued)

C Instructions (Continued)

*--

Step	Instructions
6	In the "Import Metadata" window, Click the "Browse" button next to "**Import metadata from**". 
7	Navigate to the location where the State metadata template is stored.
8	Select the metadata template that matches the data request.
9	Ensure "The type of metadata to import" is set to "Current Style (FGDC)".
10	CLICK "**OK**".
11	Review the metadata and update information as necessary.

--*

Accessing Farm Records and Other Data

A Background

Farm Records and Conservation data for use with custom geospatial tools is available for download through EDW at **https://fsadw.nitckc.usda.gov/**.

B Requirements

Users must have access privileges to EDW. Refer to 12-CM.

C PDD * * * SharePoint Instructions

***--**The PDD SharePoint site provides access to common documents and software issue reporting. The site can be accessed at https://usdagcc.sharepoint.com/sites/FPAC-FSA-DAFP-PDD/SitePages/Home.aspx.

To report issues with custom ArcGIS tools, State Offices should submit a case through the FSA Farm Programs Software Issues SharePoint, which can be accessed through a link on the PDD SharePoint site.

Note: Access to the FSA Farm Programs Software Issues SharePoint site is granted only to State Office employees, County Office should not request access and should report issues to their State Office.**--***

Accessing Farm Records and Other Data (Continued)

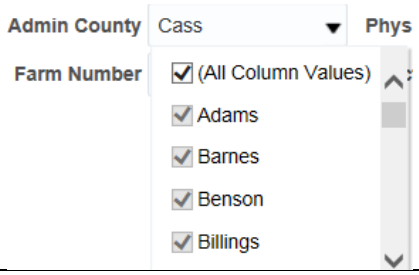
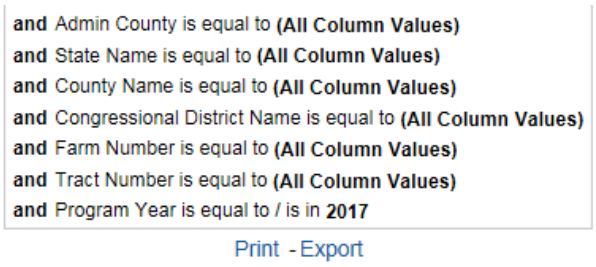
D EDW Access Instructions

***--**Refer to 12-CM for EDW access instructions.

* * *

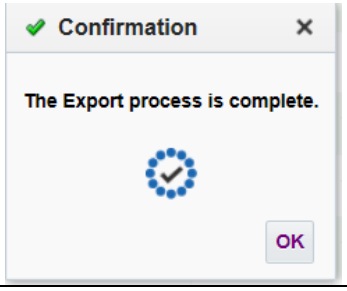
E Export CRP Conservation Contract File From EDW

The CRP Conservation Contract File is joined to the CLU layer to create a CRP layer for comparison with CCMS data and to create maps of conservation practices.

Step	Instructions
1	From the OBIEE Reports/Dashboards page, CLICK "Farm Records" and "Farm Records Conservation Detail".
2	Change the "Admin State" drop-down menu to the appropriate State.
3	Change the "Admin County" drop-down menu to "All Column Values". 
4	CLICK "**Apply**".
5	Scroll to the bottom of the report and CLICK "Export". 
6	CLICK "Data" and "CSV Format".

Accessing Farm Records and Other Data (Continued)

E Export CRP Conservation Contract File From EDW (Continued)

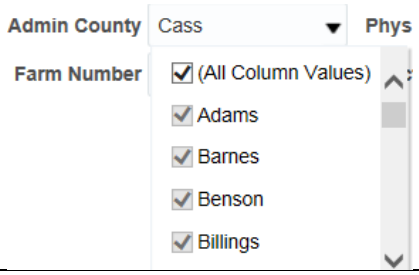
Step	Instructions
7	CLICK "OK" in the Confirmation window after the export is complete. 
8	At the bottom of the Internet Explorer window, click the arrow next to "Save". 
9	CLICK "**Save As**".
10	Navigate to C:\Geodata\Conservation.
11	CLICK "**Save**".

Accessing Farm Records and Other Data (Continued)

F Export Farm Records Contact File From EDW

The Farm Records Contact file is used to identify farm operators, tract owners or other producers. The files are used by multiple statewide CLU tools.

Note: EDW restricts files to 500,000 records. Larger States may need to export several files to capture all records. If multiple files are exported, they can be combined using the "Combine Similar CSV Files" tool.

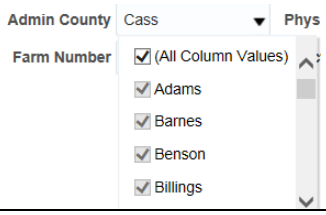
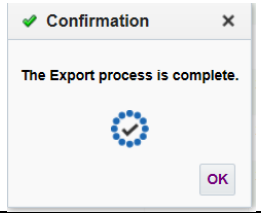
Step	Instructions
1	From the OBIEE Reports/Dashboards page, CLICK "Farm Records" and "Farm Records Contacts".
2	Change the "Contact Role" drop-down menu to the appropriate role. **Note:** To use the Split Farm Records Contact Files by County and Required Farm Combination Tools, "All View" must be selected.
3	Change the "Admin State" drop-down menu to the appropriate State.
4	Change the "Admin County" drop-down menu to "All Column Values". 
5	CLICK "**Apply**".
6	CLICK "Download CCID" in the upper-left corner of the report.
7	Scroll to the bottom of the report and CLICK "Export".
8	CLICK "**OK**" in the Confirmation window after the export is complete.
9	At the bottom of the Internet Explorer window, click the arrow next to "Save".
10	CLICK "**Save As**".
11	Navigate to c:\geodata\project_data\fsa\frs.
12	CLICK "**Save**".

Accessing Farm Records and Other Data (Continued)

G Export Farm Tract – Crop Level Farm Data File From EDW

The Farm Tract - Crop Level Farm Data file is used to identify crop base acres and ARCPLC program elections at a farm level for use in the Required Farm Combination tool.

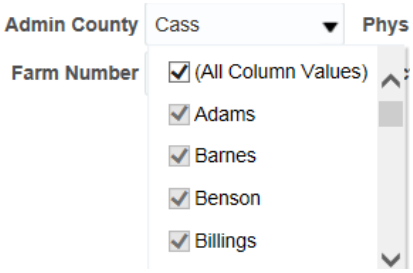
Note: EDW restricts files to 500,000 records. Larger States may need to export several files to capture all records. If multiple files are exported, they can be combined using the "Combine Similar CSV Files" tool.

Step	Instructions
1	From the OBIEE Reports/Dashboards page, CLICK "Farm Records" and "Farm Record Detail".
2	Change the "Farm Records Farm Tract Crop" drop-down menu to "Crop Level Farm".
3	Change the "Admin State" drop-down menu to the appropriate State.
4	Change the "Admin County" drop-down menu to "All Column Values". 
5	CLICK "**Apply**".
6	Scroll to the bottom of the report and CLICK "Export".
7	CLICK "OK" in the Confirmation window after the export is complete. 
8	At the bottom of the Internet Explorer window, click the arrow next to "Save".
9	CLICK "**Save As**".
10	Navigate to c:\geodata\project_data\fsa\frs.
11	CLICK "**Save**".

Accessing Farm Records and Other Data (Continued)

H Export Farm Tract – Crop Level Tract Data File From EDW

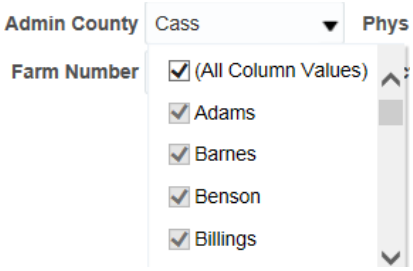
The Farm Tract - Crop Level Tract Data file is used to identify crop base acres and ARCPLC program elections at a tract level for use in the Summarize Base Acres and Summarize ARCPLC Elections tools.

Step	Instructions
1	From the OBIEE Reports/Dashboards page, CLICK "Farm Records" and "Farm Records Detail".
2	Change the "Farm Records Farm Tract Crop" drop-down menu to "Crop Level Tract".
3	Change the "Admin State" drop-down menu to the appropriate State.
4	Change the "Admin County" drop-down menu to "All Column Values".  **Note:** After exporting, verify all counties have been exported. If the report exceeds the maximum record limit, the report will be truncated. In this situation, download counties in batches.
5	CLICK "**Apply**".
6	Scroll to the bottom of the report and CLICK "Export".
7	CLICK "Data" and "CSV Format".
8	CLICK "**OK**" in the Confirmation window after the export is complete.
9	At the bottom of the Internet Explorer window, click the arrow next to "Save".
10	CLICK "**Save As**".
11	Navigate to c:\geodata\project_data\fsa\frs.
12	CLICK "**Save**".

I Export County Crop Acreage Data From EDW

The Acreage – County Crop Acreage Data file is used to identify crops and other commodities reported to FSA through the annual acreage reporting process. Data from this tool is used to create crop data polygons using the "Build Crop Data Polygons – EDW" tool.

Note: EDW restricts files to 500,000 records. Larger States may need to export several files to capture all records. If multiple files are exported, they can be combined using the "Combine Similar CSV Files" tool.

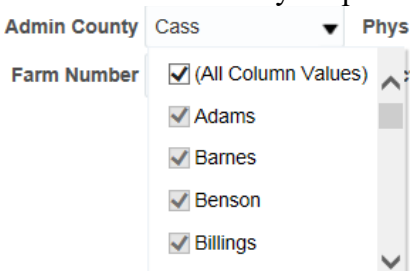
Step	Instructions
1	From the OBIEE Reports/Dashboards page, CLICK "Acreage" and "County Crop Acreage".
2	Change the "Admin State" drop-down menu to the appropriate State.
3	Change the "Admin County" drop-down menu to "All Column Values".  **Note:** After exporting, verify all counties have been exported. If the report exceeds the maximum record limit, the report will be truncated. In this situation, download counties in batches.
4	CLICK "**Apply**".
5	Scroll to the bottom of the report and CLICK "Export".
6	CLICK "**OK**" in the Confirmation window after the export is complete.
7	At the bottom of the Internet Explorer window, click the arrow next to "Save".
8	CLICK "**Save As**".
9	Navigate to c:\geodata\project_data\fsa\frs.
10	CLICK "**Save**".

Accessing Farm Records and Other Data (Continued)

*--J Export Field Level Data from EDW

The Farm Records Detail – Field Level Data file is used to identify fields that are subject to native sod provisions. Data from this tool is used to create native sod polygons using the "Create Native Sod Layer" tool.

Note: EDW restricts files to 500,000 records. Larger States may need to export several files to capture all records. If multiple files are exported, they can be combined using the "Combine Similar CSV Files" tool.

Step	Instructions
1	From the OBIEE Reports/Dashboards page, click on Farm Records > Farm Records Detail.
2	Change the Farm Records Farm Tract Crop dropdown to "Field Level".
3	Set the Admin State dropdown to the appropriate State.
4	Set the Admin County dropdown to "All Column Values".  **Note:** After exporting, verify that all counties have been exported. If the report exceeds the maximum record limit, the report will be truncated. In this situation, download counties in batches.
5	Click **[Apply]**.
6	Scroll to the bottom of the report and click "Export".
7	Click Data > CSV Format.
8	Click **[OK]** in the confirmation window after the export is complete.
9	At the bottom of the Internet Explorer window, click on the arrow next to Save.
10	Click on [**Save As**].
11	Navigate to c:\geodata\project_data\fsa\frs.
12	Click **[Save]**.

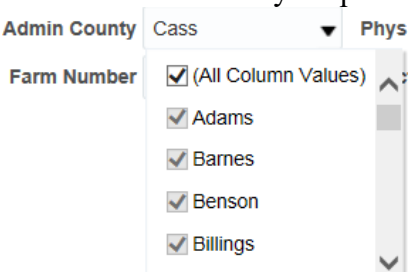
--*

Accessing Farm Records and other Data (Continued)

***--K Export Conservation Contract Data from EDW**

The CCMS Detail file is used to identify fields that are subject to native sod provisions. Data from this tool is used to compare conservation contract data to CRP data loaded in CRM Farm Records using the "Compare MIDAS CRP to CCMS" tool.

Note: EDW restricts files to 500,000 records. Larger States may need to export several files to capture all records. If multiple files are exported, they can be combined using the "Combine Similar CSV Files" tool.

Step	Instructions
1	From the OBIEE Reports/Dashboards page, click on Dashboards > Conservation (State) > CCMS.
2	Set the Admin State dropdown to the appropriate State.
3	Set the Admin County dropdown to "All Column Values".  **Note:** After exporting, verify that all counties have been exported. If the report exceeds the maximum record limit, the report will be truncated. In this situation, download counties in batches.
4	Click **[Apply]**.
5	Scroll to the bottom of the report and click "Export".
6	Click Data > CSV Format.
7	Click **[OK]** in the confirmation window after the export is complete.
8	At the bottom of the Internet Explorer window, click on the arrow next to Save.
9	Click on [**Save As]**.
10	Navigate to c:\geodata\conservation.
11	Click **[Save]**.

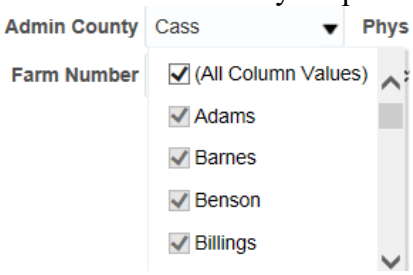
--*

Accessing Farm Records and other Data (Continued)

*--L Export Tract Level Farm Records Data from EDW

The Farm Records by Tract Level report is used to review the tract wetland determination flag. Data from this tool is used to compare tract level data with wetland point data following instructions in Exhibit 23.

Note: EDW restricts files to 500,000 records. Larger States may need to export several files to capture all records. If multiple files are exported, they can be combined using the "Combine Similar CSV Files" tool.

Step	Instructions
1	From the OBIEE Reports/Dashboards page, click on Farm Records > Farm Records Detail.
2	Set the Farm Records Farm Tract Crop dropdown to "Tract Level".
3	Set the Admin State dropdown to the appropriate State.
4	Set the Admin County dropdown to "All Column Values".  **Note:** After exporting, verify that all counties have been exported. If the report exceeds the maximum record limit, the report will be truncated. In this situation, download counties in batches.
5	Click **[Apply]**.
6	Scroll to the bottom of the report and click "Export".
7	Click Data > CSV Format.
8	Click **[OK]** in the confirmation window after the export is complete.
9	At the bottom of the Internet Explorer window, click on the arrow next to Save.
10	Click on [**Save As**].
11	Navigate to c:\geodata\project_data\fsa\frs.
12	Click **[Save]**.

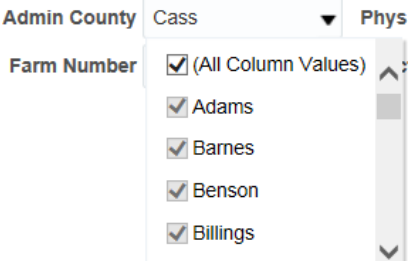
--*

Accessing Farm Records and other Data (Continued)

***--M Export Farm Records Farm Tract Crop Farm Level Data File From EDW**

The Farm Tract Crop Farm Level Data file is used to identify ARCPLC G/I/F eligibility at the farm level for use in the Required Farm Combination tool.

Note: EDW restricts files to 500,000 records. Larger States may need to export several files to capture all records. If multiple files are exported, they can be combined using the "Combine Similar CSV Files" tool.

Step	Instructions
1	From the OBIEE Reports/Dashboards page, click on Farm Records > Farm Records Detail.
2	Set the Farm Records Farm Tract Crop dropdown to "Farm Level".
3	Set the Admin State dropdown to the appropriate State.
4	Set the Admin County dropdown to "All Column Values".  **Note:** After exporting, verify that all counties have been exported. If the report exceeds the maximum record limit, the report will be truncated. In this situation, download counties in batches.
5	Click **[Apply]**.
6	Scroll to the bottom of the report and click "Export".
7	Click Data > CSV Format.
8	Click **[OK]** in the confirmation window after the export is complete.
9	At the bottom of the Internet Explorer window, click on the arrow next to Save.
10	Click on [**Save As**].
11	Navigate to c:\geodata\project_data\fsa\frs.
12	Click **[Save]**.

--*

State Office CLU Tools – Merge CLU GDB's

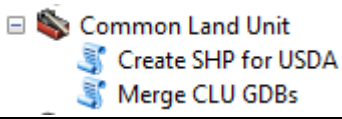
A Introduction

CLU data can be merged together to create a single statewide dataset. Use the Merge GLU GDB's tool to create a file geodatabase containing CLU and, optionally, wetland point data for an entire State.

CLU data is exported to a file geodatabase format and stored by county. Use the Bulk Export to GDB tool before running this tool. See **Exhibit 99**.

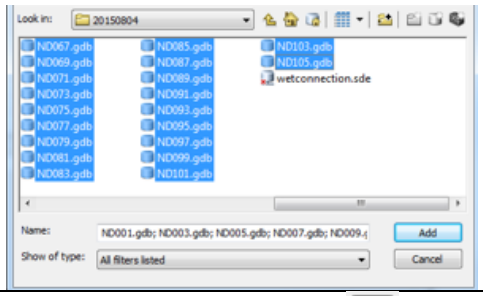
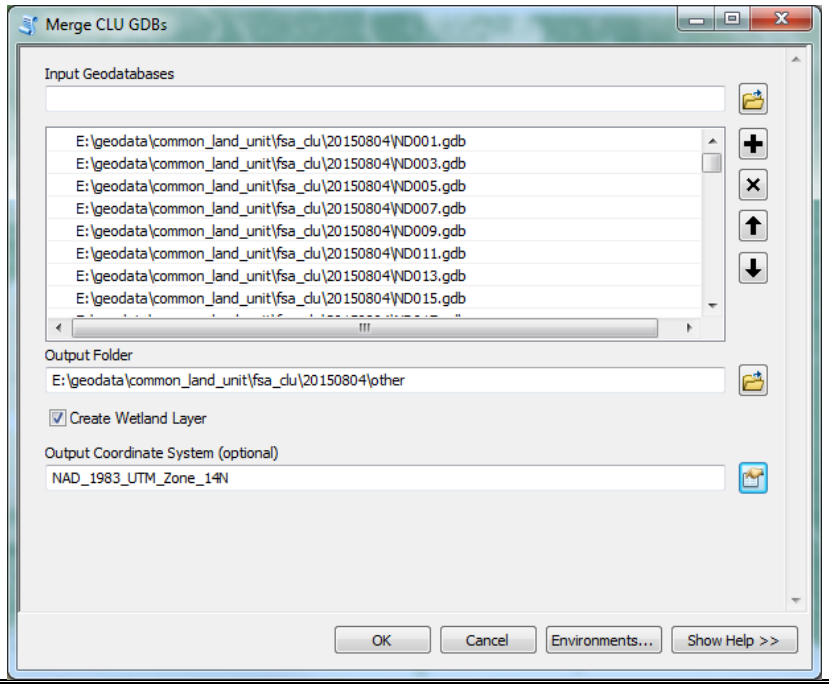
B Tool Instructions

To create a file geodatabase containing CLU and, optionally, wetland point data for an entire State use the following instructions.

Step	Instructions
1	If not already done, download and extract the PythonMapSeries.zip file to C:\Geodata. The State Office CLU Tools (statewideCLU.pyt) file should be located in C:\Geodata\PythonMapSeries.
2	Start ArcMap.
3	Open the Catalog window.
4	In the Catalog window, navigate to C:\Geodata\PythonMapSeries.
5	Expand the statewideCLU toolbox.
6	Expand the Common Land Unit toolset. 
7	Double-click on "Merge CLU GDBs".
8	Click the "Browse" button  to input geodatabases.
9	Navigate to the folder that contains the exported file geodatabases.

State Office CLU Tools – Merge CLU GDB's (Continued)

B Tool Instructions (Continued)

Step	Instructions
10	Select all desired file geodatabases and CLICK "**Add**". 
11	Click the "Browse" button  next to the "Output" folder.
12	Browse to C:\Geodata\Common_Land_Unit\fsa_clu (or choose another folder) and CLICK "**Add**".
13	If a statewide wetland layer is desired, ensure that the checkmark is placed next to "Create Wetland Layer". 
14	Specify the Output Coordinate System. By default, the tool will use the projection of the first file geodatabase. It is recommended to use the majority UTM zone for the State as an output.
15	CLICK "**OK**" to run the tool. 

Identifying Missing and Inaccurate CLU Attributes

A Common Instructions

The following instructions to open the statewide CLU layer in ArcMap will be required for all queries completed in this exhibit.

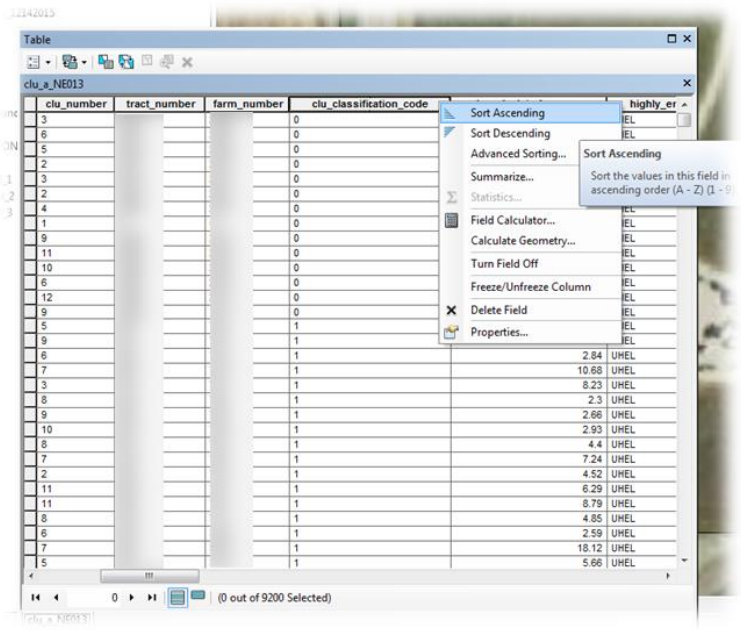
Step	Instructions
1	Open ArcMap.
2	Add the statewide CLU layer.
3	Open the statewide CLU layer attribute table.

Identifying Missing and Inaccurate CLU Attributes (Continued)

B Identify Missing or Inaccurate LCC's

The following instructions provide the steps to sort and review the LCC attributes to identify missing or inaccurately loaded codes. CLU's with missing or inaccurate codes can be selected and exported from the list for further review in CRM Farm Records.

Note: CRM Farm Records should no longer allow Zero or Null entries for LCC on any CLU. A missing LCC for CLU will result in a failed replication or a hard stop for a user trying to save an edit.

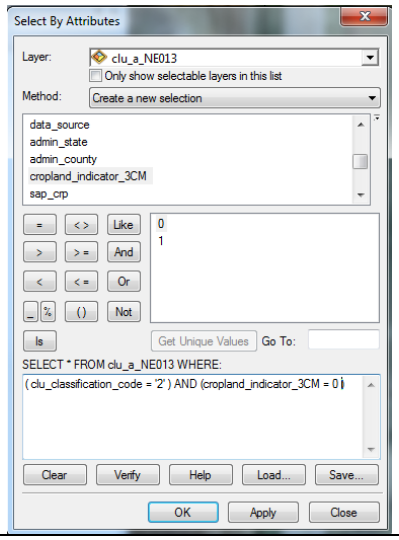
Step	Instructions
1	Right-click the "**clu_classification_code**" column header.
2	CLICK "**Sort Ascending**" to sort the LCC attributes in numeric order.  **Note:** With LCC sorted, users can also scroll through LLC's to identify attributes that are not common for the county. **Example:** Identify if any Tundra and Perennial Ice and Snow LCC classifications have been used incorrectly.
3	Review for any zero "0" or Null LCC's attributed.

Code	Land Classification
1	Urban
2	Cropland
3	Rangeland
4	Forest
5	Water Body
6	Mined
7	Barren
8	Tundra
9	Perennial Ice and Snow
10	Other Agricultural Land

Identifying Missing and Inaccurate CLU Attributes (Continued)

C Identify CLU's With Cropland LCC But No 3-CM Indicator

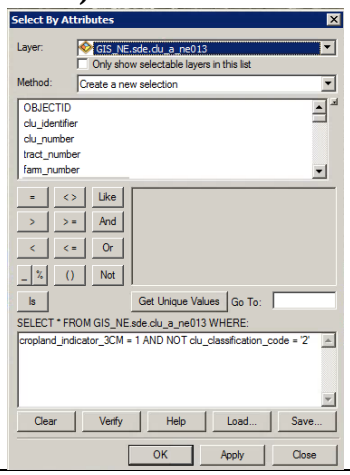
The following instructions provide the steps to identify CLU's where the LCC is identified as cropland (2), but the 3-CM Indicator is set to "No". Since the 3-CM indicator is not set to "Yes", the acreage for these CLU's is not identified as Cropland Acres at the tract level. The CLU's should be reviewed to determine whether either the LCC or the 3-CM indicator is incorrectly identified.

Step	Instructions
1	Open the "**Select by Attributes**" tool.
2	In the Select by Attributes window, verify or select the statewide CLU or county CLU layer in the "Layer" field.
3	Build the following query: **(clu_classification_code = '2') AND (cropland_indicator_3CM = 0)** • double-click on "**clu_classification_code**" • click the "**=**" button • CLICK "**Get Unique Values**" • double-click on "**2**" • click the "**And**" button • double-click on "**cropland_indicator_3CM**" • click the "**=**" button • CLICK "**Get Unique Values**" • double-click on "**0**". 
4	CLICK "**OK**".
5	Export the selected CLU's as needed to assist with reviewing and correcting in CRM Farm Records.

Identifying Missing and Inaccurate CLU Attributes (Continued)

D Identify CLU's With 3-CM Indicator But No Cropland LCC

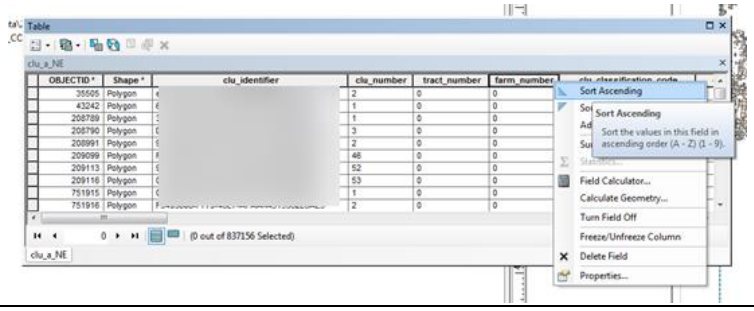
The following instructions provide the steps to identify CLU's where the LCC is identified as something other than cropland (2), but the 3-CM Indicator is set to "Yes". In these cases the acreage for the CLU is being included as cropland acres at the tract level. CLU's should be reviewed to determine whether either the LCC or the 3-CM indicator is incorrectly identified.

Step	Instructions
1	Open the "**Select by Attributes**" tool.
2	In the Select by Attributes window, verify or select the statewide CLU or county CLU layer in the "Layer" field.
3	Build the following query: **(cropland_indicator_3CM = 1) AND NOT (clu_classification_code = '2')** • double-click on "**cropland_indicator_3CM**" • click the "**=**" button • CLICK "**Get Unique Values**" • double-click on "**1**" • click the "**And**" button • click the "**Not**" button • double-click on "**clu_classification_code**" • click the "**=**" button • CLICK "**Get Unique Values**" • double-click on "**2**". 
4	CLICK "**OK**".
5	Export the selected CLU's as needed to assist with reviewing and correcting in CRM Farm Records.

Identifying Missing and Inaccurate CLU Attributes (Continued)

E Identify Zero Farm, Tract, or CLU Numbers

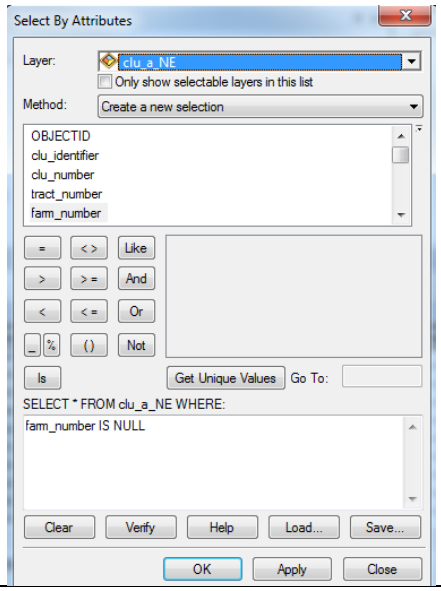
The process for sorting or querying zero attributes for Farm, Tract, or CLU numbers is the same. Complete the process once over the farm number attributes and then repeat for the tract number and CLU number attributes. The following steps will just review sorting and querying farm number attributes within the CLU attribute table.

Step	Instructions
1	Right-click the "**farm_number**" column header.
2	CLICK "**Sort Ascending**". 
3	Select and export all zero attributes.

Identifying Missing and Inaccurate CLU Attributes (Continued)

F Identify Null Farm, Tract, or CLU Numbers

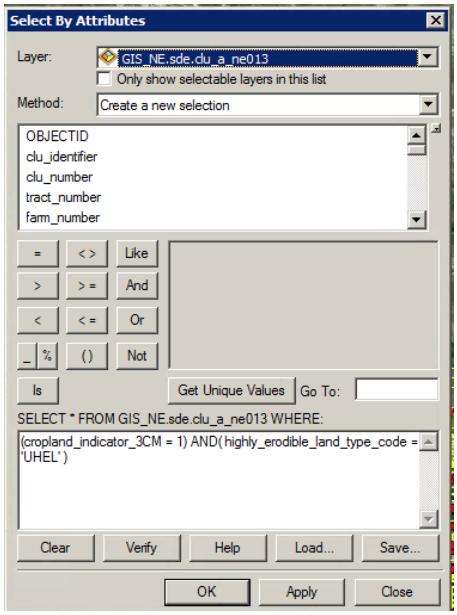
The process for sorting or querying Null attributes for Farm, Tract, or CLU numbers is the same. Complete the process once over the farm number attributes and then repeat for the tract number and CLU number attributes. The following steps will just review sorting and querying farm number attributes within the CLU attribute table.

Step	Instructions
1	Open the "**Select by Attributes**" tool.
2	In the Select by Attributes window, verify or select the statewide CLU or county CLU layer in the "Layer" field.
3	Build the following query: **farm_number IS NULL** • double-click on "**farm_number**" • click the "**Is**" button • ENTER "**NULL**". 
4	CLICK "**OK**".
5	Export the selected CLU's as needed to assist with reviewing and correcting in CRM Farm Records.

Identifying Missing and Inaccurate CLU Attributes (Continued)

G Review CLU HEL Determinations

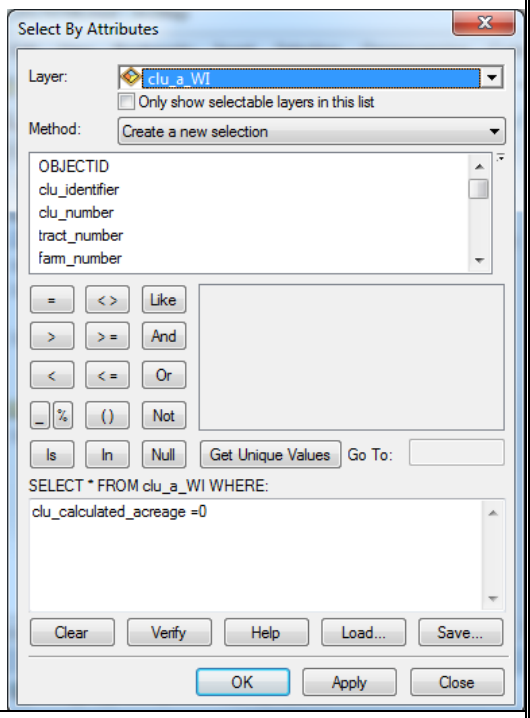
CLU level HEL determinations can be reviewed for missing or inaccurate data using the following queries to identify cropland fields missing HEL determinations. Instructions for comparing CLU's with a 3-CM Indicator and UHEL are as follows.

Step	Instructions
1	Open the "**Select by Attributes**" tool.
2	In the Select by Attributes window, verify or select the statewide CLU or county CLU layer in the "Layer" field.
3	Build the following query: **cropland_indicator_3CM = 1 AND highly_erodible_land_type_code = 'UHEL'** • double-click on "**cropland_indicator_3CM**" • click the "=" button • CLICK "**Get Unique Values**" • double-click on "1" • click the "**And**" button • double-click on "**highly_erodible_land_type_code**" • click the "=" button • CLICK "**Get Unique Values**" • double-click on "**UHEL**". 
4	CLICK "**OK**".
5	Export the selected CLU's as needed to assist with reviewing and correcting in CRM Farm Records.

Identifying Missing and Inaccurate CLU Attributes (Continued)

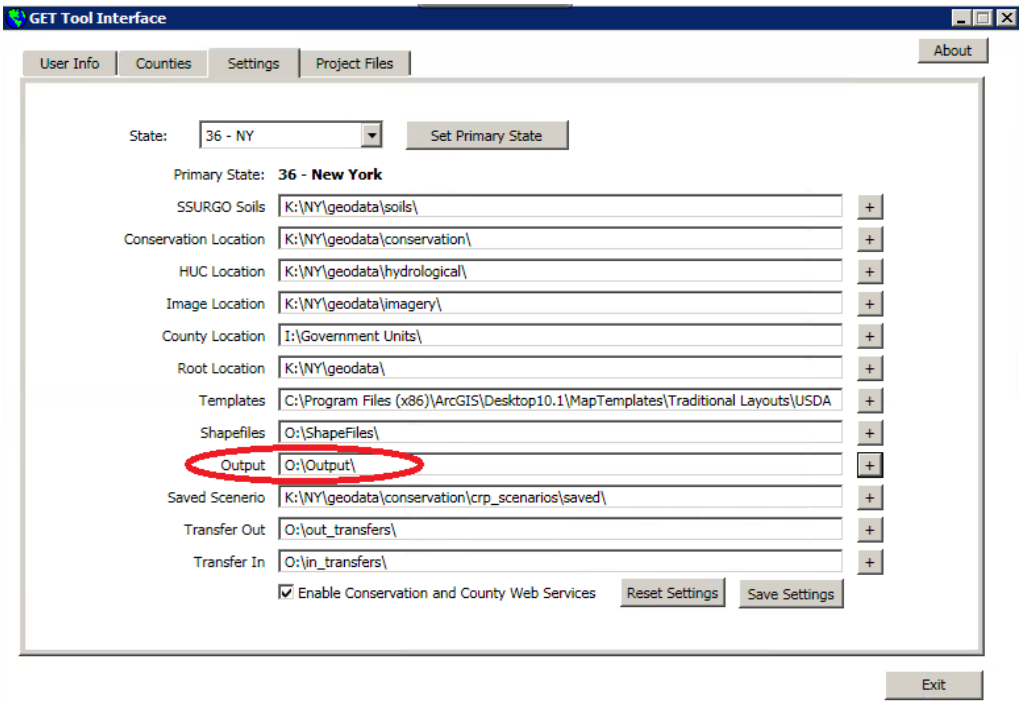
H Identify Unresolved Orphan CLU's and Polygons With Zero Acreage

The "CLU Calculated Acreage" field can be reviewed to find unresolved orphan CLU's and polygons with zero acreage.

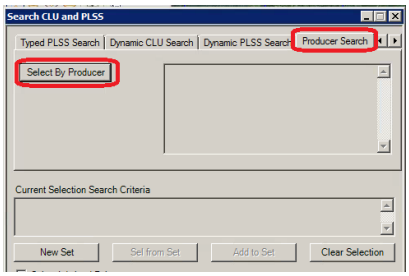
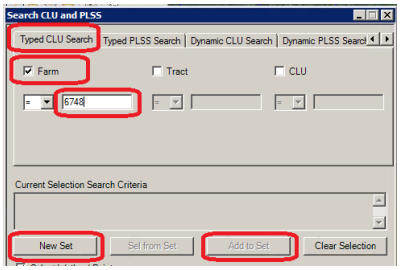
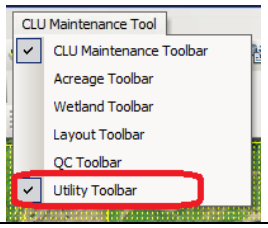
Step	Instructions
1	Open the "**Select by Attributes**" tool.
2	In the Select by Attributes window, verify or select the statewide CLU or county CLU layer in the "Layer" field.
3	Build the following query: **clu_calculated_acreage = 0** • double-click on "**clu_calculated_acreage**" • click the "=" button • ENTER "0". 
4	CLICK "**OK**".
5	Export the selected CLU's as needed to assist with reviewing and correcting in CRM Farm Records.

Exporting a CLU Subset Using the CLU MT Subset Tool

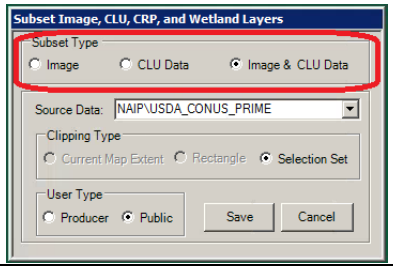
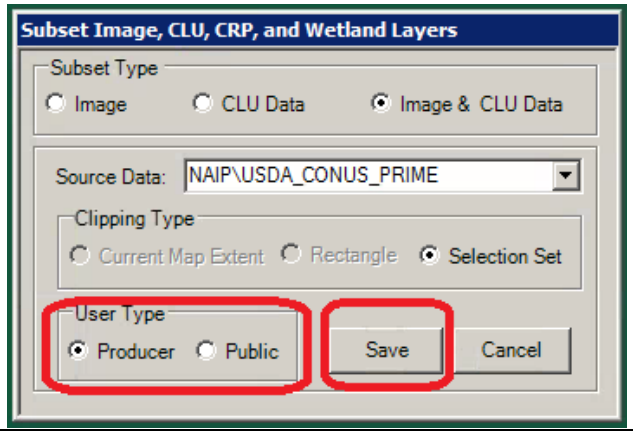
The following provides instructions to create a subset of CLU and wetland data for a producer or other third party request.

Step	Instructions
1	Before beginning subset tool process, ensure that the GET settings have been applied as follows. 
2	Start or open a CLU Maintenance Tool project in ArcMap.
3	Search for the desired farm and/or tract using the Search Tool.

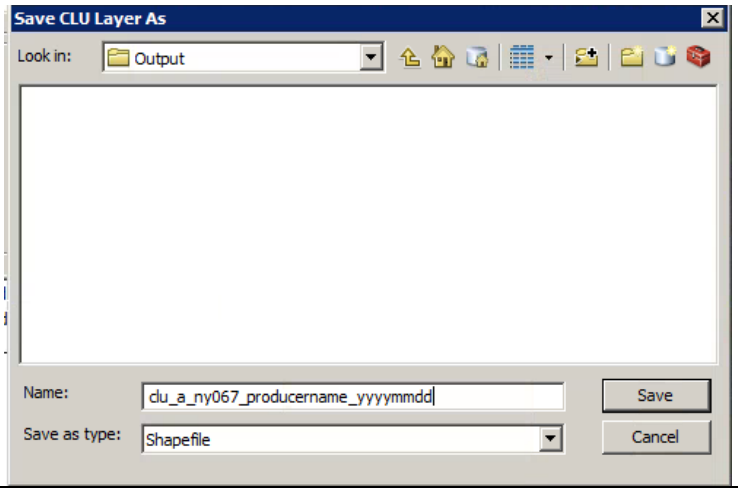
Exporting a CLU Subset Using the CLU MT Subset Tool (Continued)

Step	Instructions
4	Search by producer or use the "Typed CLU Search" tab.   **Note:** These instructions only demonstrate "Farm" selection search.
5	CLICK "CLU Maintenance Tool" in the main toolbar. CLICK "Utility Toolbar" from the "CLU Maintenance Tool" drop-down menu. 
6	From the Utility Toolbar, click the "Toggle Selection Fill" button. 

Exporting a CLU Subset Using the CLU MT Subset Tool (Continued)

Step	Instructions
7	From the Utility Toolbar, click the "Subset Tool" button. 
8	In the "Subset Tool" dialog box, select the "Image & CLU Data" radio button. 
9	Select the "Producer" radio button under "User Type". 
10	CLICK "**Save**".

Exporting a CLU Subset Using the CLU MT Subset Tool (Continued)

<table>
<tr><th>Step</th><th>Instructions</th></tr>
<tr><td>11</td><td>The default save location will open. Name the output files appropriately. Examples of file naming conventions include the following.
<table>
<tr><th>Dataset</th><th>File Name</th></tr>
<tr><td>CLU</td><td>clu_a_<stccc>_producername_<yyyymmdd>
OR
clu_a_<stccc>_F####_<yyyymmdd></td></tr>
<tr><td>Wetlands</td><td>wet_p_<stccc>_producername_<yyyymmdd>
OR
wet_p_<stccc>_ F####_<yyyymmdd></td></tr>
<tr><td>Imagery</td><td>NAIP_producername_<yyyymmdd>
OR
NAIP_ F####_<yyyymmdd></td></tr>
</table>

</td></tr>
<tr><td>12</td><td>CLICK “Save”.</td></tr>
</table>

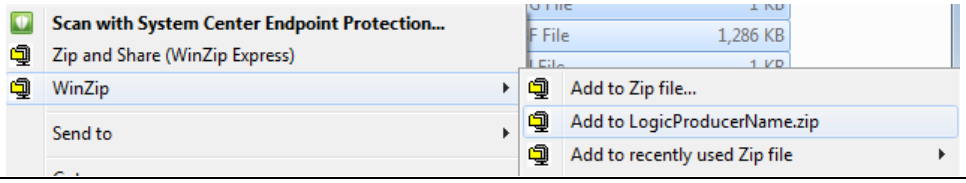
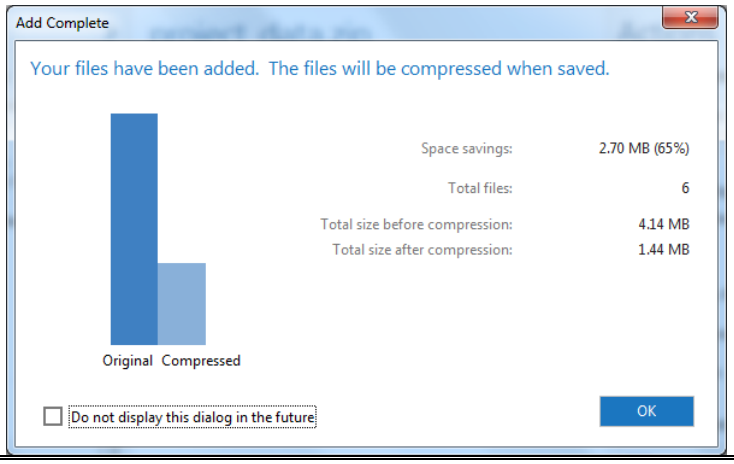
Zip, Encrypt, and Ship a Producer CLU

A Introduction

These instructions outline the process to encrypt a producer-requested CLU. These instructions assume that the selected farm or tract CLU's have been exported into a shapefile and have been copied to the desktop environment (no longer in the Citrix environment). Instructions to use the subset tool to extract CLU's can be found in **Exhibit 19**.

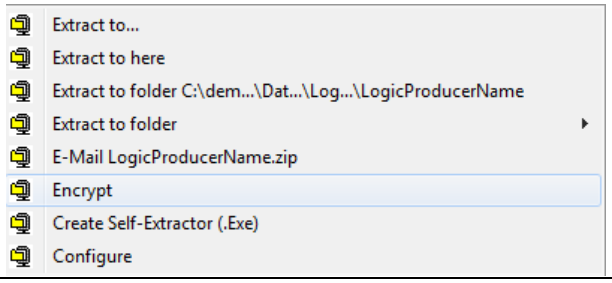
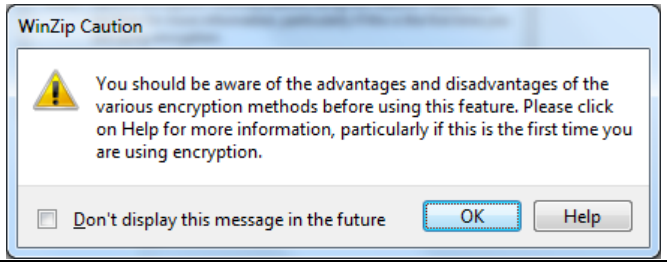
B Instructions

These instructions identify the steps to Zip, Encrypt, and Ship a Producer CLU.

Step	Instructions
1	From Windows Explorer, select the desired files of the shapefile.
2	Right-click the selected files.
3	CLICK "WinZip".
4	CLICK "Add to <name of folder>.zip". 
5	CLICK "**OK**", if necessary. WinZip will appear and disappear. 

Zip, Encrypt, and Ship a Producer CLU (Continued)

B Instructions (Continued)

Step	Instructions
6	From Windows Explorer, right-click the newly created file "<name of folder>.zip".
7	CLICK "WinZip".
8	CLICK "Encrypt". 
9	CLICK "**OK**", if necessary. 
10	Enter and re-enter a password.
11	CLICK "**OK**".
12	E-mail the file to the producer and call with the password.

Editing Wetland Point Feature Class

A Overview

The Wetland Toolbar enables authorized users to create, update and delete wetland points from the Wetland Point feature class. Wetland points must be edited within the Citrix Environment.

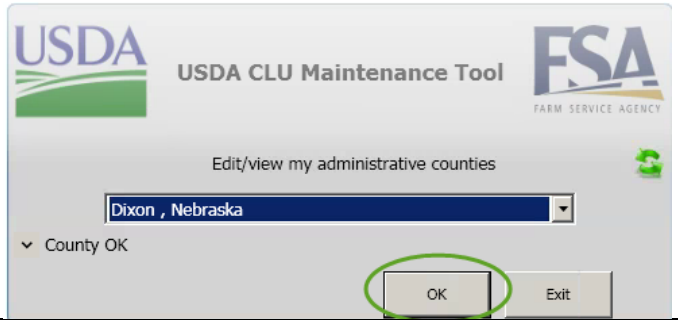
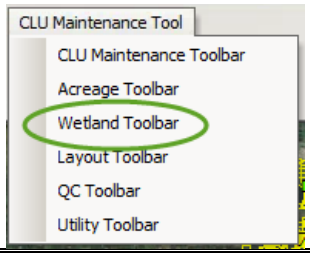
B Accessing the Wetland Point Feature Class

Editing the county wetland point feature class is completed through the CLU Maintenance Tool application. The wetland point data can also be viewed with no editing capabilities for specific farms through the CRM Farm Records, CARS mapping, and FSAfarm+ applications.

Step	Instructions
1	Access and log into the Citrix Environment. **Note:** Follow instructions in **Exhibit 86**.
2	Open an ArcMap session. **Note:** A saved county map document that includes the CLU Maintenance Tools, county CLU and wetland feature classes, and all other feature classes as needed for State mapping or tasks can also be opened.
3	Select the "CLU Maintenance Tool" radio button and CLICK "Start Using ArcMap". 
4	CLICK "Yes" to log in.

Editing Wetland Point Feature Class (Continued)

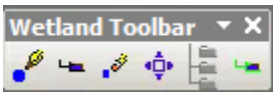
B Accessing the Wetland Point Feature Class (Continued)

Step	Instructions
5	Select the applicable county and CLICK "OK". 
6	The CLU feature class, wetland point feature class, and imagery will load for the county selected. Open the Wetland Toolbar by: • clicking on the "CLU Maintenance Tool" drop-down menu • clicking "Wetland Toolbar". 

Editing Wetland Point Feature Class (Continued)

C Wetland Toolbar and Specific Tool

The Wetland Toolbar contains 6 tools used for creating and editing wetland points.



Tool	Tool Name	Tool Description
	Add Point	Tool used to add a new wetland point within the county wetland point feature class.
	Modify Point	Tool used to modify the attributes of a wetland point selected from the county wetland point feature class.
	Delete Features	Tool used to permanently delete a wetland point selected from the county wetland point feature class.
	Move Point	Tool used to move the location of a wetland point selected from the county wetland point feature class.
	Bulk Attribute Wetland Point	Tool used to modify attributes of multiple wetland points selected from the county wetland point feature class. All attributes selected will be updated with the same entered attributes.
	QC Tool	Tool used to perform QC of the county wetland point feature class to identify if any erroneous administrative State and county codes have been entered in the wetland point feature class attributes. Wetland point attributes must correspond to the County Office where the associated farm's CLU's are administered from.

D Adding a Wetland Point

Wetland points are added to the wetland point feature class using the Wetland Point Toolbar. Points are added based on the NRCS wetland determination as indicated on NRCS-CPA-026E. Wetland points should be placed in the general physical location of the wetland in the county wetland point feature class where the farm is administratively located as indicated by Farm Records.

Note: All wetland determinations completed by NRCS must be identified in the wetland point feature class, including all determinations for certified NW.

Once a point has been added to the feature class, all applicable attributes must be entered. If the farm associated with the wetland point is transferred to a new administrative office, the wetland attributes for administrative State and county code must be updated using the Wetland Toolbar by the transferring County Office.

Editing Wetland Point Feature Class (Continued)

E Attributing Wetland Points

The following attribute data shall be entered for all FSA wetland points.

Attribute	Action Description
Label	Select the wetland abbreviation based on the NRCS determination identified on NRCS-CPA-026E.
Status	Enter the wetland status based on the determinations type completed by NRCS. Options include: • Inventoried • Certified • Unknown.
Acreage	Enter the acreage of the wetland only if the wetland is certified. For inventoried and unknown wetlands, acreage should remain blank.
State	Select the State corresponding to the physical location of the wetland.
County	Select the county corresponding to the physical location of the wetland.
Admin State	Select the State corresponding to the administrative State for the farm the wetland is associated with according to CRM Farm Records.
Admin County	Select the county corresponding to the Administrative county for the farm the wetland is associated with according to CRM Farm Records.

F Revising a Wetland Point

Revising an existing wetland point may be needed when:

- A correction is identified for either the location of the wetland point or attributes of the point
- an inventoried wetland has now been certified by NRCS
- a farm transfer occurs.

The Wetland Toolbar is used to revise an existing wetland point.

Note: Once a farm transfer has occurred, all associated wetland point attributes must be updated by the transferring county to reassign the wetlands to the new administrative State and county. See 10-CM, Section 2 for additional information.

G Deleting a Wetland Point

A wetland point my need to be deleted if it is identified that a point was incorrectly placed in the wetland point feature class that does not correspond to an NRCS determination. The Wetland Toolbar is used to delete an existing wetland point.

QC for Attributes of the Wetland Layer

A Introduction

These instructions are designed for GIS Specialists or field staff to identify incorrect or missing attribute data in the wetland layer. If missing or incorrectly attributed wetlands are identified, the data can be exported to a database file for reference or provided to local county staff to review and correct. Correcting the missing or incorrectly attributed data must be completed by the administering field staff and can only be corrected through CLU Maintenance Wetland Toolbar to update attributes accordingly. Data may need to be verified at the county level if wetland points are located on inactive farms. Analysis should be completed monthly to verify wetland information is current.

B Requirements

Sorting or querying data can be completed in Citrix or from a desktop ArcMap application. Sorting or querying data in the attribute table can be completed on the statewide wetland layer or individual county wetlands. GIS Specialists using a statewide dataset must first prepare the statewide CLU and statewide wetland layer.

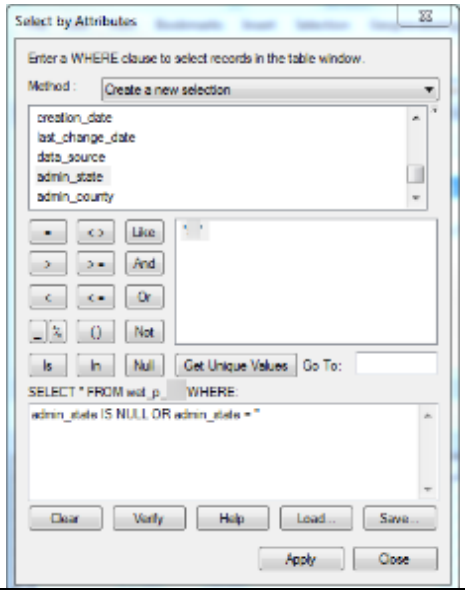
C Instructions to Query the Wetland Layer for Missing Administrative State Codes

These instructions demonstrate the process for identifying missing or incorrect admin State attribute data from the statewide wetland layer.

Step	Instructions
1	Open the "**Select by Attributes**" tool.
2	In the Layer Menu, verify that the statewide wetland or county wetland layer is selected.

QC for Attributes of the Wetland Layer (Continued)

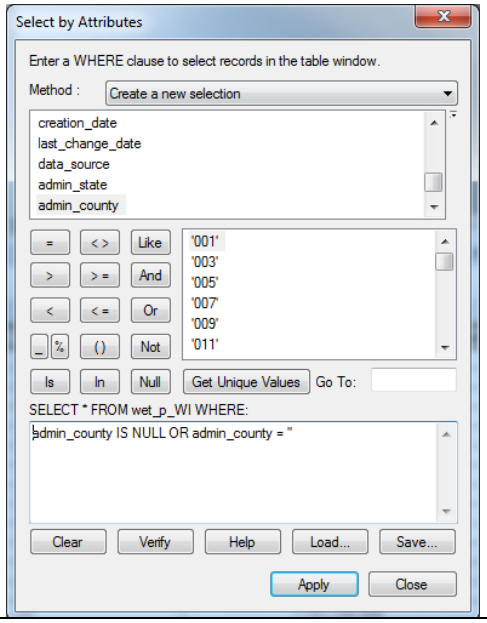
C Instructions to Query the Wetland Layer for Missing Administrative State Codes (Continued)

Step	Instructions
3	Build the following query: **admin_state IS NULL OR admin_state = ''** • double-click on "**admin_state**" • click the "**Is**" button • click the "**Null**" button • click the "**Or**" button • double-click on "**admin_state**" • click the "**=**" button • CLICK "**Get Unique Values**" • double-click on ' '. 
4	Export the selected records for each of the following queries to distribute to the County Offices for resolution.

QC for Attributes of the Wetland Layer (Continued)

D Instructions to Query the Wetland Layer for Missing Administrative County Codes

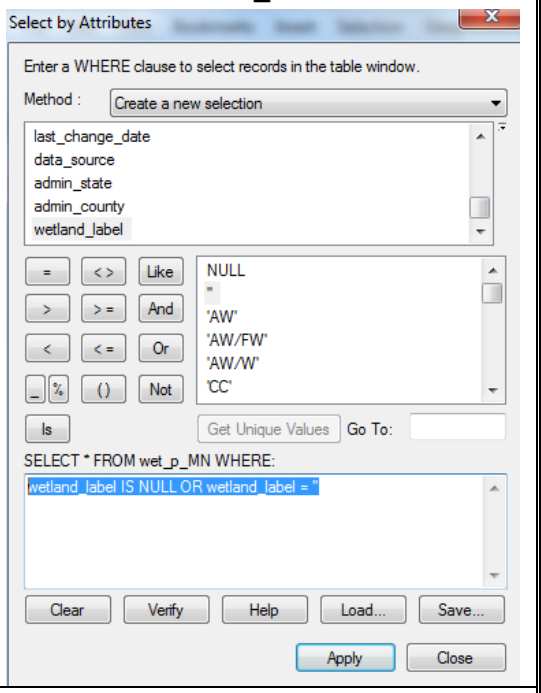
These instructions demonstrate the process for identifying missing or incorrect admin county attribute data from the statewide wetland layer.

Step	Instructions
1	Open the "**Select by Attributes**" tool.
2	In the Layer Menu, verify that the statewide wetland or county wetland layer is selected.
3	Build the following query: **admin_county IS NULL OR admin_county = ''** • double-click on "**admin_county**" • click the "**Is**" button • click the "**Null**" button • click the "**Or**" button • double-click on "**admin_county**" • click the "**=**" button • CLICK "**Get Unique Values**" • double-click on ' '. 
4	Export the selected records for each of the following queries to distribute to the County Offices for resolution.

QC for Attributes of the Wetland Layer (Continued)

E Instructions to Query the Wetland Layer for Missing Wetland Label

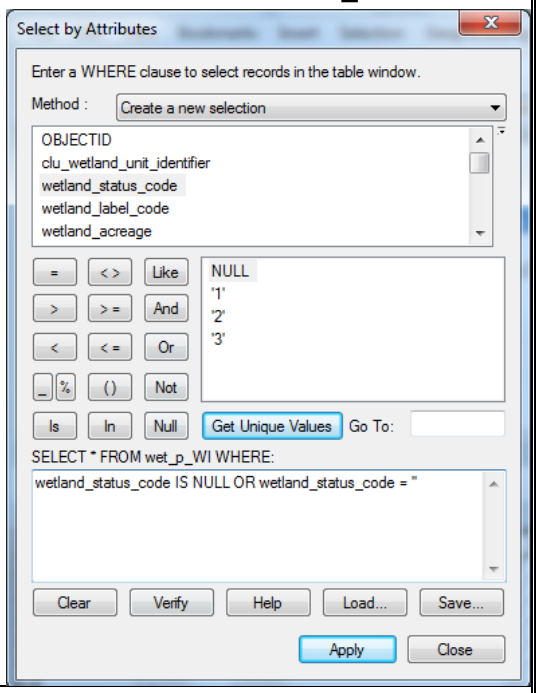
These instructions demonstrate the process for identifying missing or incorrect wetland label attribute data from the statewide wetland layer.

Step	Instructions
1	Open the "**Select by Attributes**" tool.
2	In the Layer Menu, verify that the statewide wetland or county wetland layer is selected.
3	Build the following query: **wetland_label IS NULL OR wetland_label = ''** • double-click on "**wetland_label**" • click the "**Is**" button • click the "**Null**" button • click the "**Or**" button • double-click on "**wetland_label**" • click the "**=**" button • CLICK "**Get Unique Values**" • double-click on ' '. 
4	Export the selected records for each of the following queries to distribute to the County Offices for resolution.

QC for Attributes of the Wetland Layer (Continued)

F Instructions to Query the Wetland Layer for Missing Wetland Status

These instructions demonstrate the process for identifying missing or incorrect wetland status attribute data from the statewide wetland layer.

Step	Instructions
1	Open the "**Select by Attributes**" tool.
2	In the Layer Menu, verify that the statewide wetland or county wetland layer is selected.
3	Build the following query: **wetland_status_code IS NULL OR wetland_ status_code = ''** • double-click on "**wetland_ status_code**" • click the "**Is**" button • click the "**Null**" button • click the "**Or**" button • double-click on "**wetland_ status_code**" • click the "**=**" button • CLICK "**Get Unique Values**" • double-click on ' '. 
4	Export the selected records for each of the following queries to distribute to the County Offices for resolution.

GIS Analysis of the Farm Records Wetland Determination and Wetlands Point Layer

A Process for GIS Analysis

The following steps outline the general process of comparing Farm Records wetland determinations and the wetland point layer. Steps must be done in the following order:

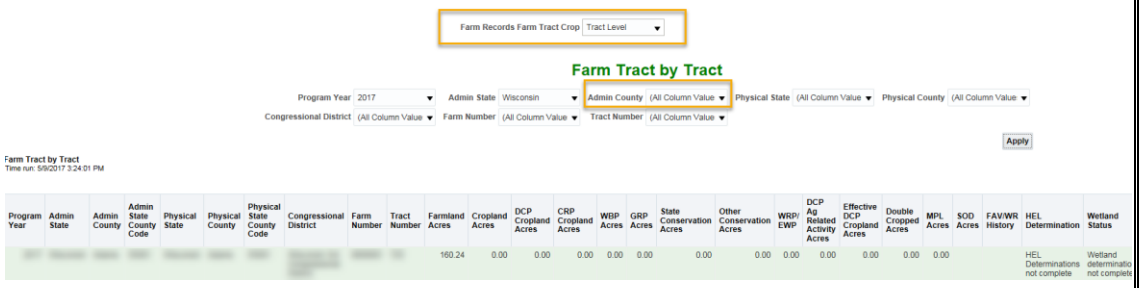
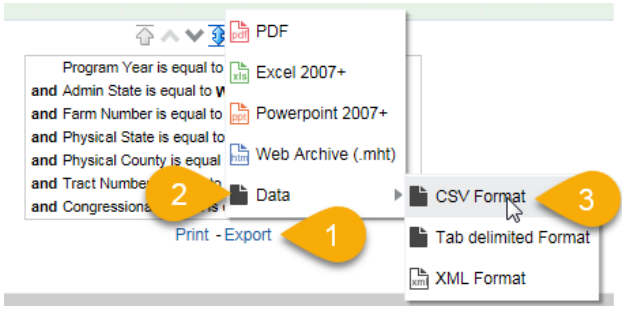
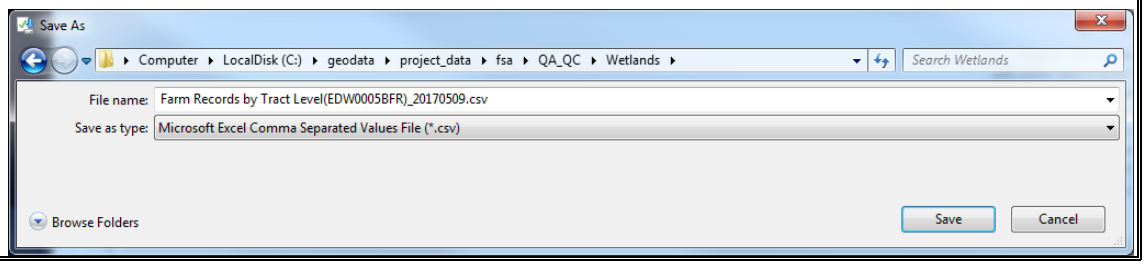
- review the wetland layer **before** comparing Farm Records per **Exhibit 22**
- prepare the CRM Wetland Tract Report
- join the CLU with the CRM Wetland Tract Report
- build spatial queries of the CRM Tract status and the wetland point layer
- use location selections to compare the spatial queries of the CRM Tract status and the wetland point layer
- create maps and share with the designated wetland specialist for Farm Programs.

Note: The following instructions will use the statewide CLU layer and tract information. This report can also be run on a county subset using the county data.

GIS Analysis of the Farm Records Wetland Determination and Wetlands Point Layer (Continued)

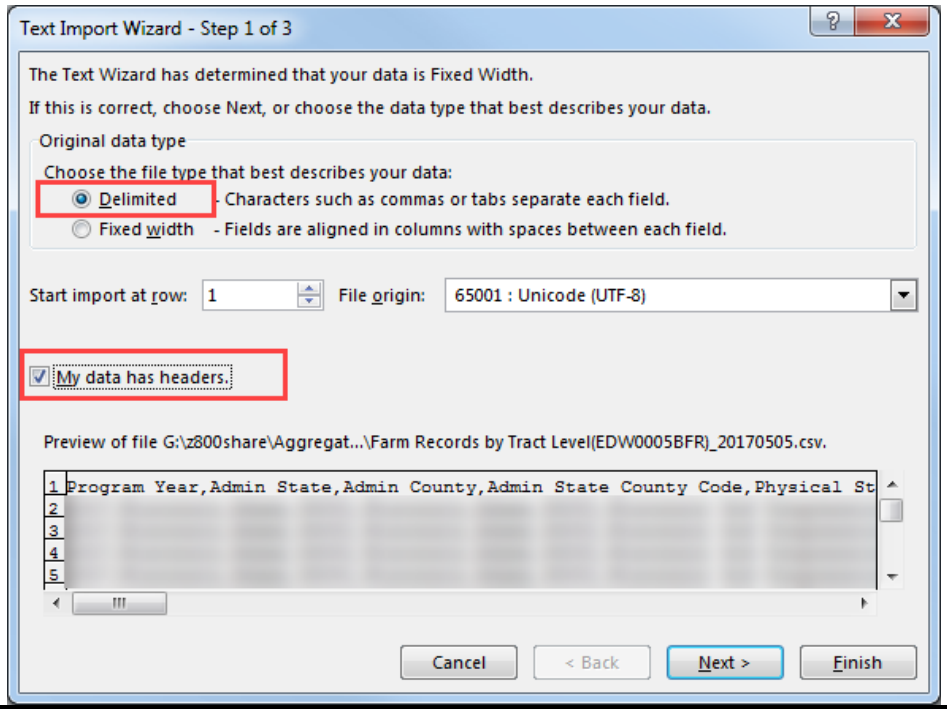
B Instructions to Prepare the CRM Wetland Tract Report

These instructions demonstrate the steps to create a unique value in the Tract report that can be joined to the CLU layer.

Step	Instructions
1	From the FSA Applications site (**http://intranet.fsa.usda.gov/fsa/applications.asp**), locate the Data Marts application. CLICK "Oracle EPM 11 Data Marts" Oracle EPM 11 Data Marts , then CLICK "OBIEE Reports/Dashboards" OBIEE Reports/Dashboards. Within EDW, CLICK "Farm Records" and "Farm Records Detail". Use the following drop-down menus to select "Tract Level" and "All Counties". Then CLICK "Apply".  Scroll down to the bottom and CLICK "Export", "Data", and "CSV Format".  CLICK "Save As", save the file to C:\geodata\project_data\fsa\QA_QC\Wetlands, and add the date to the file name. 

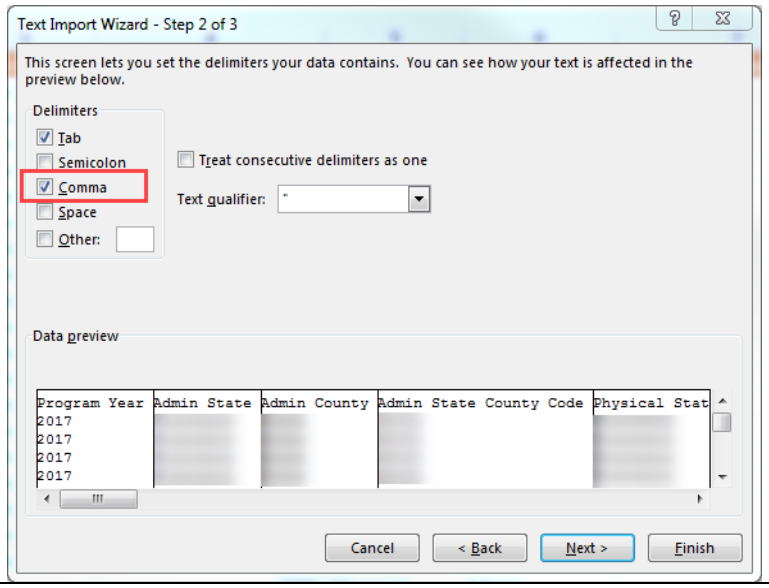
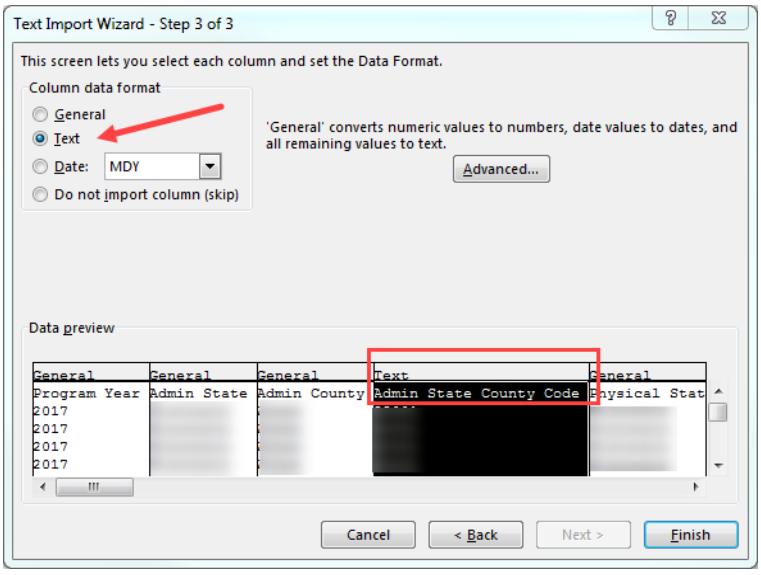
GIS Analysis of the Farm Records Wetland Determination and Wetlands Point Layer (Continued)

B Instructions to Prepare the CRM Wetland Tract Report (Continued)

Step	Instructions
2	Open Excel, then CLICK "File" and "Open" and navigate to C:\geodata\project_data\fsa\QA_QC\Wetlands and select the Farm Records by Tract Level (EDW0005BFR)_<yyyymmdd>.csv file. CLICK "**Open**".
3	In the "Text Import Wizard – Step 1 of 3" box, select the "Delimited" radio button for file type and check the "My data has headers" box. CLICK "**Next**". 

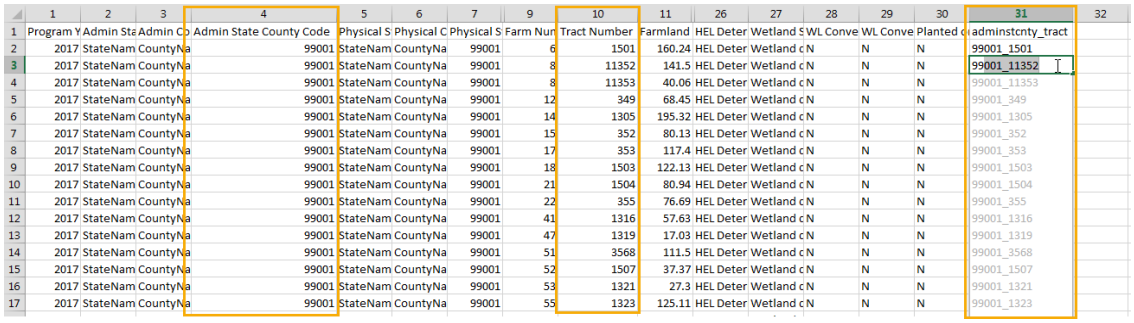
GIS Analysis of the Farm Records Wetland Determination and Wetlands Point Layer (Continued)

B Instructions to Prepare the CRM Wetland Tract Report (Continued)

Step	Instructions
4	In the "Text Import Wizard – Step 2 of 3" box, select "Comma" and CLICK "**Next**". 
5	In the "Text Import Wizard – Step 3 of 3" box, select the "Text" radio button under "Column data format" for the "Admin State County Code" column.  CLICK "**Finish**". **Note:** It may take a few seconds and the file will open in it a separate spreadsheet.

GIS Analysis of the Farm Records Wetland Determination and Wetlands Point Layer (Continued)

B Instructions to Prepare the CRM Wetland Tract Report (Continued)

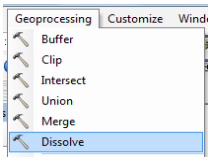
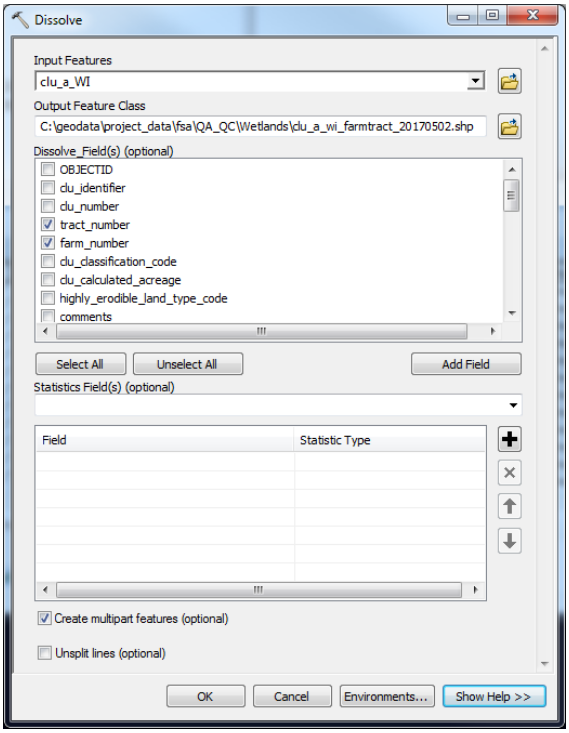
Step	Instructions
6	Create a new column called "adminstcnty_tract" (shown in column 31 in the next step).
7	Concatenate (combine) the "Admin State County Code" column and the "Tract Number" column by manually entering in 1 to 2 examples in the cells under column 31. • First enter the 5-digit value in the "Admin State County Code" column followed by an underscore "_" followed by the value in the "Tract Number" column. After entering in the first 2 cells, the rest populate automatically (CLICK "Enter" to accept). • Be sure to enter in the leading 0 for the Admin FIPS if needed. This will ensure that it is "text".  **Note:** The values in this screenprint have been scrambled to protect PII information. Some columns have been hidden to better illustrate the steps.
8	Save the file in the .CSV format in C:\geodata\project_data\fsa\QA_QC\Wetlands and close Excel.

	1	2	3	4	5	6	7	9	10	11	26	27	28	29	30	31	32
1	Program Y	Admin Sta	Admin Co	Admin State County Code	Physical S	Physical C	Physical S	Farm Nun	Tract Number	Farmland	HEL Deter	Wetland S	WL Conve	WL Conve	Planted c	adminstcnty_tract	
2	2017	StateNam	CountyNa	99001	StateNam	CountyNa	99001	6	1501	160.24	HEL Deter	Wetland c	N	N	N	99001_1501	
3	2017	StateNam	CountyNa	99001	StateNam	CountyNa	99001	8	11352	141.5	HEL Deter	Wetland c	N	N	N	99001_11352	
4	2017	StateNam	CountyNa	99001	StateNam	CountyNa	99001	8	11353	40.06	HEL Deter	Wetland c	N	N	N	99001_11353	
5	2017	StateNam	CountyNa	99001	StateNam	CountyNa	99001	12	349	68.45	HEL Deter	Wetland c	N	N	N	99001_349	
6	2017	StateNam	CountyNa	99001	StateNam	CountyNa	99001	14	1305	195.32	HEL Deter	Wetland c	N	N	N	99001_1305	
7	2017	StateNam	CountyNa	99001	StateNam	CountyNa	99001	15	352	80.13	HEL Deter	Wetland c	N	N	N	99001_352	
8	2017	StateNam	CountyNa	99001	StateNam	CountyNa	99001	17	353	117.4	HEL Deter	Wetland c	N	N	N	99001_353	
9	2017	StateNam	CountyNa	99001	StateNam	CountyNa	99001	18	1503	122.13	HEL Deter	Wetland c	N	N	N	99001_1503	
10	2017	StateNam	CountyNa	99001	StateNam	CountyNa	99001	21	1504	80.94	HEL Deter	Wetland c	N	N	N	99001_1504	
11	2017	StateNam	CountyNa	99001	StateNam	CountyNa	99001	22	355	76.69	HEL Deter	Wetland c	N	N	N	99001_355	
12	2017	StateNam	CountyNa	99001	StateNam	CountyNa	99001	41	1316	57.63	HEL Deter	Wetland c	N	N	N	99001_1316	
13	2017	StateNam	CountyNa	99001	StateNam	CountyNa	99001	47	1319	17.03	HEL Deter	Wetland c	N	N	N	99001_1319	
14	2017	StateNam	CountyNa	99001	StateNam	CountyNa	99001	51	3568	111.5	HEL Deter	Wetland c	N	N	N	99001_3568	
15	2017	StateNam	CountyNa	99001	StateNam	CountyNa	99001	52	1507	37.37	HEL Deter	Wetland c	N	N	N	99001_1507	
16	2017	StateNam	CountyNa	99001	StateNam	CountyNa	99001	53	1321	27.3	HEL Deter	Wetland c	N	N	N	99001_1321	
17	2017	StateNam	CountyNa	99001	StateNam	CountyNa	99001	55	1323	125.11	HEL Deter	Wetland c	N	N	N	99001_1323	

GIS Analysis of the Farm Records Wetland Determination and Wetlands Point Layer (Continued)

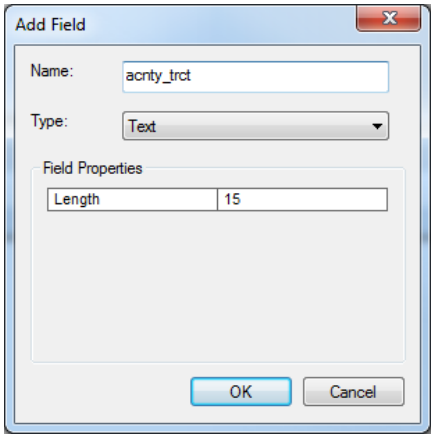
C Instructions to Join CLU With the CRM Wetland Tract Report

These instructions demonstrate the steps to create a CLU tract dissolve and join to the CRM Wetland Report modified in subparagraph D.

Step	Instructions
1	Open Desktop ArcMap and add the statewide CLU layer, statewide wetland layer, and the Tract_Wetland_CRM_<st>_<YYYYMMDD>.csv
2	Dissolve the statewide CLU by Farm, Tract, State, County, Admin State, and Admin County. • CLICK "Geoprocessing" and "Dissolve".  • Output feature class navigate to C:\geodata\project_data\fsa\QA_QC\Wetlands\clu_a_<st>_farmtract_<yyyymmdd>.shp.  • Place a checkmark for tract_number, farm_number, Admin_state, and Admin_county as the fields to dissolve into a new layer. • CLICK "OK". The new clu_a_<st>_farmtract_<yyyymmdd>.shp will be added to the map document.

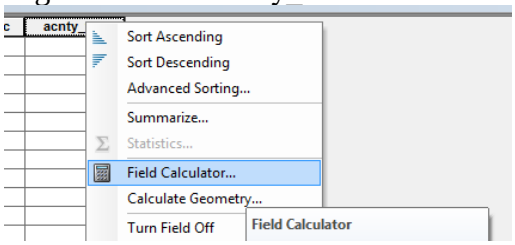
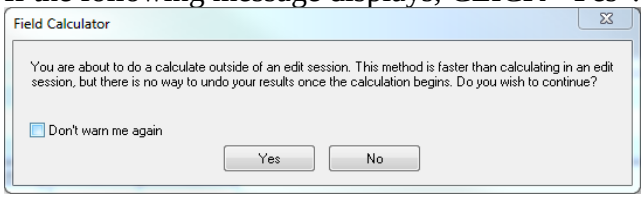
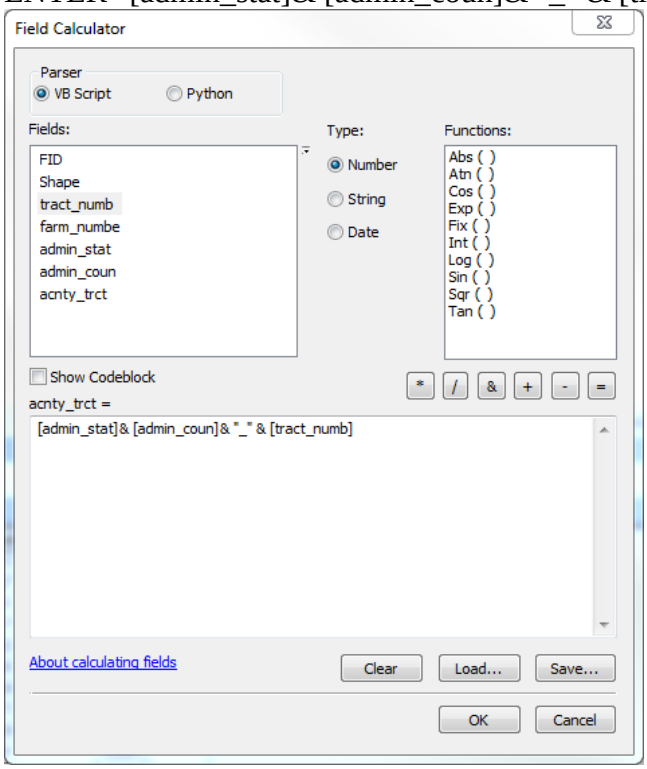
GIS Analysis of the Farm Records Wetland Determination and Wetlands Point Layer (Continued)

C Instructions to Join CLU With the CRM Wetland Tract Report (Continued)

Step	Instructions
3	Open the Attribute table of the Clu_a_<st>_farmtract_<yyyymmdd>.shp layer.
4	Create a column that will concatenate the admin State, admin_county, and tract_number fields into 1 field (name it acnty_trct). • On the Table Menu, CLICK "Table Options" and "Add Field". • In the "Name" field, ENTER "acnty_trct". • In the "Type" drop-down menu, select "Text". • In the "Length" field, ENTER "15".  CLICK "OK".

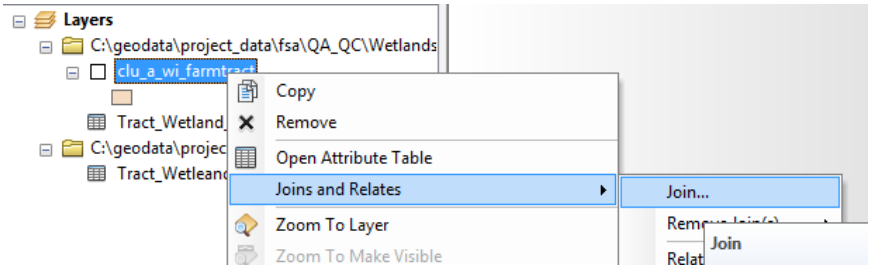
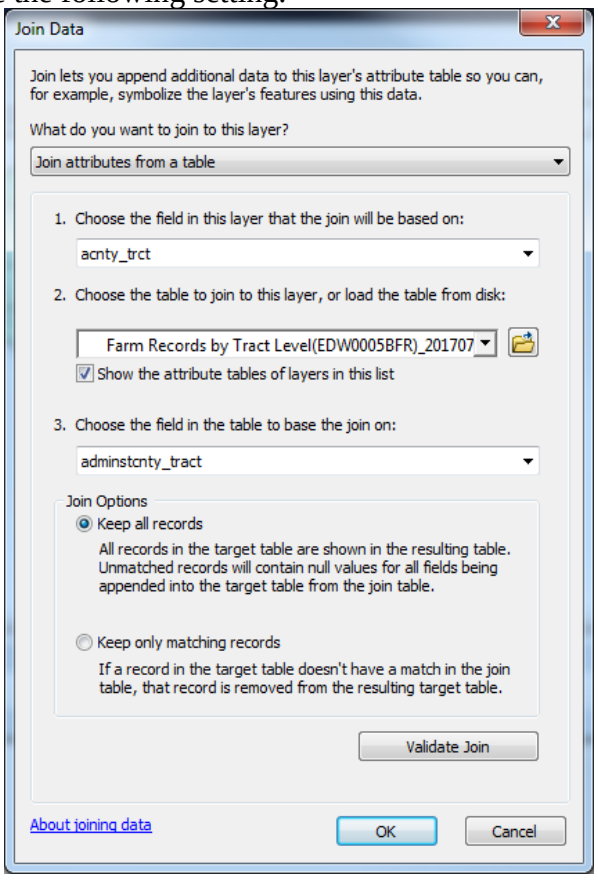
GIS Analysis of the Farm Records Wetland Determination and Wetlands Point Layer (Continued)

C Instructions to Join CLU With the CRM Wetland Tract Report (Continued)

Step	Instructions
5	Use the field calculator to concatenate the admin_state, admin_county, and tract_number fields into 1 field. • Right-click the "acnty_trct" column of the table and CLICK "Field Calculator".  • If the following message displays, CLICK "Yes".  • ENTER "[admin_stat]& [admin_coun]& "_" & [tract_numb]" in the box.  CLICK "OK".

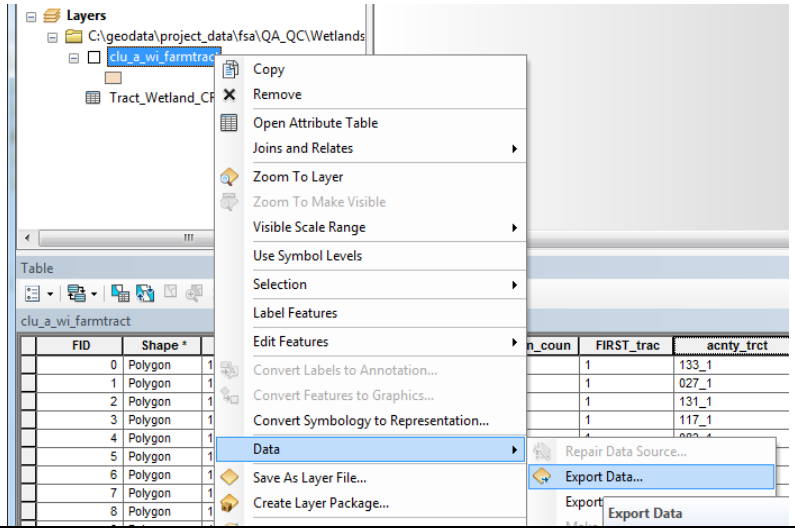
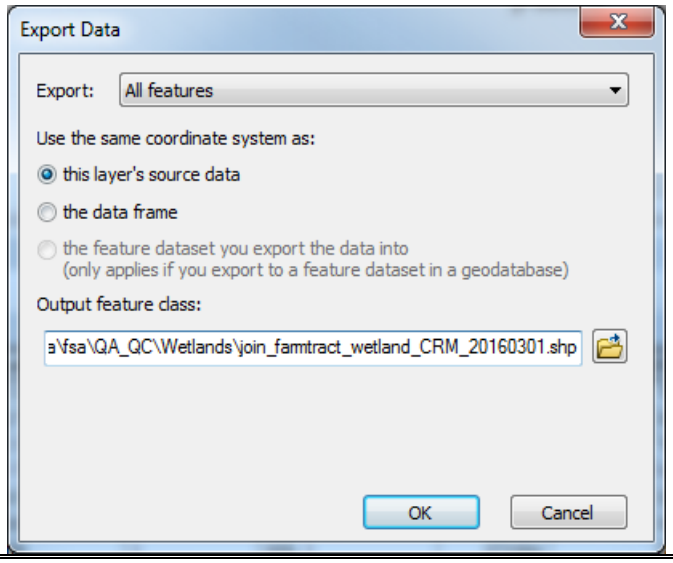
GIS Analysis of the Farm Records Wetland Determination and Wetlands Point Layer (Continued)

C Instructions to Join CLU With the CRM Wetland Tract Report (Continued)

Step	Instructions
6	Join the CRM Wetlands by Tract Report to the FarmTract CLU using the concatenated "Admin State County Tract" column. • Right-click the clu_a_<st>_farmtract layer and CLICK "Joins and Relates" and "Join".  • Use the following setting.  CLICK "OK".

GIS Analysis of the Farm Records Wetland Determination and Wetlands Point Layer (Continued)

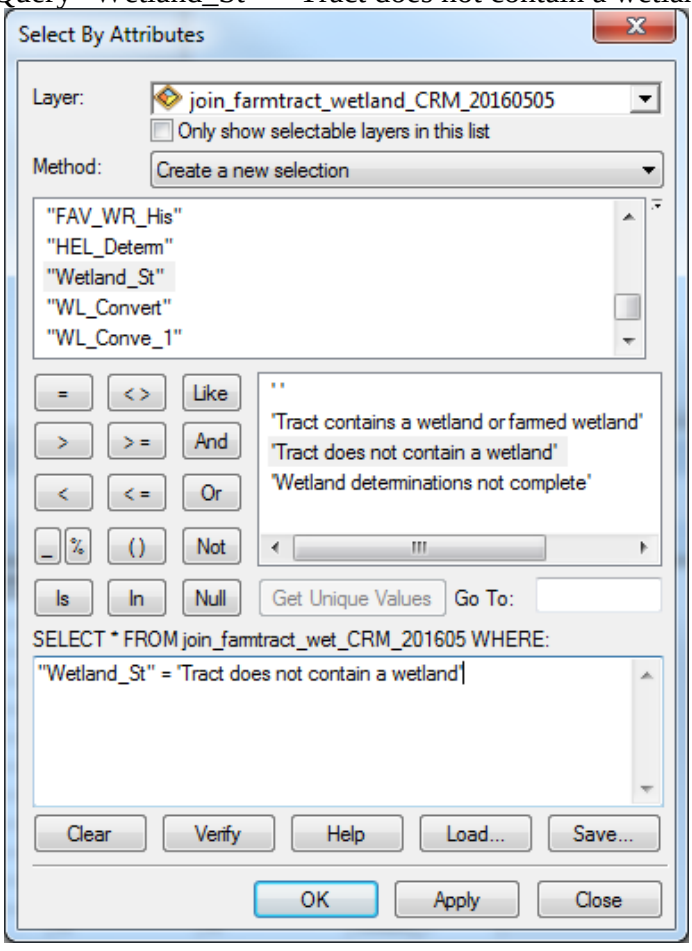
C Instructions to Join CLU With the CRM Wetland Tract Report (Continued)

Step	Instructions
7	Export the joined data. Right-click the CLU layer in the Table of Contents and CLICK "Data" and "Export Data". 
8	Name the file "join_farmtract_wetland_CRM_<YYYYMMDD>.shp". 

GIS Analysis of the Farm Records Wetland Determination and Wetlands Point Layer (Continued)

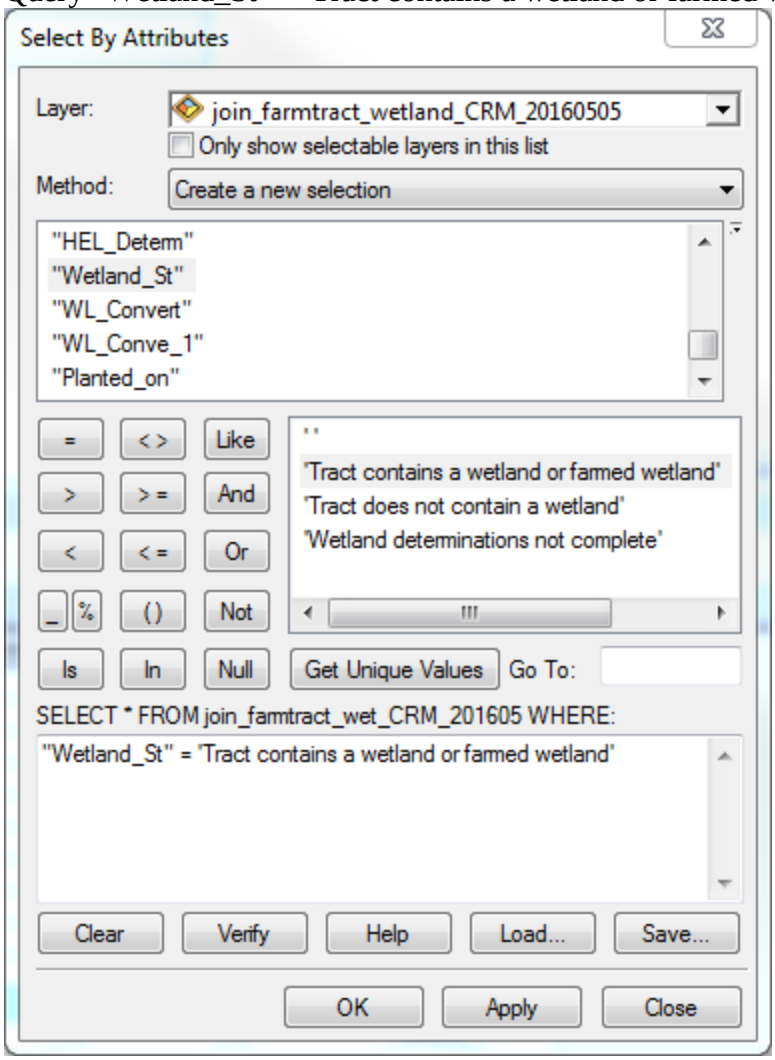
D Instructions for Spatial Queries

These instructions demonstrate the steps to create 5 selection subsets to use to compare the CRM Tract status with the wetland point layer.

Step	Instructions
1	Query the Tract Wetland report layer for "Tract does not contain a wetland" status, and select by attributes. • In the "Layer" drop-down menu, select "join_farmtract_wetland_CRM_<YYYYMMDD>.shp". • In the "Method" drop-down menu, select "Create a new selection". • Query "Wetland_St" = 'Tract does not contain a wetland'.  • Export selection to C:\geodata\project_data\fsa\QA_QC\Wetlands. • Name the file "tracts_TN_<st>_<YYYYMMDD>.shp".

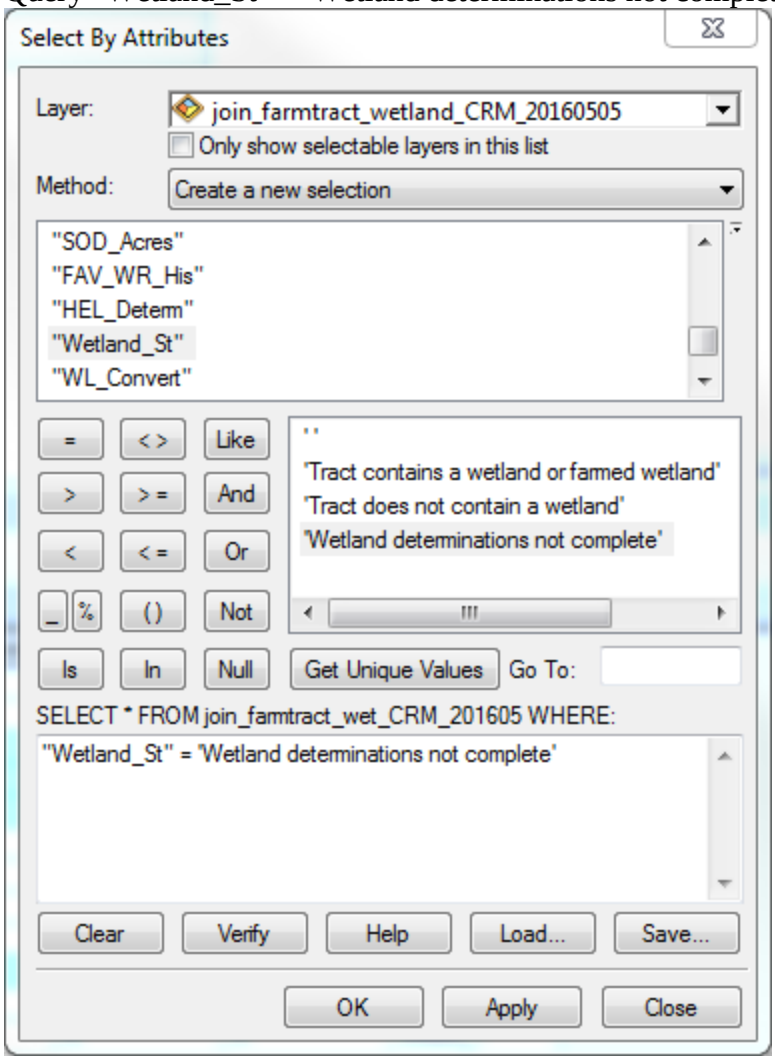
GIS Analysis of the Farm Records Wetland Determination and Wetlands Point Layer (Continued)

D Instructions for Spatial Queries (Continued)

Step	Instructions
2	Query the Tract Wetland report layer for "Tract contains a wetland or farmed wetland", and select by attributes. • In the "Layer" drop-down menu, select "join_farmtract_wetland_CRM_<YYYYMMDD>.shp". • In the "Method" drop-down menu, select "Create a new selection". • Query "Wetland_St" = 'Tract contains a wetland or farmed wetland'.  • Export selection to C:\geodata\project_data\fsa\QA_QC\Wetlands. • Name the file "tracts_TY_<st>_<YYYYMMDD>.shp".

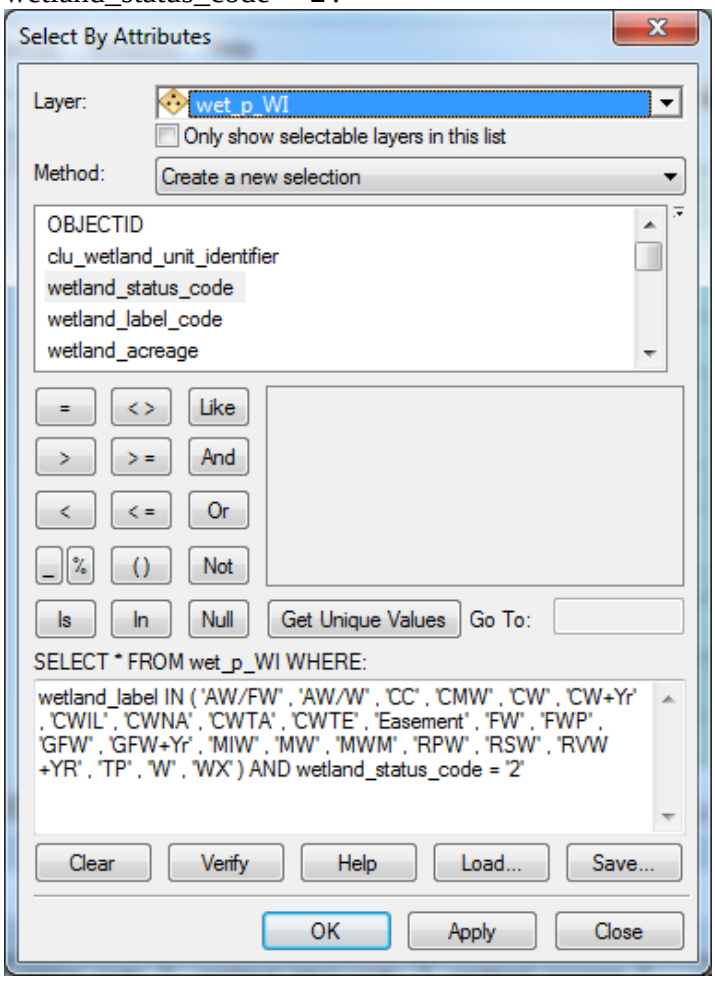
GIS Analysis of the Farm Records Wetland Determination and Wetlands Point Layer (Continued)

D Instructions for Spatial Queries (Continued)

Step	Instructions
3	Query the Tract Wetland report layer for "Wetland determinations not complete", and select by attributes. • In the "Layer" drop-down menu, select "join_farmtract_wetland_CRM_<YYYYMMDD>.shp". • In the "Method" drop-down menu, select "Create a new selection". • Query "Wetland_St" = 'Wetland determinations not complete'.  • Export selection to C:\geodata\project_data\fsa\QA_QC\Wetlands. • Name the file "tracts_NC_<st>_<YYYYMMDD>.shp".

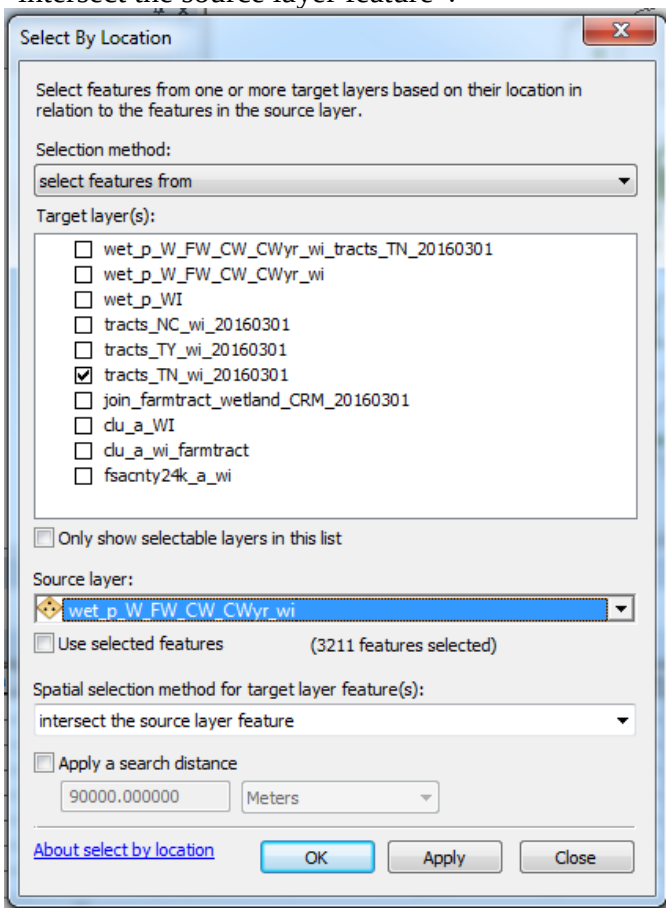
GIS Analysis of the Farm Records Wetland Determination and Wetlands Point Layer (Continued)

D Instructions for Spatial Queries (Continued)

Step	Instructions
4	Query the statewide wetland layer for certified wetlands that will affect the tract wetland status. Select by attributes. • In the "Layer" drop-down menu, select "wet_p_<ST>". • In the "Method" drop-down menu, select "Create a new selection". • Query wetland_label IN ('AW/FW', 'AW/W', 'CC', 'CMW', 'CW', 'CW+Yr', 'CWIL', 'CWNA', 'CWTA', 'CWTE', 'Easement', 'FW', 'FWP', 'GFW', 'GFW+Yr', 'MIW', 'MW', 'MWM', 'RPW', 'RSW', 'RVW+YR', 'TP', 'W', 'WX') AND wetland_status_code = '2'.  • Export selection to C:\geodata\project_data\fsa\QA_QC\Wetlands. • Name the file "wet_p_certified_<st>.shp".

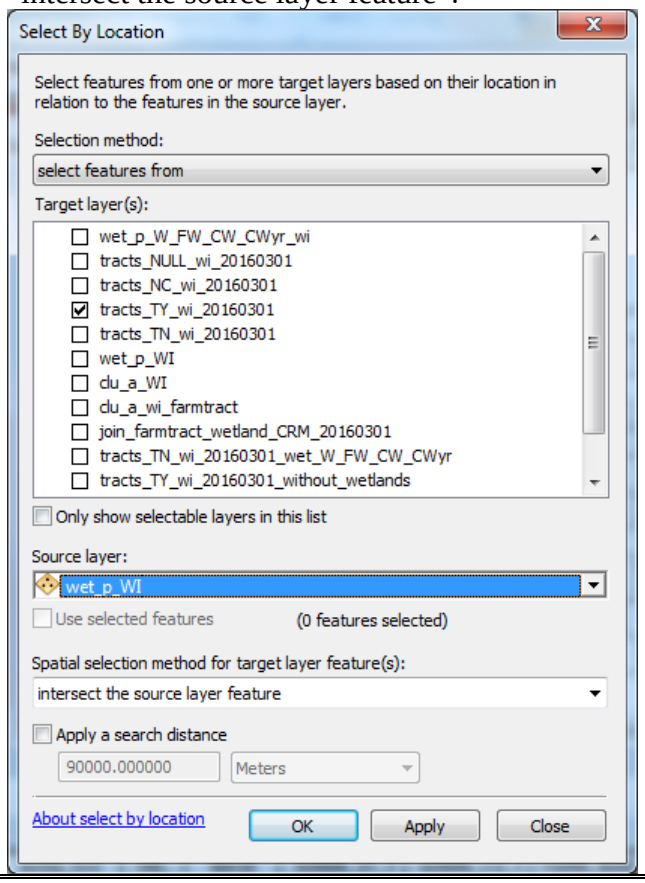
GIS Analysis of the Farm Records Wetland Determination and Wetlands Point Layer (Continued)

D Instructions for Spatial Queries (Continued)

Step	Instructions
5	With the 5 subsets just created, use the following location selections to compare the CRM Tract status with the wetland point layer.
6	Identify TN tracts to ensure that no wetlands are present in the same tract. Query for "Tract Does Not Contain a Wetland" (TN) tracts that have certified wetland points that fall within them. Select by location. • In the "Selection method" drop-down menu, select "select features from". • In the "Target layer(s)" field, select "tracts_TN_<st>_<YYYYMMDD>". • In the "Source layer" drop-down menu, select "wet_p_certified_<st> layer". • In the "Spatial selection method for target layer feature(s)" drop-down menu, select "intersect the source layer feature".  • Export selection to C:\geodata\project_data\fsa\QA_QC\Wetlands. • Name the file "tracts_TN_<st>_<YYYYMMDD>_wet_certified.shp".

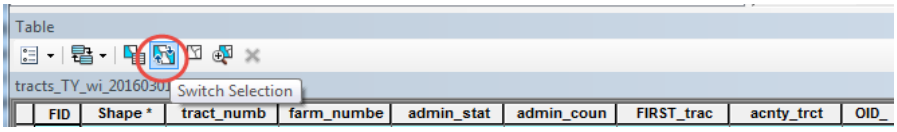
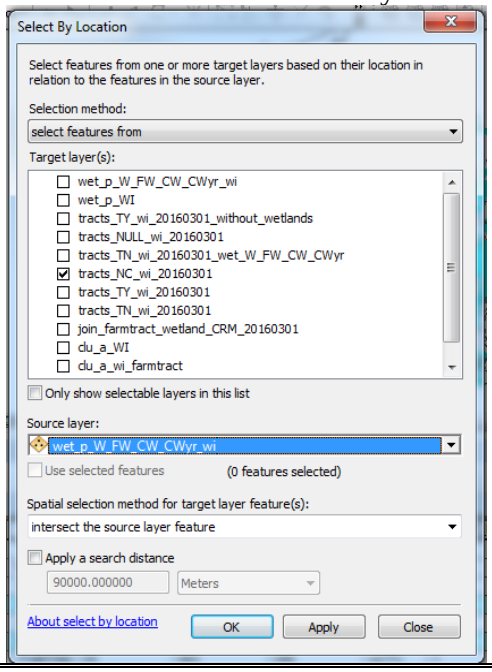
GIS Analysis of the Farm Records Wetland Determination and Wetlands Point Layer (Continued)

D Instructions for Spatial Queries (Continued)

Step	Instructions
7	Identify tracts with the "Tract contains a wetland or farmed wetland" (TY) status to ensure that a wetland is present for the tracts, if no wetland points display on tract with TY – Flag for the county. Query for TY tracts that have no wetland points that fall within them. Select by location. • In the "Selection method" drop-down menu, select "select features from". • In the "Target layer(s)" field, select "tracts_TY_<st>_<YYYYMMDD>". • In the "Source layer" drop-down menu, select "wet_p_certified_<st> layer". • In the "Spatial selection method for target layer feature(s)" drop-down menu, select "intersect the source layer feature". 

GIS Analysis of the Farm Records Wetland Determination and Wetlands Point Layer (Continued)

D Instructions for Spatial Queries (Continued)

Step	Instructions
7 (Cntd)	• Open the attribute table for the "tracts_TY_<st>_<YYYYMMDD>" layer and click the "Switch Selection" button.  • Export selection to C:\geodata\project_data\fsa\QA_QC\Wetlands. • Name the file "tracts_TY_<st>_<YYYYMMDD>_wet_certified.shp".
8	Run Spatial Query for "Wetland determination not complete" (NC). Identify NC tracts to ensure that no wetlands are present in the same tract. Query for NC tracts that have certified wetland points that fall within them. Select by location. • In the "Selection method" drop-down menu, select "select features from". • In the "Target layer(s)" field, select "tracts_NC_<st>_<YYYYMMDD>". • In the "Source layer" drop-down menu, select "wet_p_certified_<st> layer" • In the "Spatial selection method for target layer feature(s)" drop-down menu, select "intersect the source layer feature". 

GIS Analysis of the Farm Records Wetland Determination and Wetlands Point Layer (Continued)

D Instructions for Spatial Queries (Continued)

Step	Instructions
8 (Cntd)	• Export selection to C:\geodata\project_data\fsa\QA_QC\Wetlands. • Name the file "tracts_NC_<st>_<YYYYMMDD>_wet_certified.shp". **Notes:** The wetland determination "not complete" is generally the norm for most States that do not have a lot of wetlands and new determinations are only being assigned on an "as needed" basis. There is no ongoing work by NRCS to attempt to certify wetlands on all tracts. Nationwide, there is a large variation in the percent of tracts having wetland determinations. Some counties will have wetland determinations for nearly all tracts while others will have most tracts with wetland determinations not complete. The quality of the wetland points may also differ from State to State and between counties unless all of NRCS-CPA-026's are reviewed.
9	Create a statewide maps of issues.
10	Give reports to the designated wetland specialist for conservation compliance. The designated specialist will develop a plan to identify and correct wetland information in State. This plan should involve all applicable State Specialists.

Create CRP Layer

A Introduction

CRP contract information is added at the field level in CRM Farm Records in the CRP Data assignment block. This CRP contract information is downloadable from EDW on an as-needed basis. The CRP contract information can be joined to CLU using a unique key comprised of the administrative state, administrative county, farm number, tract number, and field number. This joined CRP data can be used to spatially represent CRP participation and for QC purposes.

A CRP layer can be created for an individual county using the exported CLU file geodatabase or as a statewide layer using a merged file geodatabase created using the Merge CLU GDB's tool.

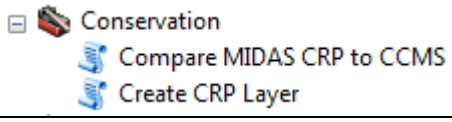
B Requirements

The following steps must be completed before running the Create CRP Layer tool:

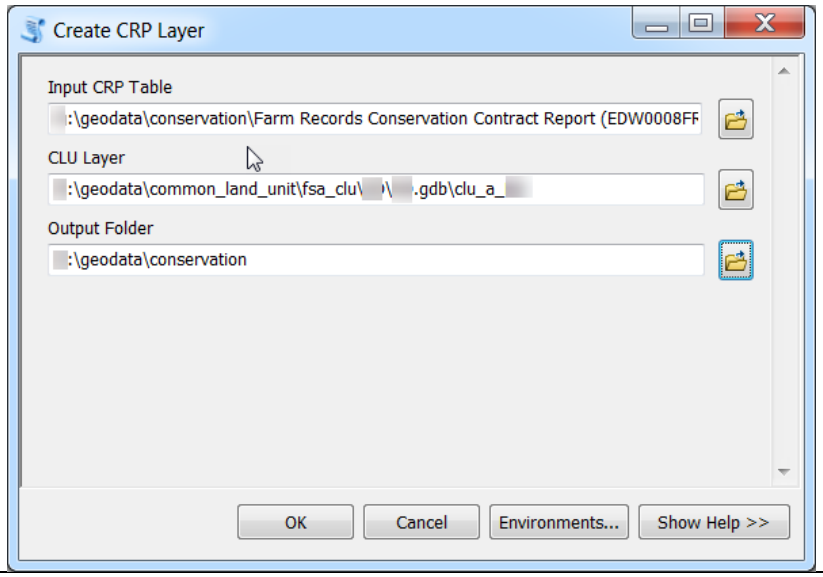
- current CLU exported to File Geodatabase per **Exhibit 99**
- statewide CLU Layer created per **Exhibit 17**
- download the Conservation Contract Report from EDW per **Exhibit 16**.

C Create CRP Layer

The following instructions create a CRP layer.

Step	Instructions
1	Download and extract the PythonMapSeries.zip file to C:\geodata. The State Office CLU Tools (statewideCLU.pyt) file should be located in C:\geodata\PythonMapSeries.
2	Start ArcMap.
3	Open the ArcToolbox window.
4	Right-click on "ArcToolbox" and CLICK "Add Toolbox".
5	Navigate to C:\geodata\PythonMapSeries.
6	Add the toolbox named "StatewideCLU.pyt".
7	Expand the State Office CLU Tool toolbox.
8	Expand the Conservation toolset. 
9	Double-click on "Create CRP Layer".
10	Click the "Browse" button  next to the Input CRP Table.

C Create CRP Layer (Continued)

Step	Instructions
11	Navigate to C:\geodata\conservation folder. Select the Farm Records Conservation Contract Report (EDW0008FR).csv file and CLICK "**Open**".
12	Under CLU Layer, browse to the folder where the desired CLU data is stored. Select either a county CLU layer or a statewide CLU layer and CLICK "**Add**". **Note:** The user may choose to use either a county CLU layer (e.g. clu_a_mi091) or a statewide CLU layer.
13	Under Output folder, browse to C:\Geodata. Select the Conservation folder and CLICK "**Add**". 
14	CLICK "**OK**" to run the tool.
15	The output is a geodatabase, named the same as the input CLU data, containing a single feature class named CRP.
16	In ArcMap, CLICK "Add Data" .
17	Navigate to C:\Geodata\Conservation.
18	Double-click the crp_a_<st>.gdb file geodatabase.
19	Select the CRP feature class.
20	CLICK "**Add**". The resulting feature dataset will be added to ArcMap.

Compare MIDAS CRP to CCMS

A Background

CRP Contract information stored in CCMS should be compared to CRP data loaded at the field level in CRM Farm Records on a regular basis. Run the Create CRP Layer tool to join the MIDAS CRP data with the statewide CLU layer before performing the steps in this document.

B Requirements

***--**The following step must be completed before comparing MIDAS CRP to the CCMS data:

- Statewide CRP Layer created per **Exhibit 24**.**--***

C Download CCMS Contract Information File

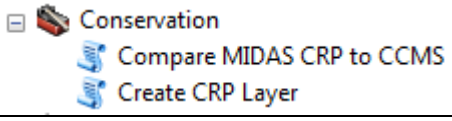
--**Download the CCMS Contract Information file from EDW per instructions in **Exhibit 16**.**--

*** * ***

Compare MIDAS CRP to CCMS (Continued)

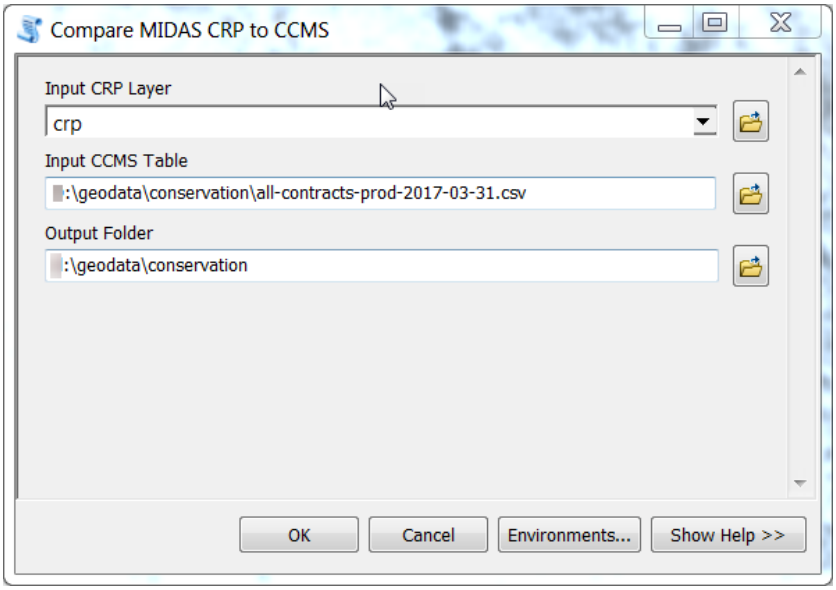
D Compare MIDAS CRP to the CCMS Data

The following instructions compare MIDAS CRP to the CCMS data.

Step	Instructions
1	Download and extract the PythonMapSeries.zip file to C:\Geodata. The State Office CLU Tools (statewideCLU.pyt) file should be located in C:\Geodata\PythonMapSeries.
2	Start ArcMap.
3	Open the ArcToolbox window.
4	Right-click on "ArcToolbox" and CLICK "Add Toolbox".
5	Navigate to C:\Geodata\PythonMapSeries.
6	Add the toolbox named "StatewideCLU.pyt".
7	Expand the State Office CLU Tools toolbox.
8	Expand the Conservation toolset. 
9	Double-click the "Compare MIDAS CRP to CCMS" tool.
10	Click the "Browse" button  next to the Input CRP Layer.
11	Navigate to the statewide CRP feature class stored in c:\geodata\conservation\crp_a_<st>.gdb\crp.
12	CLICK "**Add**".
13	Click the "Browse" button  next to the Input CCMS Table.
14	Navigate to C:\Geodata\Conservation.
15	Select the file named All_Contracts_<YYYY>_<MM>_<DD>.csv.
16	CLICK "**Open**".

Compare MIDAS CRP to CCMS (Continued)

D Compare MIDAS CRP to the CCMS Data (Continued)

Step	Instructions
17	Click the "Browse" button  next to Output Folder.
18	Navigate to C:\Geodata.
19	Click the "Conservation" folder and CLICK "**Add**".
20	CLICK "**OK**" to run the tool.  A file named CRP_mismatchlist_<yyymmdd>.csv will be created in the c:\geodata\conservation folder and will be sorted by administrative State, administrative county, farm number, and contract number. This list will identify errors, see the next section for explanation of errors found. An additional file named farms_with_CRP_by_county_<yyyymmdd>.csv is created that summarizes the total number of farms with CRP, number of contracts, and errors encountered by county. CCMS data, including signup number, approval date, original start date, and rental rate, will be added to all records in the CRP layer where the contract number matches.

Compare MIDAS CRP to CCMS (Continued)

E Explanation of Data

The output file CRP_mismatchlist_<yyymmdd>.csv identifies errors between the CRM Farm Records CRP data and the CCMS CRP Contract information. The following list provides the possible error messages found in this report and an explanation of each.

Error Message	Description
Contract not found in CRP Software	A contract number was found in CRM Farm Records that does not match with a contract in CCMS. This commonly displays if a suffix was not updated in CRM Farm Records.
Contract not found in MIDAS	A contract number exists in CCMS but is not found in CRM Farm Records. In many cases, this is because a suffix was not updated in CRM Farm Records or because CRP data has not been updated at the field level in CRM Farm Records.
Contract acres off by xxx acres	The total acres of the CLUs in CRM Farm Records associated with the contract number does not match the contract acreage in CCMS. Acres are rounded at the field level before adding to match CRP procedure.
Practice CP___ not found in MIDAS	A conservation practice is associated with a contract in CCMS, but no CLU's are attributed with the practice number in CRM Farm Records.
Expiration Date does not match	The expiration date listed in CCMS does not match 1 or more entries at the field level in CRM Farm Records.
Expiration Date not consistent	More than 1 expiration date was found in CRM Farm Records. CRP data should be reviewed at the field level in CRM Farm Records to ensure that the same expiration date is entered for all fields on the contract.

QC for Attributes of the CRP Layer

A Introduction

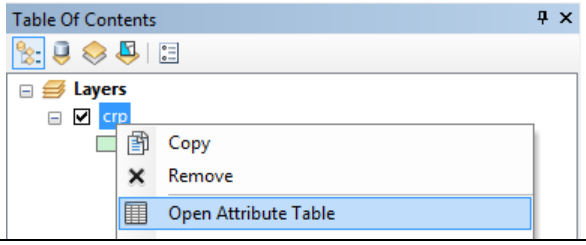
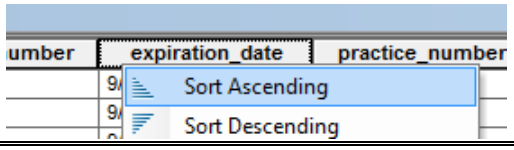
These instructions are designed for GIS Specialists to identify incorrect attribute data in the CRP layer. If incorrectly attributes are identified, the data can be exported to a database file for reference or provided to local county staff to review and correct. Correcting the incorrectly attributed data must be completed by the administering field staff and can only be corrected through CRM Farm Records to update attributes accordingly. Analysis should be completed monthly to verify CRP information is being updated and current.

B Requirements

Sorting or querying data can be completed from a desktop ArcMap application. Sorting or querying data in the attribute table can be completed on the statewide CRP Layer created using the Create CRP Layer tool, see instructions in **Exhibit 24**.

C Instructions to Query the CRP Layer for Expired Contracts

These instructions demonstrate the process for identifying contracts that have past expiration dates from the statewide CRP layer.

Step	Instructions
1	Open the Attribute Table of the CRP Layer. 
2	Scroll right to locate the “expiration_date” field.
3	Right-click the “expiration_date” field heading and CLICK “Sort Ascending”. 

QC for Attributes of the CRP Layer (Continued)

C Instructions to Query the CRP Layer for Expired Contracts (Continued)

Step	Instructions
4	Examine the dates for dates that have passed. **Notes:** Early release or terminated contracts prior to roll over will need to be removed manually. Except for early release or voluntarily terminated contracts that chose to receive partial payment for the year. Roll over should delete out expired CRP contract data. In the CRP Layer, records with invalid expiration dates have a date of 5/12/1933 automatically entered by the Create CRP Layer tool.

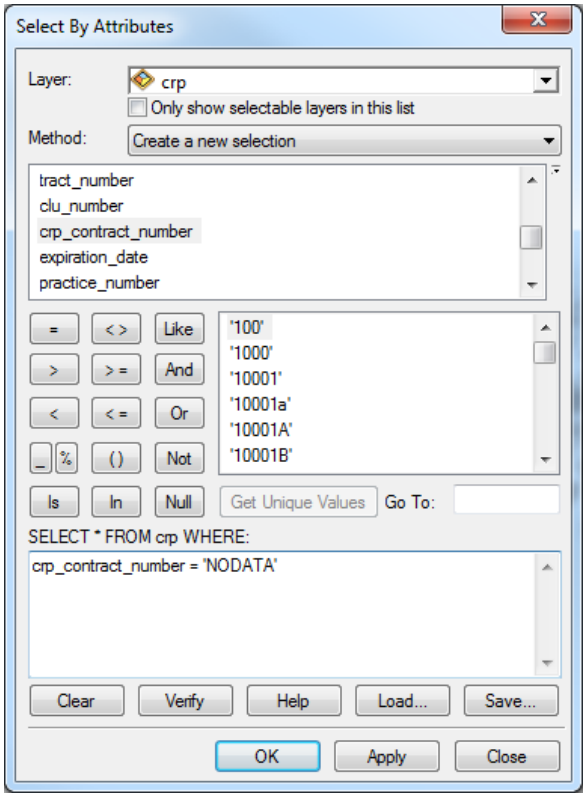
D Instructions to Query the CRP Layer for Invalid CRP Contract Numbers

These instructions demonstrate the process for identifying records with invalid CRP contract numbers from the statewide CRP layer.

Step	Instructions
1	Open the "**Select by Attributes**" tool.
2	In the Layer Menu, verify that the statewide CRP layer is selected.

QC for Attributes of the CRP Layer (Continued)

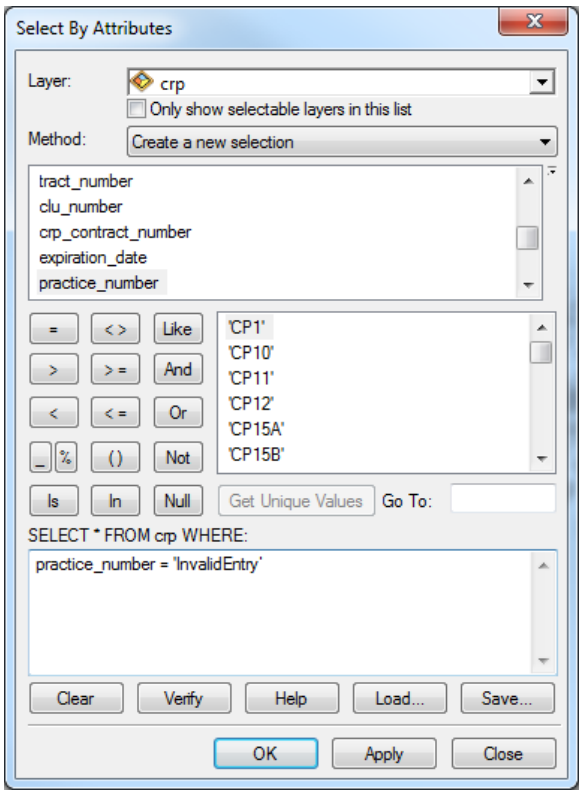
D Instructions to Query the CRP Layer for Invalid CRP Contract Numbers (Continued)

Step	Instructions
3	Build the following query: **crp_contract_number = 'NODATA'** • double-click on "**crp_contract_number**" • click the "**=**" button • CLICK "**Get Unique Values**" • double-click on "**NODATA**".  **Note:** If the value "NODATA" is not available after clicking "Get Unique Values", then the value does not exist and there will be no records to select.
4	Export the selected records for each of the following queries to distribute to the County Offices for resolution.

QC for Attributes of the CRP Layer (Continued)

E Instructions to Query the CRP Layer for Invalid Practice Numbers

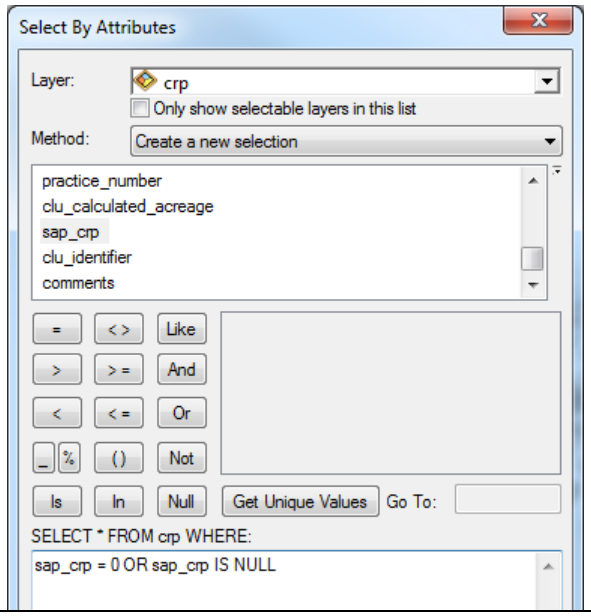
These instructions demonstrate the process for identifying records with invalid practice numbers from the statewide CRP layer.

Step	Instructions
1	Open the "**Select by Attributes**" tool.
2	In the Layer Menu, verify that the statewide CRP layer is selected.
3	Build the following query: **practice_number = 'InvalidEntry'** • double-click on "**practice_number**" • click the "=" button • CLICK "**Get Unique Values**" • double-click on "**InvalidEntry**".  **Note:** If the value "InvalidEntry" is not available after clicking "Get Unique Values", then the value does not exist and there will be no records to select.
4	Export the selected records for each of the following queries to distribute to the County Offices for resolution.

QC for Attributes of the CRP Layer (Continued)

F Instructions to Query the CRP Layer for Missing SAP_CRP Flags

Records with CRP Contract information loaded should have "1" in the "sap_crp" field. These instructions demonstrate the process for identifying missing sap_crp flags from the statewide CRP layer.

Step	Instructions
1	Open the "**Select by Attributes**" tool.
2	In the Layer Menu, verify that the statewide CRP layer is selected.
3	Build the following query: **sap_crp = 0 OR sap_crp IS NULL** • double-click on "**sap_crp**" • click the "**=**" button • ENTER "**0**" • click the "**Or**" button • double-click on "**sap_crp**" • click the "**Is**" button • click the "**Null**" button. 
4	Export the selected records for each of the following queries to distribute to the County Offices for resolution.

Build Crop Data Polygons Tool

A Introduction

The State GIS Specialist can use the following instructions to create the county crop data datasets using the Statewide CLU Build Crop Data Polygons or Build Crop Data Polygons - EDW tool. The Build Crop Data Polygon tool links tabular crop reporting data loaded in CARS to the CLU layer at the field level to create a geographic representation of crops planted in a county and a listing of all reported crops for a county. The tool can be batch processed for all counties in the State using the Iterate Cropdata script. See **Exhibit 28**.

Note: Instructions in this exhibit apply to both the Build Crop Data Polygons tool and the Build Crop Data Polygons – EDW tool.

Important: It is recommended to run the batch script instead of the standalone tool to process all counties for the State more efficiently.

B Requirements

The following are required to be available to the GIS Specialist to successfully run the Build Crop Data Polygon Tool to create the county crop datasets.

- Statewide CLU tools saved to the "C:\geodata\PythonMapSeries" folder
- County CLU geodatabases downloaded from Citrix and saved to the "**C:\geodata\common_land_unit\fsa_clu**" folder
- Detailed Crop Data downloaded from SharePoint and unzipped to the "**C:\geodata\land_use_land_cover\fsa_compliance\<year>**" folder
- Detailed Crop Data downloaded from EDW and saved to to the "**C:\geodata\land_use_land_cover\fsa_compliance\<year>**" folder

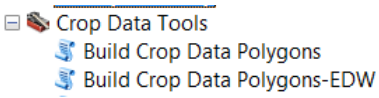
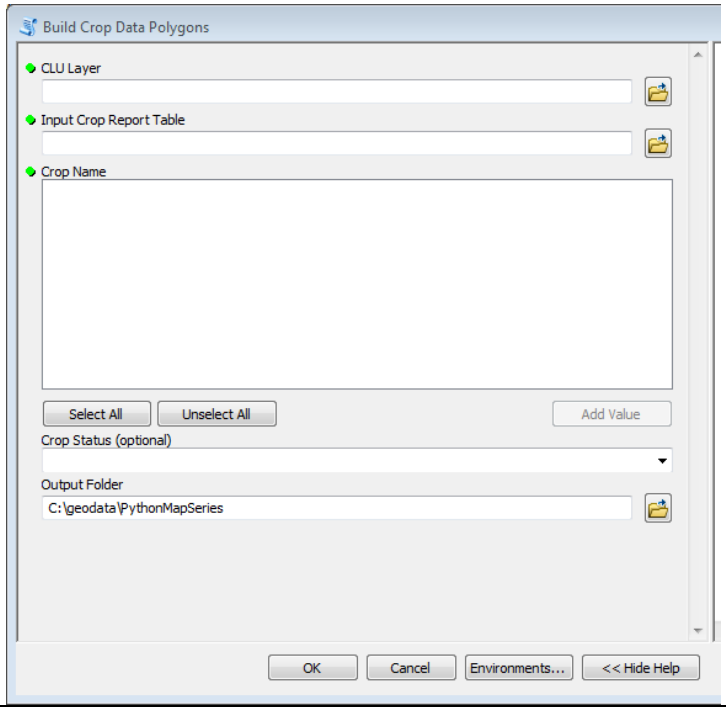
C Instructions

The State GIS Specialist can use these instructions to create the county crop data datasets using the Statewide CLU Build Crop Data Polygons or Build Crop Data Polygons - EDW tool.

Step	Instructions
1	Open ArcMap.
2	Open ArcToolbox  .
3	Right-click on "ArcToolbox" and CLICK "Add Toolbox".
4	Navigate to "**C:\geodata\PythonMapSeries**".
5	Add the toolbox named "**StatewideCLU.pyt**".
6	Expand the State Office CLU Tools toolbox.

Build Crop Data Polygons Tool (Continued)

C Instructions (Continued)

Step	Instructions
7	Double-click on "**Build Crop Data Polygons**" or "**Build Crop Data Polygons-EDW**" if using data from EDW. 
8	The Build Crop Data Polygon window will open. 
9	For CLU layer: • click the "**Browse**" button  next to the "CLU Layer" field • navigate to the file geodatabase that contains the county CLU feature class: **C:\geodata\common_land_unit\fsa_clu** • select the **CLU** and CLICK "**Add**".

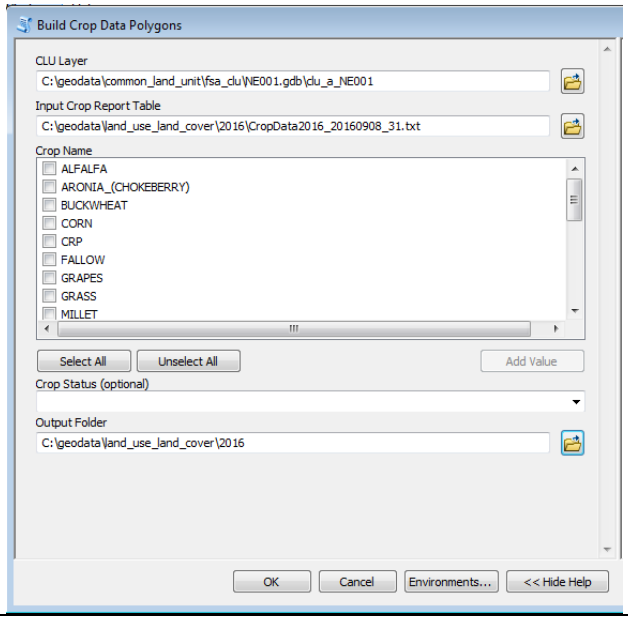
Build Crop Data Polygons Tool (Continued)

C Instructions (Continued)

Step	Instructions
10	For input crop report table: • click the "**Browse**" button  next to the "Input Crop Report Table" field • navigate to the **C:\geodata\land_use_land_cover\fsa_compliance** folder • select the file detailed crop data file for the State named "**cropdatayyy_yyymmdd_st**" **or** "**Acreage Reports County Crop Acreage Report (EDW0001AR).csv**" if using the EDW version • CLICK "**Add**".
11	For crop name, select the crop or crops that the feature classes should be created for. **Note:** CLICK "**_ALL_CROPS**" to create the county feature class with all crops included.
12	For crop status (optional), this is an optional field to further define the output results. Leave this entry blank to create all records for all crops. Options to filter specific crop status include: • Failed • Prevented • Volunteer.
13	For output folder, change the default location by clicking on the "**Browse**" button  . • navigate to and select "**C:\geodata\land_use_land_cover\fsa_compliance\<YYYY>**" • CLICK "**Add**".

Build Crop Data Polygons Tool (Continued)

C Instructions (Continued)

Step	Instructions
14	The following is a screen print of the tool with all fields entered. 
15	CLICK "**OK**" to compile the county crop data for the CLU selected.

Batch Script to Build Crop Data Polygons

A Introduction

The State GIS Specialist shall use the following instructions to batch create the county crop data datasets using the Statewide CLU Build Crop Data Polygons tool. Using the batch script allows the state GIS Specialist to compile all county data at once. To create individual crop data files and use the CLU Build Crop Data Polygon tool directly see **Exhibit 27**.

B Requirements

The following are required to be available to the GIS Specialist to successfully run the batch script to create the county crop datasets:

- statewide CLU tools saved to the "**C:\geodata\PythonMapSeries**" folder
- Iterate_cropdata.py tool saved to the "**C:\geodata\PythonMapSeries**" folder
- all county CLU geodatabases downloaded from Citrix and saved to the "**C:\geodata\common_land_unit\fsa_clu**" folder, the folder must contain only county CLU geodatabases
- detailed Crop Data downloaded from SharePoint and unzipped to the "**C:\geodata\land_use_land_cover\fsa_compliance\<year>**" folder.

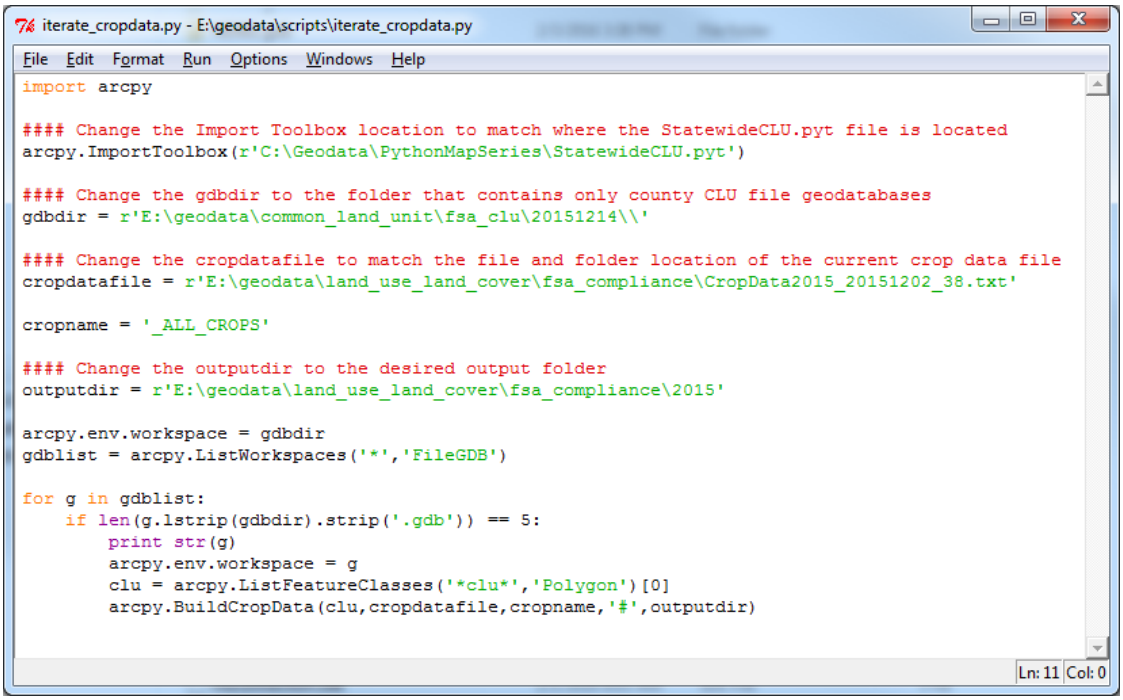
C Instructions

The State GIS Specialist shall use these instructions to batch create the county crop data datasets using the Statewide CLU Build Crop Data Polygons tool.

Step	Instructions
1	Navigate to where the "iterate_cropdata" script is saved at "C:\geodata\PythonMapSeries".
2	Right-click the "**iterate_cropdata.py**" file and CLICK "**Edit with IDLE**".

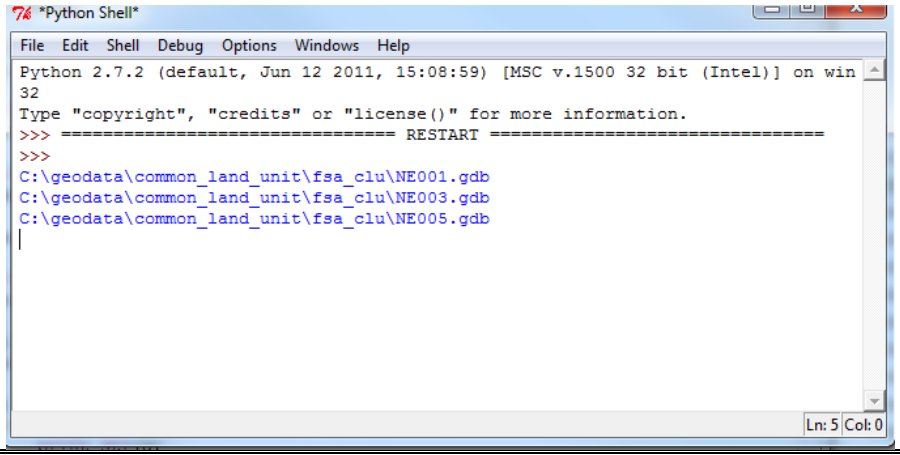
Batch Script to Build Crop Data Polygons (Continued)

C Instructions (Continued)

Step	Instructions
3	The script will open. Command lines will be color coded. The red text indicates what needs to be changed on the following green command line. 
4	Edit each green command line as indicated in the red commented line in step 3 to reflect the location or name of the folders or files to be accessed. **Important:** Only edit the green text as needed. Do not change any other portion of the command line. • The "ImportToolbox" line should be changed to match wherever the StatewideCLU toolbox is located. • Change the directory location where the CLU geodatabases are saved.

Batch Script to Build Crop Data Polygons (Continued)

C Instructions (Continued)

Step	Instructions
4 (Cntd)	• Change the directory location where the applicable crop data is saved and change the name of the crop data file to the downloaded raw crop data file downloaded. **Important:** When building the crop data it is important that the CLU and the raw crop data files are from similar dates or crop years. • Change the output directory location to where the created county crop layer and data should be saved. **Note:** Each time a new detailed crop dataset is downloaded, the third command line will need to be updated accordingly to reference the correct year and the correct file name.
5	Once all command entries have been modified to match the State's setup and files, save the changes (CLICK "**File**" and "**Save**").
6	To initiate the batch script, PRESS "**F5**". The following is an example of the Batch Script running from the IDLE window. 

Merge Cropland Dataset Tool

A Introduction

The State GIS Specialist can use the following instructions after the Build Crop Data Polygons tool or the Iterate Cropdata script. The Statewide CLU Merge Cropland Dataset tool is used to merge the individual county crop data into a statewide layer.

B Requirements

The following are required to be available to the GIS Specialist to successfully run the Merge Cropland Dataset Tool to create the statewide crop layer:

- statewide CLU tools saved to the "C:\geodata\PythonMapSeries" folder
- county crop geodatabases saved to the "**C:\geodata\land_use_land_cover\fsa_compliance\<year>**" folder.

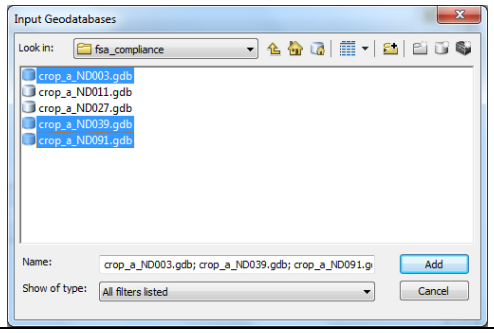
C Instructions

The State GIS Specialist can use these instructions after the Build Crop Data Polygons tool or the Iterate Cropdata script.

Step	Instructions
1	Start desktop ArcMap.
2	Open ArcToolbox.
3	Right-click on "ArcToolbox" and CLICK "**Add Toolbox**".
4	Navigate to **C:\Geodata\PythonMapSeries**.
5	Select and add **StatewideCLU.pyt**.
6	Expand the **State Office CLU Tools** toolset.
7	Double-click on "**Merge Cropland Dataset**".
8	Click the "Browse" button  next to Input Geodatabases.
9	Navigate to the folder that contains the crop data file geodatabases, typically c:\geodata\land_use_land_cover\fsa_compliance.

Merge Cropland Dataset Tool (Continued)

C Instructions (Continued)

Step	Instructions
10	Select 1 or more crop data file geodatabases to be merged. 
11	CLICK "**Add**".
12	Click the "Browse" button next to Output Folder.
13	Browse to **C:\Geodata\land_use_land_cover**.
14	Select "fsa_compliance" and CLICK "**Add**".
15	Under crop name, choose 1 or more crops to be included in the merged file geodatabase. The list of available crops is based on the feature classes that are already created in the input data. Typically, "_ALL_CROPS" will be selected. **Important:** If the batch script was used to create the county crop data datasets, the only crop name available will be the crop selected while using that tool. If "_ALL_CROPS" was selected for the batch script, the only option in the merge tools will be for "_ALL_CROPS."
16	Set the Output Coordinate System. Click the "Pick" icon, then select the desired coordinate system. **Note:** This step is optional. If left blank, the coordinate system of the first input dataset will be used.
17	CLICK "**OK**" to run the tool.

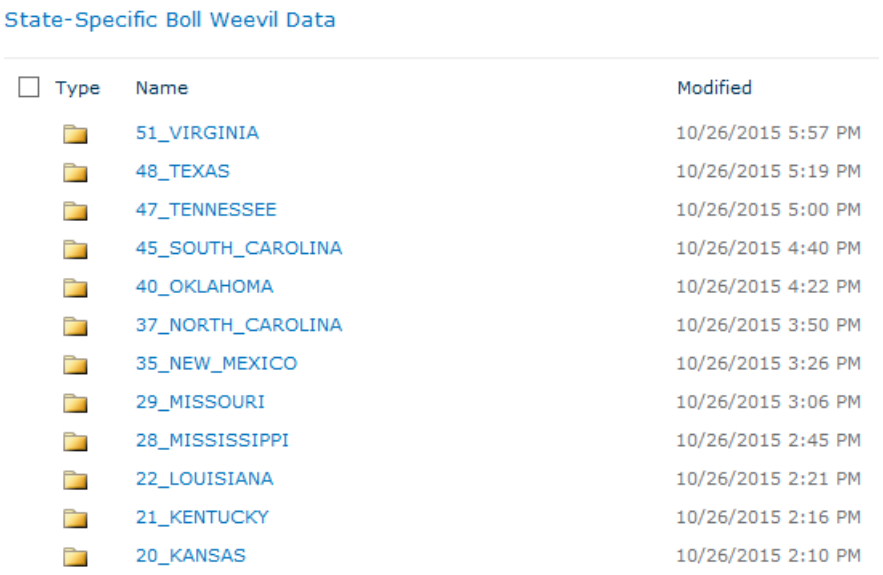
Boll Weevil Data – Adding Crops to CLU's

A Background

The audience for this exhibit is restricted to State GIS Specialists and Coordinators. This exhibit provides instructions for setting up and running a tool that adds crop data from the Compliance Detail File to CLU shapefiles.

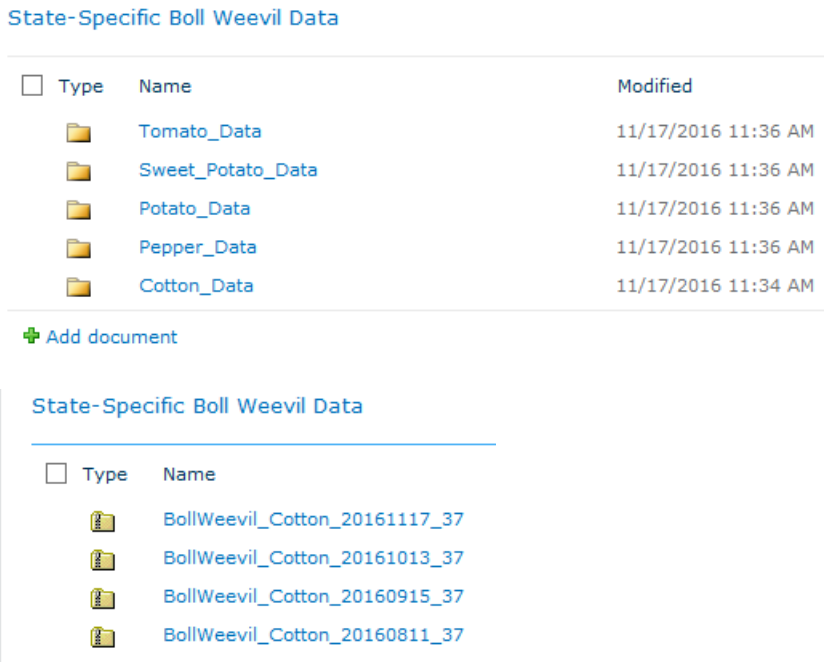
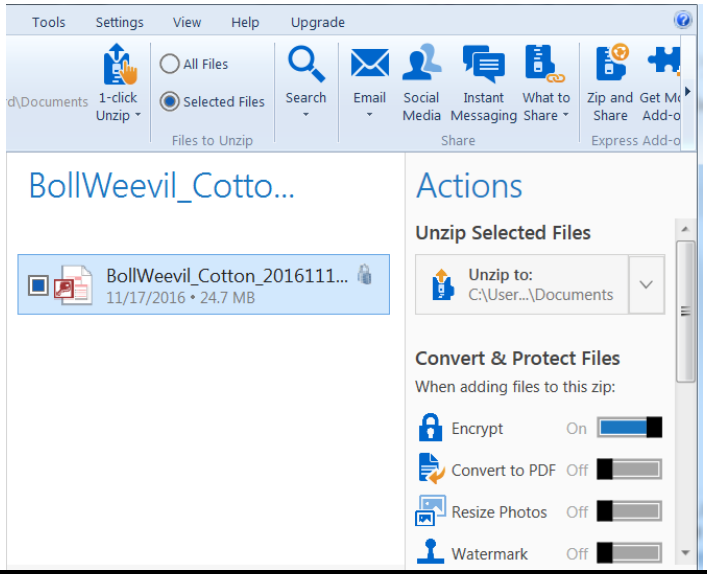
B Preparatory Steps for Using the Tool

The first 3 steps of the instructions will only need to be conducted once as part of the initial setup. After the initial setup has been established, these steps will no longer be required unless the tool has been updated.

Step	Instructions
1	Create a work folder on the local C drive, e.g. **C:\cotton_workspace**.
2	Download the **2012_AddCrops2CLU.zip** and the **BollWeevil_<CropType>_<YYYYMMDD>_<st>.zip** files from the FSA GIS SharePoint site to the workstation.
3	Unzip the 2012_AddCrops2CLU.zip file and extract the toolbox, **Add Crop Data to CLU Tool.tbx** and the Python script, **2012_AddCrop2CLU.py**, to the work folder that was created.
4	Download the **BollWeevil_<CropType>_<YYYYMMDD>_<st>.zip** file for the State from the FSA GIS SharePoint site. 

Boll Weevil Data – Adding Crops to CLU's (Continued)

B Preparatory Steps for Using the Tool (Continued)

Step	Instructions
5	Extract the **BollWeevil_<CropType>_<YYYYMMDD>_<st>.mdb** file from the **BollWeevil_<CropType>_<YYYYMMDD>_<st>.zip** file to the work folder. 
6	Unzip the CLU Shapefiles from K:\<ST>\Geodata\BollWeevilEradicationProgram folder. Place the CLU files in the "work folder" on the C Drive of the workstation. 

Boll Weevil Data – Adding Crops to CLU's (Continued)

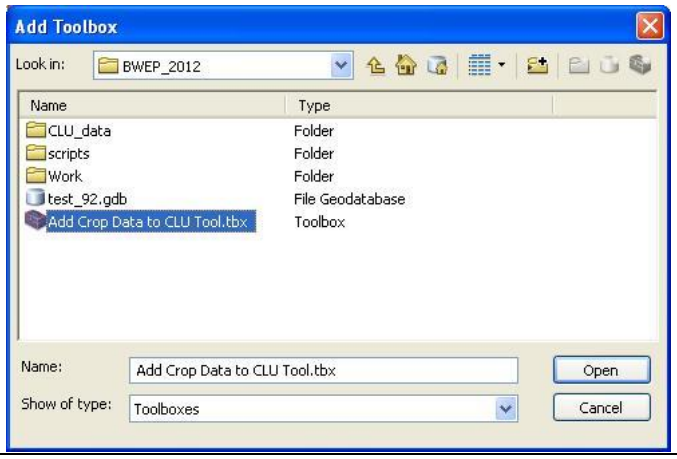
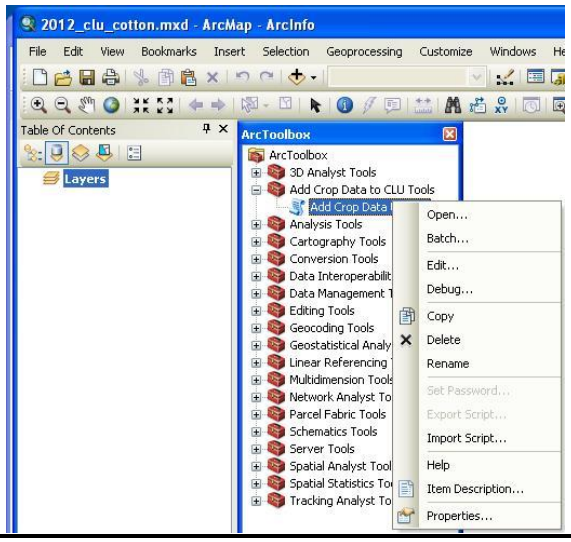
C Adding the Tool to a New ArcMap Project

The following instructions add the tool to a new ArcMap project.

Step	Instructions
1	Open ArcMap. Click the "**Cancel**" button on the ArcMap – Getting Started form to open a new ArcMap document.
2	If the ArcToolbox does not display on the interface, click the "Red Toolbox" icon  to show the ArcToolbox window.
3	Right-click on "**ArcToolbox**" and CLICK "**Add Toolbox**". 

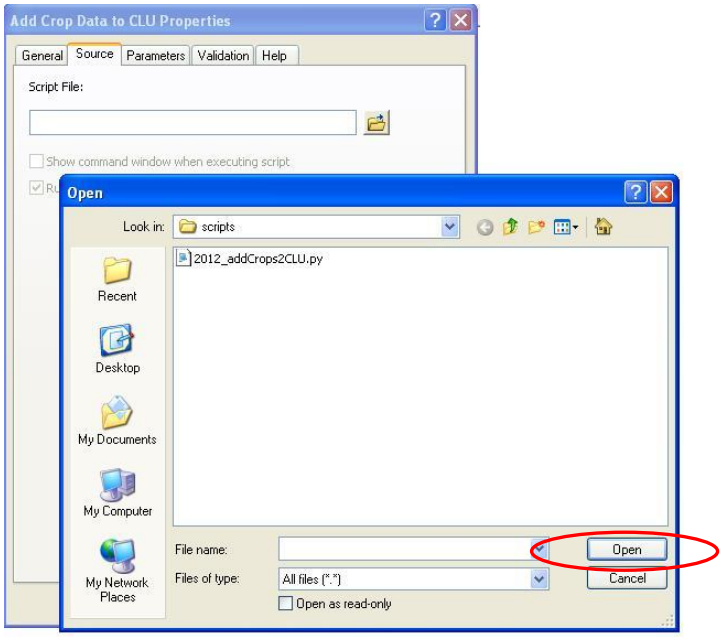
Boll Weevil Data – Adding Crops to CLU's (Continued)

C Adding the Tool to a New ArcMap Project (Continued)

Step	Instructions
4	Navigate to the work folder where the "**Add Crop Data to CLU Tool.tbx**" file was saved, click the toolbox, and CLICK "**Open**". 
5	The toolbox is added to the toolbox tree. Click the plus sign ("+") to the left of the toolbox to expand the tree. Attach the Python script to the tool by right-clicking on "**Add Crop Data to CLU**" and clicking "**Properties**". 

Boll Weevil Data – Adding Crops to CLU's (Continued)

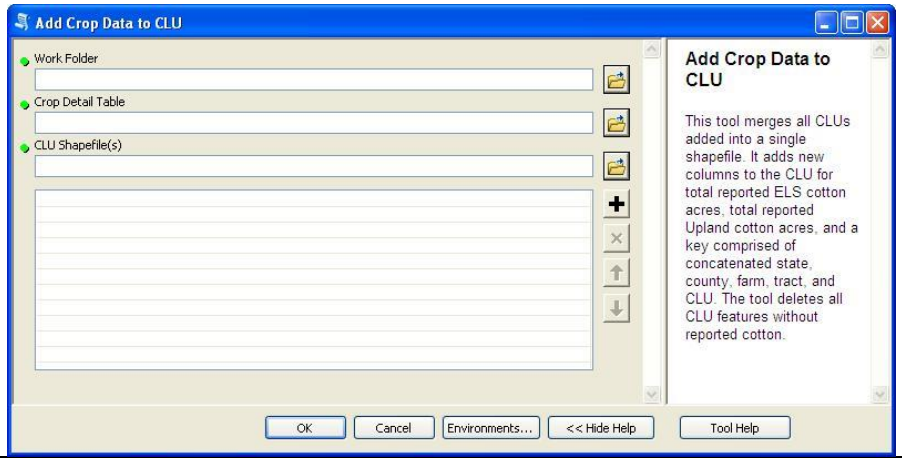
C Adding the Tool to a New ArcMap Project (Continued)

Step	Instructions
6	Select the "**Source**" tab in the **Add Crop Data to CLU Properties** window, and click the folder icon to the right of the textbox to browse to the folder containing the script. Attach it to the tool by selecting the script and clicking "**Open**". 
7	Save and name the ArcMap project so that when the tool needs to be used again, the employee will not have to set up another project and add the toolbox.

Boll Weevil Data – Adding Crops to CLU's (Continued)

D Using the Tool

The following instructions are for how to use the tool.

Step	Instructions
1	Double-click "**Add Crop Data to CLU**" or right-click and CLICK "**Open**" to open the user interface to the tool.
2	Notice that the **Help** panel provides useful tool information and specific instructions for adding the 3 input parameters to the tool: Work Folder, Crop Detail Table, and CLU Shapefile(s). 
3	Add the Work Folder by double-clicking the folder icon to the right of the "**Work Folder**" textbox and navigating to the drive or folder storing the work folder. Single-click the folder name and CLICK "**Add**".
4	Add the Crop Detail table stored in the **clu_crops_<st>.mdb** file by clicking on the folder icon to the right of the "**Crop Detail Table**" textbox, and navigating to the work folder that contains the **clu_crops_<st>.mdb**. Double-click the mdb file to open it, and double-click the **cmpdtl** table to add it.
5	Add all the CLU shapefiles that the employee needs to attach crop data to by clicking the folder icon to the right of the "**CLU Shapefile(s)**" textbox and navigating to the folder that contains them. Hold down the "**Ctrl**" key and click on multiple CLU's, or hold down the "**Shift**" key to click on a range of CLU's.
6	CLICK "**OK**" to begin running the tool. When a message is received that the process has completed successfully, verify the success by adding the merged shapefile, **merged_clu_<st>.shp** to the ArcMap document and viewing its attribute table.

Boll Weevil Data – Adding Crops to CLU's (Continued)

E Final Processing of the Tool

The following instructions are for the final processing of the tool.

Step	Instructions
1	Depending on the number of shapefiles added, the tool may take a long time to complete.
2	The script will delete unused columns, such as CLUCLSCD, from the CLU attribute table and will add 2 new columns for Upland Cotton and ELS Cotton acreages.
3	See the **Cotton_Data_Record_Layouts.doc** document for a description of the **clu_<st>** shapefile and the **cmpdtl**, **cmpshr**, and **nmaddr** table attributes.

*--Creating State CPA, CREP, and SAFE Shapefile

A CPA, CREP, and SAFE Based on County Boundaries

The following is the process for CPA, CREP, and SAFE based on county boundaries.--*

Step	Process
1	Start ArcMap.
2	*--Add the FSA_Counties_dd17 feature dataset.--*
3	Click the "Select Features" tool  .
4	*--Click on a county to select to be included in the conservation eligibility area.--* Hold the "Shift" key while clicking to select additional counties.
5	Open ArcToolbox.
6	Expand the Data Management Tools toolbox.
7	Expand the Generalization toolset.
8	Double-click the "Dissolve" tool.
9	Set the "Input Features" drop-down menu to "county".
10	*--Set the Output Feature Class to c:\geodata\conservation\: • cpa_a_<st>_<prj>.shp. • crep_<code>_a_<st>_<prj>.shp • safe_<code>_a_<st>_<prj>.shp Select the appropriate naming convention based on the conversation type being created.--*
11	Uncheck "Create multipart features".
12	CLICK "OK" to run the "Dissolve" tool.
13	*--Attribute the shapefile using the steps outlined in subparagraph D.--*

***--Creating State CPA, CREP, and SAFE Shapefile (Continued)**

B CPA, CREP, and SAFE Based on HUC's

The following is the process for CPA, CREP, and SAFE based on HUC's.**--***

Step	Process
1	Start ArcMap.
2	Add the WBD feature class.
3	Click the "Select Features" tool  .
4	***--**Click on a hydrologic unit to select to be included in the conservation eligibility area. Hold the "Shift" key while clicking to select additional counties.**--*** **Note:** Users may use an attribute query to select HUC's.
5	Open ArcToolbox.
6	Expand the Data Management Tools toolbox.
7	Expand the Generalization toolset.
8	Double-click the "Dissolve" tool.
9	Set the "Input Features" drop-down menu to the WBD layer.
10	***--**Set the Output Feature Class to c:\geodata\conservation\: • cpa_a_<st>_<prj>.shp. • crep_<code>_a_<st>_<prj>.shp • safe_<code>_a_<st>_<prj>.shp Select the appropriate naming convention based on the conversation type being created.**--***
11	Uncheck "Create multipart features".
12	CLICK "OK" to run the "Dissolve" tool.
13	***--**Attribute the shapefile using the steps outlined in subparagraph D.**--***

***--Creating State CPA, CREP, and SAFE Shapefile (Continued)**

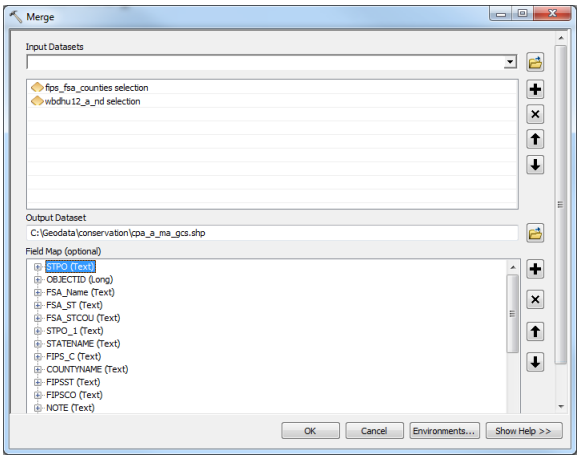
C CPA, CREP, and Safe Based on Other Geographic Aggregations

The following is the process for CPA, CREP, and SAFE based on other geographic aggregations.**--***

Step	Process
1	Start ArcMap.
2	Add the WBD feature class.
3	Click the "Select Features" tool  .
4	***--**Click on a hydrologic unit to select to be included in the conservation eligibility area. Hold the "Shift" key while clicking to select additional counties.**--*** **Note:** Users may use an attribute query to select HUC's.
5	Right-click the WBD feature class in the Table of Contents.
6	CLICK "Selection" and "Create Layer from Selected Features".
7	Remove the checkmark from the wbd_selection layer.
8	***--**Add the FSA_Counties_dd17 feature dataset to the map document.**--***
9	Click the "Select Features" tool  .
10	***--**Click on a county to select to be included in the conservation eligibility area.**--*** Hold the "Shift" key while clicking to select additional counties.
11	Right-click the County feature dataset in the Table of Contents.
12	CLICK "Selection" and "Create Layer from Selected Features".
13	Open ArcToolbox.
14	Expand the Data Management Tools toolbox.
15	Expand the General toolset.
16	Double-click on "Merge".
17	From the "Input Datasets" drop-down menu, select the wbd_selection layer.

***--Creating State CPA, CREP, and SAFE Shapefile (Continued)**

C CPA, CREP, and Safe Based on Other Geographic Aggregations (Continued)

Step	Process
18	From the "Input Datasets" drop-down menu, select the FSA_Counties_dd17 layer.
19	Set the Output Dataset to c:\geodata\conservation\: • cpa_a_<st>_<prj>.shp. • crep_<code>_a_<st>_<prj>.shp • safe_<code>_a_<st>_<prj>.shp Select the appropriate naming convention based on the conversation type being created.  **--***
20	CLICK "**OK**" to run the tool.
21	When the tool has finished running, open the Editor Toolbar.
22	CLICK "Editor" and "Start Editing".
23	***--**Select the shapefile from the list of layers.**--***
24	CLICK "**OK**".
25	CLICK "Editor" and "Merge".
26	***--**Right-click on **shapefile** in the Table of Contents.**--***
27	CLICK "Selection" and "Select All".
28	On the Editor Toolbar, CLICK "Editor" and "Merge".
29	Select the first feature and CLICK "**OK**".
30	CLICK "Editor" and "Save Edits".
31	CLICK "Editor" and "Stop Editing".
32	***--**Attribute the shapefile using the steps outlined in subparagraph D.**--***

***--Creating State CPA, CREP, and SAFE Shapefile (Continued)**

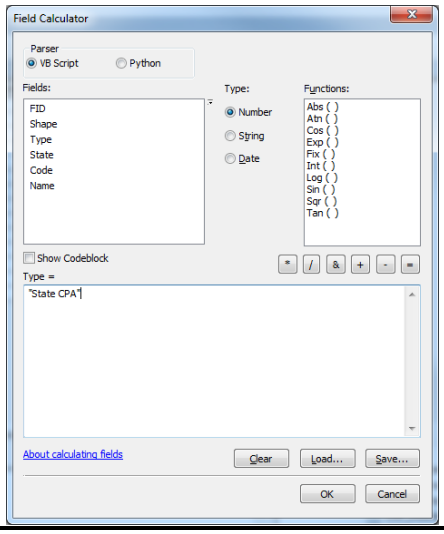
D Attributing State CPA, CREP, and SAFE

The following is the process for attributing State CPA, CREP, and SAFE.**--***

<table>
<tr><th>Step</th><th>Process</th></tr>
<tr><td>1</td><td>With ArcMap open and the CPA feature class added, open ArcToolbox.</td></tr>
<tr><td>2</td><td>Expand the Data Management Tools toolbox.</td></tr>
<tr><td>3</td><td>Expand the Fields toolset.</td></tr>
<tr><td>4</td><td>Double-click “Add Field”.</td></tr>
<tr><td>5</td><td>***--**Set the “Input Table” drop-down menu to the appropriate shapefile (for example, cpa_a_<st>_<pri>).**--***</td></tr>
<tr><td>6</td><td>Set the “Field Name” field to “**Type**”.</td></tr>
<tr><td>7</td><td>Set the “Field Type” drop-down menu to “**TEXT**”.</td></tr>
<tr><td>8</td><td>Set the “Field Length” field to “**25**”.</td></tr>
<tr><td>9</td><td>CLICK “**OK**”.</td></tr>
<tr><td>10</td><td>After the tool successfully executes, run the “Add Field” tool again for the following fields.
<table>
<tr><th>Field Name</th><th>Field Type</th><th>Field Length</th></tr>
<tr><td>State</td><td>TEXT</td><td>5</td></tr>
<tr><td>Code</td><td>TEXT</td><td>5</td></tr>
<tr><td>Name</td><td>TEXT</td><td>255</td></tr>
</table></td></tr>
<tr><td>11</td><td>Under “ArcToolbox”, “Data Management Tools”, and “Fields”, double-click “Delete Field”.</td></tr>
<tr><td>12</td><td>***--**Set the “Input Table” drop-down menu to the applicable conservation shapefile.**--***</td></tr>
<tr><td>13</td><td>CLICK “**Select All**”.</td></tr>
</table>

***--Creating State CPA, CREP, and SAFE Shapefile (Continued)**

D Attributing State CPA, CREP, and SAFE (Continued)--*

Step	Process
14	Remove the checkmarks from the following attributes: • Type • State • Code • Name.
15	CLICK "**OK**" to run the tool.
16	***--**After the tool has processed, right-click on the shapefile in the Table of Contents.**--***
17	CLICK "Open Attribute Table".
18	Right-click the "**Type**" column header.
19	CLICK "**Field Calculator**". CLICK "**Yes**" to continue if prompted.
20	***--**ENTER "**State CPA, SAFE, CREP**" in the code block based on the type of conservationfile being created. Ensure to include quotation marks.**--***
21	CLICK "**OK**". 

***--Creating State CPA, CREP, and SAFE Shapefile (Continued)**

D Attributing State CPA, CREP, and SAFE (Continued)--*

Step	Process
22	Right-click the "**State**" column header.
23	CLICK "**Field Calculator**". CLICK "**Yes**" to continue if prompted.
24	Enter the 2-letter postal abbreviation for the State, surrounded by quotation marks, in *--the code block (for example, "WI").--*
25	CLICK "**OK**".
26	Right-click the "**Code**" column header.
27	CLICK "**Field Calculator**". CLICK "**Yes**" to continue if prompted.
28	*--ENTER the abbreviation of the CPA, CREP, or SAFE in the code block. Ensure to include quotation marks. CPA example: "CPA" CREP example: "MWO" SAFE example: "PM"--*
29	CLICK "**OK**".
30	Right-click the "Name" column header.
31	CLICK "**Field Calculator**". CLICK "**Yes**" to continue if prompted.
32	*--ENTER the conservation project name in the code block. Ensure to include quotation marks. CPA example: "Maryland CPA" CREP example: "Minnesota Water Quality" SAFE example: "Pollinator and Monarch"--*
33	CLICK "**OK**".

Creating Zones Within CPA's

A Creating Zone Polygon

The following is the process for creating zone polygon.

Step	Process
1	Start ArcMap.
2	Add the State CPA feature class (cpa_a_<st>_<prj>.shp).
3	Add the county and/or the WBD feature class. **Note:** Priority zones must be based on the same geographic aggregation as the CPA.
4	Click the "Select Features" tool .
5	Click on a polygon to be included in the priority zone. Hold the "Shift" key while clicking to select additional polygons.
5	Open ArcToolbox.
6	Expand the Data Management Tools toolbox.
7	Expand the Generalization toolset.
8	Double-click the "Dissolve" tool.
9	Set the "Input Features" drop-down menu to the feature class used to create the zone (either county or WBD).
10	Set the Output Feature Class to c:\geodata\conservation\<zone name>_a_<st>_<prj>.shp. **Note:** This is a temporary dataset. The zone name shall be: • "AQ" for Air Quality zones • "WQ" for Water Quality zones • "WL" for Wildlife zones.
11	Uncheck "Create multipart features".
12	CLICK "**OK**" to run the Dissolve tool.
13	In ArcToolbox, expand the General Toolset.
14	Double-click the "Append" tool.
15	Set the "Input Dataset" drop-down menu to the output feature class created in step 10.
16	Set the "Target Dataset" drop-down menu to "cpa_a_<st>_<prj>.shp".
17	Set the "Schema Type" drop-down menu to "**NO_TEST**".
18	CLICK "**OK**" to run the tool.

Creating Zones Within CPA's (Continued)

B Attributing State Zones

The following is the process for attributing State zones.

Step	Process
1	With ArcMap open and the CPA feature class added, select the polygons to attribute.
2	Right-click on "**cpa_a_<st>_gcs**" in the Table of Contents.
3	CLICK "**Open Attribute Table**".
4	Right-click the "Type" column header.
5	CLICK "**Field Calculator**". CLICK "**Yes**" to continue if prompted.
6	ENTER "**State <zone name>**" in the code block. Ensure to include quotation marks. Replace <zone name> with the appropriate name as follows. **Zone** / **Type** Wildlife Zone / "State WL" Water Quality Zone / "State WQ" Air Quality Zone / "State AQ"
7	Right-click the "**State**" column header.
8	CLICK "**Field Calculator**". CLICK "**Yes**" to continue if prompted.
9	Enter the 2-letter postal abbreviation for the State, surrounded by quotation marks, in the code block.
10	CLICK "**OK**".
11	Right-click the "**Code**" column header.

Creating Zones Within CPA's (Continued)

B Attributing State Zones (Continued)

<table>
<tr><th>Step</th><th>Process</th></tr>
<tr><td>12</td><td>CLICK "Field Calculator". CLICK "Yes" to continue if prompted.</td></tr>
<tr><td>13</td><td>ENTER "<zone code>" in the code block. Ensure to include quotation marks.

Replace <zone code> with the appropriate name as follows.

<table><tr><th>Zone</th><th>Code</th></tr><tr><td>Wildlife Zone</td><td>"WL"</td></tr><tr><td>Water Quality Zone</td><td>"WQ"</td></tr><tr><td>Air Quality Zone</td><td>"AQ"</td></tr></table></td></tr>
<tr><td>14</td><td>CLICK "OK".</td></tr>
<tr><td>15</td><td>Right-click the "Name" column header.</td></tr>
<tr><td>16</td><td>CLICK "Field Calculator". CLICK "Yes" to continue if prompted.</td></tr>
<tr><td>17</td><td>ENTER "<zone name>" in the code block. Ensure to include quotation marks.

Replace <zone name> with the appropriate name as follows.

<table><tr><th>Zone</th><th>Name</th></tr><tr><td>Wildlife Zone</td><td>"State Wildlife Habitat Priority Zone"</td></tr><tr><td>Water Quality Zone</td><td>"State Water Quality Priority Zone"</td></tr><tr><td>Air Quality Zone</td><td>"State Air Quality Priority Zone"</td></tr></table></td></tr>
<tr><td>18</td><td>CLICK "OK".</td></tr>
</table>

GPS Automation Tool

A Background

The GPS Automation Tool extracts specified CLUs and exported county CLU and converts features into points attributed with latitude, longitude, and a unique identifier.

The tool allows the State GIS Specialist to provide County Office users with:

- a point shapefile
- a map of the points for the measurement service
- spreadsheet of the XY coordinates for each point.

Tool outputs are associated with each other using a GPSID unique identifier.

B Requirements

The GPS Automation Tool:

- is available for both Desktop and Citrix and is designed for regular ArcMap
- should not be used with CLU Maintenance Tool or TERRA
- is intended to be run on a subset or selection. Do not run an entire CLU or CRP layer through this tool
- is available for download on the National FSA GIS SharePoint site and should be saved to C:\geodata\GPS_Points.

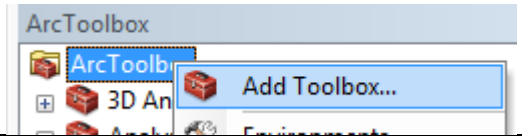
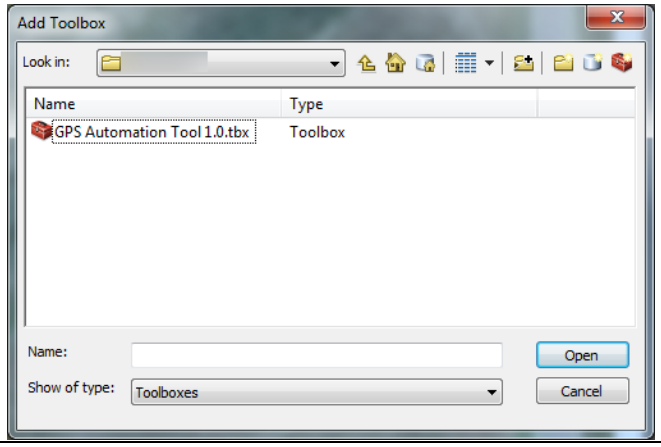
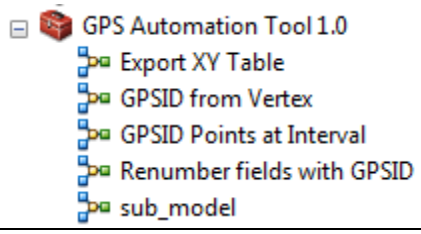
Users must:

- create the following folders and subfolders before to running models:
  - C:\geodata\GPS_Points
  - C:\geodata\gps\<yyyy>\Field_polygons
  - C:\geodata\GPS_Points\Point_XY_Tables
- create a geodatabase before running models:
  - C:\geodata\gps\<yyyy>\Field_polygons\Field_polygon.gdb

GPS Automation Tool (Continued)

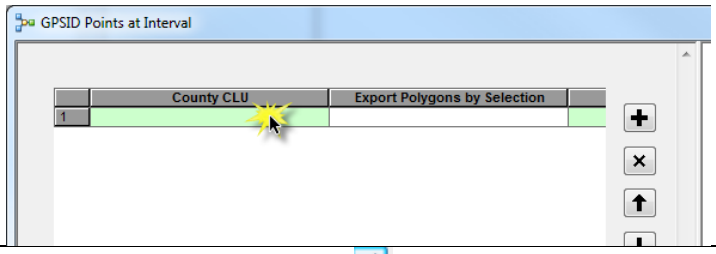
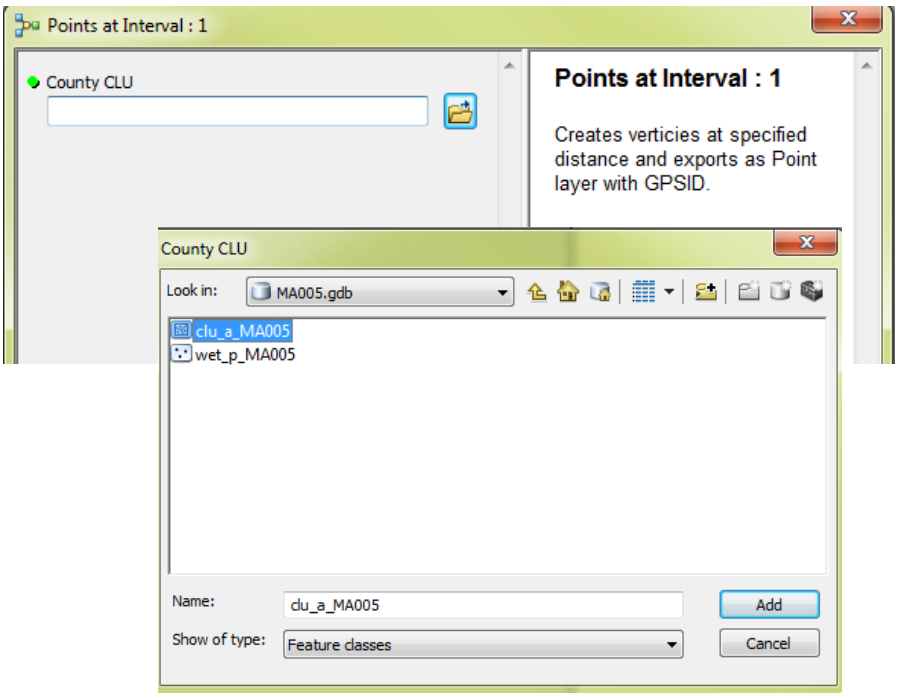
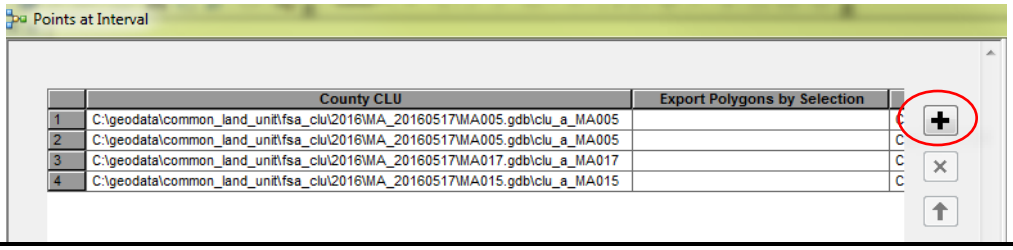
C Instructions for Creating and Displaying Points

Use these instructions to use the GPS Automation Tool to create and display points for upload to the GPS units.

Step	Instructions
1	Open ArcMap.
2	Open ArcToolbox and right-click and CLICK "Add Toolbox" to add a new toolbox. 
3	Navigate to C:\geodata\GPS_Points. 
4	Select "GPS Automation Tool 1.0.tbx" and CLICK "**Open**". File will display in ArcToolbox. 
5	Double-click on "GPSID Points at Interval".
6	GPS ID points at Interval window will be displayed.

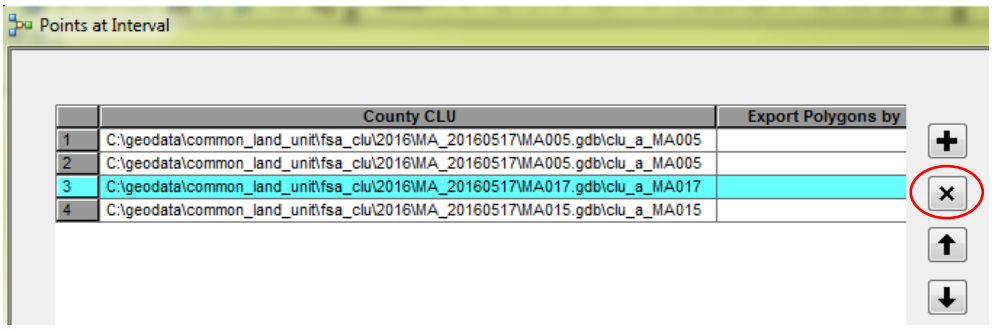
GPS Automation Tool (Continued)

C Instructions for Creating and Displaying Points (Continued)

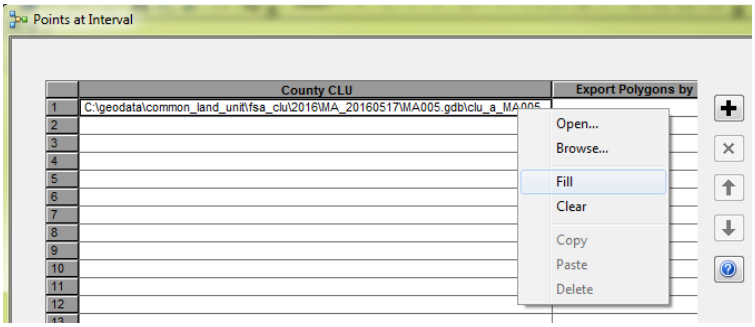
Step	Instructions
7	Double-click (or right-click and CLICK "Open") in the "**County CLU**" area. 
8	Click the "Browse" button to navigate to the most recent County CLU file geodatabase. Select the CLU layer and CLICK "**Add**" and "**OK**".  **Note:** Users can CLICK "+" to add additional files, if needed. 

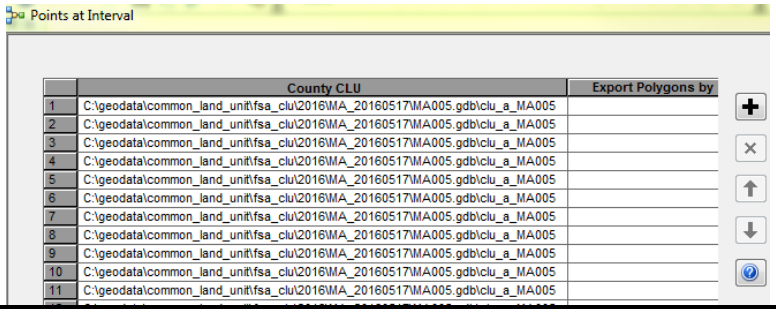
C Instructions for Creating and Displaying Points (Continued)

Step	Instructions
8 (Cntd)	**Note:** Users can also remove files by clicking on the file so that it highlights and then CLICK "**X**" to remove the layer.



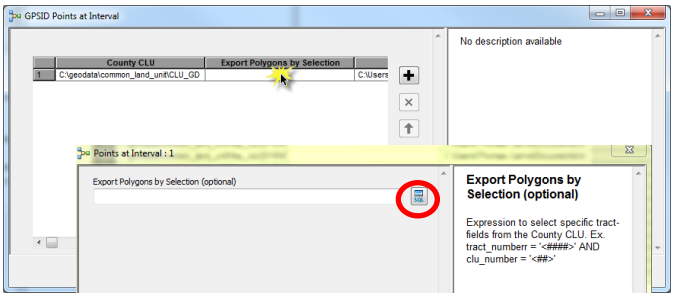
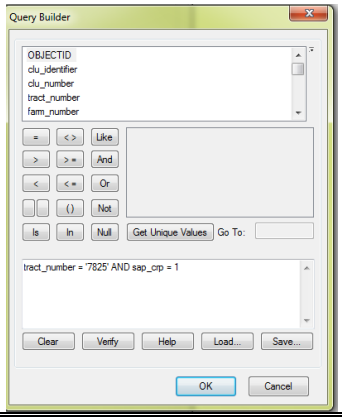
Note: If the user is exporting multiple fields from a common CLU, add rows for number of field polygons and right-click the first CLU input feature class. Then CLICK "Fill" and it will copy that layer into all rows.



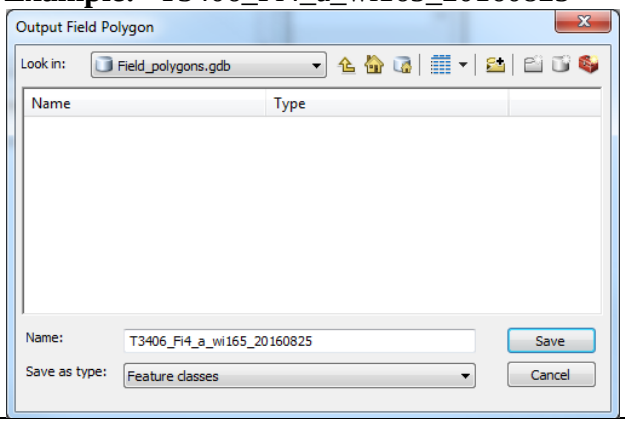
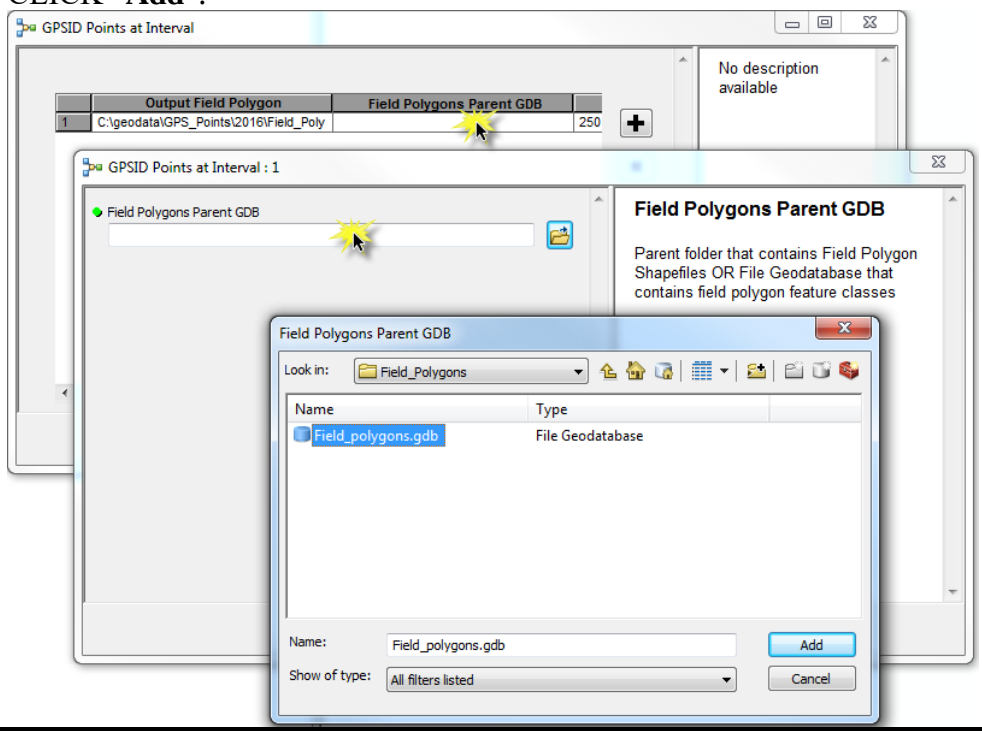


GPS Automation Tool (Continued)

C Instructions for Creating and Displaying Points (Continued)

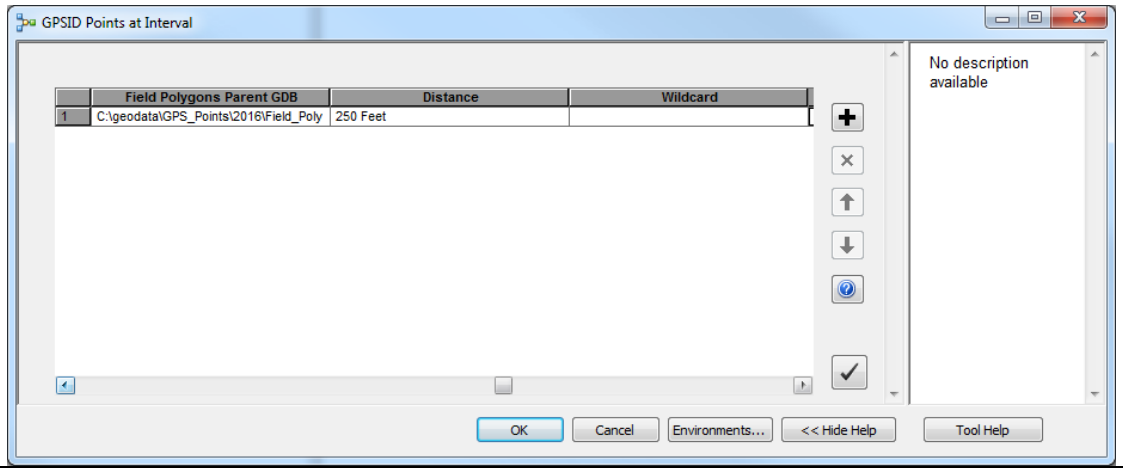
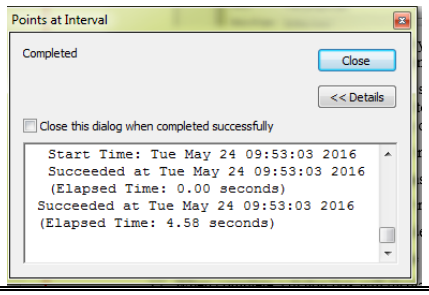
Step	Instructions
9	Double-click (or right-click and CLICK "Open") in the "**Export Polygons by Selection**" area and click the "SQL" button  . 
10	Using a SQL query, select target tracts/fields to export. For example: • to export CRP fields: tract_number = '<####>' AND sap_crp = 1 • to export a single field: tract_number = '<####>' AND clu_number = '<##>'. 

C Instructions for Creating and Displaying Points (Continued)

Step	Instructions
11	Scroll right to the next column. Open the "**Output Field Polygon**" area (right-click and CLICK "Open") to choose the output location and name for the export geometry. Recommended location is the file geodatabase C:\geodata\gps\2016\Field_polygons\Field_polygons.gdb Recommended file naming convention is: <tttt>_Fi<ff>_a_<stfips>_<yyyymmdd> where <tttt> is the tract number, <ff> is the field number, <stfips> is the FIPS code, and <yyyymmdd> is the current date. **Example:** T3406_Fi4_a_wi165_20160825 
12	Scroll right to the next column. Open "**Field Polygons Parent GDB**" and navigate to the Field_polygons.gdb in C:\geodata\gps\2016\Field_polygons\Field_polygon.gdb and CLICK "**Add**". 

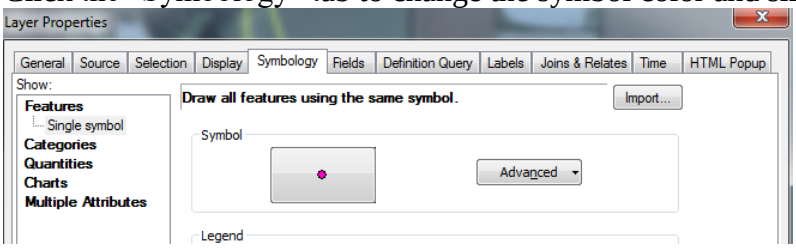
GPS Automation Tool (Continued)

C Instructions for Creating and Displaying Points (Continued)

Step	Instructions
13	Scroll right to the next "**Distance**" column sets the desired interval to create intermediate points between vertices. Tool defaults to 250 feet, which is recommended as best practice. **Note:** Deleting the "distance" and leaving this field blank will create GPS point shapefiles of just the existing vertices. 
14	Scroll right to the next "**Wildcard**" column is an optional filter to select only a subset of field polygon exports within GDB. **Example:** If the employee only wanted to create GPS Point shapefiles for exports on a specific day, write "*<yyyymmdd>". Asterisk denotes **any** characters: • a leading asterisk <*xxxx> means **any** text comes before • an ending asterisk <xxxx*> means **any** text comes after • text within asterisks <*xxxx*> means **any** text comes before or after.
15	In the next column, keep "**Output GPS Point Feature**" as default.
16	When the needed files are added to the tool, CLICK "**OK**" to run the tool.
17	When the "Complete a Dialog" box is displayed, CLICK "**Close**". 

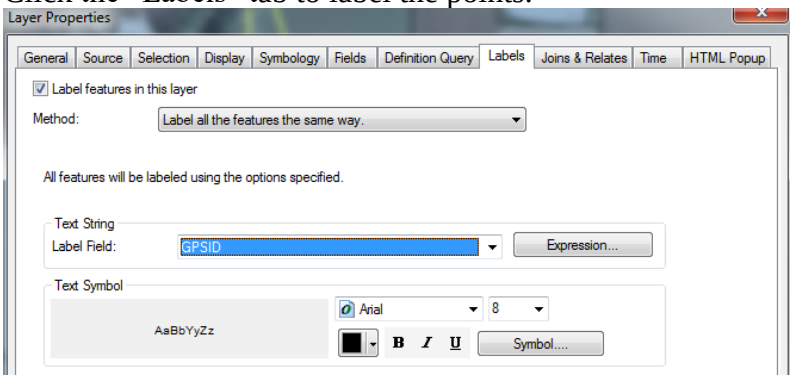
GPS Automation Tool (Continued)

C Instructions for Creating and Displaying Points (Continued)

Step	Instructions
18	Points can be added to ArcMap by clicking the "Add Data" button  . The point files created can be found by navigating to: C:\geodata\GPS_Points.
19	Zoom to field or fields. 
20	Double-click the points layer to change symbology and label points based on GPSID. • Click the "Symbology" tab to change the symbol color and size.  **Note:** GIS Specialist may have a symbology set that can be imported to standardize the symbol color and size used for GPS Points. Some adjustments may be needed based on scale and size of polygons. Refer to the State GIS Specialist for questions.

GPS Automation Tool (Continued)

C Instructions for Creating and Displaying Points (Continued)

Step	Instructions
20 (Cntd)	• Click the "Labels" tab to label the points.  • Check the "Label features in this layer" box and select "GPSID" in the "Label Field" drop-down menu. **Note:** GIS Specialist may have a symbology set that streamlines the steps needed for labeling the GPSID such as adding a halo, adjusting the font, size and color for best display with NAIP.
21	Field will display with the points labeled.  **Note:** User can screen capture the field labeled for reference when working in the field and print. States may also consider developing a map template for mapping and placing GPS Points. Labeling the fields, tract, and or farm number on the polygons can also be useful when using the images out in the field as reference.
22	Points can now be added to the GPS unit.

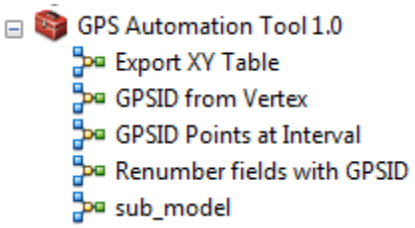
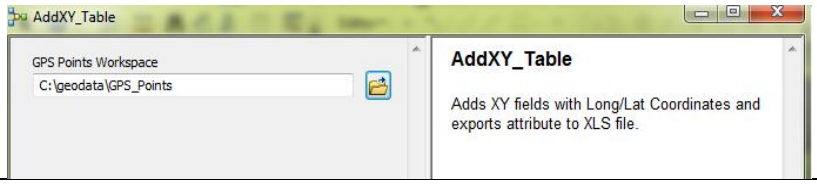
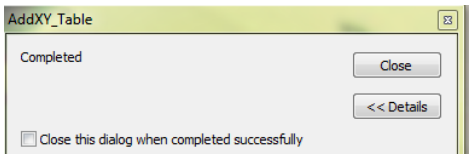
GPS Automation Tool (Continued)

D Instructions to Export XY Table Tool

Use this tool to create an Excel file with the XY coordinates of each GPSID point. Excel XY tables include fields (FID, clu_number, tract_number, farm_number, clu_classification_code, clu_calculated_acres, HEL_code, sap_crp, GPSID, X coordinate, Y coordinate).

Notes: This can only be run after the Points at Interval tool instructions in subparagraph C.

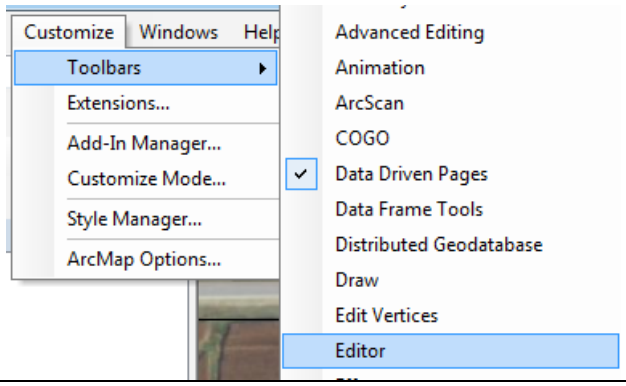
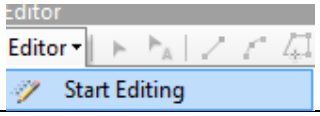
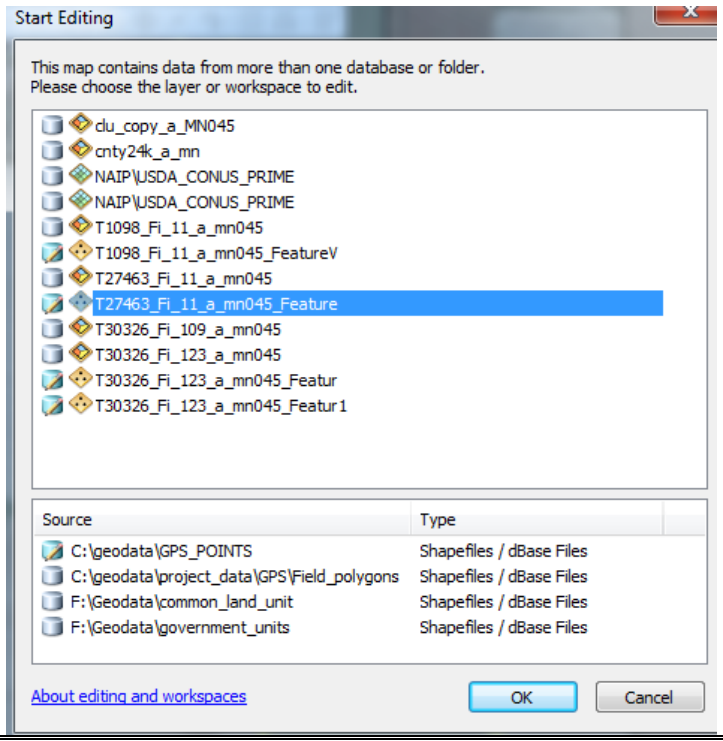
Coordinates default to input coordinate system of the GPS point files, which are set by the parent CLU fields from which they are exported.

Step	Instructions
1	Double-click "**Export XY Table**" on the GPS Automation Tool, to open the tool. 
2	Verify default file location of Point shapefiles is C:\geodata\GPS_Points. 
3	CLICK "**OK**".
4	When the "Complete a Dialog" box is displayed, CLICK "**Close**".  Excel files will be located in the output folder C:\geodata\GPS_Points\Point_XY_Tables. The file name is automatically copied from GPS Point shapefile.

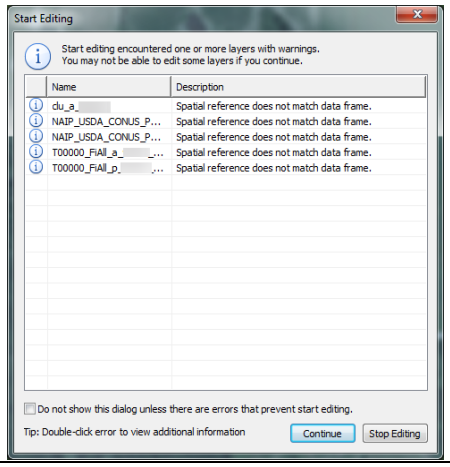
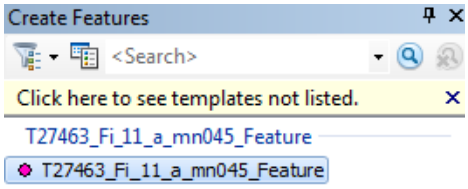
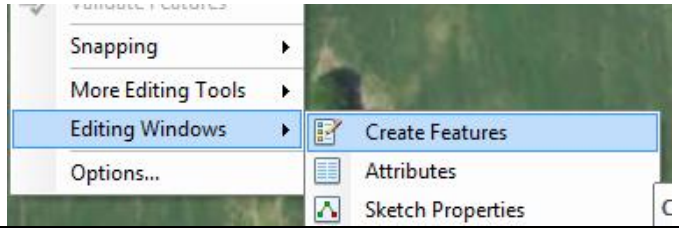
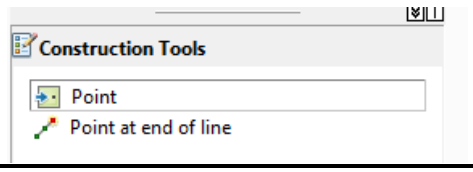
GPS Automation Tool (Continued)

E Instructions for Editing Points and Renumbering

Use these instructions to add additional points or delete points that will not be needed. The remaining points can then be renumbered using the "Renumber fields with GPSID" tool.

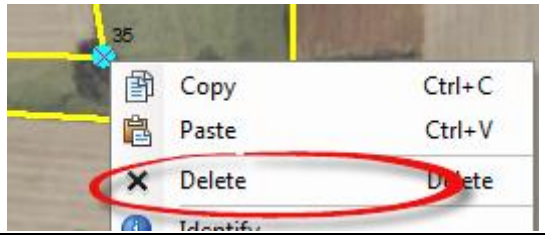
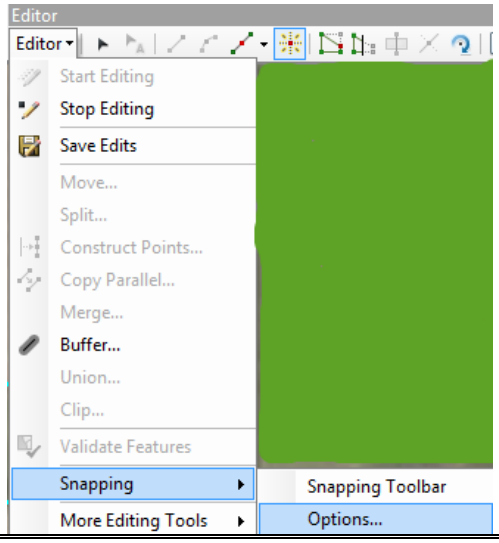
Step	Instructions
1	Start an edit session in ArcMap after the points have been created. 
2	CLICK "Start Editing" on the toolbar. 
3	Select the points that will need to be adjusted and CLICK "**OK**". 

E Instructions for Editing Points and Renumbering (Continued)

Step	Instructions
4	CLICK "**Continue**". 
5	Click the points that will be edited.  **Note:** If the Create Feature window does not automatically open, on the Editor Toolbar, CLICK "Editor", "Editing Windows", and "Create Features" to open the Create Feature window. 
6	CLICK "**Point**" under "Construction Tools". 

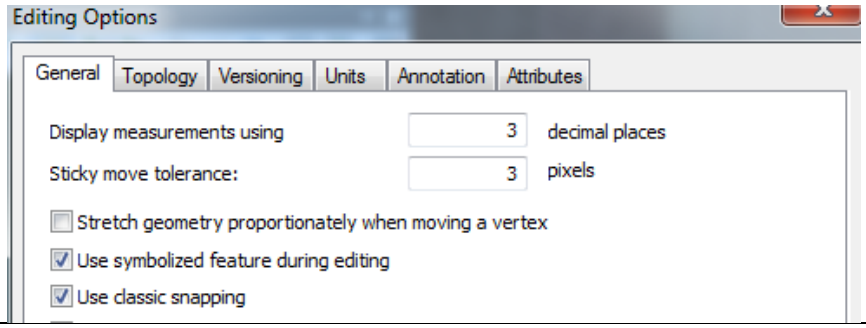
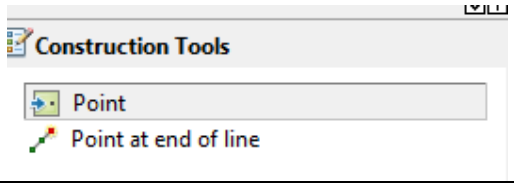
GPS Automation Tool (Continued)

E Instructions for Editing Points and Renumbering (Continued)

Step	Instructions
7	Click the "Edit" tool in the Editor Toolbar. 
8	To delete a point, click the point to select it, right-click on it, and CLICK "Delete". 
9	To add points, the user must set snapping tolerance. CLICK "Editor", "Snapping", and "Options" from the Editor Toolbar. 

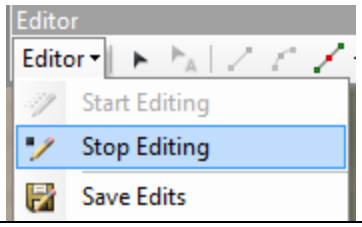
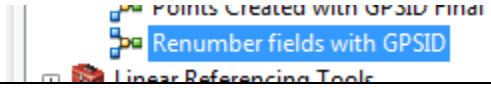
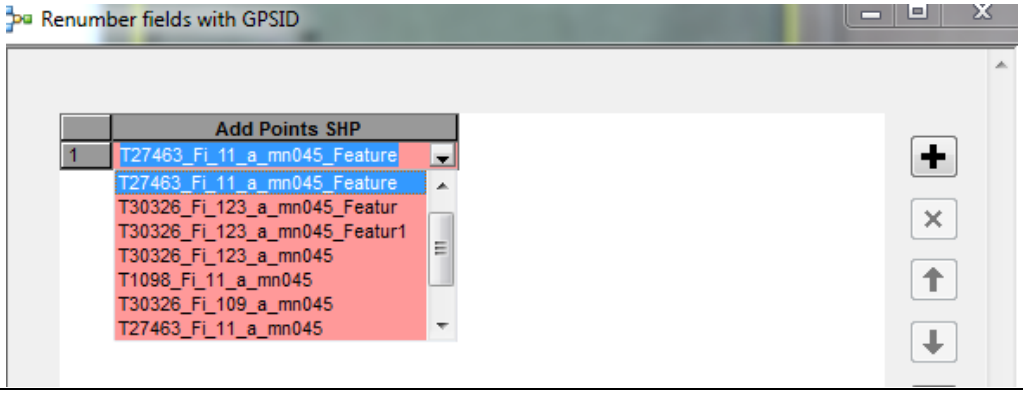
GPS Automation Tool (Continued)

E Instructions for Editing Points and Renumbering (Continued)

Step	Instructions
10	Set Editing Options to match this graphic. 
11	CLICK "**Point**" under "Construction Tools". 
12	Add points as needed. Move the cursor along a line, observe the cursor is hugging or sticking to the line, if this occurs the snapping is set properly. Click the line to add points. Points will be added as 0 for the GPSID. 

GPS Automation Tool (Continued)

E Instructions for Editing Points and Renumbering (Continued)

Step	Instructions
13	When finished, CLICK "Editor" and "Stop Editing" from the Editor Toolbar. 
14	A dialog box will display asking to save the edits. CLICK "**Yes**" to save edits.
15	Return to ArcToolbox and open the GPS Automation Tool 1.0. 
16	CLICK "**Renumber fields with GPSID**".
17	Select the point layer file that was edited and needs to be renumbered. 
18	CLICK "**OK**".
19	CLICK "**Close**". The renumbering is completed with the GPSID updated to a new sequence.

Reprojecting Shapefiles for Use in CRM Farm Records

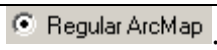
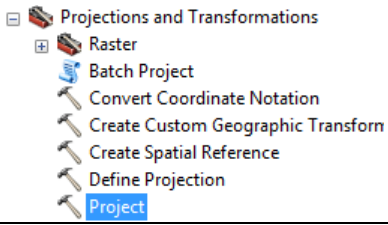
A Introduction

Local geographic data is generally stored in a projection other than WMAS. Shapefiles must be reprojected before being added to CRM Farm Records.

Shapefiles that are downloaded from a GPS unit may contain Z-values for elevation data and M-values for route data. These values must be disabled before adding a shapefile to CRM Farm Records. These options are disabled by changing the environment settings of the Project tool.

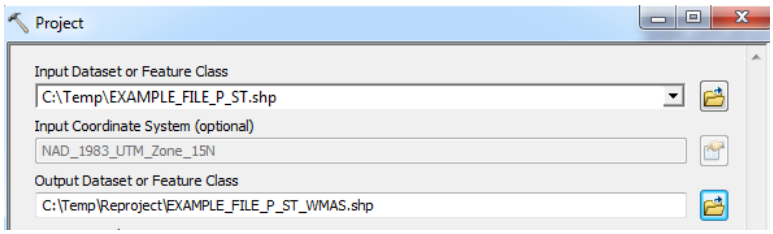
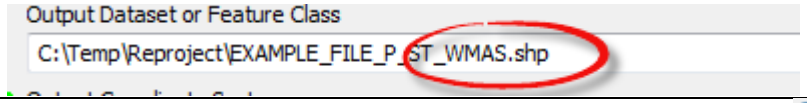
B Instructions

These instructions identify the steps for reprojecting shapefiles for use in CRM Farm Records.

Step	Instructions
1	Within the Citrix environment, start ArcMap.
2	On the Splash Screen, click the "Regular ArcMap" radio button  .
3	CLICK "**Start Using ArcMap**".
4	Within ArcMap, click the "ArcToolbox" icon  .
5	Expand the Data Management Tools toolbox.
6	Expand the Projections and Transformations toolset. 
7	Double-click the "Project" tool.

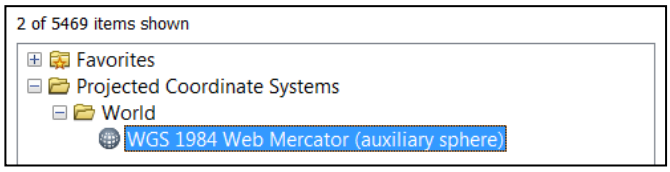
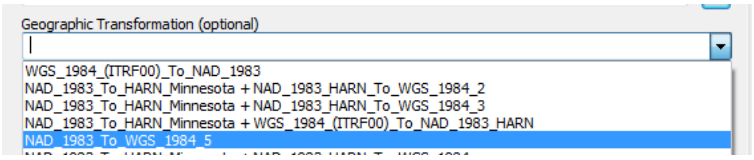
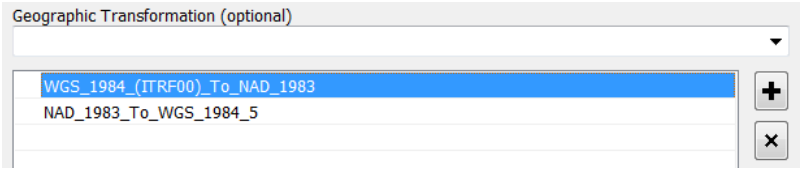
Reprojecting Shapefiles for Use in CRM Farm Records (Continued)

B Instructions (Continued)

Step	Instructions
8	Under Input Dataset or Feature Class, browse to the directory where the shapefile is stored, select it, and add it.  **Note:** If the data being reprojected is in a coordinate system other than UTM, contact the State GIS Specialist for assistance.
9	Under Output Dataset or Feature Class, specify the name of output dataset. Add "WMAS" to the end of the file name, before the .shp extension. 
10	Under Output Coordinate System, click the "Browse" button  .
11	Within the "Spatial Reference Properties" dialog box, ENTER "web" in the "Search" box, and click the "Search" button. 
12	Under the search results, expand the Projected Coordinate Systems and World folders.

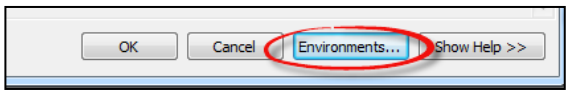
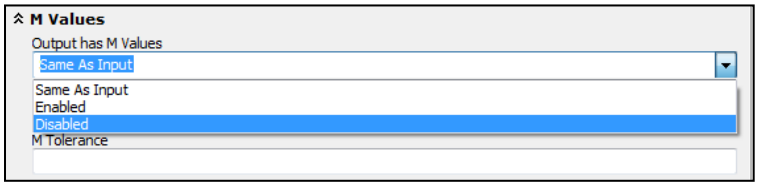
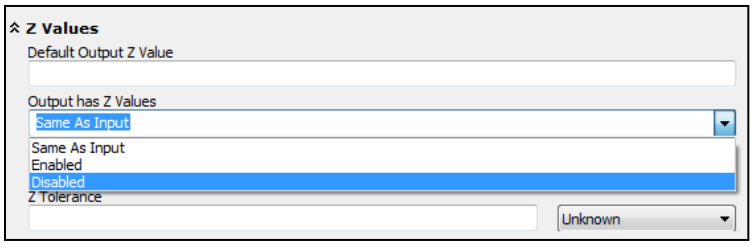
Reprojecting Shapefiles for Use in CRM Farm Records (Continued)

B Instructions (Continued)

Step	Instructions
13	CLICK "WGS 1984 Web Mercator (auxiliary sphere)".  **Note:** Click the star to make this a favorite. This will save the projection under the "Favorites" folder at the top.
14	CLICK "**OK**".
15	Under "Geographic Transformation", select "NAD_1983_T0_WGS_1984_5" from the drop-down menu.  If another transformation displays in the Geographic Transformation list, highlight it and remove it by clicking the  to the right of the list.  **Note:** Only 1 transformation can be included on the list and it must be NAD_1983_To_WGS_1984_5.

Reprojecting Shapefiles for Use in CRM Farm Records (Continued)

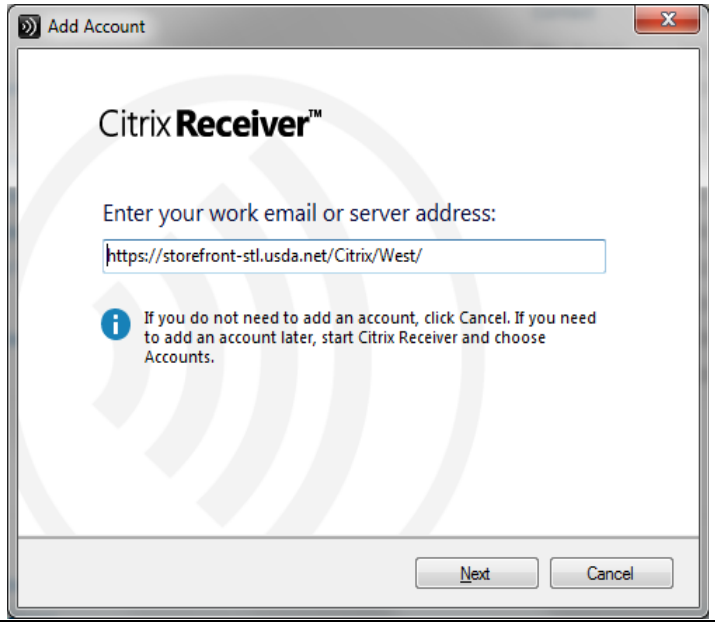
B Instructions (Continued)

Step	Instructions
16	If GPS data is being projected, CLICK "**Environments**". If other data is being projected, skip to step 17.  • Expand the M values environment and set the "Output has M Values" drop-down menu to "Disabled".  • Expand the Z values environment and set the "Output has Z Values" drop-down menu to "Disabled".  • CLICK "**OK**" to save the Environment Settings.
17	CLICK "**OK**" to reproject the data.
18	When the tool has successfully completed, the reprojected data can now be copied from the Citrix environment to the user's computer (F:\geodata\project_data\fsa\Subfolder) and added to CRM Farm Records.

Access Citrix

*--A Initial Setup of the Citrix Workspace

These instructions identify the steps to set up the Citrix Environment for the first time on any--* machine to identify the correct domain. Any questions regarding accessing Citrix Environment should be directed to the State GIS Specialist.

Step	Instructions
1	*--Right-click the "Citrix Workspace" icon in the Windows System Tray  . Users may need to click the arrow to expand hidden icons. **Note:** Users may choose to drag the "Citrix Workspace" icon to the system tray--* (to the right of the arrow). This will eliminate the need to click the arrow to access the icon in the future.
2	CLICK "**Open**".
3	ENTER "**https://storefront-kcc.usda.net/Citrix/West**" in the Add Account window. 
4	CLICK "**Next**".
5	Enter the LincPass PIN when prompted.
6	CLICK "Desktops" at the top of the Citrix Receiver Screen.

Access Citrix (Continued)

***--A Initial Setup of the Citrix Workspace (Continued)**

Step	Instructions
7	Click the "Star" icon next to FSA GISO PROD.  FSA GISO PROD will be added to the Favorites Screen for future use. **Note:** The "Star" icon only needs to be clicked once to add to the Favorites screen. This step does not need to be repeated once the desktop has been added.
8	CLICK "FSA GISO PROD". A new Citrix Desktop Viewer window will display. **Note:** The new window may display behind other open windows on the desktop.

--*

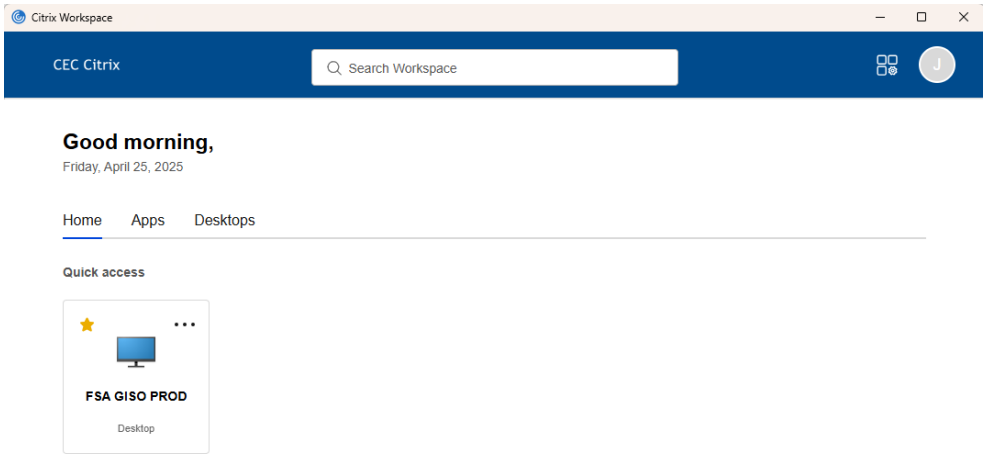
Access Citrix (Continued)

* * *

--B Opening Citrix Workspace After Initial Setup Complete--

These instructions identify the steps to open the Citrix Environment after the initial setup is complete.

*--

Step	Instructions
1	Right-click the "Citrix Workspace" icon in the Windows System Tray  . Users may need to click the arrow to expand hidden icons.
2	CLICK "Open".
3	Enter the LincPass PIN if prompted.
4	Click the "FSA GISO PROD" icon on the Citrix Reciever window. 
5	A new Citrix Desktop Viewer window will display. **Note:** The new window may display behind other open windows on the desktop.

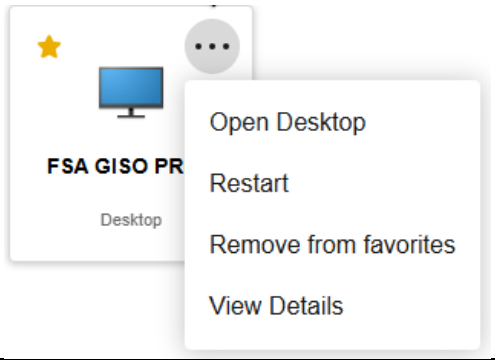
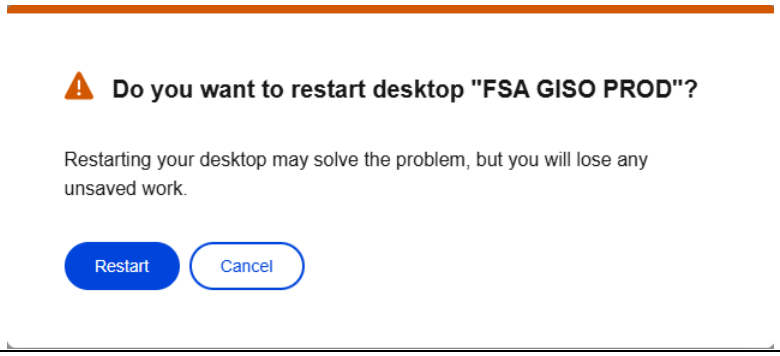
--*

Access Citrix (Continued)

C Restarting Citrix

At times there may be a need to restart the Citrix Environment. This will terminate any open sessions for the user including any open applications within Citrix. Unsaved changes in any open application will be lost.

*--

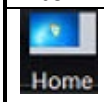
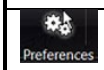
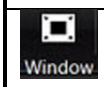
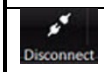
Step	Instructions
1	If open, close the Citrix Environment window.
2	CLICK "More Options" next to the FSA GISO PROD. 
3	CLICK "Restart".
4	CLICK "Restart" again when prompted to confirm. 
5	If prompted, enter the LincPass PIN. Once Citrix Environment has restarted, a new Citrix Receiver window will display.

--*

Access Citrix (Continued)

--D Citrix Workspace Drop-Down Menu--

Menu items at the top of the Citrix window are described in the following table.

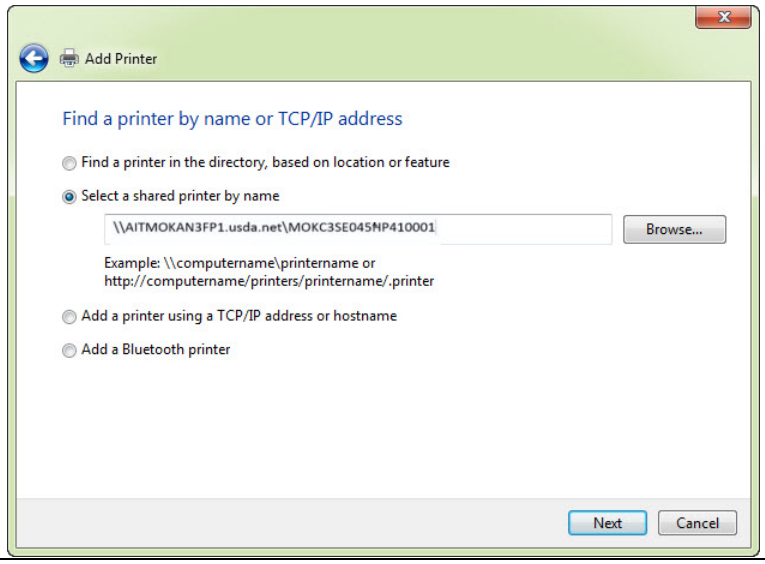
Item	Description
	The "**Home**" button minimizes the Citrix window and returns users to the local desktop. Click the Citrix application in the Windows Task Bar to return to the Citrix session.
	The "**Ctrl+Alt+Del**" drop-down button functions sends the keyboard command to the Citrix environment. This may be necessary to access the Task Manager or to prompt a login screen.
	The "**Preferences**" button provides settings for Citrix Receiver Client behavior, including: • local file access permissions • camera and microphone access • display settings.
	The "**Window**" button restores the Citrix Receiver window to its original size. After clicking this button, the drop-down menu changes the "**Window**" button into a "**Full-screen**" button, which expands the Citrix Receiver window to full screen resolution and will hide the local desktop.
	Pressing the "**Disconnect**" button will close the Citrix Receiver window but maintain the user's Citrix session. **Note:** The "Disconnect" button functions the same way as the "X" in the corner of the Citrix window.

Access Citrix (Continued)

E Printing in Citrix

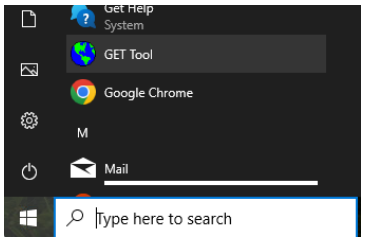
The Citrix Universal Print Driver is automatically available with the installation of Citrix Receiver v14 and does not require any installation by Citrix users. The Citrix UPD will automatically print to the default printer, but all printers will be created.

If a user finds that a desired printer is not available within Citrix.

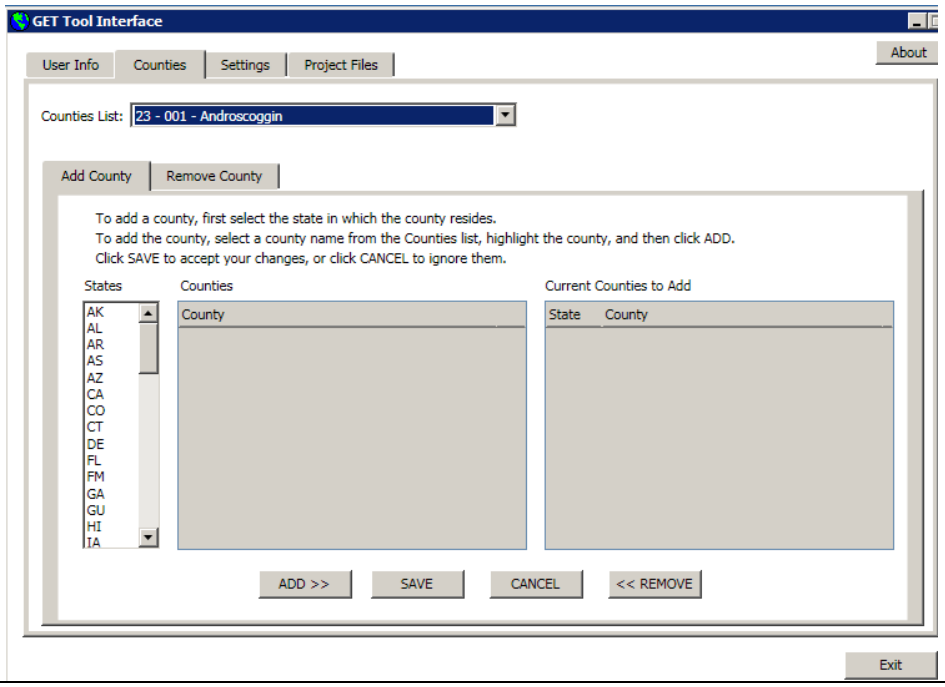
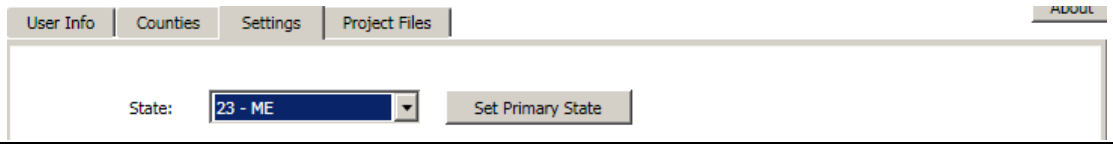
Step	Instructions
1	*--In Citrix, CLICK "Start", "Settings", and "Devices".
2	CLICK "Printers and Scanners".
3	CLICK "Add a printer or scanner".--*
4	CLICK "The printer that I want isn't listed".
5	Click the "Select a shared printer by name" radio button.
6	Enter the printer name and location. 
7	CLICK "**Next**". **Note:** Users may need to install a printer driver when adding the printer.
8	CLICK "**Finish**" to complete installation of the printer.

Configuring GET

GET allows users to change default settings for the CLU Maintenance Tool and TERRA. This setup will only need to be done once. GET will be configured with the following instructions.

Step	Instructions
1	From the Citrix environment, CLICK "Start" * * * and "GET Tool". *--  --* **Note:** A shortcut to the GET application may be added to the desktop within Citrix. See **paragraph 501** for Citrix access.
2	GET will open on the "User Info" tab. User login information will automatically populate based on information in CBS. Click the "**Counties**" tab.
3	The "Counties" tab allows the user to add an administrative county to CLU Maintenance Tool and TERRA. In the "States" list box, click the 2-letter abbreviation of the administrative State.
4	Select the county from the "Counties" list box. **Note:** Only add the administrative counties the user is authorized to work in. Counties where land physically located in another county but administered by the user's county does not need to be added separately.
5	CLICK "**Add**".

Configuring GET (Continued)

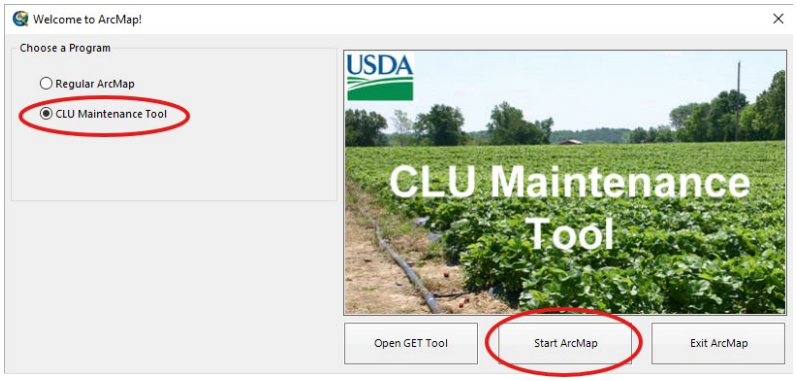
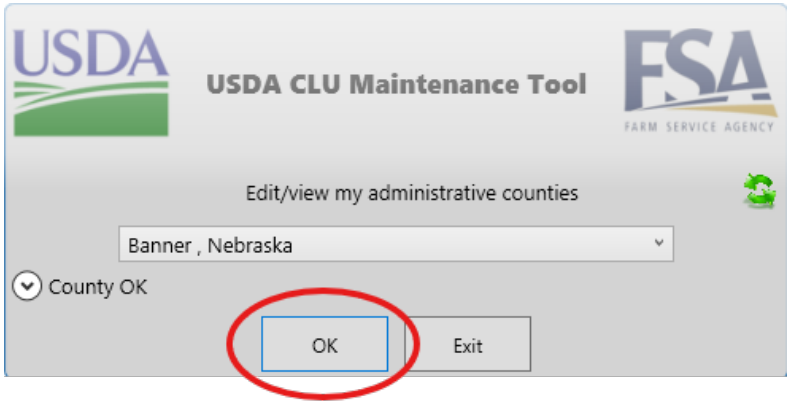
Step	Instructions
6	CLICK "**Save**" to save the changes. 
7	Click the "**Settings**" tab. The "Settings" tab allows users to change default directories for CLU Maintenance Tool and TERRA. Do not change settings unless instructed by the State GIS Specialist.
8	Ensure that the Primary Administrative State is selected in the "State" drop-down menu. CLICK "**Set Primary State**". 
9	CLICK "**Save Settings**".
10	CLICK "**Exit**".

Accessing CLU Maintenance Tool

A Open the CLU Maintenance Tool Within the Citrix Desktop

After accessing the Citrix Desktop the CLU Maintenance Tool can be opened from the Start Menu or a desktop shortcut.

*--

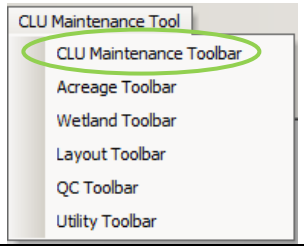
Step	Instructions
1	From the Citrix Desktop, CLICK "Start", "ArcGIS", and "ArcMap 10.8.2". A shortcut to ArcMap may also be created on the user desktop. See **paragraph 501** for Citrix access. **Note:** A saved county map document that includes the CLU Maintenance Tool, county CLU and wetland feature classes, and all other feature classes as needed for State mapping or tasks can also be opened.
2	In the Splash Screen, CLICK "CLU Maintenance Tool".
3	CLICK "**Start Using ArcMap**". *-- 
4	CLICK "**Yes**" when prompted to log in.
5	Select the applicable county and CLICK "**OK**".  The CLU, wetland, and imagery for the selected county will load into ArcMap.

--*

CLU Maintenance Toolbar

A Accessing the CLU Maintenance Toolbar

These instructions access the CLU Maintenance Toolbar.

Step	Instructions
1	From an open ArcMap map document with the CLU Maintenance Tool loaded, CLICK "CLU Maintenance Tool" and "CLU Maintenance Toolbar". 
2	The CLU Maintenance Toolbar will open. 

B CLU Control Panel

The CLU Control Panel allows users to add specific types of data to the CLU Maintenance Tool map document. Adding data through the CLU Control Panel enables specific functionality, including CLU and PLSS search tools.

The CLU Control Panel is organized into 5 tabs:

- CLU
- Data Layers
- Imagery
- Web Services
- Other Layers.

CLU Maintenance Toolbar (Continued)

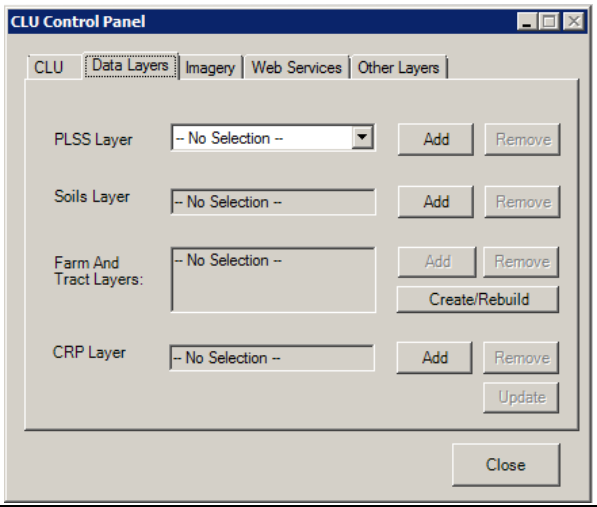
C Switch Administrative CLU's

The "CLU" tab within the CLU Control Panel allows users to switch from one administrative CLU to another. This function is only used for combined or shared managed County Offices. Administrative counties must be set in GET before they can be selected in the "CLU" tab. See **Exhibit 87**.

Step	Instructions
1	Click the CLU Control Panel .
2	On the "CLU" tab, CLICK "Switch".
3	Select the desired county from the drop-down menu.
4	CLICK "OK".
5	CLICK "Close" on the CLU Control Panel.

D Add and Remove PLSS Layer

To search by PLSS, the layer must be identified in the CLU Control Panel.

Step	Instructions
1	Click the CLU Control Panel .
2	Click the "Data Layers" tab. 

CLU Maintenance Toolbar (Continued)

D Add and Remove PLSS Layer (Continued)

Step	Instructions
3	Click the "PLSS Layer" drop-down menu.
4	If the PLSS layer has already been added to the map document, select it from the drop-down menu and skip to step 9.
5	CLICK "**Add**" next to the "PLSS Layer" drop-down menu.
6	Navigate to K:\<ST>\Geodata\Cadastral.
7	Select the appropriate PLSS layer.
8	CLICK "**Add**".
9	CLICK "**Close**" on the CLU Control Panel.

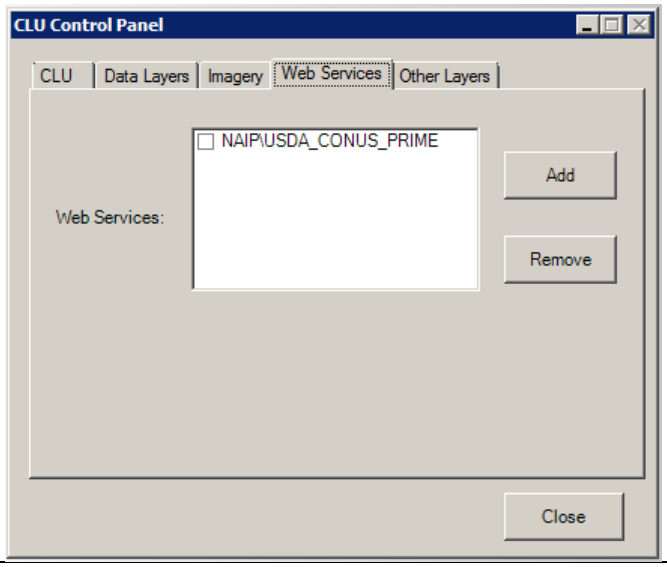
To remove the PLSS layer from the map document.

Step	Instructions
1	Open the CLU Control Panel.
2	Click the "Other Layers" tab.
3	Place a checkmark next to the PLSS layer in the list of other layers.
4	CLICK "Remove".
5	CLICK "Close" on the CLU Control Panel.

CLU Maintenance Toolbar (Continued)

E Add Imagery Web Services

CLU Maintenance Tool will automatically add NAIP services to the map document. Additional image services, including historical imagery layers, can be added.

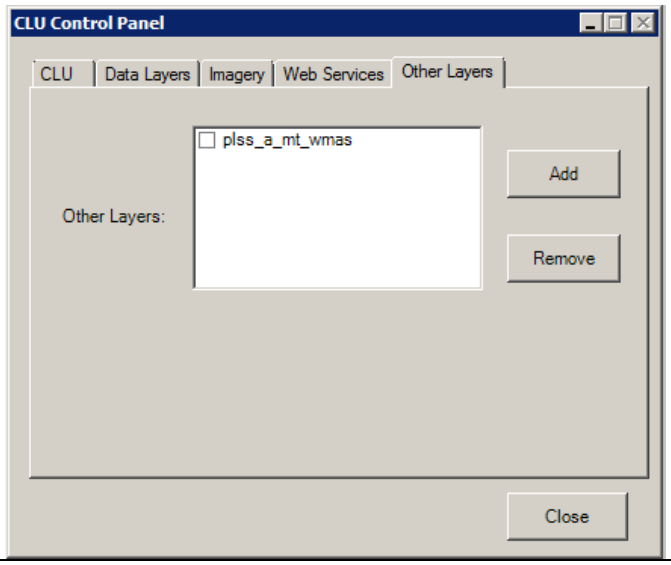
Step	Instructions
1	Open the CLU Control Panel.
2	Click the "Web Services" tab. 
3	CLICK "**Add**".
4	Web service data may be provided as a layer file or by connecting to a web service. Work with the state GIS specialist to identify how the data should be accessed.
5	CLICK "**Add**".
6	CLICK "**Close**" on the CLU Control Panel.

Layers can be removed by checking the layer and then clicking "Remove".

CLU Maintenance Toolbar (Continued)

F Add Other Layers

The following instructions outline adding additional other layers to the map document.

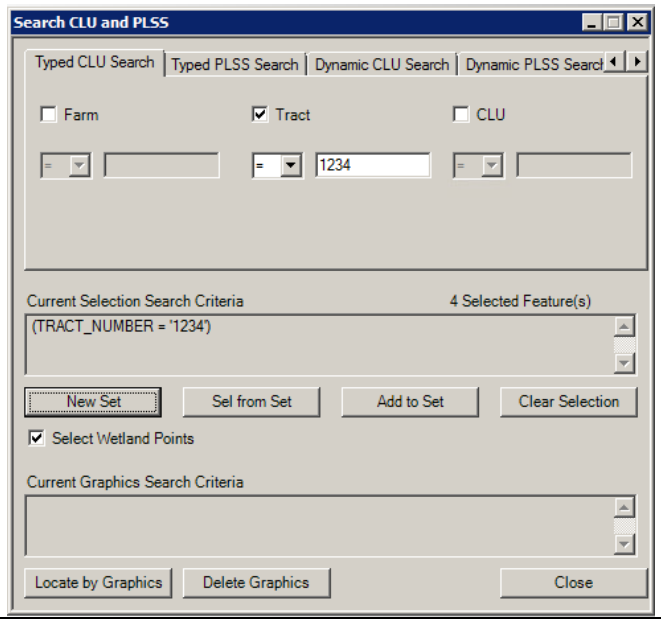
Step	Instructions
1	Open the CLU Control Panel.
2	Click the "Other Layers" tab. 
3	CLICK "Add".
4	Navigate to the desired location in the "K:\<ST>\GeoData" folder.
5	Select the desired data.
6	CLICK "**Add**".
7	CLICK "**Close**" on the CLU Control Panel.

Layers can be removed by checking the layer and then clicking "Remove".

CLU Maintenance Toolbar (Continued)

G Search CLU

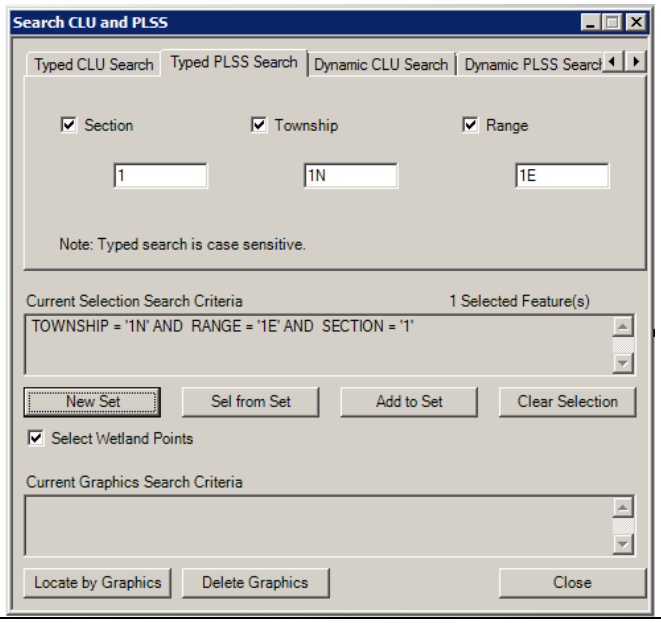
The following instructions identify how to use the Typed CLU Search to identify specific farms, tracts, or CLU's.

Step	Instructions
1	On the CLU Maintenance Toolbar, click the "Search CLU and PLSS" tool .
2	On the "Typed CLU Search" tab, place a checkmark next to the desired search criteria. **Note:** Do not search for CLU number only, as this will identify all CLU's with the same CLU number in the CLU layer.
3	Enter the desired numbers in the appropriate text boxes.
4	CLICK "New Set". 
5	If multiple farms or tracts are to be selected at 1 time: • enter the first farm or tract in steps 3 and 4 • enter the next number • CLICK "Add to Set" • repeat for all desired farms or tracts.
6	CLICK "Close".

CLU Maintenance Toolbar (Continued)

H Search PLSS

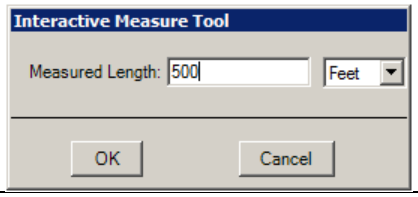
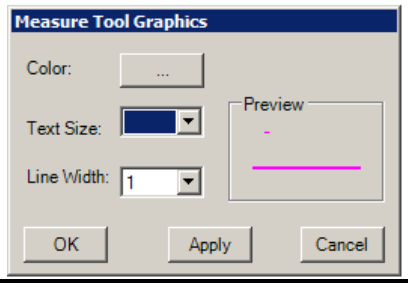
The following instructions identify how to use the Typed PLSS Search to identify specific sections.

Step	Instructions
1	On the CLU Maintenance Toolbar, click the "Search CLU and PLSS" tool .
2	On the "Typed PLSS Search" tab, place a checkmark next to Section, Township, and Range.
3	Enter the respective numbers in the appropriate text boxes. **Note:** Township and Range direction may need to be specified. Consult with the State GIS Specialist for specific details of the PLSS dataset. 
4	CLICK "**New Set**".
5	If multiple sections are to be selected at 1 time: • enter the first section in steps 3 and 4 • enter the next number • CLICK "Add to Set" • repeat for all desired sections.
6	CLICK "Close".

CLU Maintenance Toolbar (Continued)

I Measure Tool

The Measure Tool is used to create distance measurements. Graphics created by the tool can be converted into a shapefile for use in CRM Farm Records.

Step	Instructions
1	On the CLU Maintenance Toolbar, click the "Measure" tool. A new mouse cursor will display .
2	Click a point on the map to begin drawing a line segment.
3	Continue clicking to add vertices to the line segment, if necessary.
4	Double-click to finish drawing the line segment.
5	The Interactive Measure Tool window will be displayed. The drawn line distance will display in the "Measured Length" text box. To change the length of the line segment, enter in a new value and CLICK "OK". The line segment will be modified to match the specified value. 
6	The "Delete Measure Graphic" tool can be used to delete all graphics drawn by the "Measure" tool. Click the tool, then CLICK "Yes" to confirm that all graphics will be deleted.
7	Graphics created by the Measure Tool can be modified to adjust the color, text size and line width. Click the "Measure Tool Graphics" button to access the settings window. 

Acreage Toolbar

A Accessing the Acreage Toolbar

The Acreage Toolbar is accessed in a CLU Maintenance Tool map document by clicking "CLU Maintenance Tool" and "Acreage Toolbar".

B Draw a New Acreage Graphic

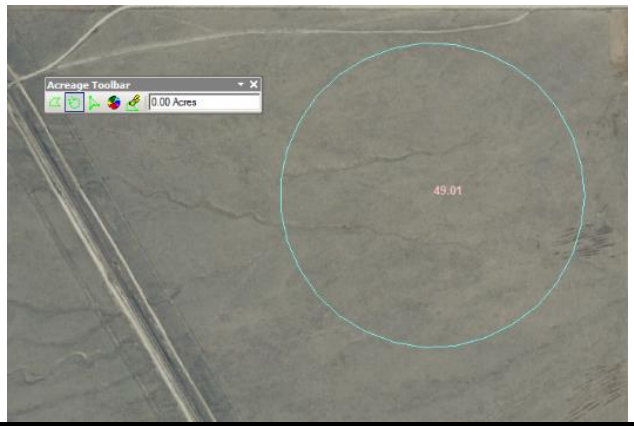
This function allows the user to calculate acreage of any area by drawing a graphic shape around the area of interest. The graphic displays in blue with an acreage label indicating the acreage within the area drawn. Multiple graphics can be created.

Step	Instructions
1	Click the "Draw New Acreage Graphic" tool on the Acreage Toolbar.
2	Click once on the point of beginning to begin drawing the graphic.
3	Click at each point a new vertex needs to be added.
4	Double-click to finish the graphic. The determined acres will display at the center of the graphic.  **Note:** Acreage graphics must have a minimum of 3 vertices.

Acreage Toolbar (Continued)

C New Circular Acreage Graphic

The Circular Acreage Graphic function allows the user to calculate acreage of any area by drawing a circular graphic shape over the area of interest. The graphic displays in blue with an acreage label indicating acreage within the area drawn.

Step	Instructions
1	Click the "New Circular Acreage Graphic" tool on the Acreage Toolbar.
2	Click and hold the mouse button at the center of the circle to be drawn.
3	Drag the cursor away from the center. A temporary gray graphic will display as the cursor is being dragged.
4	Move the cursor to the desired boundary location and release the mouse button. 

Acreage Toolbar (Continued)

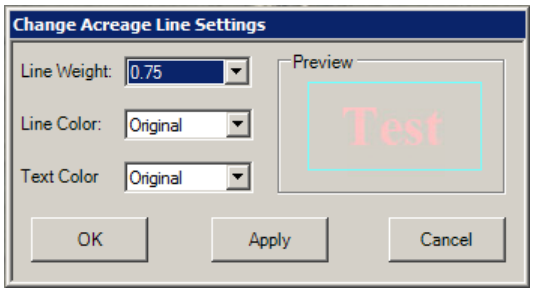
D Acreage Graphic Vertex Editor

This function resizes or reshapes the acreage graphic by adjusting the vertices of the graphic.

Step	Instructions
1	Click the "Acreage Graphic Vertex Editor" tool.
2	Click the acreage graphic to select it.
3	Click the acreage graphic again to show the vertices. 
4	Click and drag on an existing vertex to move the boundary. To remove an existing vertex, right-click and CLICK "Delete Vertex". To add a vertex, right-click a boundary segment and CLICK "Add Vertex". Click and drag within the acreage graphic to move the graphic to a new location.

E Change Acreage Graphic Symbol

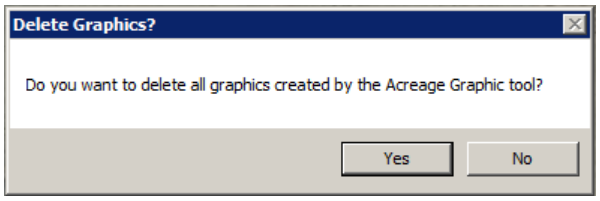
The "Change Acreage Graphic Symbol" tool allows the user to adjust the line color, text color, and the line width of the measuring graphic. CLICK "Apply" and then "OK" to update the settings. To opt out of changing the settings, CLICK "Cancel".



Acreage Toolbar (Continued)

F Delete Acreage Graphic

The “Delete Acreage Graphic” removes all acreage graphics drawn by this tool. After clicking the button, the user receive the following confirmation message box.



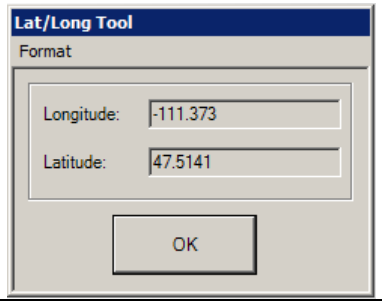
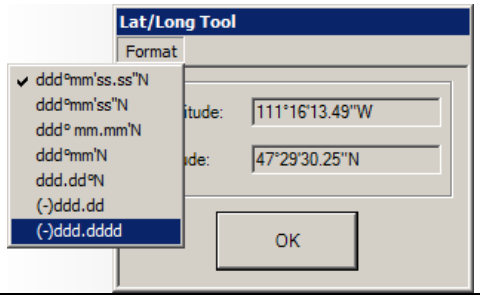
Utility Toolbar

A Accessing the Utility Toolbar

The Utility Toolbar is accessed in a CLU Maintenance Tool map document by clicking “CLU Maintenance Tool” and “Utility Toolbar”.

B Lat/Long Tool

This tool identifies the latitude and longitude of a user defined point. To use the tool, follow this table.

Step	Instructions
1	Click the “Lat/Long” tool located in the Utility Toolbar. The cursor will then change to a crosshair.
2	Click the point of interest. The “Lat/Long Tool” dialog box will display. 
3	If necessary, change the format of the latitude and longitude by clicking the “Format” drop-down menu. 
4	CLICK “OK” to close the Lat/Long Tool window.

C Subset Tool

See **Exhibit 19**.

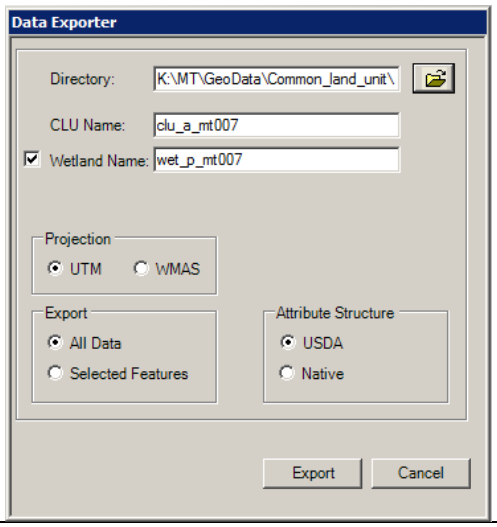
Utility Toolbar (Continued)

D Export CLU Data

The Export CLU Data tool allows the user to export the CLU and wetland data in its entirety or based on a selection. If no CLU data is selected, the entire county CLU dataset will be exported. If a selection is made in ArcMap, the user can choose to export only the selected CLU data and the wetlands points within each selected CLU.

By default, the exported output files are in UTM projection, which shall be used when exporting for placing on the F:\ drive for NRCS use.

The following are the instructions to export the CLU in its entirety for use by NRCS.

Step	Instructions
1	CLICK "Export CLU Data"  .
2	Click the "Browse" button for the directory.
3	Navigate to "K:\<ST>\GeoData" folder.
4	Select the "Common_land_unit" folder.
5	CLICK "Add". 
6	Accept all of the remaining defaults.
7	CLICK "Export".

ArcGIS Data Remediation Tool

A Introduction

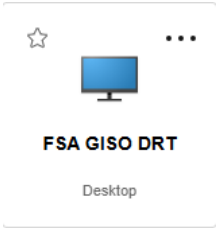
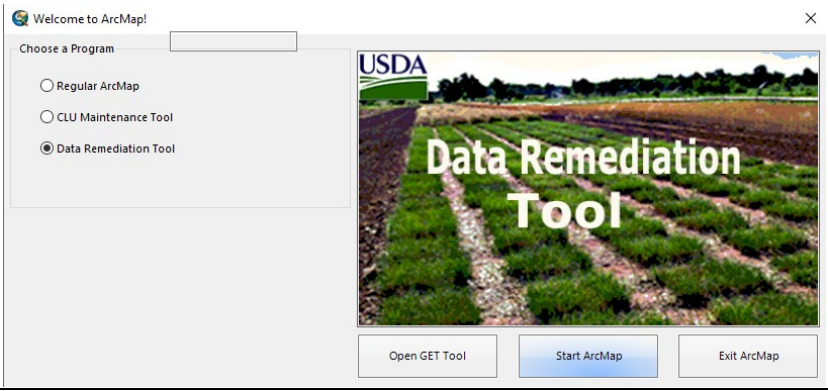
The ArcGIS DRT allows authorized data remediation administrators to correct or revise attributes in the county CLU layers through the Citrix environment rather than in CRM Farm Records.

Important: DRT should only be used to make corrections because of problems that have occurred in CRM Farm Records. Using DRT to circumvent any program requirement such as completing a reconstitution or nonagricultural determination is not authorized.

B Instructions to Access DRT

These instructions identify the steps to access the ArcGIS DRT within Citrix.

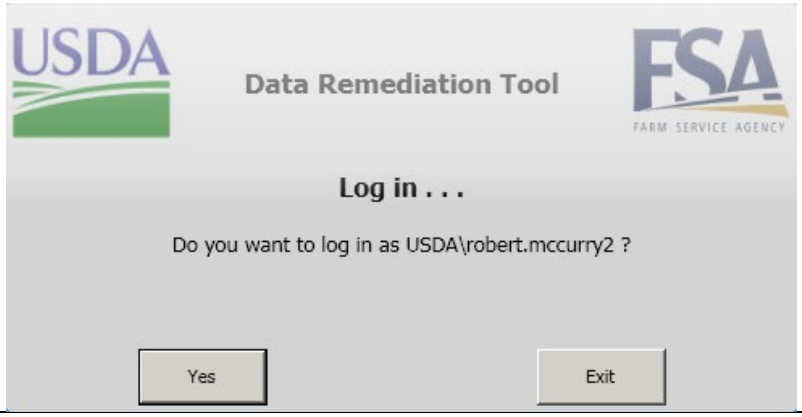
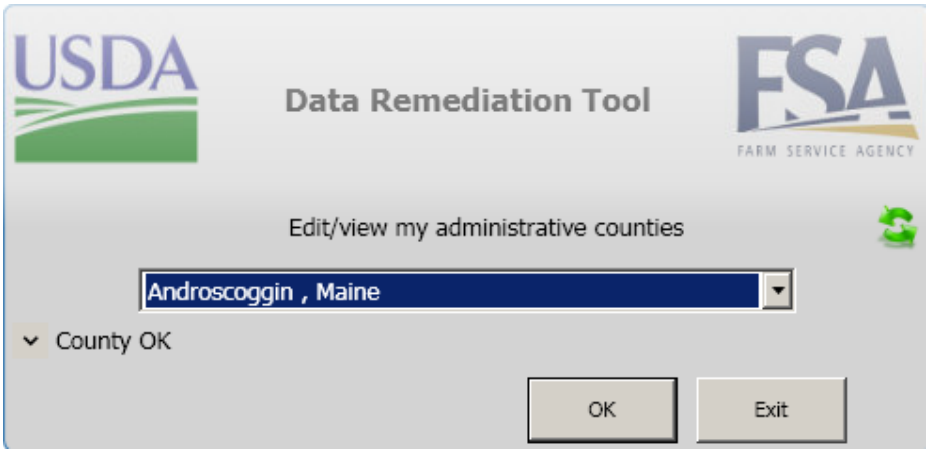
*--

Step	Instructions
1	Open Citrix Receiver. See **paragraph 501** for Citrix access.
2	Open the FSA GISO DRT desktop. 
3	Logon using LincPass credentials when prompted.
4	From the Citrix desktop, CLICK "Start", "ArcGIS", and "ArcMap 10.8.2". A shortcut to ArcMap may also be created on the user desktop.
5	Select the **Data Remediation Tool** on the Welcome to ArcMap Screen and then CLICK "**Start Using ArcMap**". 

--*

ArcGIS Data Remediation Tool (Continued)

B Instructions to Access DRT (Continued)

Step	Instructions
6	CLICK "**Yes**" to login. 
7	Select the administrative county to edit from the drop-down menu and CLICK "**OK**".  **Note:** The **Pick a County** form is populated with available counties that have been added during the GET Tool setup process. See **Exhibit 87** for GET instructions.

ArcGIS Data Remediation Tool (Continued)

B Instructions to Access DRT (Continued)

Step	Instructions
8	ArcGIS DRT adds an additional drop-down menu to the main ArcMap menu bar. Using the "Data Remediation Tool" drop-down menu, CLICK "**Data Remediation Toolbar**" to open the Data Remediation Toolbar. 

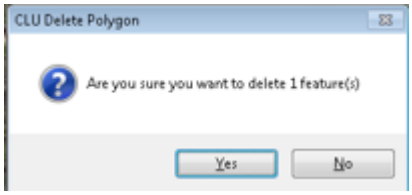
C Description of ArcGIS DRT's

The following are the descriptions of ArcGIS DRT's.

Tool	Description
	The CLU Control Panel gives the option to specify and add additional layers. **Note:** For additional information on the CLU Control Panel, see **Exhibit 89**.
	The Search CLU and PLSS tool gives the option to select features by searching: • Farm / tract / field numbers (CLU number) • Section / township / range numbering (PLSS). **Note:** For additional information on the Search CLU and PLSS tool, see **Exhibit 89**.

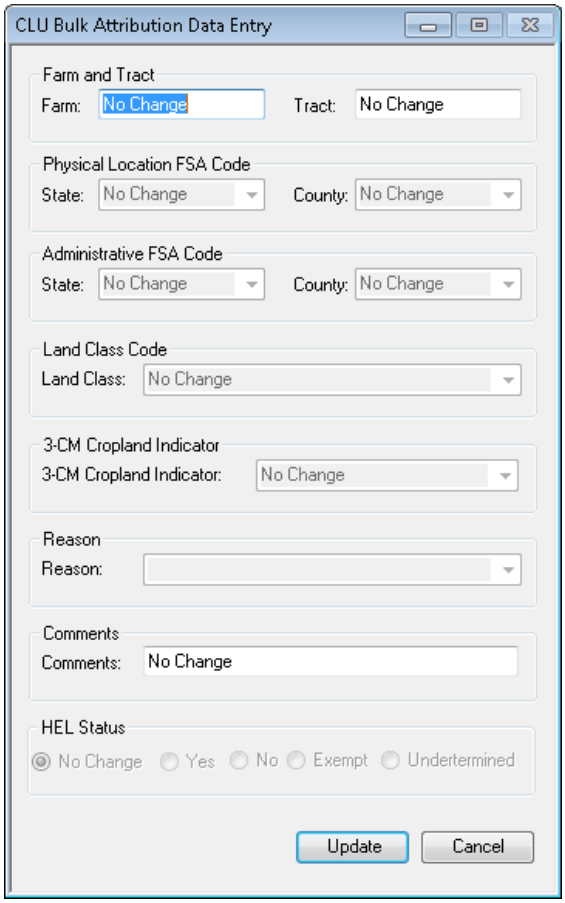
ArcGIS Data Remediation Tool (Continued)

C Description of ArcGIS DRT's (Continued)

Tool	Description
	The Delete Feature(s) tool allows users to delete 1 or more CLU polygons. **Note:** Users should exercise caution with this tool as CLU deletion cannot be undone. Users must ensure that they do not delete all CLU's or the only CLU on a tract, as that will cause the tract to become invalid. Users should specifically pay attention to CLU's that have been selected if the search tool has been used to search for a farm/tract. All CLU's within the selection criteria will be selected and users will need to reselect only the field or fields to be deleted. To delete a single CLU or multiple CLU's: • select CLU's with the Select Features tool • click the Delete Feature(s) tool • before CLU is deleted, the "Final Confirmation" dialog box will display as follows:  • CLICK "Yes" to delete the selected land units or "No" to cancel the request to delete CLU's. **Warning:** This tool may only be used to delete discrete polygons (polygons that are not contained within another polygon). If an inclusion type polygon is deleted using this tool, a "doughnut-hole" area will be created. The acreage value of the "doughnut hole" will not revert to the surrounding polygon that contained the deleted field. This type of error is not detectable by the software and will result in inaccurate total farm / tract acreages. If an inclusion must be removed, use the Merge tool in CRM Farm Records.

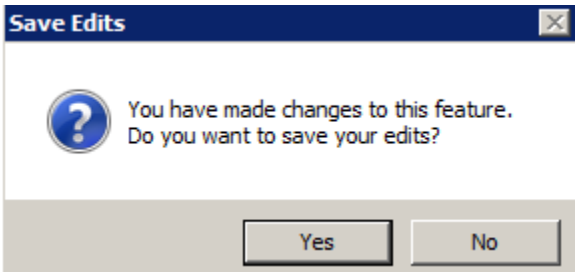
ArcGIS Data Remediation Tool (Continued)

C Description of ArcGIS DRT's (Continued)

Tool	Description
	The "CLU Bulk Attribution" button allows users to change a farm number and/or a tract number as well as edit the "Comments" field on 1 or multiple selected CLU's. To use the CLU Bulk Attribution functionality: • select the polygons that need to be updated, and then click the "CLU Bulk Attribution" button • in the CLU Bulk Attribution Data Entry window, change the applicable attributes **Note:** To leave an existing attribute unchanged, ensure that "No Change" is showing.  • CLICK "**Update**" to save the changes • CLICK "**Yes**" to change the specified attributes for the selected land units or "**No**" to cancel the request without saving any attribution changes.

ArcGIS Data Remediation Tool (Continued)

C Description of ArcGIS DRT's (Continued)

Tool	Description
	The **CLU Iterator** allows users to change farm number, tract number, field number, and comments on single selected CLU. To use the Iterator: • select the applicable CLU **Note:** More than one CLU can be selected at a time, but only 1 can be edited at a time through the CLU Iterator tool. • enter the new farm, tract, and/or CLU number as needed • CLICK "Update" **Note:** If a valid number has been added, the following message will be displayed.  • CLICK "**Yes**" to save the new attribution or "**No**" to cancel the request without saving any attribution changes. In addition, this tool allows users to cycle through a selection set using the "**Previous**" and "**Next**" buttons when iterating multiple CLU's. • Once a feature has been updated, the Iterator moves to the next CLU in the selection if there are multiple CLU features in the selection set. • To re-attribute a feature, CLICK "**Previous**" or "**Next**" if working from a selection set.

ArcGIS Data Remediation Tool (Continued)

C Description of ArcGIS DRT's (Continued)

Tool	Action
 (Cont)	• If a new selection set is desired, CLICK "**Cancel**" to close the CLU Iterator, select another CLU or group of CLU's using the Select tool, and re-open the CLU Iterator. • CLICK "**Update**" to save the new attribution. When finished updating attributes, CLICK "**Cancel**" on the attribute dialog. **Notes:** The "Save Edits" option will display when the user clicks the "**Previous**", "**Next**", or "**Update**" button. A tract cannot be duplicated within a farm and a tract number cannot be associated with multiple farms. If a CLU is updated with an invalid farm and tract number combination (such as pre-existing tract number in the CLU dataset not associated with the same farm), the following error message will result.  CLICK "**OK**" to return to the Attribute Screen to correct the error.

ArcGIS Data Remediation Tool (Continued)

D Remediation Action for Failed Tract Reconstitutions

The following instructions provide the remediation needed for failed tract divisions and combinations in CRM Farm Records.

Step	Instructions
1	Compare in CRM Farm Records the tract numbers assigned in the CLU layer through GIS Data Assignment Block to the tract numbers listed in the Farm Hierarchy. The DRT user shall change the attributes of each CLU by resetting tract number attribute to match the tract number in the CRM Farm Records hierarchy. **Note:** DRT Administrators should use the search tool to search for existing tracts in the CLU layer so all CLU's are highlighted. The Bulk Attribution Tool can be used to reset the tract number for all selected CLU's to match the tract number in the CRM Hierarchy.
2	Once corrected with DRT, open the Farm in CRM Farm Records and click the "**Edit**" button. If the farm is free of errors, notify the County Office that the tract division may be re-processed in CRM Farm Records.
3	If a Tract Inconsistency Error occurs, the farm will need to be submitted to the Data Remediation Site to clear the Tract Inconsistency Error flag. A spreadsheet listing the Farm IBase IDs shall be submitted.Name the spreadsheet: "ST_Tract_Inconsistency_reset_mmddyyyy", where ST is the two letter state abbreviation and mmddyyyy is the date.
4	Post the spreadsheet as needed to the Data Remediation Site on SharePoint at **https://sharepoint.fsa.usda.net/mgr/dafp/PECD/FR_GIS_data/Shared%20Documents/Forms/AllItems.aspx**. This will request that the tract inconsistency flag on the farm is reset.
5	The National Office will provide notification to the DRT Administrator of the farms that have had the tract inconsistency flag reset. The DRT Administrator shall then inform the County Office personnel to access the farms listed in the report for their county and click the "**Edit**" button to initiate an edit session.
6	The tract will be returned to its pre-reconstitution state with GIS and the CRM farm hierarchy in sync. CLICK "**Save**".
7	The tract reconstitution may be re-processed in CRM Farm Records.

ArcGIS Data Remediation Tool (Continued)

E Remediation Action for Failed Farm Reconstitutions

The following instructions provide the remediation needed for failed farm divisions and combinations in CRM Farm Records.

Step	Instructions
1	GIS DRT Administrator shall review both parent and child farms in CRM Farm Records to identify which record has the associated CLU's.
2	If CLU's are assigned to the child farms, use DRT to re-associate the farm number for all CLU's back to the parent farm numbers. **Notes:** In cases where the CLU's are still associated with the parent farm, the approving official in the County Office should try approving the reconstitution again. Using DRT is not required. DRT Administrators should use the search tool to search for existing tracts in the CLU layer so all CLU's are highlighted. The Bulk Attribution Tool can be used to reset the farm number for all selected CLU's to the parent farm numbers. The DRT administrator will need to know the original parent farm and tract structure to reassign each tract back to the correct parent farm number. The County Office should provide the parent farm and tract structure to the DRT administrator with either a map or the original FSA-156EZ.
3	Once the CLU's are re-attributed, CED or approving official should try approving the reconstitution workflow again.

Batch Export of CLU's to Geodatabases

A Instructions for Saving the Citrix Only Tools

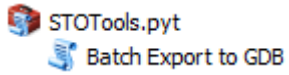
Steps in this subparagraph are one-time-only steps that must be completed to move the bulk exporter tool into Citrix. These steps only need to be repeated if the tool is updated.

Step	Instructions
1	Download and unzip the most current copy of the PythonMapSeries Toolset to C:\geodata. ***--**Navigate to **https://usdagcc.sharepoint.com/sites/FBC-GDMS/FSA_GIS/FSA_User_Documentation_Library/Forms/AllItems.aspx**.**--***
2	Open Windows Explorer.
3	In Windows Explorer, navigate to C:\Geodata\PythonMapSeries.
4	Right-click the CitrixOnly folder.
5	CLICK "**Copy**".
6	Navigate to the Citrix O drive directly from the user desktop by typing \\usda.net\fsa\Citrix\Personal\<firstname>.<lastname>.USDA\ in the Windows Explorer address bar. Right-click the **My Stuff** folder and CLICK "**Paste**".
7	Right-click the My Stuff folder.
8	CLICK "**Paste**".

Batch Export of CLU's to Geodatabases (Continued)

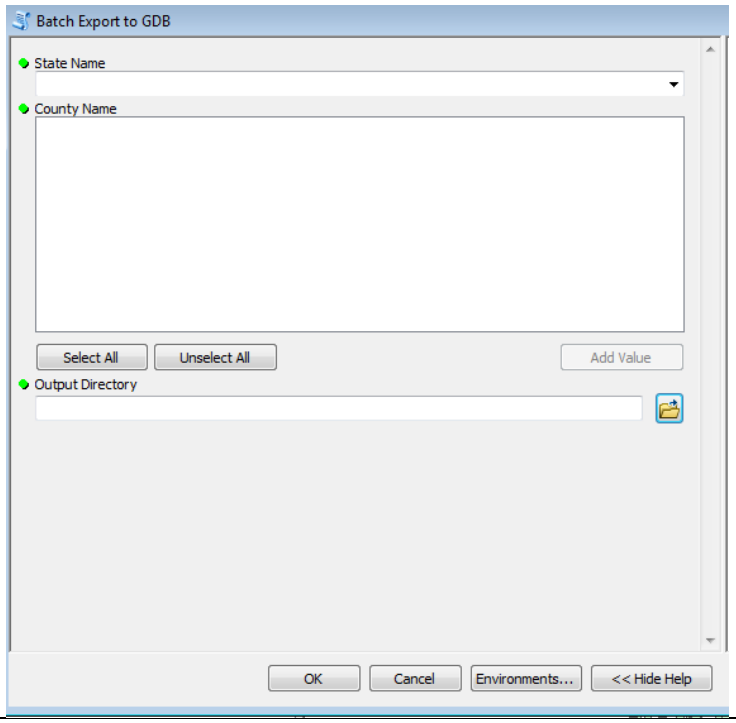
B Instructions for Exporting County File Geodatabases

These instructions export county file geodatabases.

Step	Instructions
1	From the Citrix desktop, CLICK "Start", "All Programs", "ArcGIS", and "ArcMap". A shortcut to ArcMap may also be created on the user desktop. See **paragraph 501** for Citrix access.
2	In the Splash Screen, CLICK "Regular ArcMap".
3	CLICK "**Start Using ArcMap**".
4	Click the "Catalog Window" button  located on the Tools Toolbar.
5	In the Catalog window, expand "Folder Connections".
6	Navigate to **O:\My Stuff**. If O:\ is not visible, click the "Connect to Folder" button  . • In the Connect to Folder window, CLICK "**My Computer**". • CLICK "**OK**" on the message, "Folder Desktop cannot be used. Please choose another folder". • Navigate to **O:**. • CLICK "**OK**".
7	Expand the **STOTools.pyt** toolbox. 

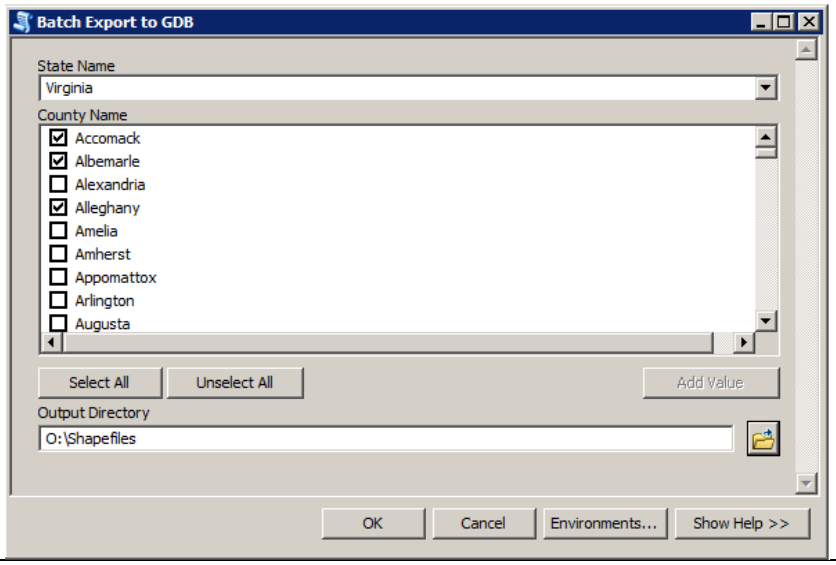
Batch Export of CLU's to Geodatabases (Continued)

B Instructions for Exporting County File Geodatabases (Continued)

Step	Instructions
8	Double-click the "**Batch Export to GDB**" script tool. 
9	Click the "State Name" drop-down menu and select the desired State.
10	Place a checkmark next to each desired county in the "County Name" option box or CLICK "**Select All**" to select all counties.
11	Click the "Browse" icon next to Output Directory.
12	Navigate to **K:\<ST>\Geodata**.
13	Select the "Common_Land_Unit" folder.
14	CLICK "**Add**".

Batch Export of CLU's to Geodatabases (Continued)

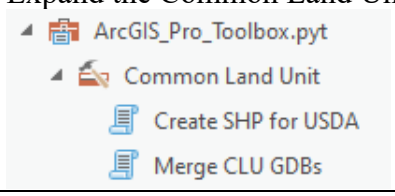
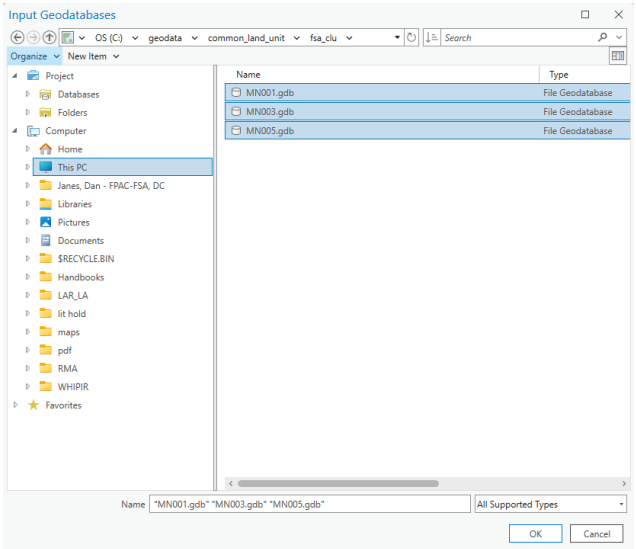
B Instructions for Exporting County File Geodatabases (Continued)

Step	Instructions
15	CLICK "**OK**" to run the tool. 
16	After the tool has completed, move the ZIP files from **K:\<ST>\GeoData\Common_Land_Unit** to **C:\Geodata\Common_Land Unit\fsa_clu**. **Note:** The K:\ can be accessed directly from the user's local desktop by browsing to **\\usda.net\FSA\Citrix\Geodata\<ST>**.
17	Open Windows Explorer on the local computer. Navigate to **C:\Geodata\Common_Land_Unit\fsa_clu**.
18	Select all the ZIP files. Right-click 1 of the selected files and CLICK "**WinZip>Extract to here**".

Create SHP for USDA

These instructions outline the process to create SHP for USDA.

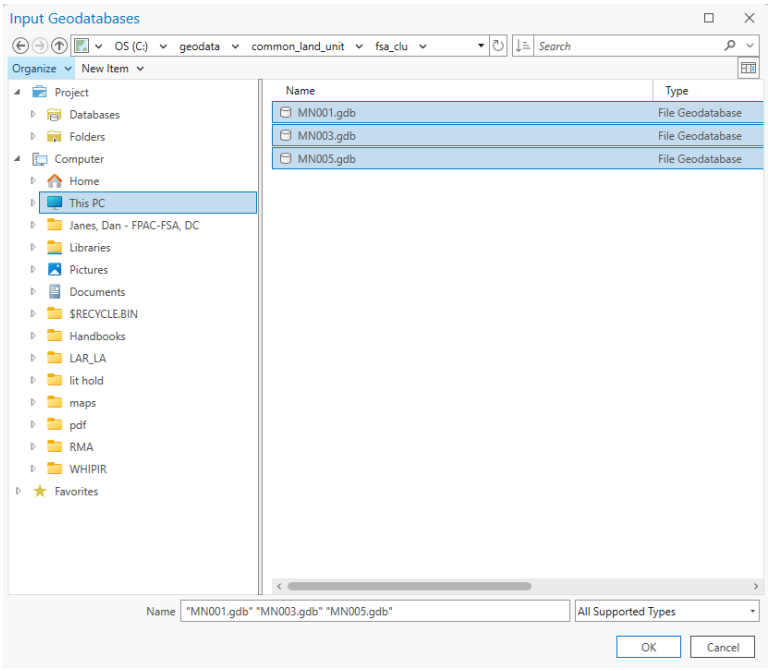
*--

Step	Instructions
1	If not done already, download and extract the Arc GIS_Pro_Toolbox_v3.zip file to C:\Geodata. The State Office CLU Tools (ArcGIS_Pro_Toolbox.pyt) file should be saved in C:\Geodata\PythonMapSeries.
2	Start ArcGIS Pro.
3	Open the Catalog window.
4	In the Catalog window, navigate to C:\Geodata\PythonMapSeries.
5	Expand the ArcGIS_Pro_Toolbox toolbox.
6	Expand the Common Land Unit toolset. 
7	Double-click on "Create SHP for USDA".
8	Click the "Browse" button  next to Input Geodatabases.
9	Navigate to the folder that contains the exported file geodatabases.
10	Select all the desired file geodatabases. 
11	CLICK "**OK**".
12	Click the "Browse" button  next to the Output folder.

--*

Create SHP for USDA (Continued)

*--

Step	Instructions
13	Browse to C:\Geodata\Common_Land Unit\. 
14	Select the fsa_clu folder.
15	CLICK "**OK**" to close the Output Folder window.
16	CLICK "**Run**" to execute the tool.

--*

Copy CLU's to Servers

A Instructions for Creating a Server List in CSV Format

These instructions outline the process to create a standardized server list in CSV format.

<table>
<tr><th>Step</th><th>Instructions</th></tr>
<tr><td>1</td><td>Start Microsoft Excel and create a blank worksheet.</td></tr>
<tr><td>2</td><td>In the first row of the worksheet, add the following column names:

• Server_Name
• FIPS
• County_Name
• Office
• Agency.</td></tr>
<tr><td>3</td><td>On the second row, add the following information for the first Service Center.
<table>
<tr><th>Attribute</th><th>Description</th></tr>
<tr><td>Server_Name</td><td>The server name assigned by CTS, typically \\<prefix><st><cityCTScode>3fp<N>\<st><cityCTScode>.

Example: \\aiomtcir3fp1\mtcir</td></tr>
<tr><td>FIPS</td><td>Lower case State abbreviation and 3-digit administrative county code.

Example: ne001</td></tr>
<tr><td>County Name</td><td>County name, spelled out with spaces.

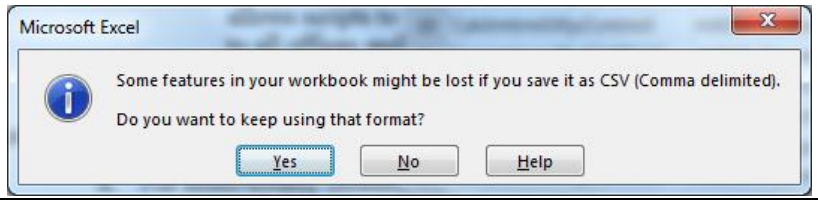
Example: Lake of the Woods</td></tr>
<tr><td>Office</td><td>Full city name.

Example: Richland Center</td></tr>
<tr><td>Agency</td><td>ENTER "FSA" or "NRCS". When distributing CLU using this script, CLU will copy to all agencies. Aggregate data will only display on servers identified as "FSA" in this column.</td></tr>
</table></td></tr>
<tr><td>4</td><td>Create a row for each FSA county and populate the individual county information. For offices that administer multiple counties, create a row for each county and FIPS code with the same server name.

<table>
<tr><th>Server_Name</th><th>FIPS</th><th>County_Name</th><th>Office</th><th>Agen</th></tr>
<tr><td>\\Aiomtlew3fp1\mtlew</td><td>mt027</td><td>Fergus</td><td>Lewistown</td><td>FSA</td></tr>
<tr><td>\\Aiomtlew3fp1\mtlew</td><td>mt069</td><td>Petroleum</td><td>Lewistown</td><td>FSA</td></tr>
</table></td></tr>
</table>

Copy CLU's to Servers (Continued)

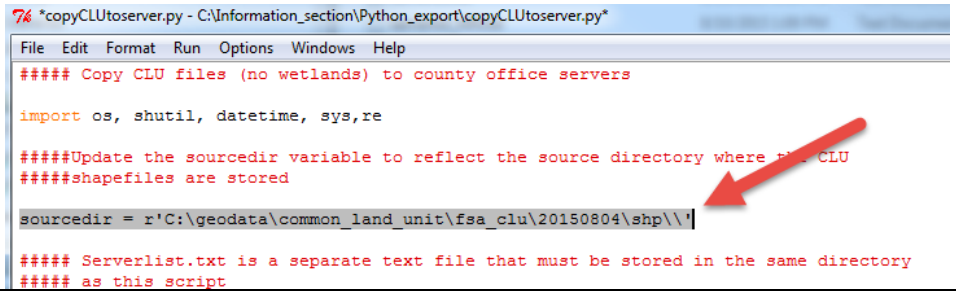
A Instructions for Creating a Server List in CSV Format (Continued)

Step	Instructions
5	CLICK "File" and "Save As" from a blank Excel document, and save the file as a CSV (Comma delimited). Save the CSV.
6	CLICK "Computer".
7	CLICK "**Browse**". Navigate to c:\geodata\scripts. If the folder does not exist, create it.
8	Change the file name to **serverlist.csv**.
9	Change the "Save As Type" drop-down menu to **CSV (Comma delimited)(*.csv)**.
10	CLICK "**Save**".
11	CLICK "**Yes**" to the "Microsoft Excel" dialog box. 
12	Close Excel and CLICK "**Don't Save**". It is unnecessary to save the file a second time.

Copy CLU's to Servers (Continued)

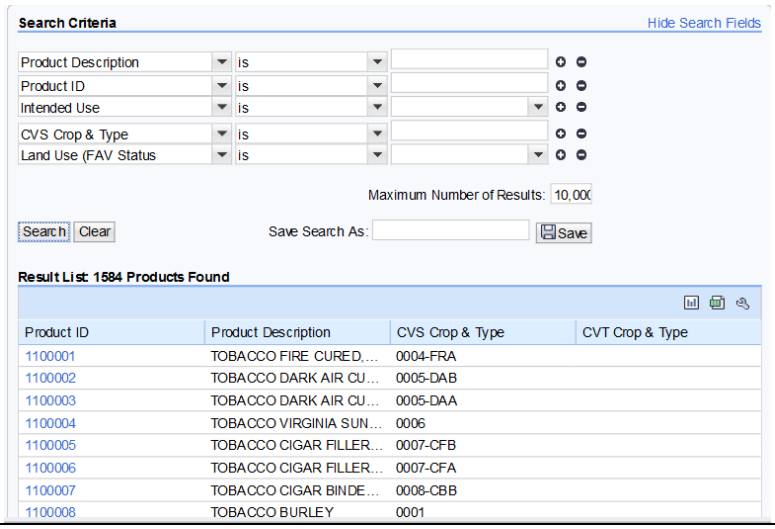
B Using Python to Copy CLU's

These instructions outline the process to use Python to copy CLU's.

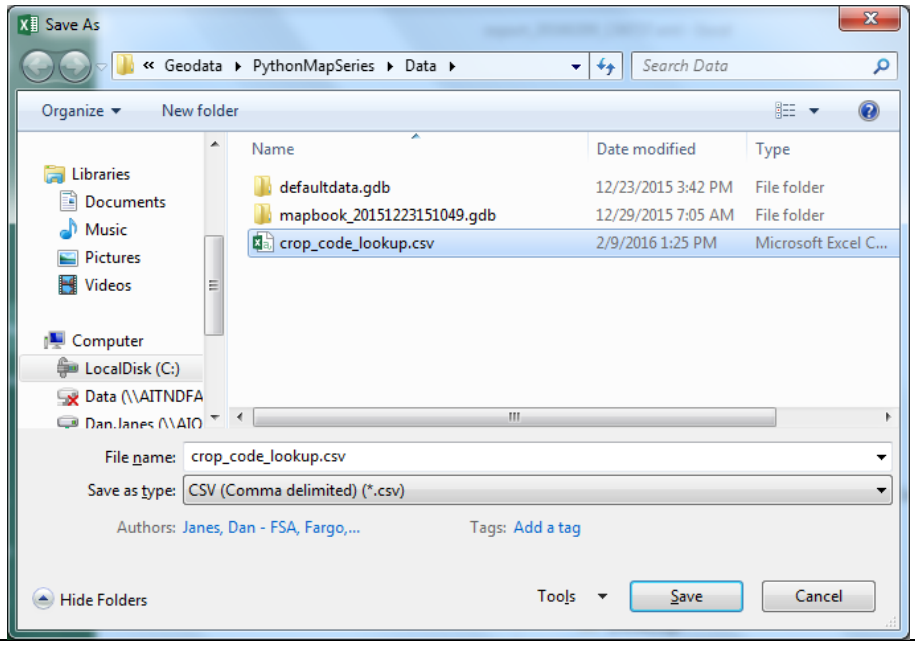
Step	Instructions
1	Download the copyCLUtoServer.py script from the FSA GIS Sharepoint site and save to c:\geodata\scripts.
2	CLICK "Start", "All Programs", "ArcGIS", "Python 2.7", and "IDLE (Python GUI)".
3	CLICK "File" and "Open". Right-click the copyCLUtoServer.py file and CLICK "**Edit with IDLE**".
4	Navigate to c:\geodata\scripts and CLICK "copyCLUtoServer.py".
5	CLICK "Open".
6	Modify line 8 in the script to reflect the directory where the CLU shapefiles are stored. In the sample script, the State uses subfolders by date for each CLU export for archiving capability. If this strategy is employed, the script should be updated each time before running to ensure that the most current CLU is copied. 
7	Save the script. To run the script, either PRESS "**F5**" with the IDLE window open or double-click the copy CLUtoServer.py in Windows Explorer. **Note:** Using the F5 Command is recommended to allow GIS Specialist to identify or track issues related to the script, server list or troubling shooting folder structures.

Updating Crop Data Table for the Build Crop Data Polygon Tool

These instructions update the crop data table for the Build Crop Data Polygon tool.

Step	Instructions
1	Open CRM Farm Records through the MIDAS Portal.
2	CLICK "**Product Master**" and CLICK "**Search Products**".
3	In the Search Criteria window, set the Maximum Number of Results to **10,000**.
4	CLICK "**Search**". 
5	At the top of the Result List, click the "**Export to Spreadsheet**" button  .
6	The search results will open in Excel. CLICK "**File**" and CLICK "**Save As**".
7	Navigate to **C:\geodata\PythonMapSeries\Data**.
8	Change the "Save As Type" drop-down menu to **CSV (Comma Delimited)(*.csv)**.

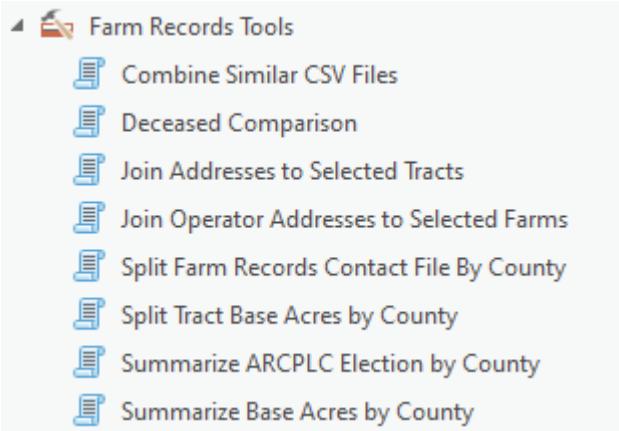
Updating Crop Data Table for the Build Crop Data Polygon Tool (Continued)

Step	Instructions
9	Change the File Name to "**crop_code_lookup.csv**". 
10	CLICK "**Save**".
11	CLICK "**Yes**" to overwrite the existing file if prompted and if warned about saving in CSV format.
12	Close Excel. If prompted to saved changes again, CLICK "**No**".

Split Farm Records Contact File by County

These instructions split the farm records contact file by county.

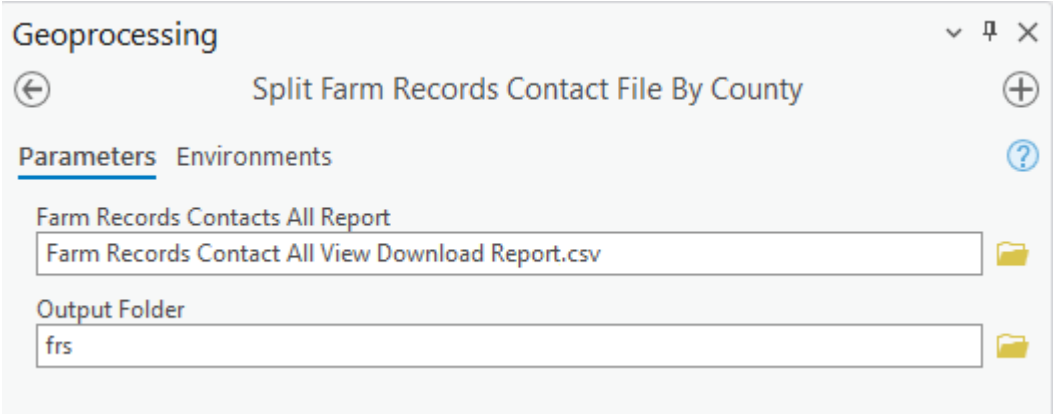
*--

Step	Instructions
1	If not done already, download and extract the Arc GIS_Pro_Toolbox_v3.zip file to C:\Geodata. The State Office CLU Tools (ArcGIS_Pro_Toolbox.pyt) file should be saved in C:\Geodata\PythonMapSeries.
2	Start ArcGIS Pro.
3	Open the Catalog window.
4	In the Catalog window, navigate to C:\Geodata\PythonMapSeries.
5	Expand the ArcGIS_Pro_Toolbox toolbox.
6	Expand the Farm Records Tools toolbox. 
7	Double-click the "Split Farm Records Contact File By County" tool.
8	Click the "Browse" button  next to Farm Address Text File.
9	Navigate to c:\geodata\project_data\fsa\frs and CLICK "Farm Records Contact All View Download Report.csv".
10	CLICK "**OK**".
11	Click the "Browse" button  next to Output Folder.

--*

Split Farm Records Contact File by County (Continued)

*--

Step	Instructions
12	Navigate to c:\geodata\project_data\fsa.
13	Select the frs folder and CLICK "**OK**". 
14	CLICK "**RUN**" to run the tool.
15	CSV files containing the farm records data will be exported to c:\geodata\project_data\fsa\frs. An additional file, schema.ini, is also created to allow ArcGIS to read the farm number and other numeric data as text fields, allowing data to be joined to the CLU based on farm number.

--*

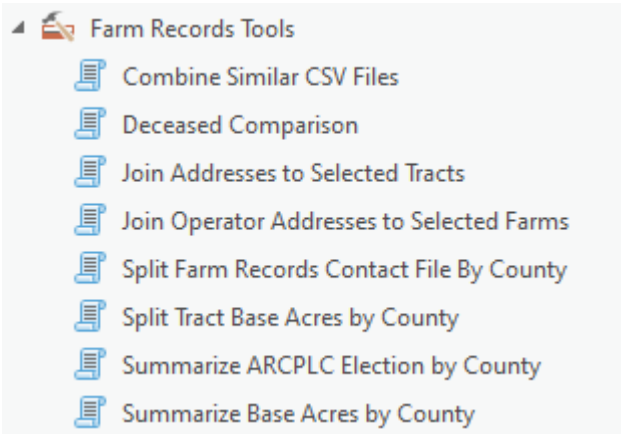
Combine Similar CSV Files Tool

A Introduction

The Combine Similar CSV Files tool combines CSV files that have identical attributes into a single output file. This tool enables users to combine downloads from EDW into single statewide datasets that can be used with other tools in the Statewide CLU toolbox.

B Tool Instructions

These instructions are for the Combine Similar CSV Files tool.
*--

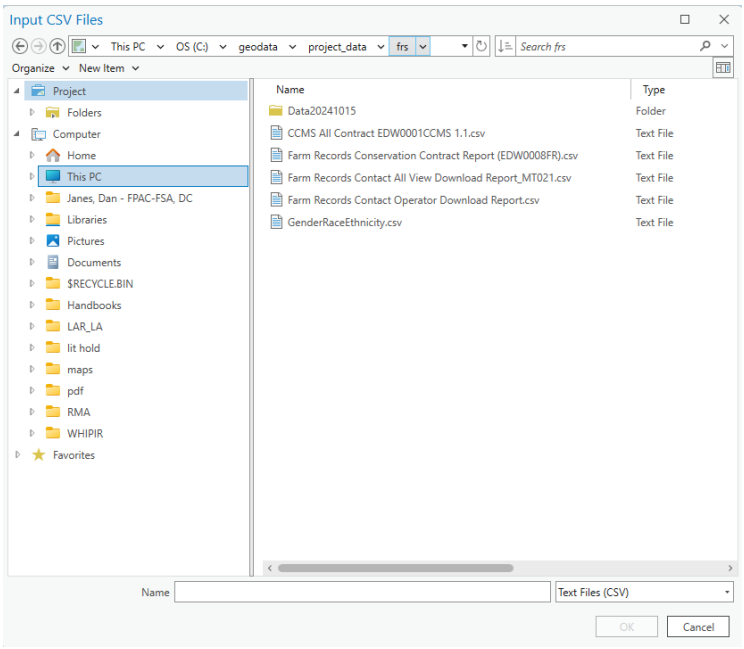
Step	Instructions
1	If not done already, download and extract the Arc GIS_Pro_Toolbox_v3.zip file to C:\Geodata. The State Office CLU Tools (ArcGIS_Pro_Toolbox.pyt) file should be saved in C:\Geodata\PythonMapSeries.
2	Start ArcGIS Pro.
3	Open the Catalog window.
4	In the Catalog window, navigate to C:\Geodata\PythonMapSeries.
5	Expand the ArcGIS_Pro_Toolbox toolbox.
6	Expand the Farm Records Tools toolbox. 
7	Double-click “Combine Similar CSV Files”.
8	Click the “Browse” button  next to Input CSV Files.
9	Browse to the directory that contains the CSV files to be combined.

--*

Combine Similar CSV Files Tool (Continued)

B Tool Instructions (Continued)

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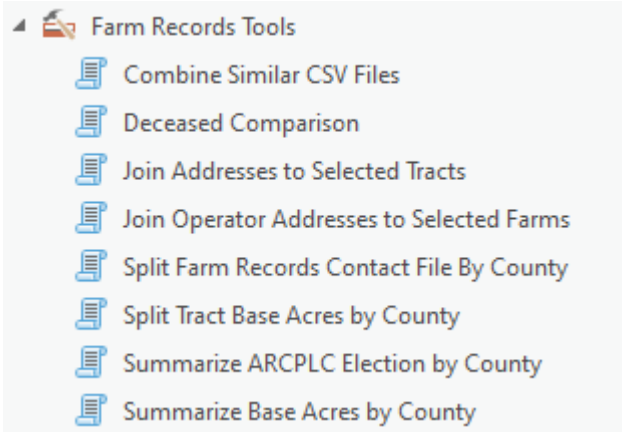
Step	Instructions
10	Select all desired CSV files and CLICK "OK". 
11	Specify the output file name.
12	Click the "Browse" button  next to Output folder.
13	Select the "Output" folder.
14	CLICK "Run" to run the tool.

--*

--Join Operator Addresses to Selected Farms--

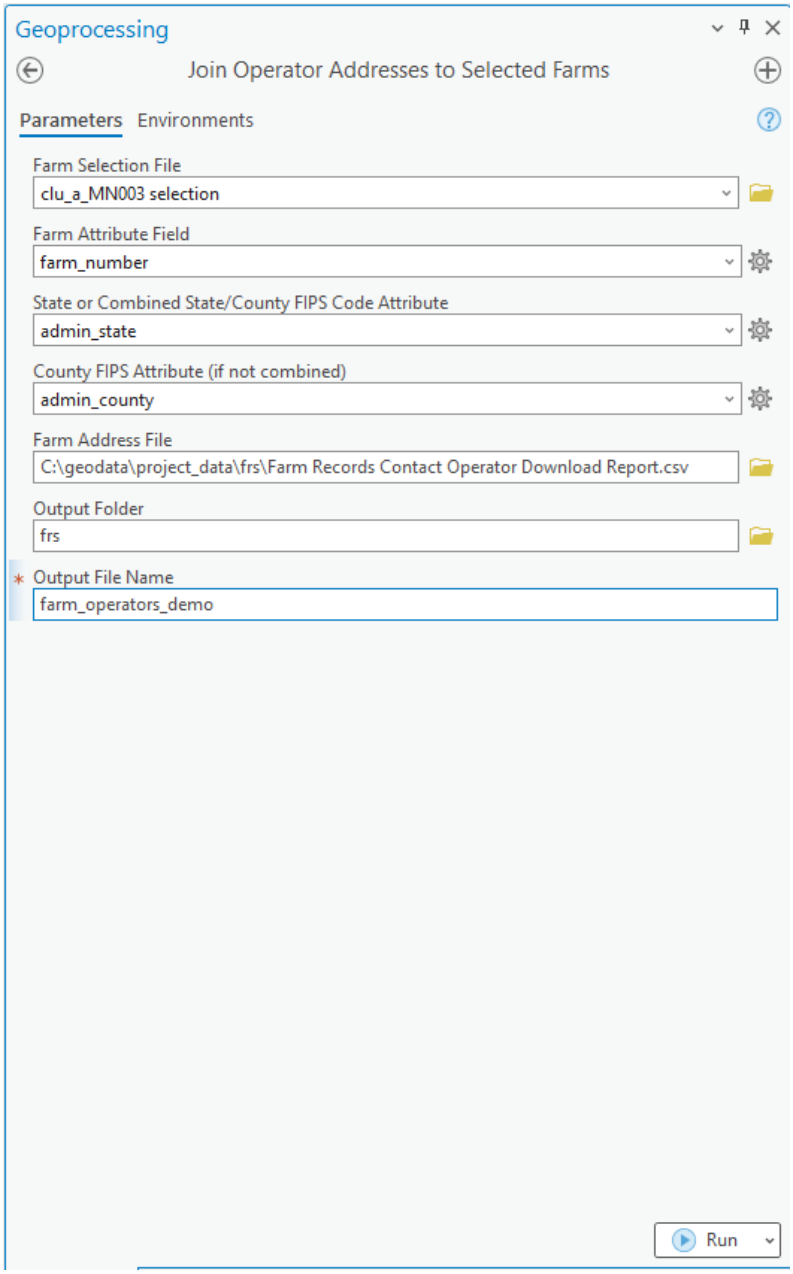
These instructions join operator addresses to selected farms.

***--**

Step	Instructions
1	If not done already, download and extract the Arc GIS_Pro_Toolbox_v3.zip file to C:\Geodata. The State Office CLU Tools (ArcGIS_Pro_Toolbox.pyt) file should be saved in C:\Geodata\PythonMapSeries.
2	Start ArcGIS Pro.
3	Open the Catalog window.
4	In the Catalog window, navigate to C:\Geodata\PythonMapSeries.
5	Expand the ArcGIS_Pro_Toolbox toolbox.
6	Expand the Farm Records Tools toolbox. 

--*

***--Join Operator Addresses to Selected Farms (Continued)**

Step	Instructions
7	Double-click the "**Join Operator Addresses to Selected Farms**" tool. 
8	The "Farm Selection File" can be populated with a layer from ArcGIS Pro or a table containing a list of farms. For an ArcGIS Pro layer, use the drop-down menu to select the layer. Otherwise, click the "Browse" button next to "Farm Selection File".

--*

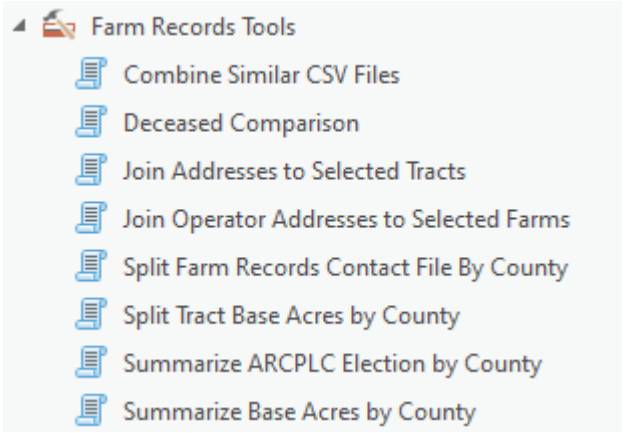
***--Join Operator Addresses to Selected Farms (Continued)**

Step	Instructions
9	Change the "Farm Attribute Field" drop-down menu to match the attribute in the farm selection file that contains the farm number.
10	Change the "State or Combined State/County FIPS Code Attribute" drop-down menu to the attribute from the farm selection file that represents the State code or combined State/county code. **Note:** If the attribute only represents the State code, the county FIPS attribute must be specified separately.
11	If the State or Combined FIPS Code Attribute only contains the State code, change the drop-down menu for the "County FIPS Attribute" to the attribute in the farm selection file that represents the county code.
12	Click the "Browse" button  next to Farm Address file. Navigate to c:\geodata\project_data\fsa\frs and add the Farm Records Operator Contact file.
13	CLICK "**OK**".
14	Click the "Browse" button  next to the Output folder.
15	Navigate to c:\geodata\project_data\fsa.
16	Select the FRS folder and CLICK "**OK**".
17	CLICK "**RUN**" to run the tool.

Join Addresses to Selected Tracts

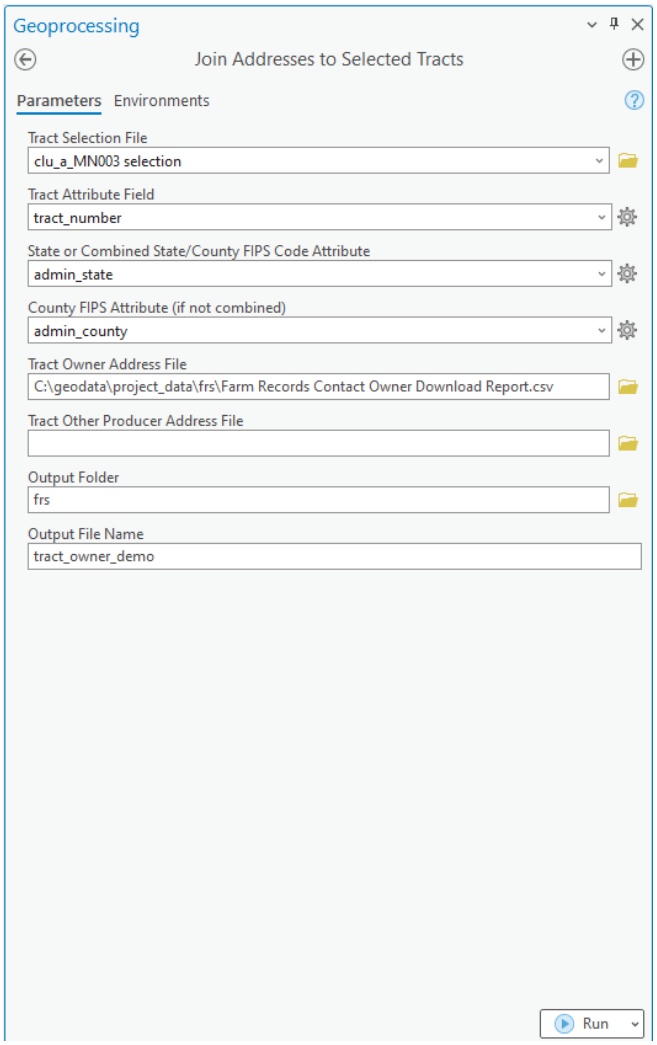
These instructions join addresses to selected tracts.

*--

Step	Instructions
1	If not done already, download and extract the Arc GIS_Pro_Toolbox_v3.zip file to C:\Geodata. The State Office CLU Tools (ArcGIS_Pro_Toolbox.pyt) file should be saved in C:\Geodata\PythonMapSeries.
2	Start ArcGIS Pro.
3	Open the Catalog window.
4	In the Catalog window, navigate to C:\Geodata\PythonMapSeries.
5	Expand the ArcGIS_Pro_Toolbox toolbox.
6	Expand the Farm Records Tools toolbox. 

--*

Join Addresses to Selected Tracts (Continued)

Step	Instructions
7	Double-click the "**Join Addresses to Selected Tracts**" tool. *--  --*
8	The "Tract Selection File" can be populated with a layer from ArcMap or a table containing a list of tracts. For an ArcMap layer, use the drop-down menu to select the layer. Otherwise, click the "Browse" button next to "Tract Selection File".
9	Change the "Tract Attribute Field" drop-down menu to match the attribute in the tract selection file that contains the tract number.
10	Change the "State or Combined State/County FIPS Code Attribute" drop-down menu to the attribute from the tract selection file that represents the State code or combined State/county code. **Note:** If the attribute only represents the State code, the county FIPS attribute must be specified separately.
11	If the State or Combined FIPS Code Attribute only contains the State code, change the drop-down menu for the "County FIPS Attribute" to the attribute in the tract selection file that represents the county code.

Join Addresses to Selected Tracts (Continued)

*--

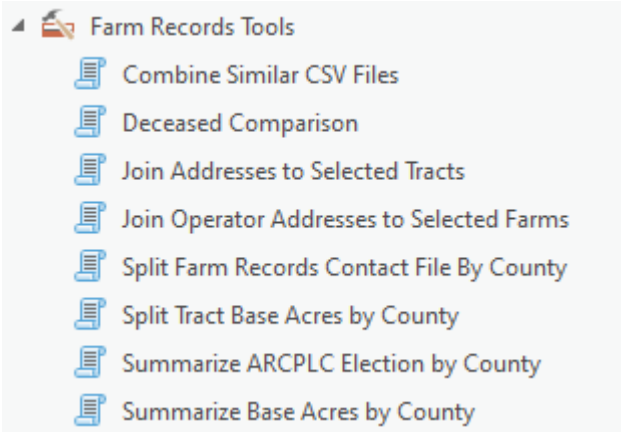
Step	Instructions
12	Addresses can be joined for tract owners, tract operators, or both. For owners, click the "Browse" button  next to Tract Owner Address file. Navigate to c:\geodata\project_data\fsa\frs and add the Farm Records Contact Owner file. For other producers, click the "Browse" button  next to Tract Other Producer Address file. Navigate to c:\geodata\project_data\fsa\frs and add the Farm Records Contact Other Producer file.
13	CLICK "**OK**".
14	Click the "Browse" button  next to the Output folder.
15	Navigate to c:\geodata\project_data\fsa.
16	Select the FRS folder and CLICK "**OK**".
17	CLICK "**RUN**" to run the tool.

--*

Split Tract Base Acres by County

These instructions split tract base acres by county.

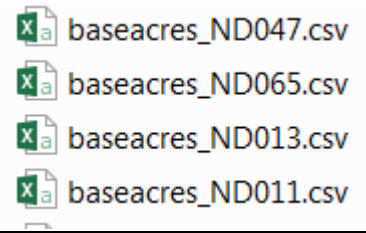
*--

Step	Instructions
1	If not done already, download and extract the Arc GIS_Pro_Toolbox_v3.zip file to C:\Geodata. The State Office CLU Tools (ArcGIS_Pro_Toolbox.pyt) file should be saved in C:\Geodata\PythonMapSeries.
2	Start ArcGIS Pro.
3	Open the Catalog window.
4	In the Catalog window, navigate to C:\Geodata\PythonMapSeries.
5	Expand the ArcGIS_Pro_Toolbox toolbox.
6	Expand the Farm Records Tools toolbox. 
7	Double-click the "Split Tract Base Acres By County" script tool.
8	Click the "Browse" button  next to Tract Base Acre Text File.
9	Navigate to c:\geodata\project_data\fsa\frs and CLICK "Farm Records by Crop Level Tract.csv".
10	CLICK "**OK**".
11	Click the "Browse" button  next to the Output Folder.
12	Navigate to c:\geodata\project_data\fsa\frs.
13	Click once on the frs folder and CLICK "**OK**".

--*

Split Tract Base Acres by County (Continued)

*--

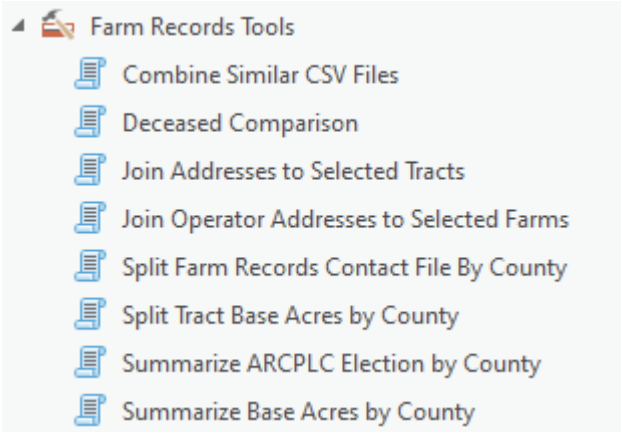
Step	Instructions
14	CLICK "**RUN**" to run the tool.
15	CSV files containing the farm records data will be exported to c:\geodata\project_data\fsa\frs. An additional file, schema.ini, is also created to allow ArcGIS to read the tract number and other numeric data as text fields, allowing data to be joined to the CLU based on tract number. 

--*

Summarize Base Acres by County

These instructions summarize base acres by county.

*--

Step	Instructions
1	If not done already, download and extract the Arc GIS_Pro_Toolbox_v3.zip file to C:\Geodata. The State Office CLU Tools (ArcGIS_Pro_Toolbox.pyt) file should be saved in C:\Geodata\PythonMapSeries.
2	Start ArcGIS Pro.
3	Open the Catalog window.
4	In the Catalog window, navigate to C:\Geodata\PythonMapSeries.
5	Expand the ArcGIS_Pro_Toolbox toolbox.
6	Expand the Farm Records Tools toolbox. 
7	Double-click the "Summarize Base Acres by County" script tool.
8	Click the "Browse" button  next to Tract Address Text File.
9	Navigate to c:\geodata\project_data\fsa\frs and CLICK "Farm Records by Crop Level Tract.csv".
10	CLICK "**OK**".
11	Click the "Browse" button  next to the Output Folder.
12	Navigate to c:\geodata\project_data\fsa\frs.
13	Click once on the frs folder and CLICK "**OK**".
14	CLICK "**RUN**" to run the tool.

--*

Summarize ARCPLC Election by County

Instructions to run the Summarize ARCPLC Election by County tool.

Note: The Farm Records by Crop Level Tract file must be exported from EDW before running this tool.

*--

Step	Instructions
1	If not done already, download and extract the Arc GIS_Pro_Toolbox_v3.zip file to C:\Geodata. The State Office CLU Tools (ArcGIS_Pro_Toolbox.pyt) file should be saved in C:\Geodata\PythonMapSeries.
2	Start ArcGIS Pro.
3	Open the Catalog window.
4	In the Catalog window, navigate to C:\Geodata\PythonMapSeries.
5	Expand the ArcGIS_Pro_Toolbox toolbox.
6	Expand the Farm Records Tools toolbox. 
7	Double-click on “Summarize ARCPLC Election By County”.
8	Click the “Browse” button  next to Farm Records by Crop Level Tract File.
9	Navigate to c:\geodata\project_data\fsa\frs and CLICK “Farm Records by Crop Level Tract (EDW0005DFR).csv”.
10	CLICK “**OK**”.
11	Click the “Browse” button  next to the Output folder.
12	Navigate to c:\geodata\project_data\fsa.
13	Click once on the frs folder and CLICK “**OK**”.
14	CLICK “**RUN**” to run the tool.
15	A CSV file named arcplc_election_summary.csv will be exported to c:\geodata\project_data\fsa\frs.

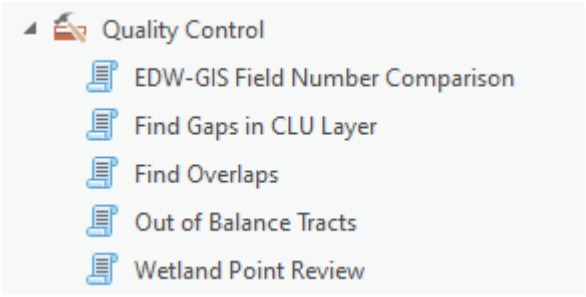
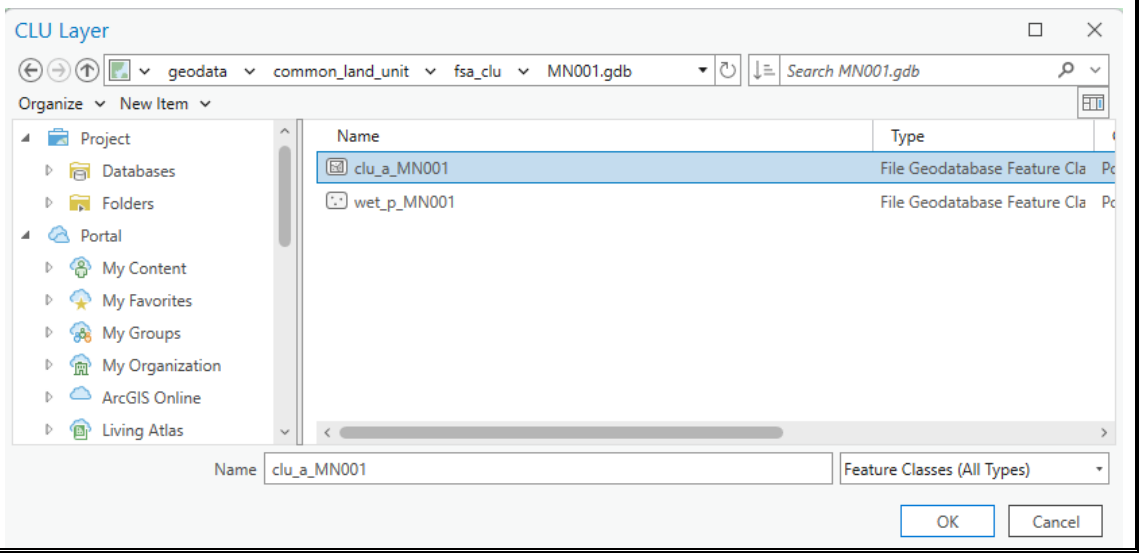
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Find Overlaps Tool

A Tool Instructions

Use these instructions for the Find Overlaps tool.

*--

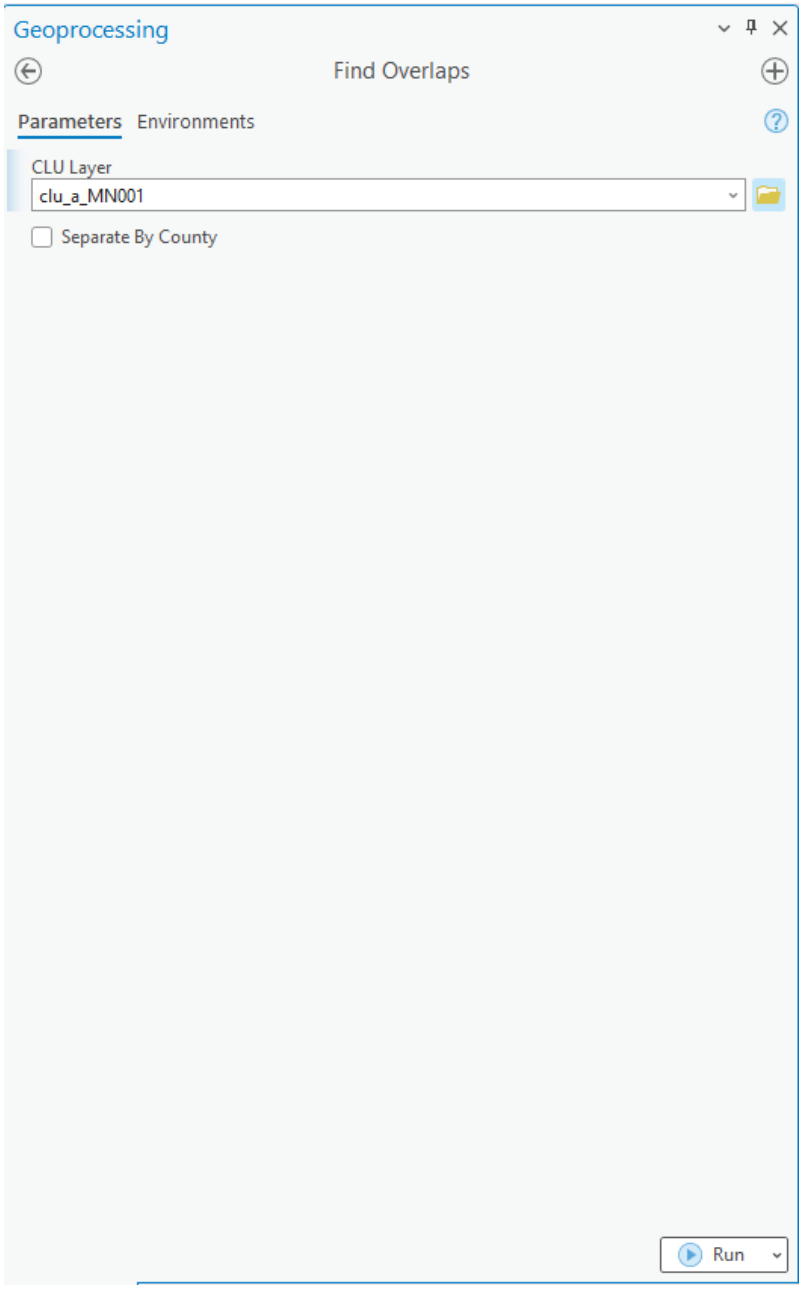
Step	Instructions
1	If not done already, download and extract the Arc GIS_Pro_Toolbox_v3.zip file to C:\Geodata. The State Office CLU Tools (ArcGIS_Pro_Toolbox.pyt) file should be saved in C:\Geodata\PythonMapSeries.
2	Start ArcGIS Pro.
3	Open the Catalog window.
4	In the Catalog window, navigate to C:\Geodata\PythonMapSeries.
5	Expand the ArcGIS_Pro_Toolbox toolbox.
6	Expand the Quality Control toolset. 
7	Double-click on “Find Overlaps”.
8	Click the “Browse” button  next to CLU Layer.
9	Navigate to the folder that contains the exported file geodatabases.
10	Select the desired CLU feature class and CLICK “**OK**”. 

--*

Find Overlaps Tool (Continued)

A Tool Instructions (Continued)

*--

Step	Instructions
11	CLICK "**RUN**" to run the tool.  **Note:** If the "Separate By County" box is checked then the output shapefiles will have the county ID included in the shapefile name. This will still be the case even if only 1 county CLU was selected as the input.

--*

Find Overlaps Tool (Continued)

B Explanation of Data

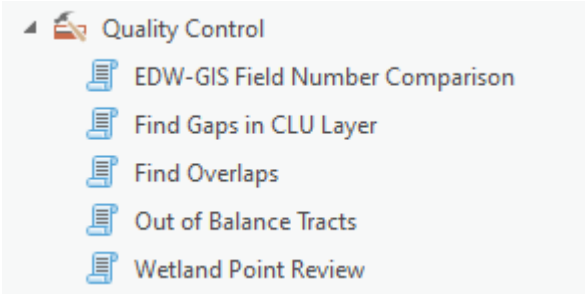
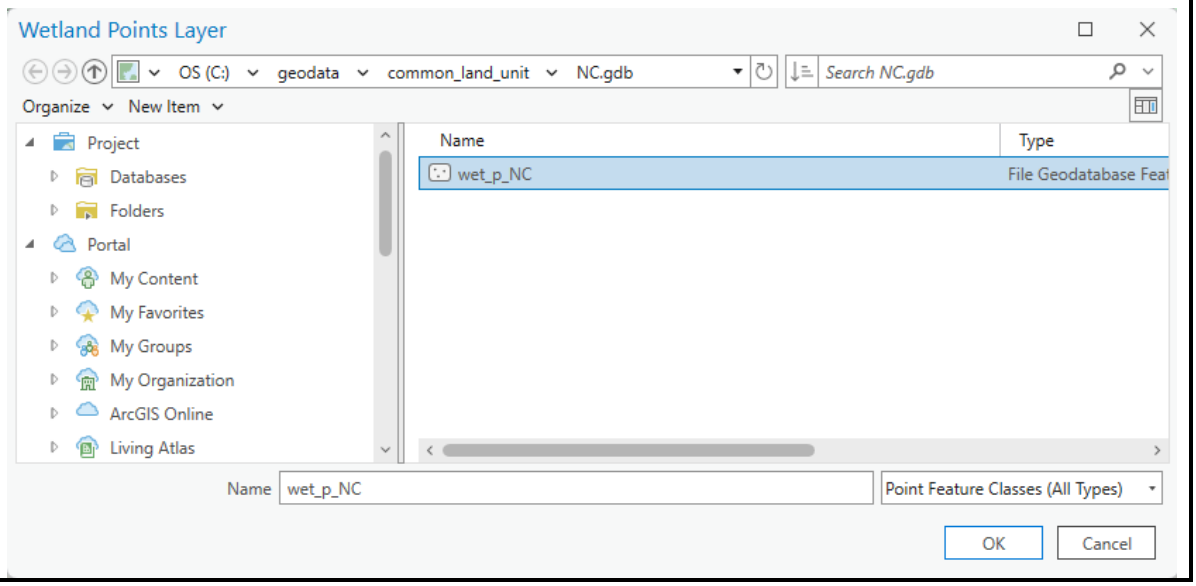
Output files created by the Find Overlaps tool include the following.

File Name	Key Attributes	Description
Overlaps_a_<stnnn>.shp		A polygon shapefile identifying all overlaps present in the CLU feature class. When an overlap occurs, 2 or more polygons will be created for each overlap, identifying the portion of each polygon that contributes to the overlap.
	Admin_ST	The administrative State FIPS code from the CLU.
	Admin_co	The administrative county FIPS code from the CLU.
	Overlap_ac	The size in acres of the overlap .005.
Overlaps_clu_<st>_ <yyyymmdd>.dbf		Complete listing of all overlaps within the State or county in tabular format.
	Admin_ST	The administrative State FIPS code from the CLU.
	Admin_co	The administrative county FIPS code from the CLU.
	Overlap_ac	The size in acres of the overlap.
Overlaps_p_<stnnn>.shp		A point feature class identifying the centroid of each overlap. This feature class can be used to cartographically represent overlaps on a progress map.

Wetland Point Review

Use these instructions for the wetland point review.

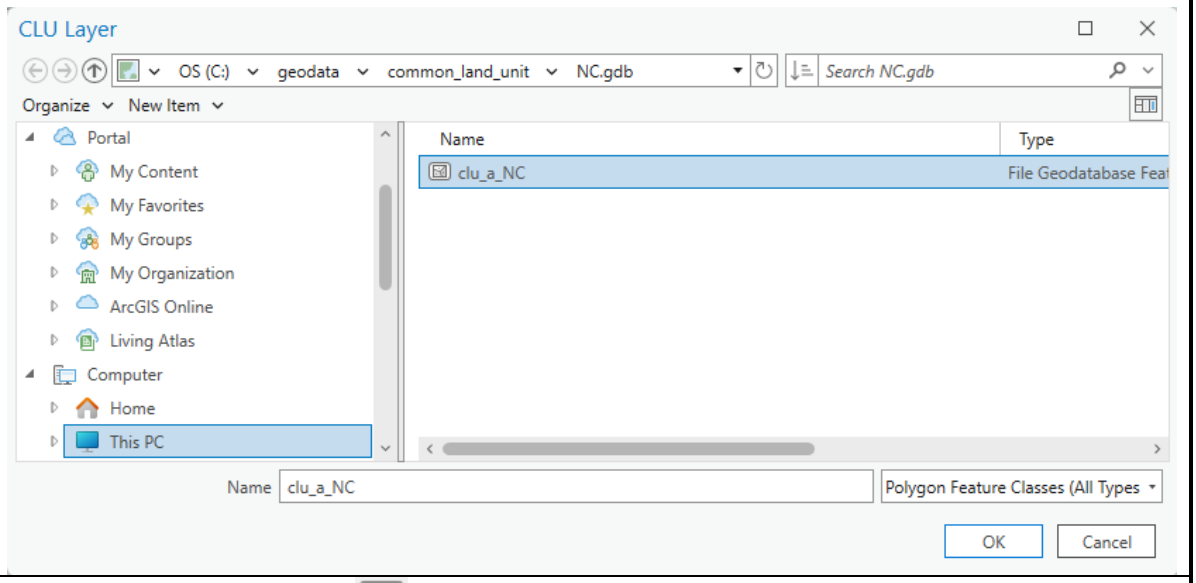
*--

Step	Instructions
1	If not done already, download and extract the Arc GIS_Pro_Toolbox_v3.zip file to C:\Geodata. The State Office CLU Tools (ArcGIS_Pro_Toolbox.pyt) file should be saved in C:\Geodata\PythonMapSeries.
2	Start ArcGIS Pro.
3	Open the Catalog window.
4	In the Catalog window, navigate to C:\Geodata\PythonMapSeries.
5	Expand the ArcGIS_Pro_Toolbox toolbox.
6	Expand the Quality Control toolset. 
7	Double-click on "Wetland Point Review".
8	Click the "Browse" button  next to Wetland Points Layer.
9	Navigate to the folder that contains the Statewide Wetland layer. See **Exhibit 21**.
10	Select the desired wetland feature class and CLICK "**OK**". 

--*

Wetland Point Review (Continued)

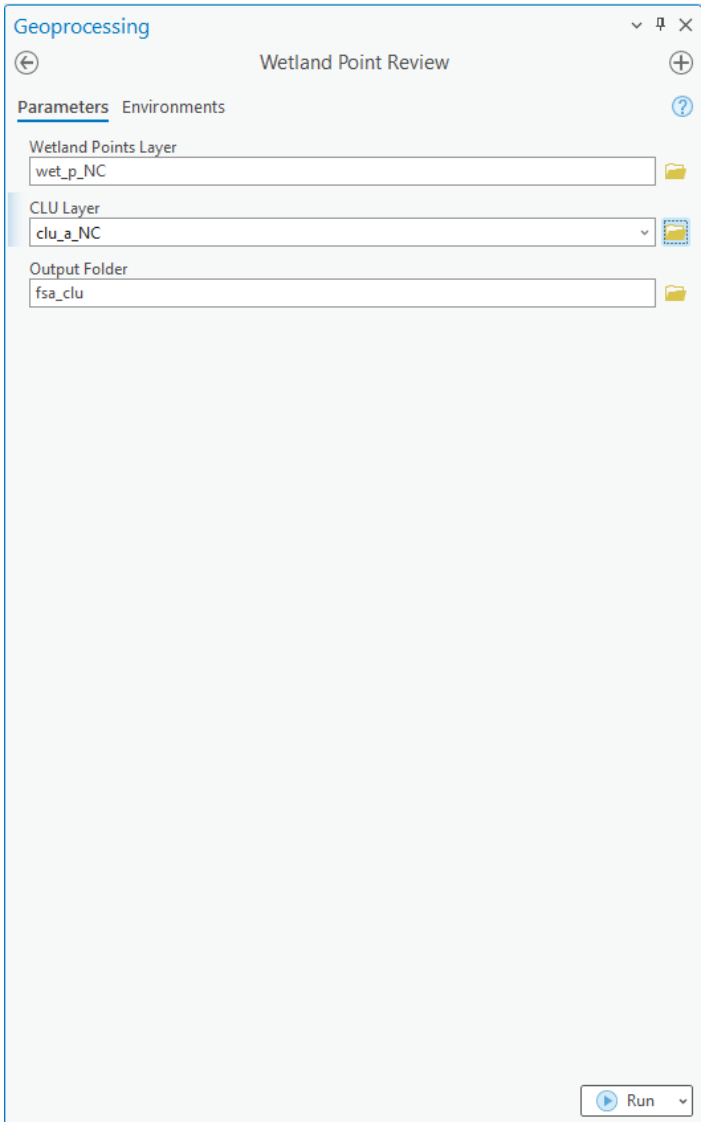
*--

Step	Instructions
11	Click the "Browse" button  next to CLU Layer.
12	Navigate to the folder that contains the Statewide CLU layer. See **Exhibit 17**.
13	Select the statewide CLU feature class and CLICK "**OK**". 
14	Click the "Browse" button  next to the Output folder.
15	Navigate to c:\geodata\common_land_unit.
16	Click on fsa_clu and CLICK "**OK**".

--*

Wetland Point Review (Continued)

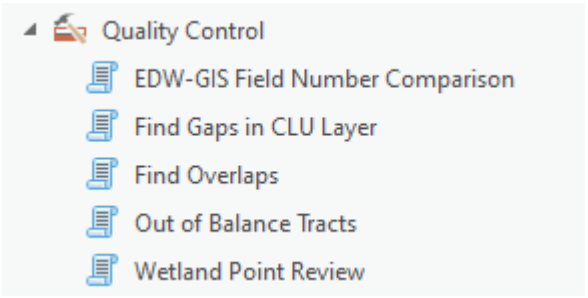
*--

Step	Instructions
17	CLICK "**RUN**" to run the tool.  A text file will be created in the output directory named wetPtAdmnReview_<yyyymmdd>_<hhmmss>.txt. The text file contains a list of all county codes and the number of errors found in each county. Counties with errors should run the Wetland QC tool on the QC Toolbar in CLU Maintenance Tool.

--*

Find Gaps in CLU Layer Tool

Follow instructions for using the Find Gaps in CLU Layer Tool according to the following table.

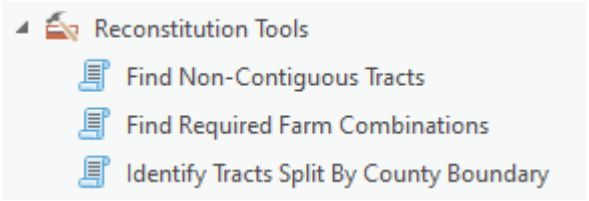
Step	Instructions
1	If not done already, download and extract the Arc GIS_Pro_Toolbox_v3.zip file to C:\Geodata. The State Office CLU Tools (ArcGIS_Pro_Toolbox.pyt) file should be saved in C:\Geodata\PythonMapSeries.
2	Start ArcGIS Pro.
3	Open the Catalog window.
4	In the Catalog window, navigate to C:\Geodata\PythonMapSeries.
5	Expand the ArcGIS_Pro_Toolbox toolbox.
6	Expand the Quality Control toolset. 
7	Double click on the "Find Gaps in CLU Layer" script tool.
8	Click the Browse button  next to Input Geodatabase.
9	Navigate to c:\geodata\common_land_unit\fsa_clu and select the file geodatabase containing the CLU to analyze. **Note:** This tool can be run on an individual county or on a merged statewide CLU.
10	Click **[OK].**
11	Click **[Run]** to run the tool.
12	A new feature class named “qc_gaps_clu_a_<ST>” will be added to the input geodatabase identified in step 9.
13	Add the resulting feature class to ArcMap to review potential gaps. A definition query should be applied using the “Acres” attribute to limit the results to larger areas.
14	The State GIS Specialist should review areas of concern with county staff to ensure CLU is accurately digitized.

--*

Find Non-Contiguous Tracts Tool

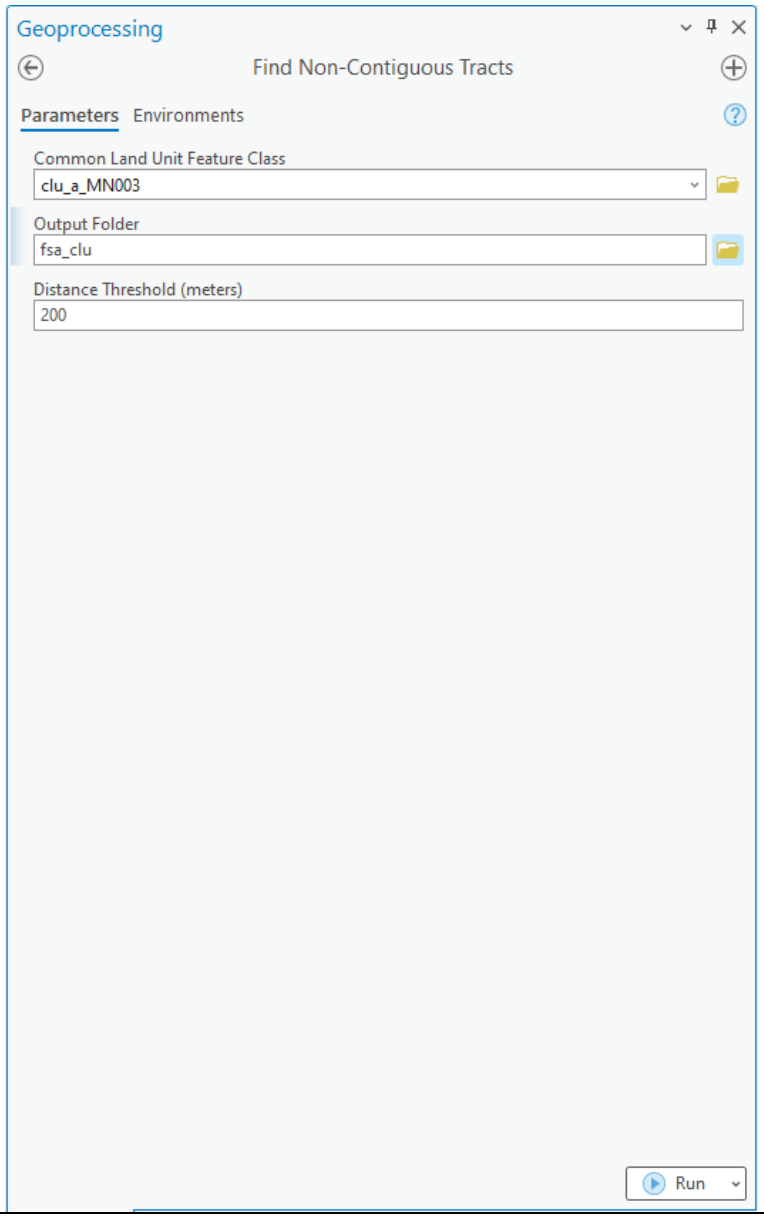
Use these instructions for the Find Non-Contiguous Tracts tool.

*--

Step	Instructions
1	If not done already, download and extract the Arc GIS_Pro_Toolbox_v3.zip file to C:\Geodata. The State Office CLU Tools (ArcGIS_Pro_Toolbox.pyt) file should be saved in C:\Geodata\PythonMapSeries.
2	Start ArcGIS Pro.
3	Open the Catalog window.
4	In the Catalog window, navigate to C:\Geodata\PythonMapSeries.
5	Expand the ArcGIS_Pro_Toolbox toolbox.
6	Expand the Reconstitution Tools toolset. 
7	Double-click the "Find Non-Contiguous Tracts" script tool.
8	Click the "Browse" button  next to Common Land Unit Feature Class.
9	Navigate to the desired State or county CLU file geodatabase and select the CLU feature class.
10	CLICK "**OK**".
11	Click the "Browse" button  next to the Output folder.
12	Navigate to c:\geodata\project_data\fsa.
13	Click once on the frs folder and CLICK "**OK**".

*--

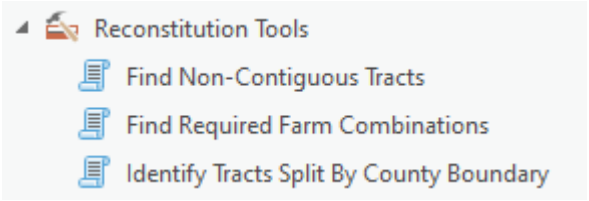
Find Non-Contiguous Tracts Tool (Continued)

Step	Instructions
14	Change the Distance Threshold as needed. A smaller threshold will potentially identify more noncontiguous tracts. It is recommended to leave the threshold set at 200 meters for at least the first run of the tool.
15	CLICK "**Run**" to run the tool. 
16	A file named noncontiguous_tracts.csv will be created in the output folder. This file will contain a list of State and county administrative codes, as well as farm and tract numbers of tracts that are found to be noncontiguous. The results may be provided to the County Office for follow-up either as a list, or maps may be made of the tracts.

Find Required Farm Combinations Tool

Use these instructions for the Find Required Farm Combinations tool.

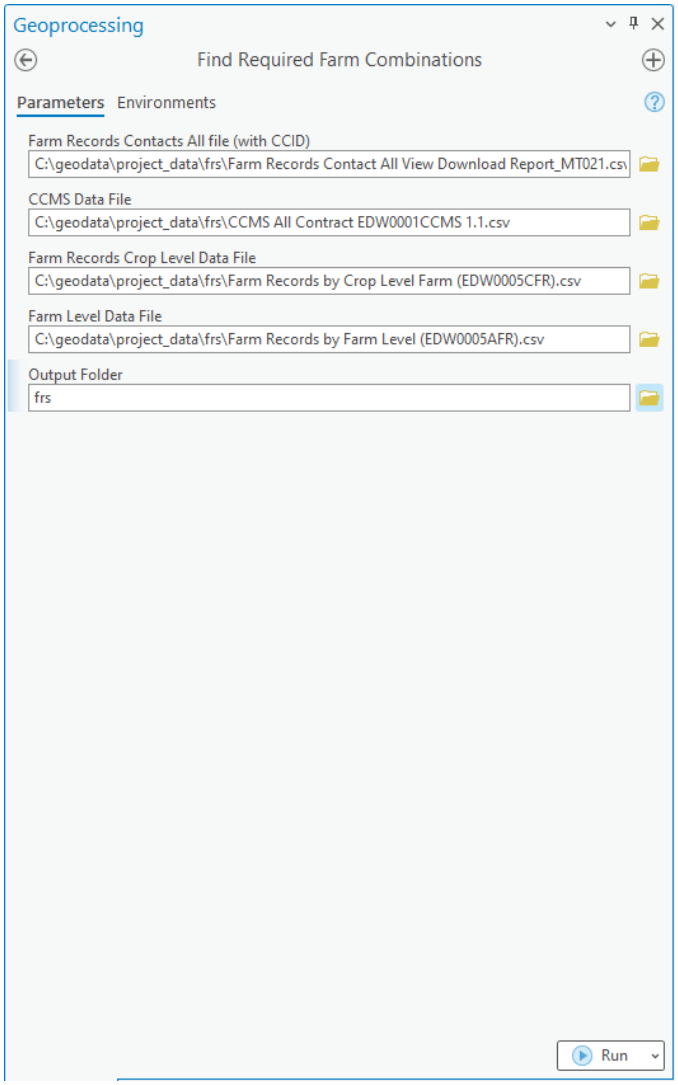
*--

Step	Instructions
1	If not done already, download and extract the Arc GIS_Pro_Toolbox_v3.zip file to C:\Geodata. The State Office CLU Tools (ArcGIS_Pro_Toolbox.pyt) file should be saved in C:\Geodata\PythonMapSeries.
2	Start ArcGIS Pro.
3	Open the Catalog window.
4	In the Catalog window, navigate to C:\Geodata\PythonMapSeries.
5	Expand the ArcGIS_Pro_Toolbox toolbox.
6	Expand the Reconstitution Tools toolset. 
7	Double-click the "Find Required Farm Combinations" script tool.
8	Click the "Browse" button  next to Farm Operator Details File.
9	Navigate to c:\geodata\project_data\fsa\frs and CLICK "Farm Records Contact All View Download Report.csv".
10	CLICK "**OK**".
11	Click the "Browse" button  next to CCMS Data File.
12	Navigate to c:\geodata\conservation and CLICK "CCMS All Contract EDW0001CCMS 1.1.csv".
13	CLICK "**OK**".
14	Click the "Browse" button  next to Farm Crop Level Data File.
15	Navigate to c:\geodata\project_data\fsa\frs and CLICK "Farm Records by Crop Level Farm (EDW0005CFR).csv".

--*

Find Required Farm Combinations Tool (Continued)

*--

Step	Instructions
16	CLICK "**OK**".
17	Click the Browse button next to Farm Level Data File.
18	Navigate to c:\geodata\project_data\fsa\frs and select Farm Records by Farm Level (EDW0005AFR).csv.
19	Click **[OK].**
20	Click the Browse button next to Output Folder.
21	Navigate to c:\geodata\project_data\fsa.
22	Click once on the frs folder and click **[OK]**. **Note:** Users may wish to create a "required_recons" subfolder to store the output.
23	Click **[Run]** to run the tool. 

--*

Find Required Farm Combinations Tool (Continued)

*--

<table>
<tr><th>Step</th><th>Instructions</th></tr>
<tr><td>24</td><td>HTM files containing a list of required farm combinations will be exported to the specified output folder. Records will be listed by operator name, with an ARCPLC notification message indicating enrollment status and whether farms are participating in CRP. For each farm, the tract(s) and owner(s) will be listed.

<table>
<tr><td>JOHN DOE</td><td colspan="3">ARCPLC: More than one program elected – All farms listed can be combined</td></tr>
<tr><td></td><td colspan="3">No farms in CRP</td></tr>
<tr><td></td><td>10858</td><td>13167</td><td>JOHN DOE</td></tr>
<tr><td></td><td></td><td></td><td>JANE DOE</td></tr>
<tr><td></td><td>11846</td><td>6865</td><td>JOHN DOE</td></tr>
<tr><td></td><td></td><td></td><td>JANE DOE</td></tr>
<tr><td></td><td></td><td>6907</td><td>JOHN DOE</td></tr>
<tr><td></td><td></td><td></td><td>JANE DOE</td></tr>
</table>

Note: Farms with an ARCPLC election but no base acres may appear on the report as a required combination. These farms should be manually reviewed to determine whether farms can be combined.</td></tr>
<tr><td>25</td><td>An additional file named required_recons_<ST>.csv, where <ST> is the state abbreviation, is created in the output folder. This CSV file provides a summary by county of the number of farms, number of operators, number of multi-farm operators and number of operators with required farm combinations.

This table can be joined to a county boundary dataset to provide a map of required farm combination data.</td></tr>
</table>

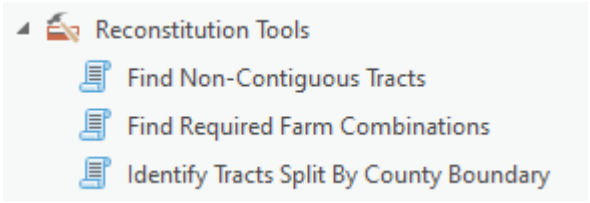
--*

Identify Tracts Split by County Boundary

Tracts that contain land that is physically located in multiple counties and is both greater than 10 acres in all physical locations and greater than 5 percent of the overall tract acreage must be separated according to 10-CM. The "Identify Tracts Split by County Boundary" tool provides a method for GIS users to identify tracts administered by a State or county that meet these criteria.

A Tool Execution

*--

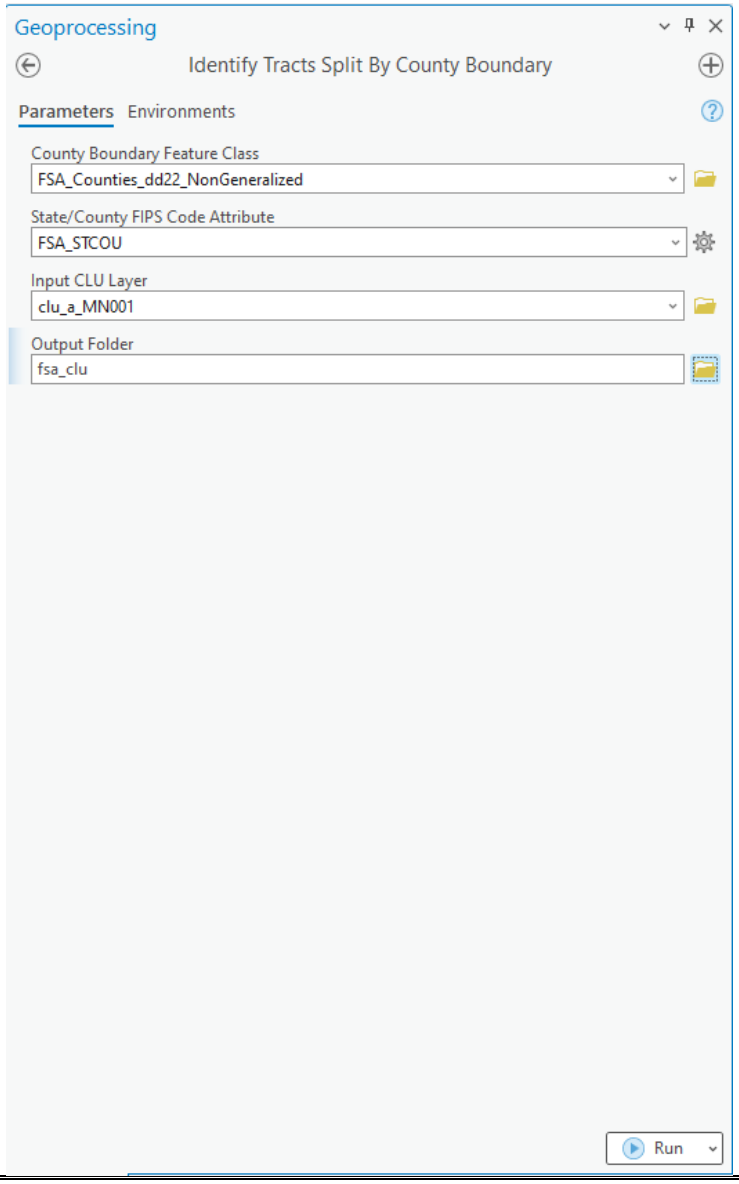
Step	Instructions
1	If not done already, download and extract the Arc GIS_Pro_Toolbox_v3.zip file to C:\Geodata. The State Office CLU Tools (ArcGIS_Pro_Toolbox.pyt) file should be saved in C:\Geodata\PythonMapSeries.
2	Start ArcGIS Pro.
3	Open the Catalog window.
4	In the Catalog window, navigate to C:\Geodata\PythonMapSeries.
5	Expand the ArcGIS_Pro_Toolbox toolbox.
6	Expand the Reconstitution Tools toolset. 
7	Double click on the "Identify Tracts Split By County Boundary" tool.
8	Click the "Browse" button next to "County Boundary Feature Class".
9	Navigate to C:\Geodata\Government_Units\fsa_counties_dd22_NonGeneralized.gdb.
10	Double click on the FSA_Counties_dd22_NonGeneralized feature dataset.
11	Under the feature dataset, select the FSA_Counties_dd22_NonGeneralized feature class.
12	Click "OK".
13	Change the "State County FIPS Code Attribute" dropdown to "FSA_STCOU".
14	Click the "Browse" button next to "Input CLU Layer".
15	Navigate to C:\Geodata\Common_Land_Unit\fsa_clu or the folder where the desired CLU file geodatabase is stored.

--*

Identify Tracts Split by County Boundary (Continued)

A Tool Execution

*--

Step	Instructions
16	Select the CLU feature class from the file geodatabase.
17	Click "OK".
18	Use either the "Browse" button or type the folder location in the "Output Folder" input box. The output file will usually be set to C:\Geodata\project_data\fsa.
19	Click "Run" to run the tool. 

--*

Identify Tracts Split by County Boundary (Continued)

B Review Results

Files created by the "Identify Tracts Split by County Boundary" tool will be stored in the output folder as specified in the tool.

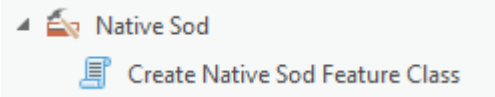
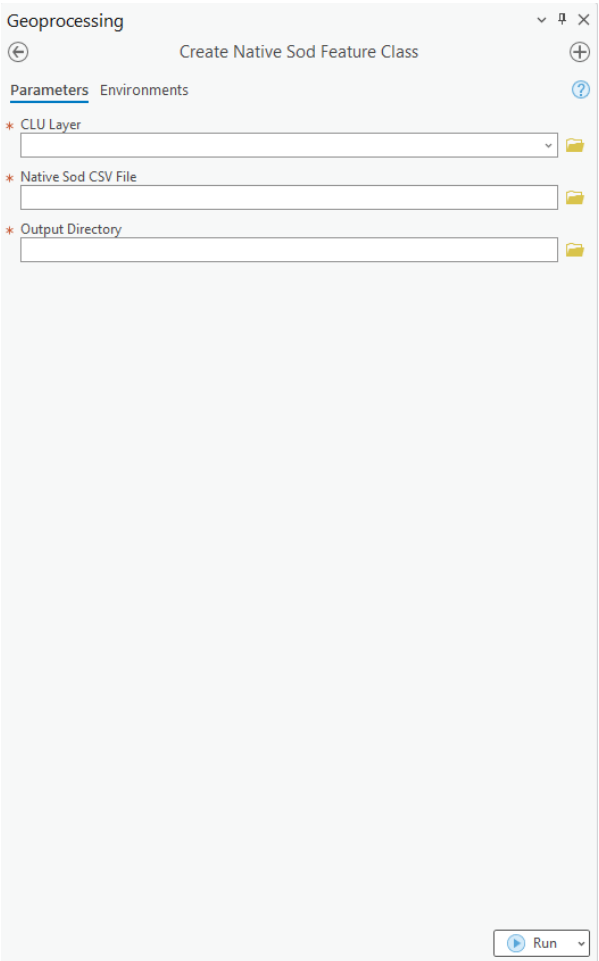
Step	Instructions
1	Open Windows Explorer.
2	Navigate to the output folder as specified in the tool, usually c:\geodata\project_data\fsa.
3	Double click on the file named "tracts_crossed_by_county_boundary_yyyymmdd.csv". The file will open in Microsoft Excel.
4	Review records in the spreadsheet and perform Farm Records corrections as necessary.

	A	B	C	D	E	F	G
1	admin_state	admin_county	tract_number	farm_number	fsa_stcou	area	percentage
2	35	7	1781	1052	35033	13875.24517	15.39398671
3	35	7	1781	1052	35007	76258.94443	84.6060133
4	35	31	2841	2574	35031	312.6773234	5.251018926
5	35	31	2841	2574	35006	5641.925519	94.74898071
6	35	9	4012	4335	35009	1341.577185	57.8295722
7	35	9	4012	4335	35041	820.8653234	35.38394288

Create Native Sod Feature Dataset Class

Use these instructions for the Create Native Sod Feature Dataset.

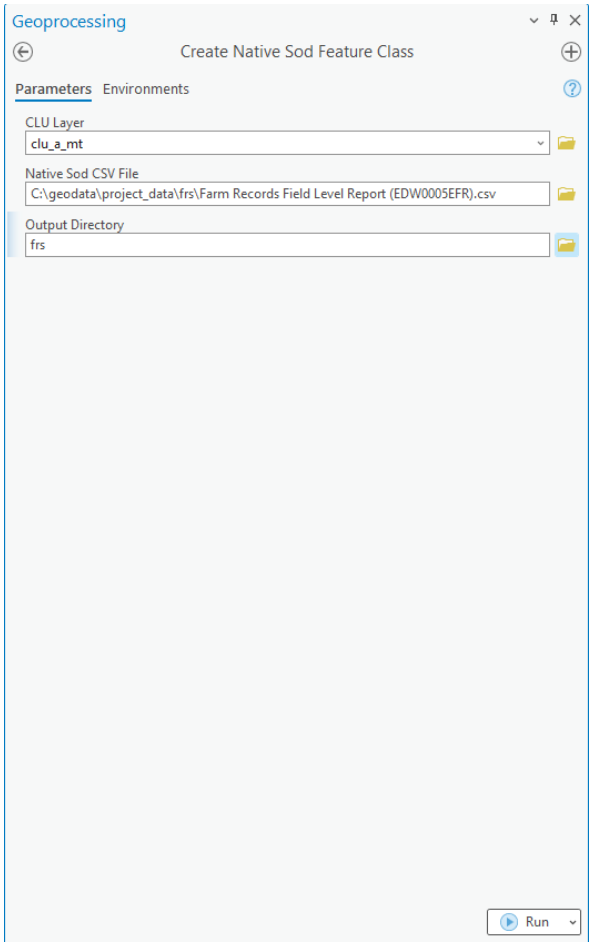
*--

Step	Instructions
1	If not done already, download and extract the Arc GIS_Pro_Toolbox_v3.zip file to C:\Geodata. The State Office CLU Tools (ArcGIS_Pro_Toolbox.pyt) file should be saved in C:\Geodata\PythonMapSeries.
2	Start ArcGIS Pro.
3	Open the Catalog window.
4	In the Catalog window, navigate to C:\Geodata\PythonMapSeries.
5	Expand the ArcGIS_Pro_Toolbox toolbox.
6	Expand the Native Sod toolset.
7	Double-click on "Create Native Feature Class". 
8	The Create Native Sod Feature Class window will open. 

--*

Create Native Sod Feature Class (Continued)

*--

Step	Instructions
9	Click the "Browse" button next to CLU Layer.
10	Navigate to the desired State CLU file geodatabase and select the CLU feature class.
11	CLICK "**OK**".
12	Click the "Browse" button next to the Native Sod CSV File.
13	Select the Farm Records Field Level Report as downloaded from EDW, typically named Farm Records Field Level Report (EDW0005EFR).csv. See **Exhibit 16**.
14	CLICK "**OK**".
15	Click the "Browse" button next to the Output directory.
16	Navigate to C:\geodata\project_data\fsa.
17	Click on FRS and CLICK "**OK**".
18	CLICK "**Run**" to run the tool.  A native sod file geodatabase will be created in the specified output director. The data in the feature class can be mapped, summarized and used within PythonMapSeries to identify the native sod fields on producer maps.

--*

Create County Summary Pages Tool

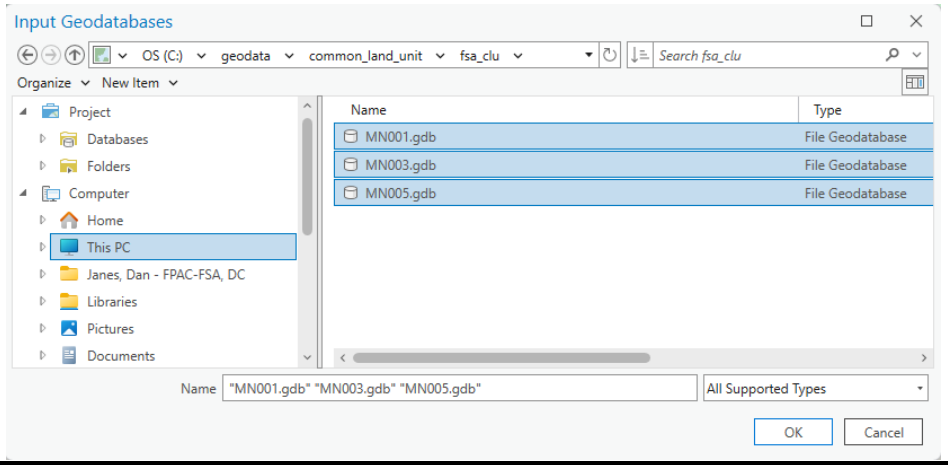
A Introduction

The Create County Summary Pages tool creates a report summarizing the data from different sources. The report includes CLU statistics, compliance data, conservation data, top 10 commodities reported to FSA, and base acres using data from CLU, Farm Records, conservation, and crop data.

B Tool Instructions

Use these instructions for the Create County Summary Pages tool.

*--

Step	Instructions
1	If not done already, download and extract the Arc GIS_Pro_Toolbox_v3.zip file to C:\Geodata. The State Office CLU Tools (ArcGIS_Pro_Toolbox.pyt) file should be saved in C:\Geodata\PythonMapSeries.
2	Start ArcGIS Pro.
3	Open the Catalog window.
4	In the Catalog window, navigate to C:\Geodata\PythonMapSeries.
5	Expand the ArcGIS_Pro_Toolbox toolbox.
6	Expand the County Summary toolbox. 
7	Double-click on “Create County Summary Pages”.
8	Click the “Browse” button  next to Input Geodatabases.
9	Browse to the directory that contains the exported file geodatabases.
10	Select all desired file geodatabases and CLICK “OK”. 

--*

Create County Summary Pages Tool (Continued)

B Tool Instructions (Continued)

*--

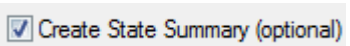
Step	Instructions
11	Click the "Browse" button  next to Farm Records by Crop Level Farm Data Table.
12	Navigate to C:\geodata\project_data\fsa\frs.
13	Select the file named "Farm Records by Crop Level Farm (EDW0005CFR).csv".
14	CLICK "OK".
15	Click the "Browse" button  next to Farm Records Contact All View Download Report.
16	Navigate to C:\geodata\project_data\fsa\frs.
17	Select the file named "Farm Records Contact All View Download Report.csv".
18	CLICK "OK".
19	Click the "Browse" button  next to Crop Data Table.
20	Navigate to c:\geodata\land_use_land_cover\fsa_compliance.
21	Select the crop data file for the appropriate program year.
22	Use the drop-down menu on the "Crop Year" line to select the crop year that is being summarized.
23	To include CRP in the summary pages, click the "Browse" button  next to Input CCMS Table, browse to the directory where the CCMS data file is located, and double-click the file to add it.

--*

Create County Summary Pages Tool (Continued)

B Tool Instructions (Continued)

*--

Step	Instructions
24	Use the drop-down menu on the State/County FIPS Code Attribute Menu to select a specific attribute field from the merged CLU layer added previously (optional).
25	Click the box next to "Create State Summary" to create a page containing a statewide summary. 
26	Click the "Browse" button  next to the Output folder.
27	Navigate to c:\geodata\project_data\fsa\frs.
28	Click once on the frs folder and CLICK "**OK**".
29	CLICK "**Run**" to run the tool.
30	Once complete the output directory will contain a folder with HTML documents summarizing data for each of the counties chosen. Resulting HTML documents can be combined into a PDF document using Adobe Acrobat.

--*

Create County Summary Pages Tool (Continued)

C Explanation of Data

The output report created by the Create County Summary Pages tool includes the following.

Report Item	Explanation	Data Source
Common Land Unit Statistics Section		
Farms in County	The count of unique farm numbers found in CLU for the county.	CLU
Tracts in County	The count of unique tract numbers found in CLU for the county.	CLU
Farm Operators and Other Tenants	A count of unique farm partner identifiers found in the MIDAS Farm Partner Detail record, plus all unique other tenants from the MIDAS Tract Partner Detail. Unique identifiers that are found in both datasets are only counted once.	Farm Partner Details, Tract Partner Details
Tract Owners	A count of unique tract partner identifiers found in the MIDAS Tract Partner Details report.	Tract Partner Details
All Customers	A count of all unique farm and tract partner identifiers found in MIDAS Farm Records. Unique identifiers that are found in both farm and tract records are only counted once.	Farm Partner Details, Tract Partner Details
Cropland Acres	The total of the CLU Calculated Acreage attribute for all CLU's that have a 3-CM Cropland attribute set to True.	CLU
Other Digitized Acres	The total of the CLU Calculated Acreage attribute for all CLU's that have a 3-CM Cropland attribute set to False.	CLU
Polygons in CLU	The total number of polygons digitized in the County CLU layer.	CLU
Date Last Updated	The highest value found in the "Last Change Date" attribute of the CLU layer. CLU data may have been exported more recently than the last change date.	CLU

Create County Summary Pages Tool (Continued)

C Explanation of Data (Continued)

Report Item	Explanation	Data Source
Compliance Data Section		
Highly Erodible Acres	The total of the CLU Calculated Acreage attribute for all CLU's that are categorized as "HEL".	CLU
Non-Highly Erodible Acres	The total of the CLU Calculated Acreage attribute for all CLU's that are categorized as "NHEL".	CLU
Wetlands in County	The total of all wetland points stored in the wetland point layer.	Wetland Point Layer
Wetlands by Type	The total of all wetland points, categorized by "Inventoried", "Certified", or "Unknown".	Wetland Point Layer

Report Item	Explanation	Data Source
Conservation Data Section		
Number of Farms with CRP	The count of unique farm numbers found for the county in the CCMS data export.	CCMS Data
Number of CRP Contracts	The count of unique contract numbers found for the county in the CCMS data export.	CCMS Data
CRP Contract Acres	The sum of all practice acres for all contracts found in the county in the CCMS data export.	CCMS Data
Expiration Year, Contracts and Acres	The number of contracts and total acres expiring in the county in the next 5 years.	CCMS Data
Date Last Updated	The last modified data of the CCMS data export. This date may be slightly different from the actual export date of the data.	CCMS Data

Create County Summary Pages Tool (Continued)

C Explanation of Data (Continued)

Report Item	Explanation	Data Source
Top 10 Commodities Reported to FSA Section		
Crop type, farms, acres	The top 10 crops, excluding CRP, reported to FSA for a given year, sorted in descending order by reported acres. Crops with a status of "Prevented" are not included.	Crop Data Report
Date Last Updated	The last modified date of the crop data export. This date may be slightly different from the actual export date of the data.	Crop Data Report

Report Item	Explanation	Data Source
Base Acres Section		
Farms with Base Acres	The total number of farms in the county that have base acres, less those farms where base acres have been reduced to 0 because of a CCC-505 reduction.	Tract Base Acre Details
Farms with Bases Reduced to 0	The total number of farms in the county that have base acres reduced to zero on CCC-505.	Tract Base Acre Details
Fully Based Farms	The number of farms that have base acres that are equal to the total cropland acres on the farm. Farms are considered fully based if the base acres in tenths is equal to the cropland acres in tenths.	Tract Base Acre Details and CLU
Total Base Acres	The total base acres for all covered commodities in the county.	Tract Base Acre Details
Total CRP Reduction Acres	The total of all CRP Reduction acres recorded on CCC-505 in the county.	Tract Base Acre Details
Crop, Farm and Base Acres	A listing, in descending order by number of acres, of all covered commodities with base acres in the county and the total number of farms with bases of each covered commodity. Farms may have 1 or more covered commodities and the total number of farms may be greater than the "Farms with Base Acres" total.	Tract Base Acre Details
Date Last Updated	The last modified date of the base acre data. This date may be slightly different from the actual export date of the data.	Tract Base Acre Details

Creating Producer Map Using Python MapSeries

A Information

The tools within the Python MapSeries toolset are the recommended tools to mass creating all producer maps to be used for acreage reporting and all other program purposes. A standard template in either portrait or landscape orientation is used within the Python MapSeries tools.

B Requirements

- Python MapSeries Toolset downloaded and saved to the "**C:\geodata**" folder.
- County CLU and wetland file geodatabases exported from Citrix according to **Exhibit 99**.
- State PLSS file geodatabase saved to the "**C:geodata\cadastral**" folder.
- Other State and county layers available based on State need. This may include layers for Native Sod, roads, easements, etc.

  Note: The PLSS file geodatabase must contain an attribute containing a combined Sec-Twp-Rng. The PLSS data for counties in adjacent States may also be needed.

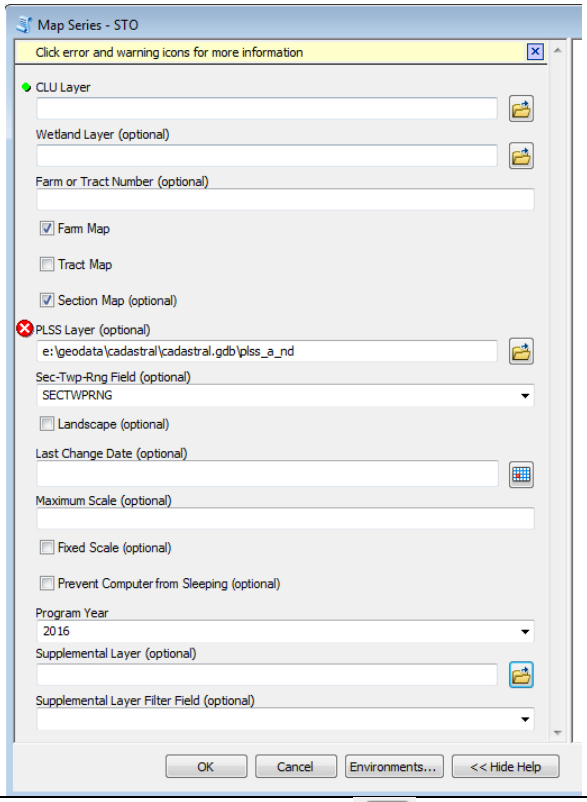
C Instructions

Use these instructions to create the producer map using Python MapSeries.

Step	Instructions
1	If not already done, download and extract the PythonMapSeries.zip file to C:\Geodata. The State Office CLU Tools (statewideCLU.pyt) file should be located in C:\Geodata\PythonMapSeries.
2	Start ArcMap.
3	Open the Catalog window.
4	In the Catalog window, navigate to C:\Geodata\PythonMapSeries.
5	Expand the PythonMapSeries_STO.pyt toolbox.

Creating Producer Map Using Python MapSeries (Continued)

C Instructions (Continued)

Step	Instructions
6	Double-click on "Map Series – STO". 
7	Click the "Browse" button  next to CLU Layer. **Note:** If CLU has been added to the open map document, the user will have a drop-down menu available and CLU can be chosen from a list of available layers.
8	Navigate to c:\geodata\common_land_unit\fsa_clu.
9	Open the county CLU file geodatabase.
10	Select the CLU layer (clu_a_<stnnn>).
11	CLICK "**Add**".
12	Click the "Browse" button  next to Wetland Layer. **Note:** If a wetland layer has been added to the open map document, the user will have a drop-down menu available and the wetlands can be chosen from a list of available layers.

Creating Producer Map Using Python MapSeries (Continued)

C Instructions (Continued)

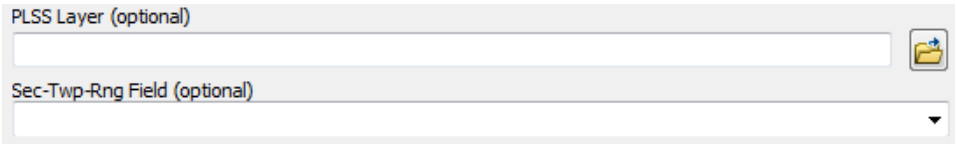
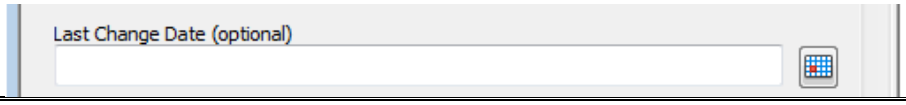
Step	Instructions
13	The Browse window should default to the file geodatabase selected in step 9. Select the Wetland layer (wet_p_<stnnn>).
14	CLICK "**Add**".

15	In the "Farm or Tract Number (optional)" text box:
	
	• **if creating Farm Maps**, enter an individual, multiple, or range of farm numbers
	
	• **if creating Tract Maps, enter either of the following**:
	
	  • individual, multiple, or range of tract numbers
	  • ENTER "F" preceding the number to specify a search by the farm number
	
	  Note: This will select all tracts for the desired farms and group the resulting maps by farm.
	
	• **if creating maps for an entire county, leave this entry blank.**
	
	For multiple farm or tract maps, enter a comma-separated list (e.g. 1,2,10,22). For a range, enter the first and last number separated by "-" (e.g. 10123-10255).

16	Place a checkmark next to either Farm Map or Tract Map. **Notes:** For Farm Maps a single map will be made for each farm with a data definition query applied at the farm level. For Tract Maps a single map will be made for each tract. If farm numbers were specified (e.g. F3456) under Farm and Tract Numbers and Tract Map is also selected, individual tract maps will be created and grouped by farm. The data definition query will be applied at the tract level for each map.

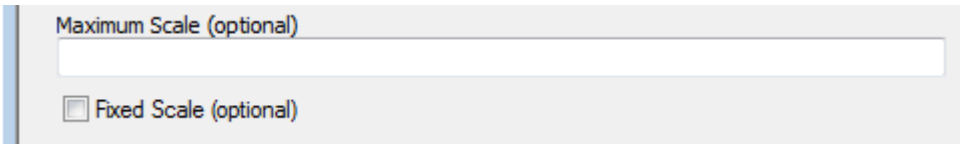
Creating Producer Map Using Python MapSeries (Continued)

C Instructions (Continued)

Step	Instructions
17	To create at either the farm or tract level but to be zoomed to the extent of a single legal description (section-township-range), check "Section Map". **Note:** This will center the resulting maps on the section that the farm or tract is located in. If a farm or tract covers more than 1 section, maps will be made for each section and a multi-page PDF document for each farm or tract will be created. Definition queries will be applied based on farm or tract. If Section Map is checked, a PLSS layer must be specified. **Note:** If Section Map is not checked, a PLSS Layer can still be added using the following instructions: • click the "**Browse**" button  • navigate to the folder where the PLSS file geodatabase is saved • CLICK "**Add**" to add the layer • select the field attribute that contains the legal description in the "Sec-Twp-Rng Field" drop-down menu. 
18	Place a checkmark next to "Landscape" to make maps in Landscape format. For portrait format maps, leave the "Landscape" check box empty.
19	To make maps based on change date, enter a date in the "Last Change Date" text box. Maps will be made for all CLU's with a change date after the date specified. 

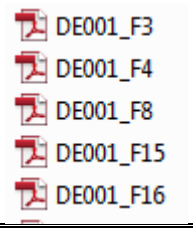
Creating Producer Map Using Python MapSeries (Continued)

C Instructions (Continued)

Step	Instructions
20	Maximum Scale and Fixed Scale (optional).  **Maximum Scale:** Enter a maximum scale if the map scale needs to be limited to an extent other than the farm, tract, or PLSS. **Note:** If the data frame - when zoomed to the full extent of the farm or tract, is at a scale greater than the specified scale, a grid will be created for the tract. This is useful for large tracts with small polygons to improve label readability. **Fixed Scale:** Check "Fixed Scale" to force all maps to be created at the scale specified in the maximum scale. If unchecked, smaller farms or tracts will use a variable scale between 1:4800 and the scale specified in the Maximum Scale.
21	Place a check next to "Prevent Computer from Sleeping" to execute "Insomnia.exe" that will prevent the user's computer from going to sleep when running a large set of maps unattended. **Note:** After executing the tool, the Insomnia window may be minimized but should not be closed. To prevent Insomnia.exe from running, remove the checkmark from "Prevent Computer From Sleeping".
22	Select the applicable program year from the drop-down menu.

Creating Producer Map Using Python MapSeries (Continued)

C Instructions (Continued)

Step	Instructions
23	A supplemental layer can be added as needed. Supplemental layers must be in .lyr file format. • Click the "**Browse**" button  . • Navigate to the location where the supplimental layer file is saved. • Select the layer file and CLICK "**Add**". The supplemental layers added must be filtered to the farm or tract if supplemental data contains PII. Select the appropriate farm or tract attribute in the "Supplemental Layer Filter" drop-down menu.
24	CLICK "**OK**" to run the tool. Maps will be exported in PDF format to the C:\Geodata\PythonMapSeries\MapOut folder. 

Creating Producer Map Using Python MapSeries (Continued)

D Usage Notes

Use these instructions for the usage notes.

Step	Instructions
1	State and county names are placed on the map based on a county lookup table. The FIPS code from the end of the CLU name is referenced in the lookup table and the appropriate county name, county equivalent (County, Parish, Borough, etc.), and State name are returned.
2	Maps are projected in the native UTM projection of the county based on a county lookup table. A rotation angle is applied to each map to remove the "tilt" that displays as one moves further from the center of a UTM zone.
3	CLU, CRP and Wetland data are exported to a temporary mapbook file geodatabase in the PythonMapSeries\Data folder. This file geodatabase will be deleted the next time the MapSeries tool is run.
4	Additional layers may be added to the map documents, e.g. roads. Definition queries will not be applied to additional layers.
5	Layer symbology and labels can be changed by modifying the .mxd files. Margin elements should not be changed (legend items, farm and tract number, legal description) because of dependencies within the script.
6	If a PLSS layer is specified but the Section Maps option is not checked, the PLSS layer for the county will be visible on the maps but maps will not be indexed by section. Users may wish to modify the layer properties for the PLSS in the Map Series MXD files to display labels on PLSS data.
7	When making maps by section, small farms or tracts (typically less than 1 acre) may be skipped in the map creation process. When the sections are selected, an inside buffer of 30 meters is applied to the tract or farm boundary. This prevents extra sections from being selected if the tract or farm slightly overlaps a section line. On very small tracts, this inside buffer is not a valid polygon and no index feature is created. Errors will be written to a log and a list of farms or tracts that were skipped can be accessed from the log file after maps are created. Maps that were skipped may be recreated without the section map option.
8	A minimum mapping scale of 1:4800 is set for all maps. This may be overridden by checking the "Fixed Scale" option and entering in a user-defined scale.
9	If the user cancels the map making process, it is recommended to reboot the computer before starting again.
10	When specifying the last change date, the calendar selector button may be used. Users should be careful to indicate "Date Only" if using this option.

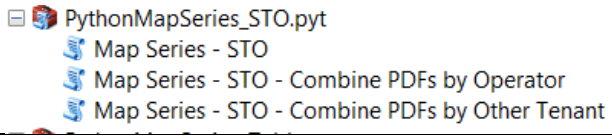
Python MapSeries – Combine PDF's by Operator

A Introduction

Farm or tract maps created using the Python Map Series Tool may be combined into a single PDF for each farm operator in a county. PDF files are saved in an "operator" subfolder in the same directory that the original maps were stored. Original maps are not affected by the merge process.

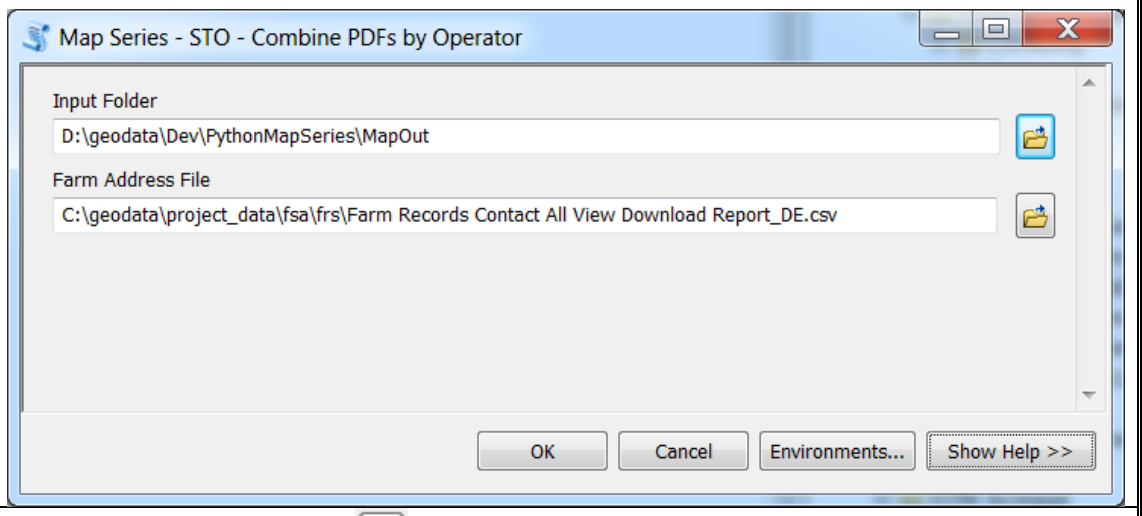
B Tool Instructions

Use these instructions for the Python MapSeries to combine PDF's by operator.

Step	Instructions
1	If not already done, download and extract the PythonMapSeries.zip file to C:\Geodata. The State Office Python Map Series Tools (PythonMapSeries_STO.pyt) file should be located in C:\Geodata\PythonMapSeries.
2	Start ArcMap.
3	Open the Catalog window.
4	In the Catalog window, navigate to C:\Geodata\PythonMapSeries.
5	Expand the PythonMapSeries_STO toolbox. 
6	Double-click on "Map Series – STO – Combine PDFs by Operator".
7	Click the "Browse" button  next to the Output folder.
8	Navigate to the folder where the PDF maps are stored.

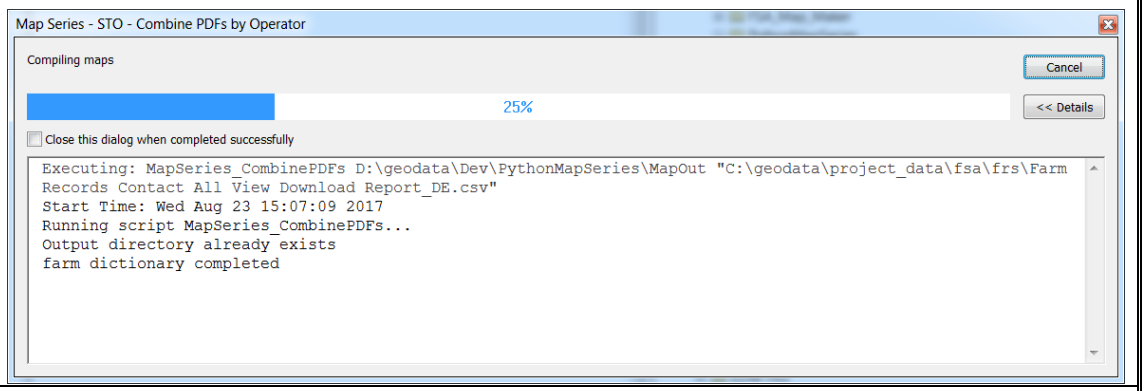
Python MapSeries – Combine PDF's by Operator (Continued)

B Tool Instructions (Continued)

Step	Instructions
9	Click once on the folder and CLICK "**Add**". 
10	Click the "Browse" button  next to the Farm Address file.
11	Navigate to the folder where the EDW Farm Records Contact file is stored.
12	Select the Farm Record Contact CSV file downloaded from EDW. **Note:** The Farm Records Contact file can be either the Operator or the "All View" file in CSV format. If the "All View" file is used, only records with a Farm Record Relationship equal to "Operator" will be read.
13	CLICK "**Open**".

Python MapSeries – Combine PDF's by Operator (Continued)

B Tool Instructions (Continued)

Step	Instructions
14	CLICK "OK" to run the tool. 
15	When the tool has completed, CLICK "Close" on the progress window. A new "operator" subfolder will be created in the same folder where the original maps are stored.

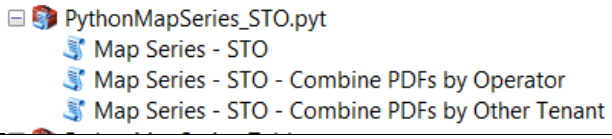
Python MapSeries – Combine PDF's by Other Tenant

A Introduction

Farm or tract maps created using the Python Map Series Tool may be combined into a single PDF for each "Other Producer" in a county. PDF files are saved in an "other_tenant" subfolder in the same directory that the original maps were stored. Original maps are not affected by the merge process.

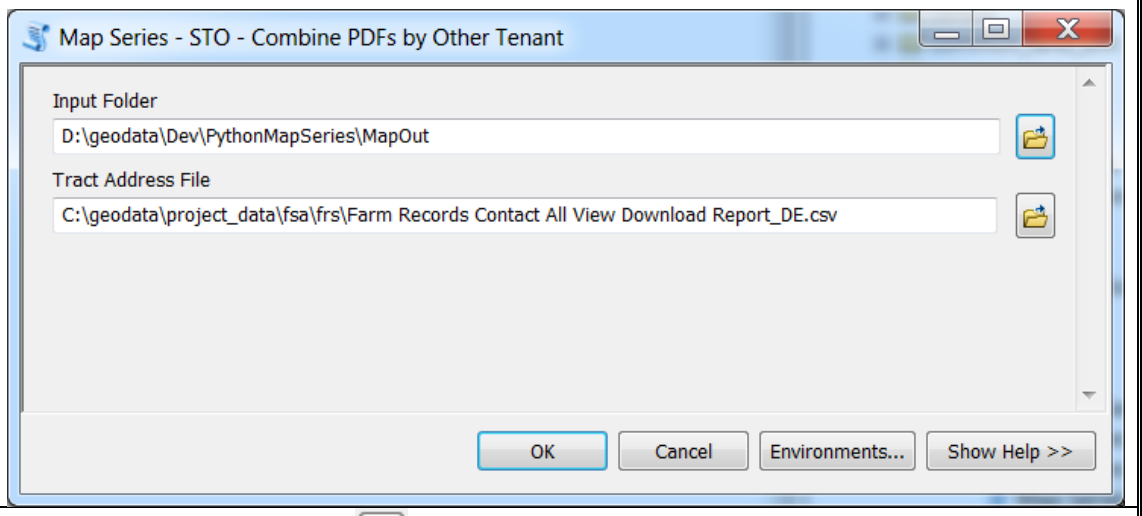
B Tool Instructions

Use these instructions for the Python MapSeries to combine PDF's by other tenant.

Step	Instructions
1	If not already done, download and extract the PythonMapSeries.zip file to C:\Geodata. The State Office Python Map Series Tools (PythonMapSeries_STO.pyt) file should be located in C:\Geodata\PythonMapSeries.
2	Start ArcMap.
3	Open the Catalog window.
4	In the Catalog window, navigate to C:\Geodata\PythonMapSeries.
5	Expand the PythonMapSeries_STO toolbox. 
6	Double-click on "Map Series – STO – Combine PDFs by Other Tenant".
7	Click the "Browse" button  next to the Output folder.
8	Navigate to the folder where the PDF maps are stored.

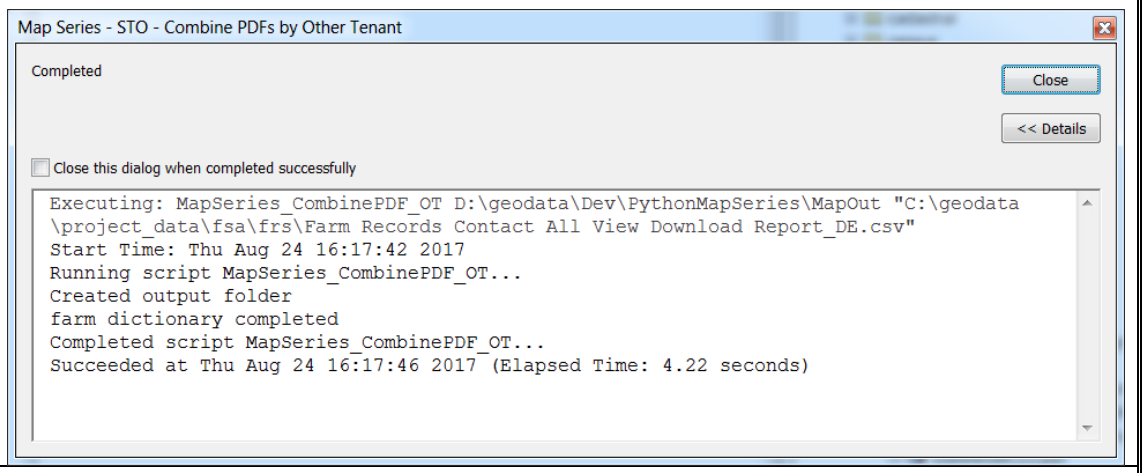
Python MapSeries – Combine PDF's by Other Tenant (Continued)

B Tool Instructions (Continued)

Step	Instructions
9	Click once on the folder and CLICK "**Add**". 
10	Click the "Browse" button  next to the Farm Address file.
11	Navigate to the folder where the EDW Farm Records Contact file is stored.
12	Select the Farm Record Contact CSV file downloaded from EDW. **Note:** The Farm Records Contact file can be either the "Other Producer" or the "All View" file in CSV format. If the "All View" file is used, only records with a Farm Record Relationship equal to "Other Producer" will be read.
13	CLICK "**Open**".

Python MapSeries – Combine PDF's by Other Tenant (Continued)

B Tool Instructions (Continued)

Step	Instructions
14	CLICK "OK" to run the tool. 
15	When the tool has completed, CLICK "Close" on the progress window. A new "other_tenant" subfolder will be created in the same folder where the original maps are stored.

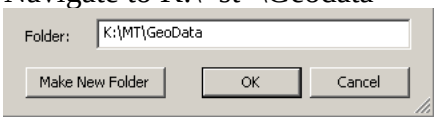
Python MapSeries – Citrix

A Introduction

Maps for acreage reporting purposes must have PII redacted at the farm or tract level, as appropriate. The desktop Python MapSeries tool allows State Office users to generate large volumes of maps in PDF format on demand. The Citrix version provides County Office users similar capability with limitations placed on the number of maps to be created at a single time. Python MapSeries - Citrix can be accessed through the Catalog window while using the CLU Maintenance Tool. The State Office GIS Specialist should modify the portrait and landscape map templates to ensure that the correct imagery and labeling strategies are used for their respective States.

B Instructions

To generate maps in PDF format from within the CITRIX environment, use the following instructions.

Step	Instructions
1	Open an existing CLU Maintenance Tool map document.
2	Click the "Catalog Window" button  located on the Tools Toolbar.
3	Navigate to K:\<st>\Geodata under "Folder Connections". **Note:** If K:\<st>\Geodata is not visible, click the "Connect to Folder" button  . • In the Connect to Folder window, CLICK "My Computer". • CLICK "**OK**" on the message, "Folder Desktop cannot be used. Please choose another folder". • Navigate to K:\<st>\Geodata  • CLICK "**OK**".
4	In the Catalog window, expand "Folder Connections".
5	Navigate to K:\<st>\Geodata\Maps\PythonMapSeries_Citrix.
6	Expand the PythonMapSeries.pyt toolbox.
7	Double-click the "Map Series - Citrix" script tool.

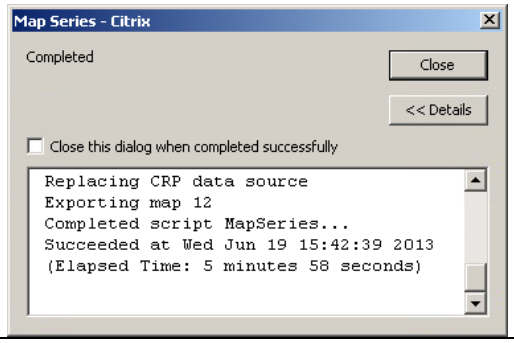
Python MapSeries – Citrix (Continued)

B Instructions (Continued)

Step	Instructions
8	Click the "CLU Layer" drop-down arrow and select the CLU layer (GIS_<ST>.SDE.clu_a_<stnnn>) from the list.
9	Click the "Wetland Layer" drop-down arrow and select the Wetland layer (National_Wetland.SDE.wetlands) from the list.
10	Enter the farm or tract number in the "Farm or Tract Number" text box. **Note:** To specify multiple farms or tracts, use a comma separated list, e.g. 345,457,876; or a hyphen-separated range, e.g. 345-500. The total number of farms (or tracts) cannot exceed 20.
11	Place a checkmark next to "Farm Map" or "Tract Map" to indicate if the numbers previously entered represent a farm or a tract.
12	To create section maps for the farm or tract, place a checkmark next to "Section Map". This will prompt the tool to create a map page for each section that the farm or tract displays on, with PII redacted at the farm or tract level.
13	If section maps are being created, select the PLSS layer from the "PLSS Layer" drop-down menu.
14	If section maps are being created, select the PLSS attribute that contains the section, township, and range information from the "Sec-Twp-Rng Field" drop-down menu.
15	If landscape-formatted (8.5" tall by 11" wide) maps are desired, place a checkmark next to "Landscape".
16	To create maps for CLU's that have changed after a certain date, enter the date in "MM/DD/YYYY" format in the "Last Change Date" text box.

Python MapSeries – Citrix (Continued)

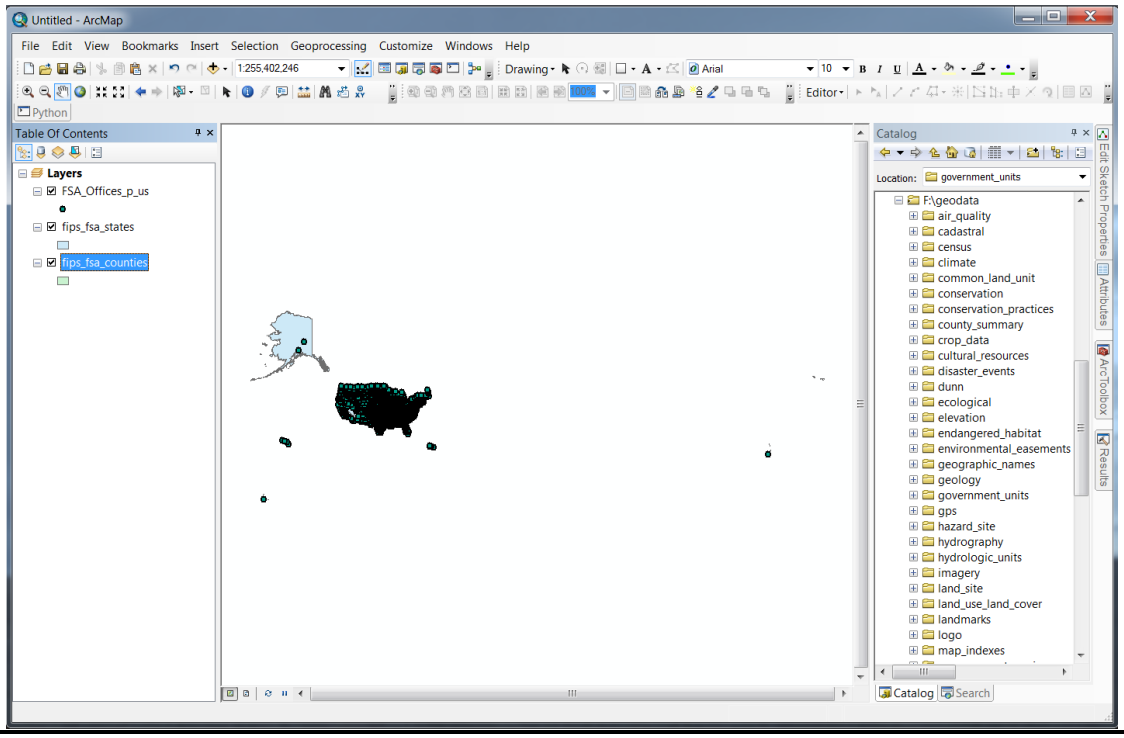
B Instructions (Continued)

Step	Instructions
17	For large farms or tracts, it may be necessary to specify a maximum scale. Entering a scale in the "Maximum Scale" text box will break farms or tracts across multiple pages. Use this option if a large farm or tract contains labels that are unreadable when viewing the entire extent. Recommended scales are between 4800 and 24000. **Note:** If using the "Section Map" option, do not specify a maximum scale.
18	CLICK "**OK**" to run the tool.
19	When the tool has completed, CLICK "**Close**". 
20	PDF documents containing the maps will be stored in K:\<ST>\Geodata\Maps\<stnnn>. These files should be moved from Citrix to a local computer and printed and\or e-mailed to the producer. Follow proper PII safeguards before e-mailing maps to producers.

Create State Map Template

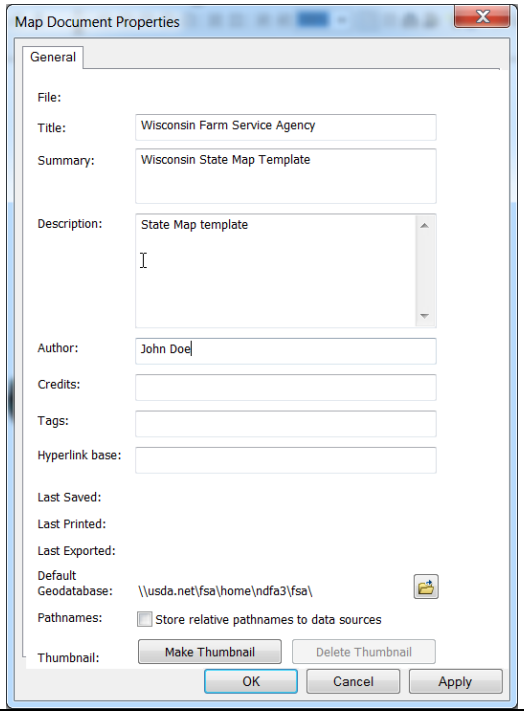
A Map Document Setup

Use these instructions to set up the map document.

Step	Instructions
1	Start ArcMap.
2	Open the Catalog window.
3	In the Catalog window, navigate to F:\Geodata\Government_Units.
4	Click and hold on the fips_fsa_counties dataset, then drag the cursor to the ArcMap data frame and release the mouse button. **Note:** The fips_fsa_counties dataset may be obtained from I:\national\government units directory
5	Click and hold on the fips_fsa_states dataset, then drag the cursor to the ArcMap data frame and release the mouse button.
6	Click and hold on the FSA_Offices_p_us dataset, then drag the cursor to the ArcMap data frame and release the mouse button. 

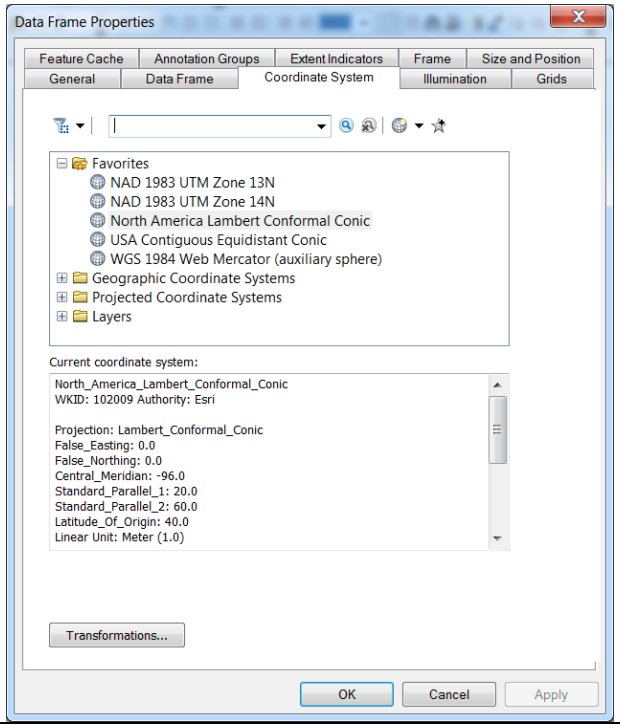
Create State Map Template (Continued)

A Map Document Setup (Continued)

Step	Instructions
7	CLICK "File" and "Map Document Properties".
8	ENTER "<State> Farm Service Agency" in the "Title" text box.
9	ENTER "<State> State Map Template" in the "Summary" text box.
10	ENTER "State map template" in the "Description" text box.
11	Enter the name of the user in the "Author" text box. 
12	CLICK "**OK**" to close the Map Document Properties window.
13	CLICK "File" and "Save As".
14	Navigate to f:\geodata\project_data\fsa.
15	Change the file name to "<ST>_State_Map_Template.mxd", where <ST> is the State abbreviation.
16	CLICK "**Save**".

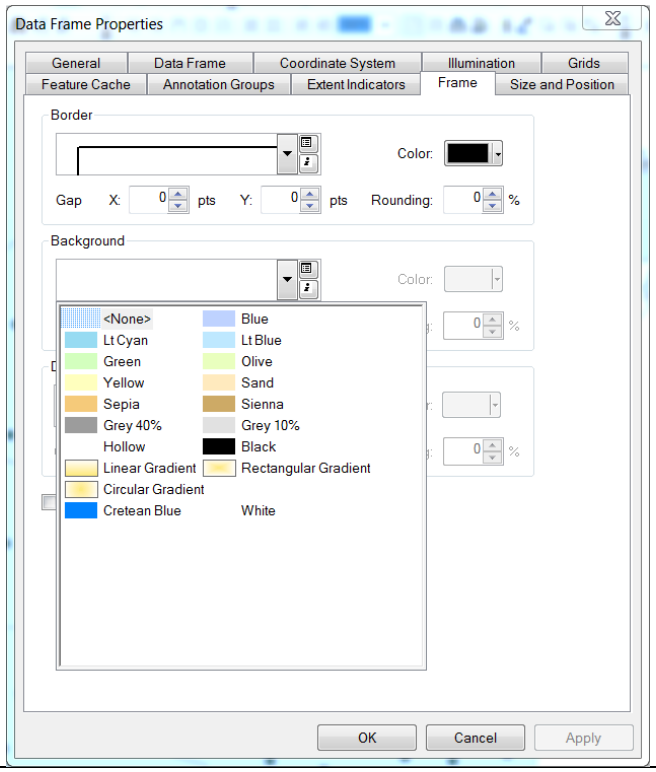
Create State Map Template (Continued)

A Map Document Setup (Continued)

Step	Instructions
17	CLICK "View" and "Data Frame Properties".
18	Click the "Coordinate System" tab.
19	Select the appropriate coordinate system for the State. Appropriate coordinate systems include the majority UTM zone for the State in NAD83, a State plane projection, or other projected coordinate system. GCS's should not be used. **Note:** Once a projection is selected, click the "Add to Favorites" button to quickly select the projection for future map documents. 
20	CLICK "**OK**" to apply the projection to the data frame.
21	CLICK "View" and "Data Frame Properties".
22	Click the "Frame" tab.
23	Click the arrow next to "Background".

Create State Map Template (Continued)

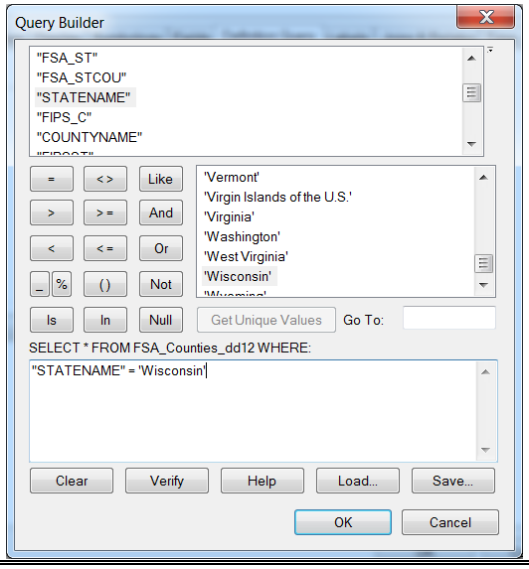
A Map Document Setup (Continued)

Step	Instructions
24	Select “LtBlue” from the list of colors. 
25	CLICK “**OK**” to apply the change and close the Data Frame Properties window.

Create State Map Template (Continued)

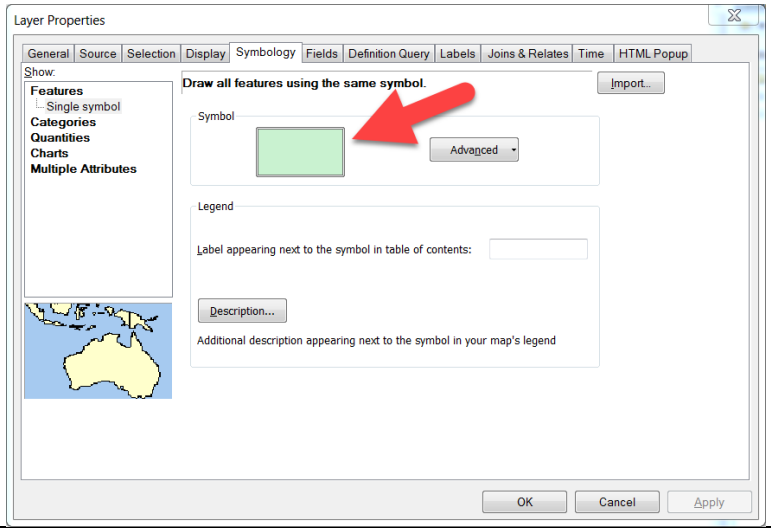
B County Boundary Layer Setup

Use these instructions to set up the county boundary layer.

Step	Instructions
1	In the Table of Contents, right-click the layer named fips_fsa_counties and CLICK "Properties".
2	Click the "General" tab.
3	Change the "Layer Name" text box to "County Boundary".
4	CLICK "**Apply**".
5	Click the "Definition Query" tab. The definition query will create a subset to display only counties within the State.
6	Click the "**Query Builder**" button.
7	Double-click on "STATENAME".
8	CLICK "=".
9	CLICK "**Get Unique Values**".
10	Double-click the State name in the list of values.
11	Ensure that the "Query Builder" text box is completely populated with the attribute name, operator, and value then CLICK "**OK**". 

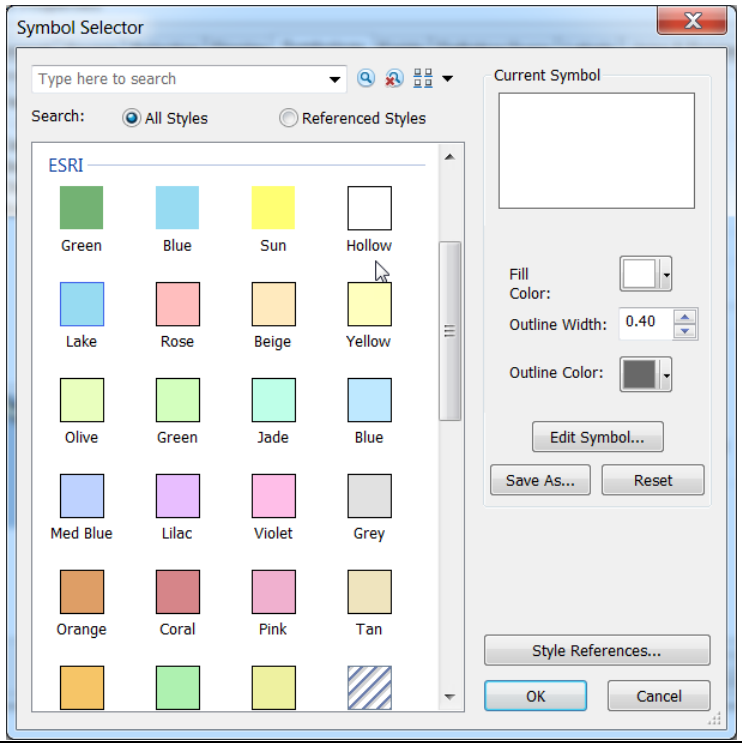
Create State Map Template (Continued)

B County Boundary Layer Setup (Continued)

Step	Instructions
12	CLICK "**Apply**".
13	Click the "Symbology" tab.
14	Click the "Symbol" box. 
15	Set the Fill Color to "Arctic White".
16	Set the Outline Width to 0.40.

Create State Map Template (Continued)

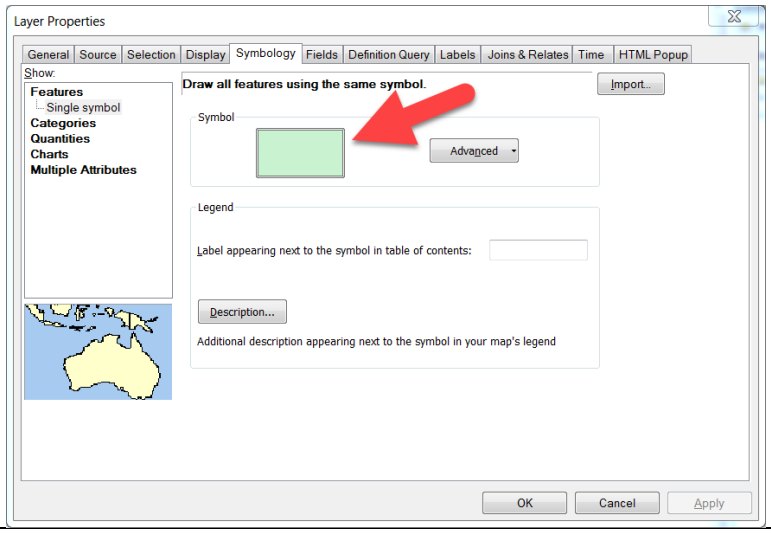
B County Boundary Layer Setup (Continued)

Step	Instructions
17	Set the Outline Color to "Gray 60%". 
18	CLICK "**OK**" to close the Symbol Selector.
19	CLICK "**OK**" to close the Layer Properties window.
20	CLICK "File" and "Save" to save the map.

Create State Map Template (Continued)

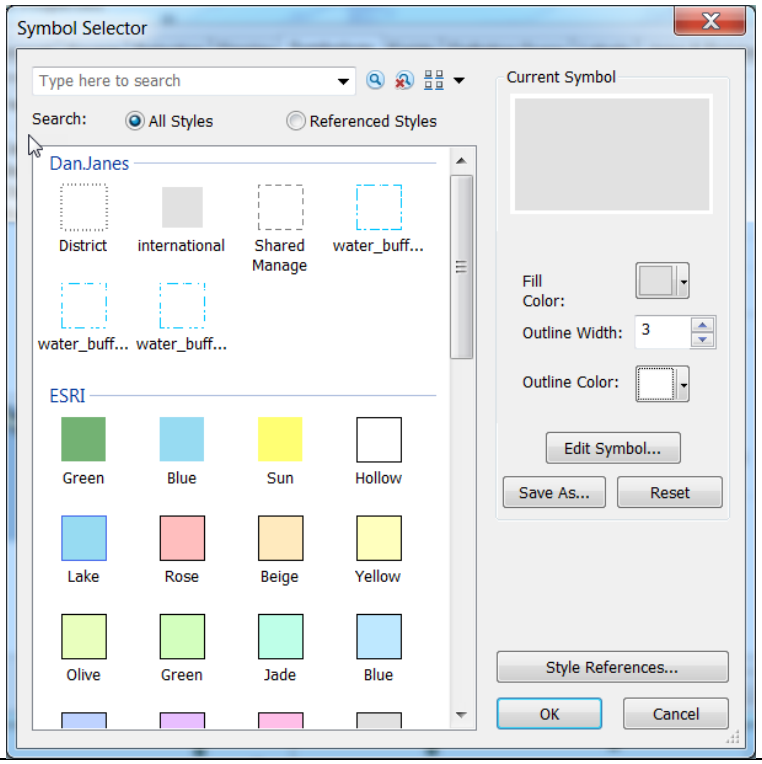
C State Boundary Layer Setup

Use these instructions to set up the State boundary layer.

Step	Instructions
1	In the Table of Contents, right-click the layer named “fips_fsa_states” and CLICK “Properties”.
2	Click the “General” tab.
3	Change the “Layer Name” text box to “State Boundary”.
4	CLICK “**Apply**”.
5	Click the “Symbology” tab.
6	Click the “Symbol” box. 
7	Set the Fill Color to “Gray 10%”.
8	Set the Outline Width to 3.

Create State Map Template (Continued)

C State Boundary Layer Setup (Continued)

Step	Instructions
9	Set the Outline Color to “Arctic White”. 
10	CLICK “**OK**” to close the Symbol Selector.
11	CLICK “**OK**” to close the Layer Properties window.
12	In the Table of Contents, click and hold the mouse button on the “State Boundary” layer name. Drag the State Boundary layer below the County Boundary layer and release the mouse button.
13	CLICK “File” and “Save” to save the map.

Create State Map Template (Continued)

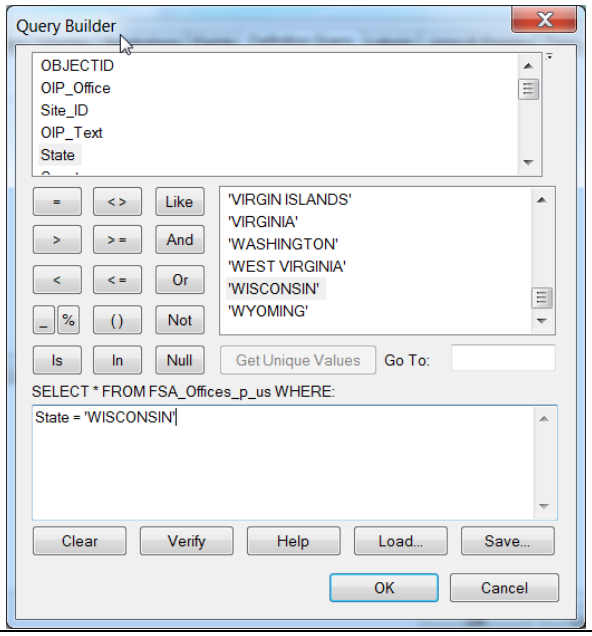
D Office Location Layer Setup

Use these instructions to set up the office location layer.

Step	Instructions
1	In the Table of Contents, right-click the layer named FSA_Offices_p_us and CLICK "Properties".
2	Click the "General" tab.
3	Change the "Layer Name" text box to "Service Centers".
4	CLICK "**Apply**".
5	Click the "Definition Query" tab. The definition query will create a subset to display only Service Centers within the State.
6	Click the "**Query Builder**" button.
7	Double-click on "STATE".
8	CLICK "**=**".
9	CLICK "**Get Unique Values**".
10	Double-click the State name in the list of values.

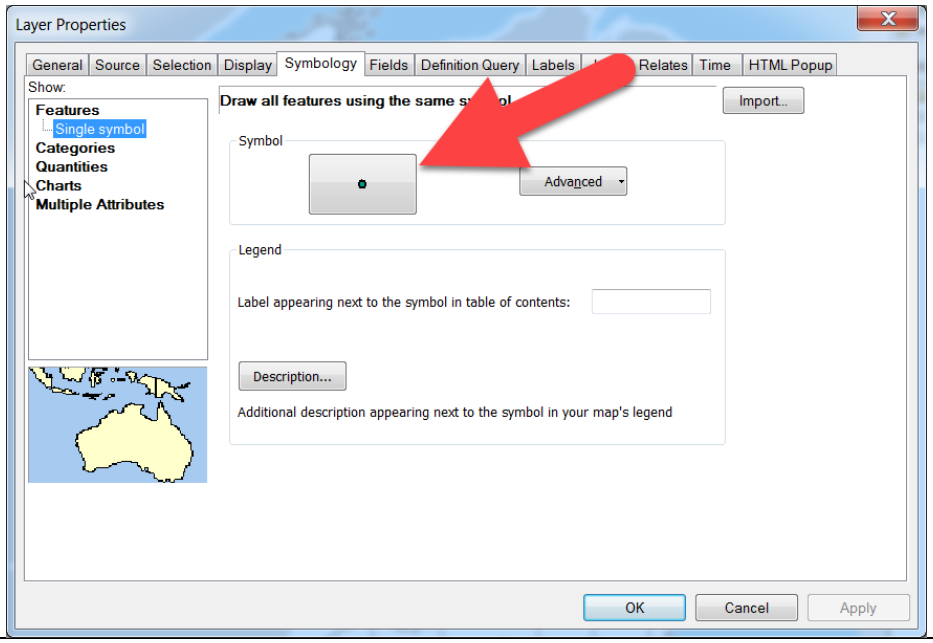
Create State Map Template (Continued)

D Office Location Layer Setup (Continued)

Step	Instructions
11	Ensure that the "Query Builder" text box is completely populated with the attribute name, operator, and value then CLICK "**OK**". 
12	CLICK "Apply".
13	Click the "Symbology" tab.

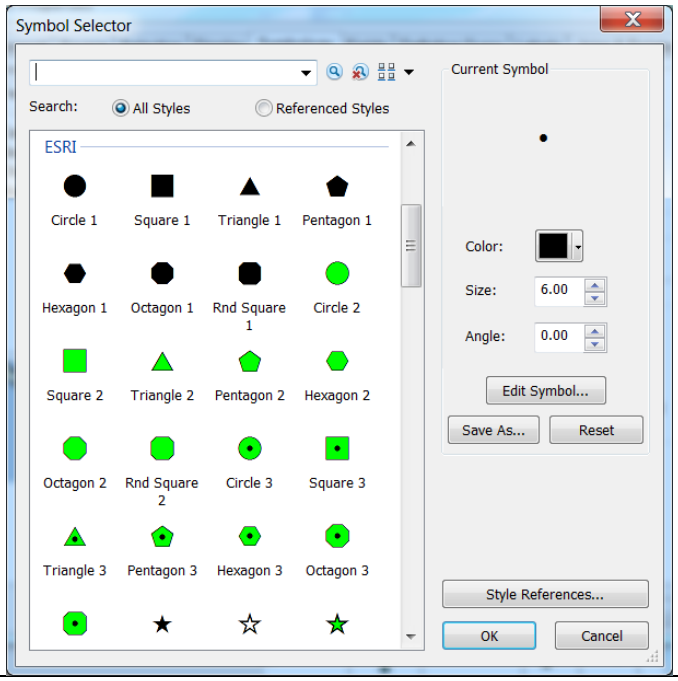
Create State Map Template (Continued)

D Office Location Layer Setup (Continued)

Step	Instructions
14	Click the Symbol Selector. 
15	Select “Circle 1” from the ESRI style set.
16	Change the size to “6”.

Create State Map Template (Continued)

D Office Location Layer Setup (Continued)

Step	Instructions
17	CLICK "**OK**" to close the Symbol Selector. 
18	CLICK "**OK**" to close the Layer Properties window.
19	In the Table of Contents, click and hold the mouse button on the "Service Centers" layer name. Drag the Service Centers layer above the County Boundary layer and release the mouse button.
20	CLICK "File" and "Save" to save the map.

Create State Map Template (Continued)

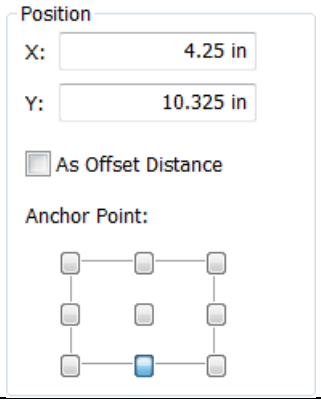
E Map Layout Setup

Use these instructions to set up the map layout.

<table>
<tr><th>Step</th><th>Instructions</th></tr>
<tr><td>1</td><td>CLICK “View” and “Layout View”.</td></tr>
<tr><td>2</td><td>CLICK “File” and “Page and Print Setup”.</td></tr>
<tr><td>3</td><td>The paper orientation is set to Portrait by default. Determine the most appropriate page orientation for the State and select either “Portrait” or “Landscape”.</td></tr>
<tr><td>4</td><td>CLICK “OK” to close the Page and Print Setup window.</td></tr>
<tr><td>5</td><td>CLICK “View” and “Data Frame Properties”.</td></tr>
<tr><td>6</td><td>Click the “Size and Position” tab.</td></tr>
<tr><td>7</td><td>Set the size and position of the data frame based on the following table.
<table>
<tr><th>Setting</th><th>Portrait setting</th><th>Landscape Setting</th></tr>
<tr><td>Position (X)</td><td>0.25 in.</td><td>0.25 in.</td></tr>
<tr><td>Position (Y)</td><td>1.0 in.</td><td>0.5 in.</td></tr>
<tr><td>Size (Width)</td><td>8.0 in.</td><td></td></tr>
<tr><td>Size (Height)</td><td>9.0 in.</td><td></td></tr>
</table>
Note: Data frame specifications may vary because of differences in State size and shape.</td></tr>
<tr><td>8</td><td>CLICK “Insert” and “Title”.</td></tr>
<tr><td>9</td><td>Right-click the title and CLICK “Properties”.</td></tr>
<tr><td>10</td><td>Click the “Text” tab.</td></tr>
<tr><td>11</td><td>Click the “Center Justification” button  .</td></tr>
<tr><td>12</td><td>CLICK “Apply”.</td></tr>
</table>

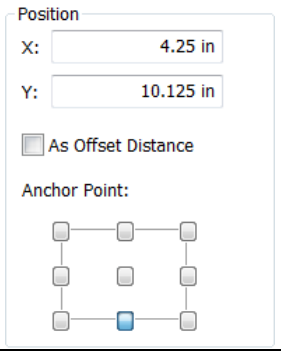
Create State Map Template (Continued)

E Map Layout Setup (Continued)

Step	Instructions
13	Click the "Size and Position" tab.
14	Click the bottom center anchor point.
15	For portrait-oriented maps, set the X position to 4.25 in. and the Y position to 10.325 in. 
16	CLICK "**OK**".
17	A subtitle should be created for the map. CLICK "Insert" and "Text".
18	ENTER "Subtitle" and PRESS "Enter". **Note:** The subtitle is an optional element on the map and may be used to provide additional explanatory information on the map. When using the template to make a map, the subtitle text may be updated or deleted.
19	Right-click the subtitle and CLICK "Properties".
20	Click the "Text" tab.
21	CLICK "Change Symbol".
22	Change the size to "16".
23	CLICK "OK" to close the Symbol Selector.
24	Click the "Size and Position" tab.

Create State Map Template (Continued)

E Map Layout Setup (Continued)

Step	Instructions
25	Click the bottom center anchor point.
26	For portrait-oriented maps, set the X position to 4.25 in. and the Y position to 10.125 in. 
27	CLICK "**OK**".
28	Agency identifying information must be provided on the map, including the USDA logo, department name, and agency name. CLICK "Insert" and "Picture".
29	Navigate to C:\Geodata\PythonMapSeries\Symbology.
30	Select the file named "USDAlogo.tif" and CLICK "Open".
31	Right-click the USDA logo and CLICK "Properties".
32	Change the Position X to .25 and the Position Y to .25.
33	Change the width to .73 in and the height to 0.5 in.
34	CLICK "OK".
35	CLICK "Insert" and "Text".
36	ENTER "United States Department of Agriculture" and PRESS "Enter".
37	Right-click the "United States Department of Agriculture" text box and CLICK "Properties".

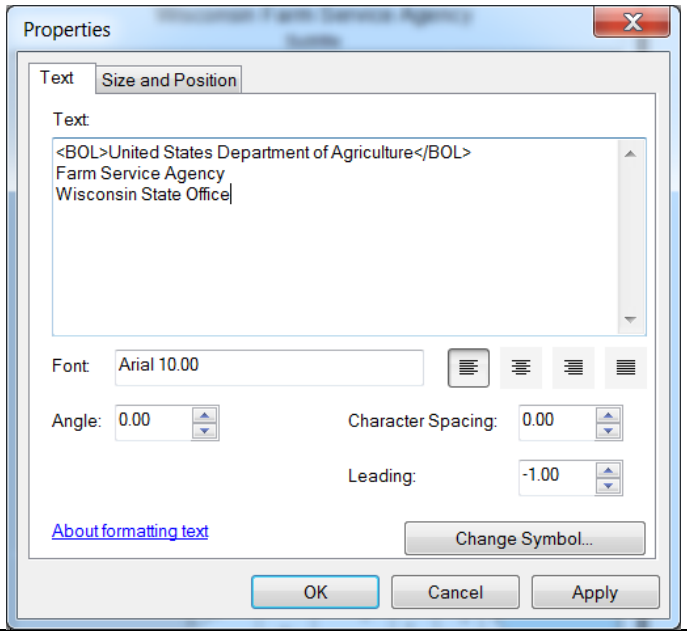
Create State Map Template (Continued)

E Map Layout Setup (Continued)

Step	Instructions
38	Click the “Text” tab.
39	ENTER “<BOL>” at the beginning of the text and “</BOL>” at the end of the line.
40	PRESS “Enter” to create a new line, then ENTER “Farm Service Agency”. PRESS “Enter”.
41	ENTER “<STATE> State Office”, where <STATE> is the full State name.
42	Click the “Left Justify” button  .
43	Change the leading to “-1”.
44	CLICK “Change Symbol”.
45	Change the size to “10”.
46	CLICK “OK” to close the Symbol Selector window.
47	CLICK “Apply”.
48	Click the “Size and Position” tab.
49	Set the X position to 1.05 in.
50	Set the Y position to 0.275 in.

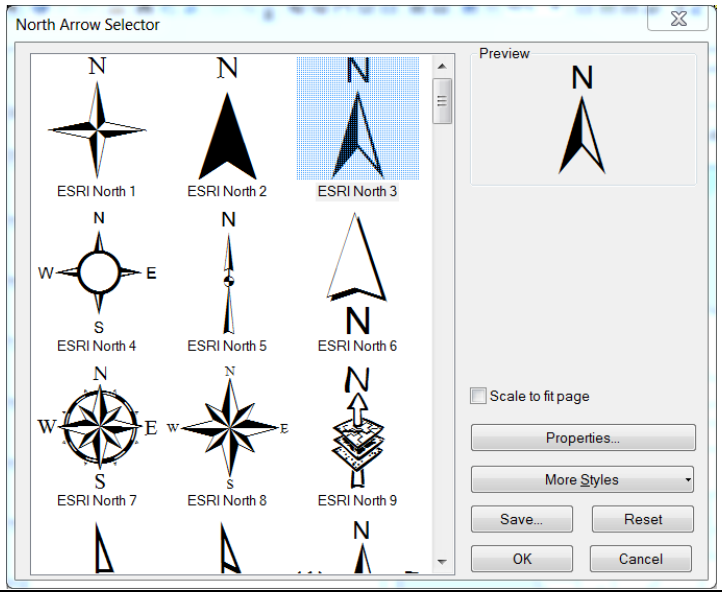
Create State Map Template (Continued)

E Map Layout Setup (Continued)

Step	Instructions
51	CLICK "**OK**". 
52	Add a Map Disclaimer to the layout. CLICK "Insert" and "Text".
53	ENTER "FOR INTERNAL USE ONLY" and PRESS "Enter". **Note:** Additional disclaimers may be required, and the "FOR INTERNAL USE ONLY" statement may be removed at the discretion of the map requestor as appropriate.
54	Right-click the disclaimer text and CLICK "Properties".
55	Click the "Size and Position" tab.
56	Change the Y position to 0.8 in.
57	CLICK "OK".

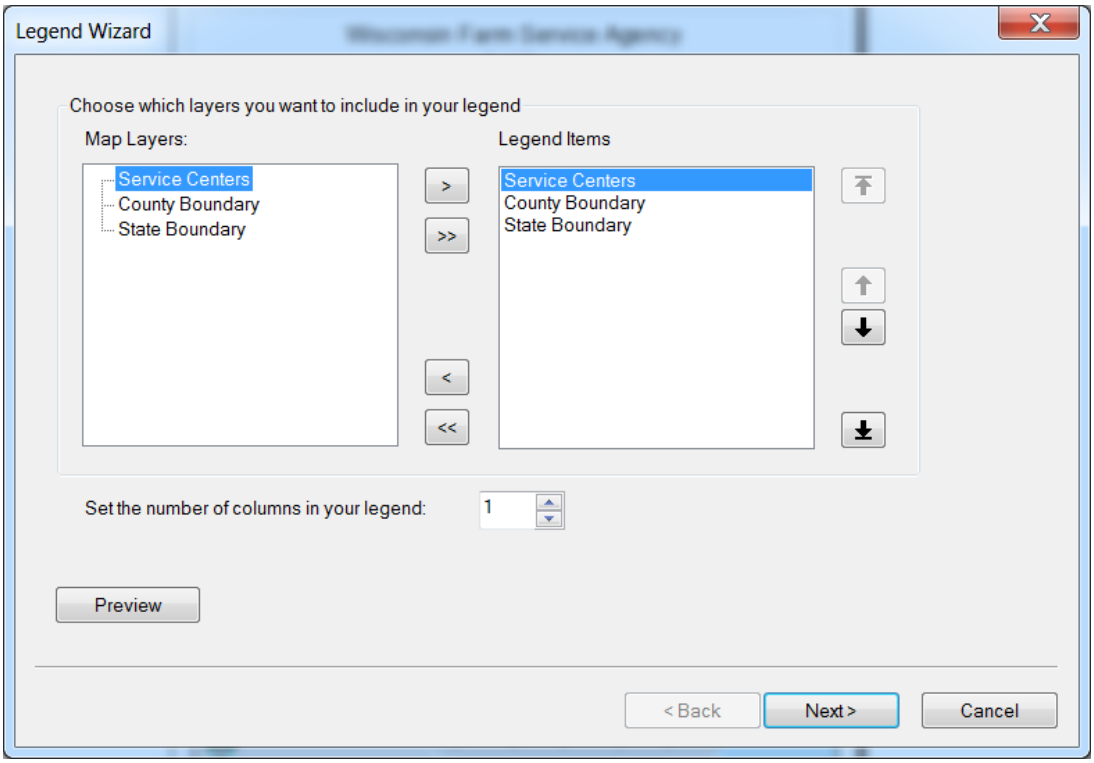
Create State Map Template (Continued)

E Map Layout Setup (Continued)

Step	Instructions
58	Add a North Arrow to the layout. CLICK "Insert" and "North Arrow".
59	Select a North Arrow and CLICK "OK" to close the North Arrow Selector. 
60	Click and drag the North Arrow to an appropriate location on the map where it does not cover any portion of the State.
61	A legend should be added to the map to provide an explanation of symbology displaying on the map. CLICK "Insert" and "Legend". **Note:** Not all layers need to display in the legend. State boundaries, county boundaries, imagery, and other clearly identifiable features do not need to be included.

Create State Map Template (Continued)

E Map Layout Setup (Continued)

Step	Instructions
62	Select the layers to display on the legend and click the "Right Arrow" button.  Layers may be removed by clicking on the name in the "Legend Items" list box and clicking on the "Left Arrow" button.
63	CLICK "**Next**" through each screen of the Legend Wizard to accept the defaults until the "Finish" button is available.
64	CLICK "**Finish**". The legend will be added to the map. Click and drag the map to an appropriate location. The legend location may need to be changed as additional layers are added to the map. To change legend properties, right-click the legend and CLICK "Properties".
65	Insert additional text elements for map creation date, USDA Nondiscrimination Statement, and other desired text. Click and drag on each element to place at an appropriate location on the map.

Create State Map Template (Continued)

F Label County Boundaries

Use these instructions to label county boundaries.

Step	Instructions
1	County boundaries should be labeled to improve map readability. Labeling specifications will vary based on State and instructions may need to be adapted by the State GIS Specialist. CLICK "View" and "Data Frame Properties".
2	Click the "General" tab.
3	Set the "Label Engine" drop-down menu to "Maplex Label Engine".
4	CLICK "**OK**".
5	Right-click the County Boundary layer in the Table of Contents and CLICK "Properties".
6	Click the "Labels" tab.
7	Place a checkmark next to "Label Features in this layer".
8	Change the drop-down menu next to the "Label" field to "COUNTYNAME".
9	Click the "**Placement Properties**" button.
10	Click the "Label Density" tab.
11	Place a checkmark next to "Remove Duplicates".
12	Place a checkmark next to "Label Largest Feature Part".
13	CLICK "OK".
14	CLICK "OK" to close the Layer Properties window. Review the labels for readability and make adjustmets to the label properties as necessary.
15	CLICK "File" and "Save".

Create State Map Template (Continued)

G Example State Map Template

The following is an example of a State map template.



Create a Data Driven Pages Map Document

A Background

Data Driven pages allows the quick and easy creation of a series of layout pages from a single map document. A feature layer, or index layer, divides the map into sections based on each index feature in the layer and generates 1 page per index feature. An example of a feature or index layer is a county dataset.

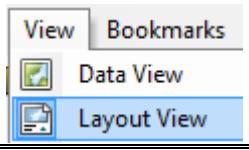
B Requirements

The following instructions require that the Map_Reference_data file geodatabase be stored in the C:\geodata\project_data\fsa\state_map_data folder. This geodatabase was provided with the 2016 GIS Training materials and can be found on the FSA GIS SharePoint site.

Also, first complete **Exhibit 165** before using the instructions in subparagraph C.

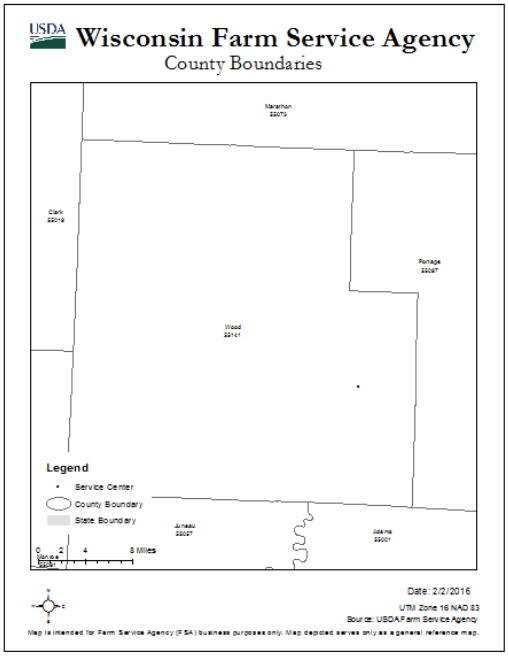
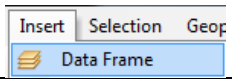
C County Map Template Setup

The following instructions are required to create a series of layout pages from a single map document.

Step	Instructions
1	Navigate to C:\geodata\project_data\fsa\state_map_data and open the saved Map Template from **Exhibit 165**.
2	CLICK "File" and "Save As" to save the map in the same folder (C:\geodata\project_data\fsa\state_map_data\) and use the following naming convention, <ST>_County_DataDrivenPages_Template, where <ST> represents the State abbreviation.
3	If the document is not already displayed in Layout View, change it by clicking "View" and "Layout View". 

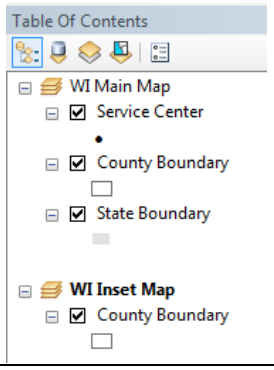
Create a Data Driven Pages Map Document (Continued)

C County Map Template Setup (Continued)

Step	Instructions
4	Within the main data frame, zoom into a standard sized/shaped county.  
5	In the Table of Contents, rename the current “Layers” data frame to “<ST> Main Map”, where <ST> is the State abbreviation.
6	Insert another Data Frame. CLICK “Insert” and “Data Frame”. 
7	Rename the New Data Frame to “<ST> Inset Map”, where <ST> is the State abbreviation. **Example:** WI Inset Map

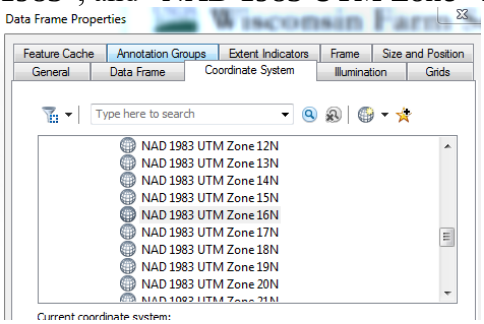
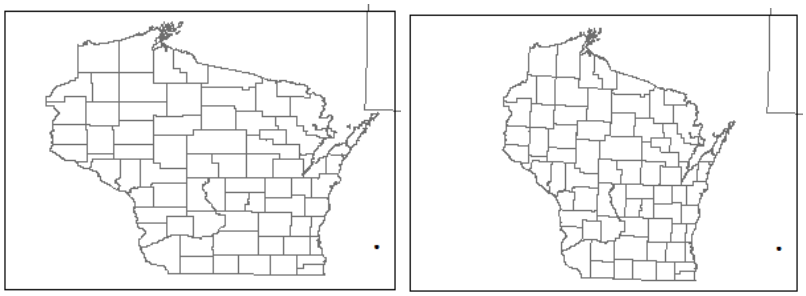
Create a Data Driven Pages Map Document (Continued)

C County Map Template Setup (Continued)

Step	Instructions
8	Drag and drop the "County Boundary" layer from the Main Map data frame to the Inset data frame. This will make a copy of the layer. 
9	Turn off the labeling on the County Boundary layer within the Inset Map data frame by right-clicking on the layer in the Table of Contents and unchecking "Label Features".
10	Right-click the same layer and CLICK "Zoom to Features" and the data frame will zoom to the extent of the county features. **Note:** Most likely, the Inset Map data frame will be displayed on top of the Main Map data frame and be difficult to see. In addition, the user may notice that the State is not being displayed in the proper coordinate system.

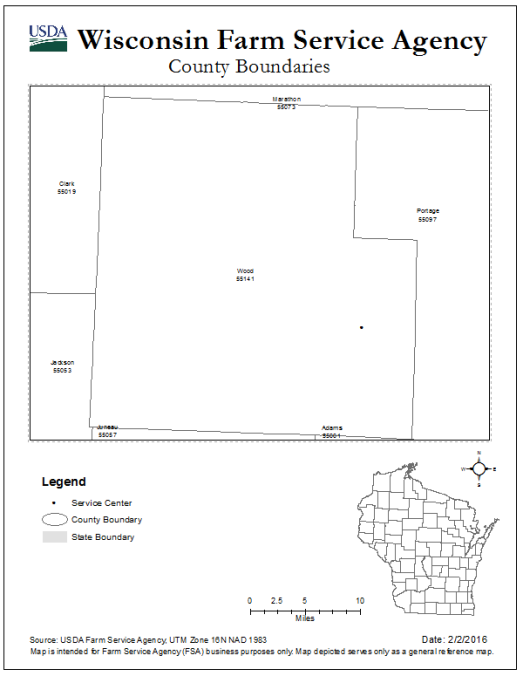
Create a Data Driven Pages Map Document (Continued)

C County Map Template Setup (Continued)

Step	Instructions
11	Set the proper coordinate system for the Inset data frame. • Right-click the Inset data frame and CLICK "Properties". • Click the "Coordinate System" tab. • Select the appropriate Coordinate System, most likely the UTM zone that covers the majority of the State. CLICK "Projected Coordinate Systems", "UTM", "NAD 1983", and "NAD 1983 UTM Zone <XX>N" where <XX>is the UTM zone.  • CLICK "**OK**".  **Note:** The data driven pages will display each county on each page within the main data frame. Because each county size and shape is different, it is a poor practice to place map elements within the main data frame, unlike the statewide template in which the size and shape of the State says consistent.

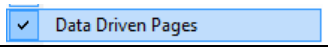
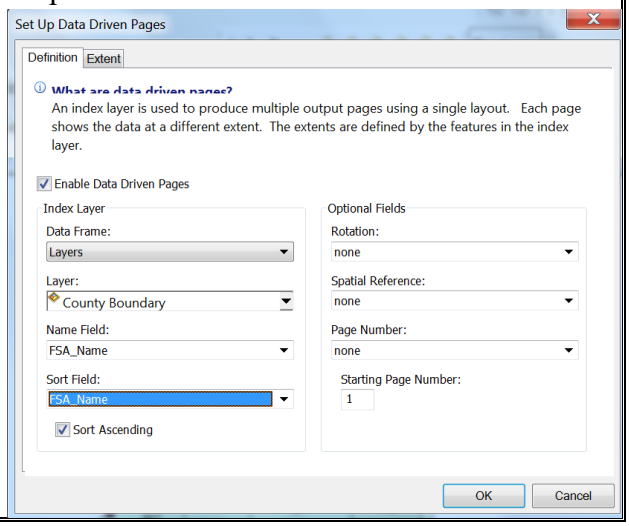
Create a Data Driven Pages Map Document (Continued)

C County Map Template Setup (Continued)

Step	Instructions
12	Re-arrange all map elements (e.g. Inset data frame, legend, logo, text, scale, etc.) so that they reside **outside** of the main data frame. Both the Inset Map data frame and the Main Map data frame may need to be resized to accommodate. The following is guidance for setting up the new layout: • use Alignment & Distribution Tools to assist with re-arranging the elements • the "Add/Remove" box outlines as necessary by right-clicking on the element, clicking the "Frame" tab and setting up or removing frame properties • use grids and guidelines as needed • use white space wisely • leave room for additional legend elements • ensure that the layout is clean and legible. 
13	Save the map.

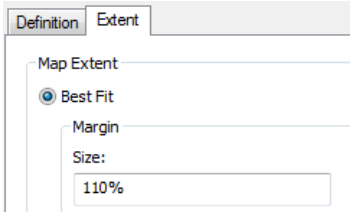
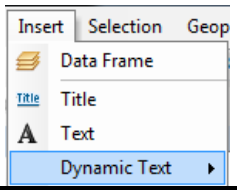
Create a Data Driven Pages Map Document (Continued)

C County Map Template Setup (Continued)

Step	Instructions
14	CLICK "Customize" and "Toolbars" and place a checkmark next to the Data Driven Pages Toolbar to turn it on. 
15	The toolbar will display, although it will be disabled. It can be left floating or can be docked into the ArcMap frame. 
16	Examine the attribute of the County Boundary layer before setting up data driven pages. Being familiar with the data, including the attributes is a priority. Identify the attribute that will be used as the index/grid layer for the data driven pages.
17	On the Data Driven Pages Toolbar, click the "Set up Data Driven Pages" button  .
18	In the "Definition" tab, check the "Enable Data Driven Pages" box to enable all options.
19	Under the "Index Layer" heading, set up the following. • Data Frame: Select the "<ST> Main Map" data frame. • Layer: Select the "County Boundary" layer. • Name Field: Select the "FSA_Name" field. • Sort Field: Select the field to use to sort the pages. Using the "FSA_Name" field is recommended. 

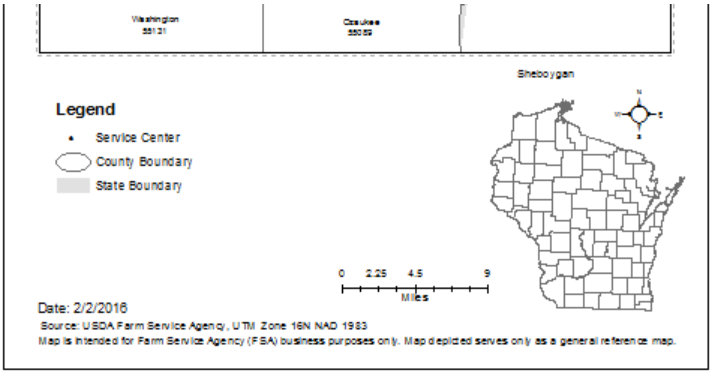
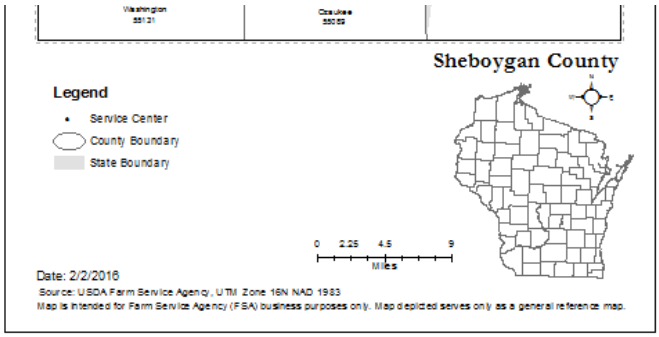
Create a Data Driven Pages Map Document (Continued)

C County Map Template Setup (Continued)

Step	Instructions
20	CLICK "**OK**" to view the basic set-up of data driven pages. Use the Data Driven Pages Toolbar to view a few different counties. CLICK "  " to advance to the next page and "  " to return to the previous page. If the "Sort by" option was set to the "FSA_Name" field, these will advance in alphabetical order. **Note:** As the user advances and returns the data on the page, the name of the index layer changes. If the user has effectively set up the feature or index layer, this will update the page number and number of pages.
21	Note the area shown around each county. This can be changed by clicking the "Set Up Data Driven Pages" button and clicking the "Extent" tab.
22	Change the Best Fit Margin from 125% to 110%. The county data shown in the Main Map data frame will be zoomed closer to the county being displayed. 
23	CLICK "**OK**".
24	CLICK "Insert" and "Dynamic Text" and select "Data Driven Page Name". 

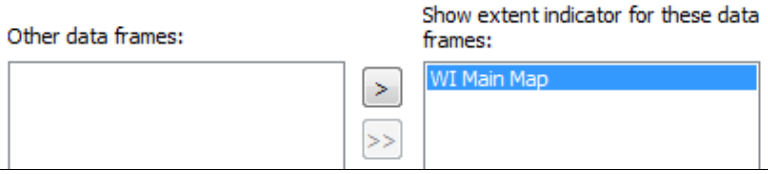
Create a Data Driven Pages Map Document (Continued)

C County Map Template Setup (Continued)

Step	Instructions
25	The Page Name text will display in the center of the map. Select the text and move it to a logical display location on the bottom of the map, where (once its font proprieties are changed) it will be easily visible and obvious that it is indicating the county being highlighted. Move elements around as necessary. 
26	Modify the Page Name text. Right-click the text and CLICK "Properties". • CLICK "**Change Symbol**". • Change the font to "Garamond". • Change the size to "26" and "Bold", if desired. • To add the text "County" after the county name, ENTER "County" (without the quotations) after the <dyn type="page" property="name"/> text. • CLICK "**OK**". 

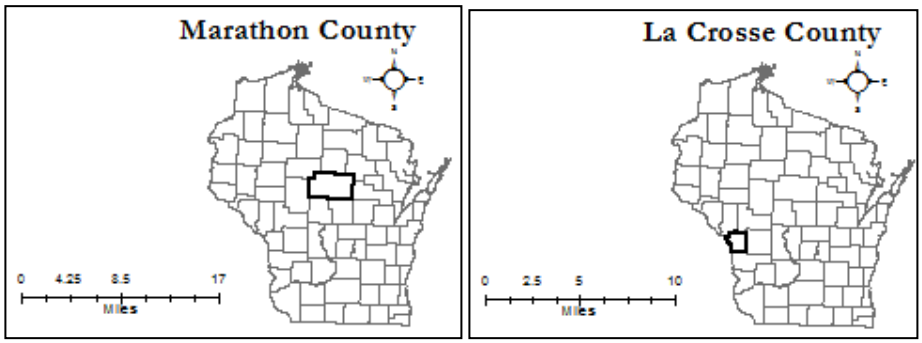
Create a Data Driven Pages Map Document (Continued)

C County Map Template Setup (Continued)

Step	Instructions
27	Use the Data Driven Pages Toolbar to view a few different counties. CLICK " " to advance to the next page and " " to return to the previous page.
28	Save the map.
29	Right-click the Inset Map data frame and CLICK "Properties".
30	Click the "Extent Indicators" tab.
31	Under "Other Data Frames", select the "<ST> Main Map" data frame and CLICK " ". That data frame will now be listed under the "Show extent indicator for these data frames" box. 
32	CLICK "**Frame**" and select a border and color. • Recommended: A thicker (3 pt.) black border. • Optional: Experiment with different symbols, colors, and sizes and select the one that best fits the map.
33	CLICK "**OK**" in the "Frame" dialog box.

Create a Data Driven Pages Map Document (Continued)

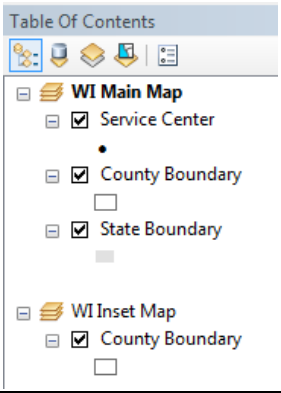
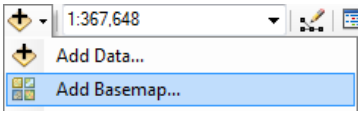
C County Map Template Setup (Continued)

Step	Instructions
34	CLICK "**OK**" to exit properties. The county displayed by data driven pages will now be outlined in the inset map. **Note:** The Page Title, Extent Indicator, and Scale bar are all dynamic elements of the data driven pages map. Click through a few of the data driven pages to see all 3 of these elements change. 
35	Save the map. The Data Driven Pages County Template is complete.

Create a Data Driven Pages Map Document (Continued)

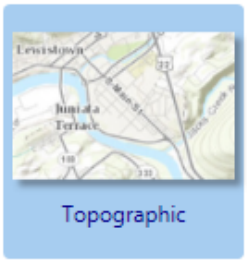
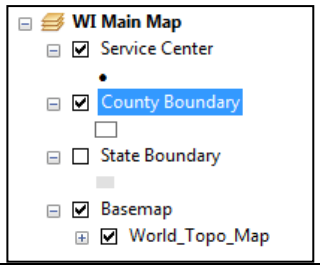
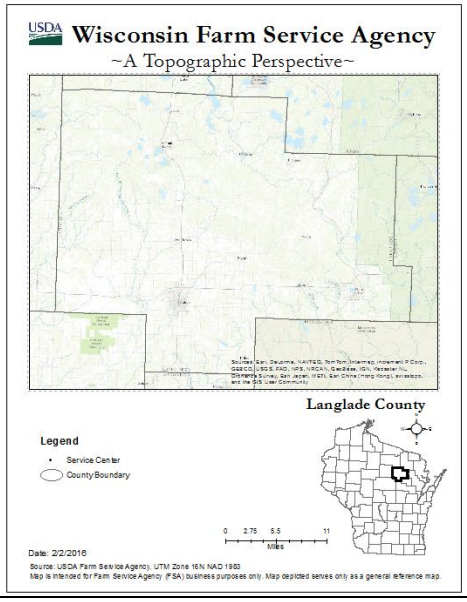
D Adding Data

The following walks through steps of adding data using available ESRI basemaps, but any dataset can be used to create data driven maps and these steps would not need to be followed. Ideally, the data would be at a more detailed scale than a countywide dataset and would show detail within a county. For example: Census Data by tract or block, CRP data, LAA boundaries, PLSS boundaries, CLU's displaying LCC's (Cropland vs. Rangeland), etc.

Step	Instructions
1	Ensure that the Main Map data frame is active. The active data frame is always bolded in the Table of Contents. If it is not bolded, right-click the Main Map data frame and CLICK "Activate". 
2	Change the Map Subtitle from County Boundaries to "~A Topographic Perspective".
3	Click the drop-down arrow next to the "Add Data" button and select "Add data from ArcGIS Online".  **Note:** Data can be added from AGOL as well. A user account is not needed to add public data, but a user account to add FSA data is needed.

Create a Data Driven Pages Map Document (Continued)

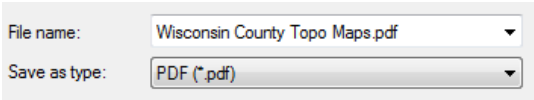
D Adding Data (Continued)

Step	Instructions
4	Select the Topographic basemap and CLICK "**Add**". The basemap will be added to the Table of Contents underneath all the other vector layers, as it is a raster basemap layer.  
5	Turn off the State Boundary layer in the Table of Contents to view the topographic map. **Note:** The Source data for the topographic map is embedded in the map service itself and will display in the main data frame when the basemap is displayed. 
6	CLICK "File" and "Save As" to save the map in the same folder (C:\geodata\project_data\fsa\state_map_data\) and use the following naming convention, <ST>_County_DataDrivenPages_TopographyMap, where <ST> represents the State abbreviation.

Create a Data Driven Pages Map Document (Continued)

E Exporting Data Driven Pages

Use these instructions to export data driven pages.

Step	Instructions
1	CLICK "File" and "Export" to access the "Export Map" dialog box.
2	Change the export folder to C:\geodata\project_data\fsa\state_map_data\exports. **Note:** The user will need to create a new folder called "exports".
3	Change the File Name to "StateName County Topo Maps" or whatever name is appropriate for the maps.
4	Set the "Save as type" to PDF. 
5	Expand the Options, if they are not already and click the "Pages" tab. 

Create a Data Driven Pages Map Document (Continued)

E Exporting Data Driven Pages (Continued)

Step	Instructions
6	Set up the export as desired • Pages: If testing, export a subsample of pages (e.g. 1-3), using the "Page Range" option. Exporting an entire county can take some time. • Format: Exporting as a PDF provides more flexibility, giving the option to export multiple pages as a Single PDF file or as Multiple PDF files based on page name or page index.
7	CLICK "**Save**" to export. Depending on the number of maps creates, the process may take a while to run.
8	Access the PDF files in the C:\geodata\project_data\fsa\state_map_data\exports folder and open to verify that the export was successful.

ESRI E-Learning Access Instructions

A Introduction

ESRI provides unlimited access to their large collection of self-paced E-Learning resources. To get access, an ESRI account that is connected to the USDA FSA is needed. This guide provides step-by-step instructions for creating an account (if one is needed) and requesting access to the unlimited E-Learning training.

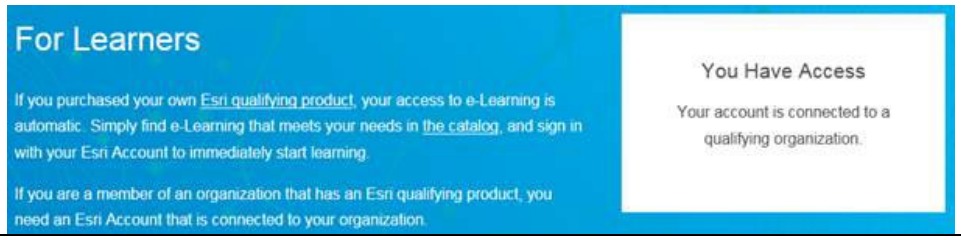
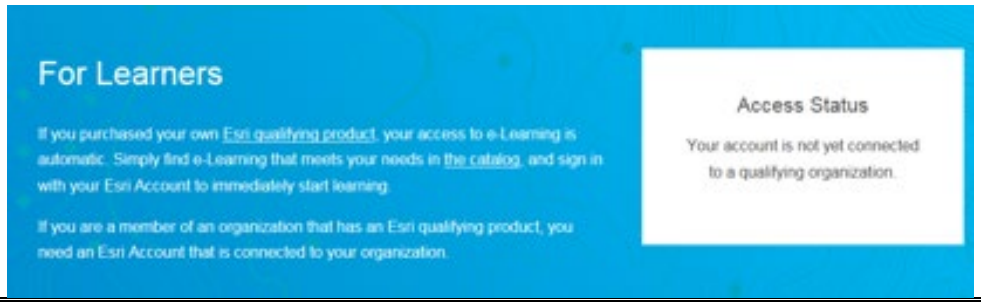
B Instructions for New Users With No ESRI Account

These instructions will allow a new user to set up an ESRI account that is connected to USDA-FSA.

Step	Instructions
1	Submit an e-mail request to the current FSA ESRI account administrator *--(Patsy Hudson – patsy.hudson@usda.gov).--* • Subject: Request for ESRI Unlimited E-Learning Access. • In the body of the e-mail request, include an official work e-mail address (or a list of e-mails if submitting multiple individuals). • Each user included in the body of the e-mail request, will receive a return e-mail *--from Patsy similar to the following example.--* **From:** My Esri [mailto:service@esri.com] **Sent:** Friday, March 17, 2017 10:34 AM **To:** <email address> **Subject:** Your Esri E-Learning Account **Access to Esri E-Learning** An administrator for your organization, **USDA Farm Service Agency**, has invited you to access e-Learning on the Esri Training website. E-Learning includes self-paced courses, seminars, videos, and other resources covering a wide variety of GIS and ArcGIS topics. Accept the invitation by clicking the button below. If you don't have an Esri account, you'll be prompted to create one. Once you have accepted your invitation, you can visit the Esri Training website at any time. If you have any questions, please contact Esri Customer Service at service@esri.com. Regards, Esri Customer Service Accept Invitation • CLICK "Accept Invitation" and follow the promts to create the account.
2	To Access the ESRI Account after it has been created, go to **https://www.esri.com/training/unlimited-esri-training/**.

ESRI E-Learning Access Instructions (Continued)

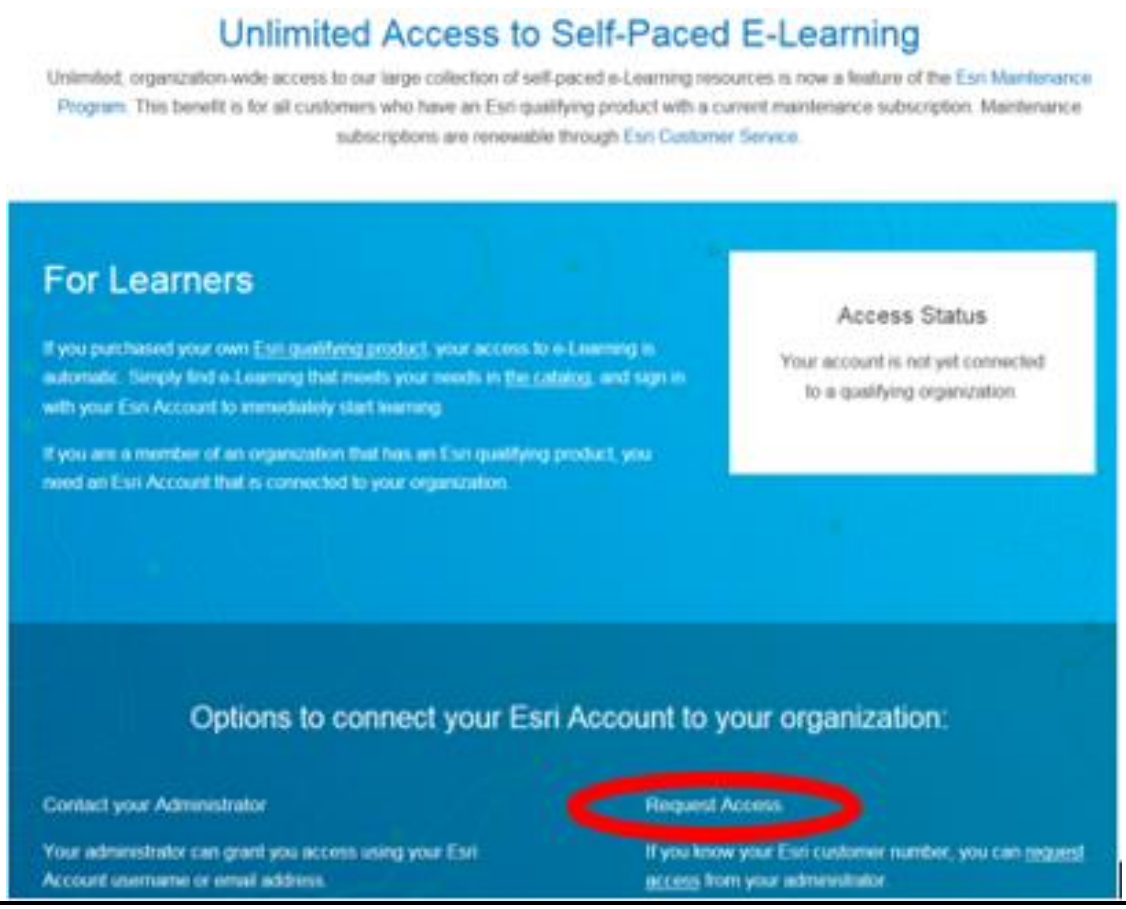
B Instructions for New Users With No ESRI Account (Continued)

Step	Instructions
3	CLICK "Sign In To Check". 
4	If the following screen is received, access to the Unlimited e-Learning resources was successful. 
5	If the following screen is received, request to have the account linked. 

ESRI E-Learning Access Instructions (Continued)

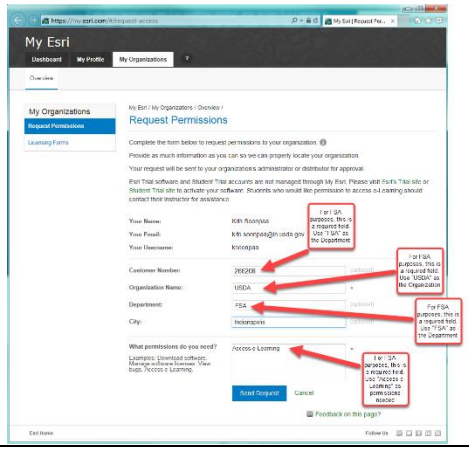
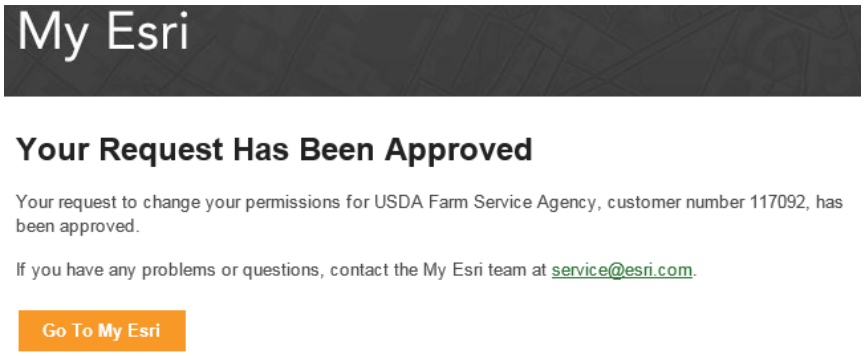
B Instructions for New Users With No ESRI Account (Continued)

Step	Instructions
6	To request to link an FSA user account, send an e-mail to Helen Zassypkina or by choosing the Request Access link in the Options section below the Access Status message. Fill in the boxes accordingly.



ESRI E-Learning Access Instructions (Continued)

B Instructions for New Users With No ESRI Account (Continued)

Step	Instructions
7	ENTER "USDA Farm Service Agency" for the organization name, "266208" for the customer number, and "Access e-Learning" in the "What permissions do you need?" box. 
8	An e-mail will be received from ESRI that is similar to the following example. 
9	See step 3 to verify the account is linked to the USDA FSA.

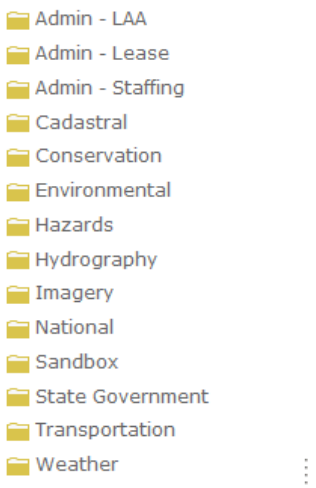
Creating a Folder Structure in AGOL

A Instructions to Setup a Folder Structure in 'My Content'

These instructions outline the process for creating the FSA folder structure in the AGOL Environment when using an agency subscription.

This folder structure will be adopted before creating/using AGOL.

FSA GIS Specialists will create a common folder and storage structure to allow for training, data sharing, and agency consistency.

Step	Instructions
1	Sign into the AGOL account. Enter the FSA AGOL username and password. CLICK "**Sign In**".
2	The following folders will be created. 
3	From the menu options, CLICK "My Content".
4	In the "Left Navigation" column under "Folders", CLICK "New" to create a new folder. 

Creating a Folder Structure in AGOL (Continued)

A Instructions to Setup a Folder Structure in 'My Content' (Continued)

Step	Instructions
5	A Create a Folder window will display. Enter the name of the folder in the "Folder Name" text field and CLICK "Create". Repeat until all folders have been added. 
6	Remove any folder that is not already defined by this user guide. In the "Left Navigation" column under "Folders", CLICK "Delete".

Joining Tabular Data in ArcGIS Desktop

A Instructions for Joining Data in ArcGIS Desktop

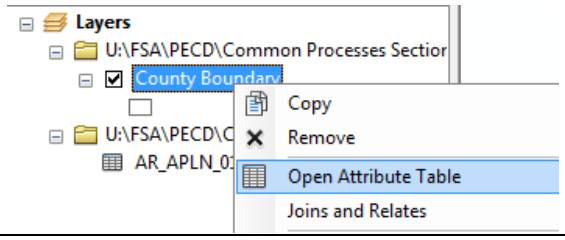
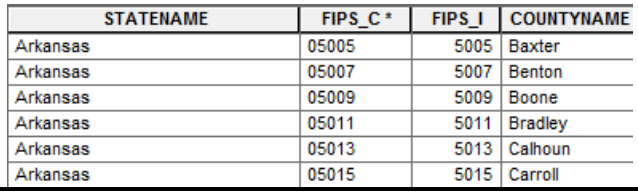
These instructions outline the process for joining tabular data to a layer using ArcGIS Desktop.

It is recommended that a common field (such as a 5-digit FIPS code) in both the spreadsheet and the layer is used to perform the join process.

Joined tabular data exported as a layer file can be used in AGOL as a Tile Package or a Hosted Feature Service.

For more information about joining and relating tables, go to **http://desktop.arcgis.com/en/arcmap/10.3/manage-data/tables/about-joining-and-relating-tables.htm**.

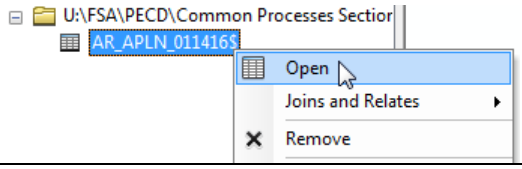
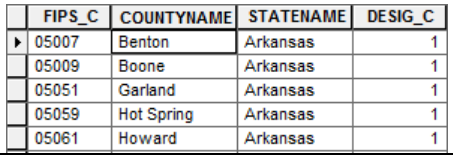
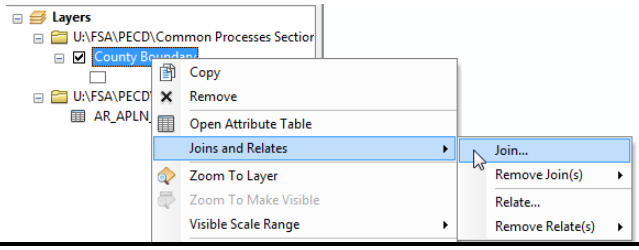
Use the following instructions to join tabular data in ArcMaps.

Step	Instructions
1	Open a blank Map Document in ArcMap.
2	CLICK "**Add Data**"  and select a layer to add to the Table of Contents.
3	Right-click the layer file and CLICK "Open Attribute Table". 
4	Review the fields in the attribute table of the layer file and close the table. 

STATENAME	FIPS_C *	FIPS_I	COUNTYNAME
Arkansas	05005	5005	Baxter
Arkansas	05007	5007	Benton
Arkansas	05009	5009	Boone
Arkansas	05011	5011	Bradley
Arkansas	05013	5013	Calhoun
Arkansas	05015	5015	Carroll

Joining Tabular Data in ArcGIS Desktop (Continued)

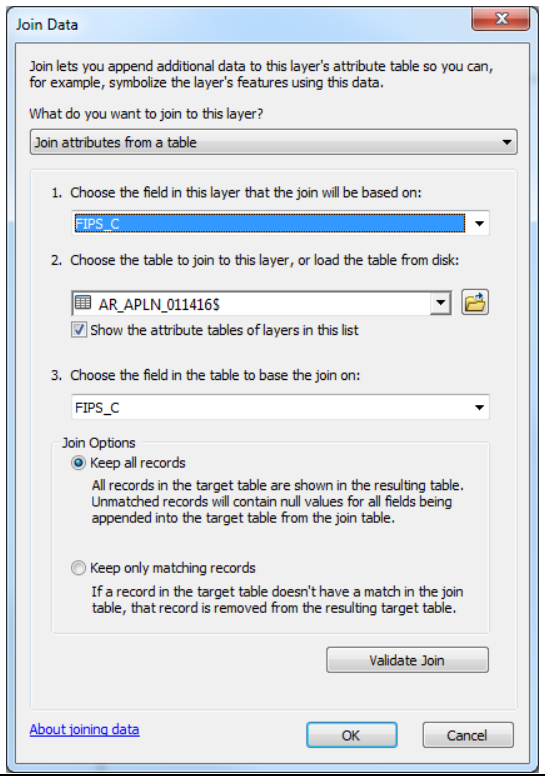
A Instructions for Joining Data in ArcGIS Desktop (Continued)

Step	Instructions
5	CLICK "**Add Data**" and select the Excel spreadsheet data to add to the Table of Contents.
6	Right-click the spreadsheet file and CLICK "Open". 
7	Review the fields in the attribute table of the spreadsheet. 
8	Look for a common field between the data layer and the tabular spreadsheet data to be used for the join. In this example, the "FIPS_C" column is the common field that will be used for the tabular join.
9	Right-click the County layer and navigate to "Joins and Relate" and "Join". 

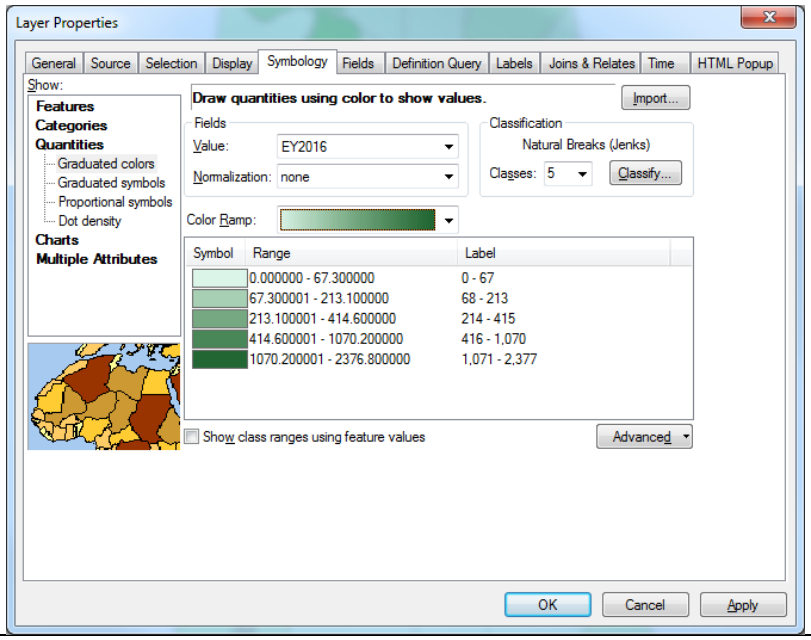
FIPS_C	COUNTYNAME	STATENAME	DESIG_C
05007	Benton	Arkansas	1
05009	Boone	Arkansas	1
05051	Garland	Arkansas	1
05059	Hot Spring	Arkansas	1
05061	Howard	Arkansas	1

Joining Tabular Data in ArcGIS Desktop (Continued)

A Instructions for Joining Data in ArcGIS Desktop (Continued)

Step	Instructions
10	In the Join Data window: • select the field in the layer that will be used in the join • ensure that the MS Excel spreadsheet is selected • select the field in the spreadsheet that will be used in the join • under "Join Options", ensure that the "Keep all Records" radio button is selected. 
11	CLICK "**OK**".
12	Right-click the layer file and scroll down to "Properties".
13	In the Layer Properties window, select the "Symbology" tab.

A Instructions for Joining Data in ArcGIS Desktop (Continued)

Step	Instructions
14	Under the "Symbology" tab, select "Quantities" in the "Left Navigation" column. 
15	In the "Value" field, use the drop-down arrow to select a unique value to symbolize the data. **Note:** It may be beneficial to remove the excess zeros if the map is only interested in whole numbers.
16	CLICK "**OK**".

Adding a Shapefile to AGOL

A Instructions to Add a Shapefile to AGOL

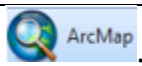
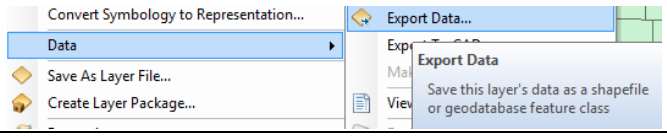
The following use specifications must be observed when using AGOL.

- Mozilla Firefox or Google Chrome Internet browser is the preferred for optimal performance with AGOL.
- JavaScript is required.
- If Internet Explorer is used Internet Explorer 11 is needed for most shapefiles because of size constraints.
- Files are stored in My Content.
- Shapefiles must be modified and condensed for use with AGOL for optimal performance. Recommend storing AGOL separate from F:\ Based geodata. Prep data in ArcGIS Desktop before using AGOL.
- Zip files created for AGOL only include .dbf, .prj, .shp, .shx.
- 1000 Feature Limit for shapefiles in AGOL.
- GIS Specialists should create C:\ArcGIS_ONLINE and C:\ArcGIS_ONLINE\AO_Geodata folders and subfolders.

Additional Information is available at **http://www.esri.com/software/arcgis/arcgisonline**. These instructions identify how to add a shapefile to AGOL.

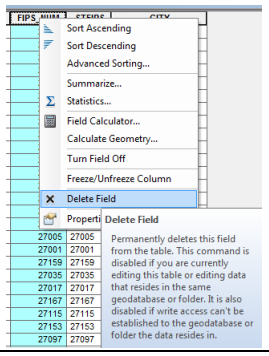
B Steps for ArcGIS

Follow these steps for ArcGIS.

Step	Instructions
1	Start ArcGIS Desktop  .
2	Add Shapefiles.
3	Export Shapefiles that will be optimized for AGOL to C:\ArcGIS_ONLINE\AO_Geodata. 
4	Remove the original F Drive Shapefiles from ArcGIS Desktop (these will no longer be needed).

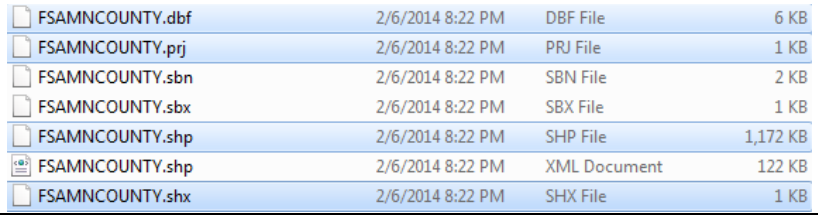
Adding a Shapefile to AGOL (Continued)

B Steps for ArcGIS (Continued)

Step	Instructions
5	Review exported shapefile and determine what attributes will be needed in AGOL. Because of size limitations and drawing speed using the minimum needed attributes is highly recommend to improve performance.
6	Remove unneeded attributes. 
7	Close ArcGIS. This will prevent records from being locked for use.

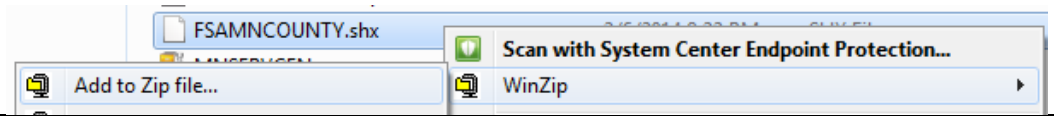
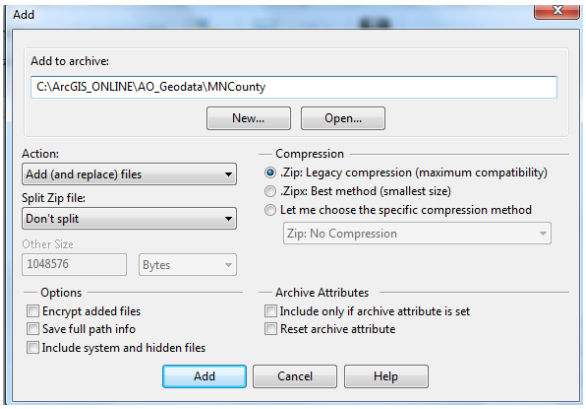
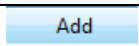
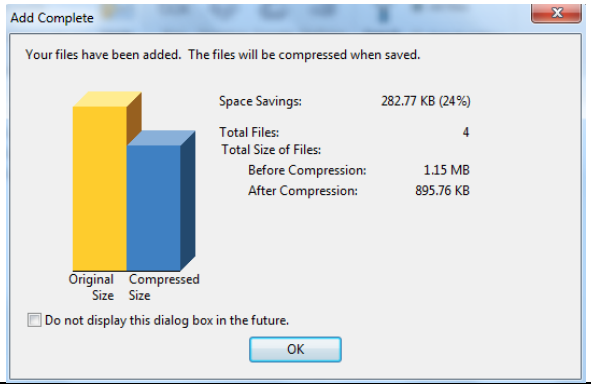
C Steps for Windows Explorer and WinZip

Follow these steps for Windows Explorer and WinZIP.

Step	Instructions
1	Open My Computer or Windows Explorer on the Desktop  .
2	Navigate to C:\ArcGIS_ONLINE\AO_Geodata.
3	Select the .dbf, .prj, .shp, and .shx files. 
4	Right-click the files.

Adding a Shapefile to AGOL (Continued)

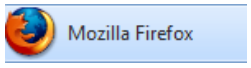
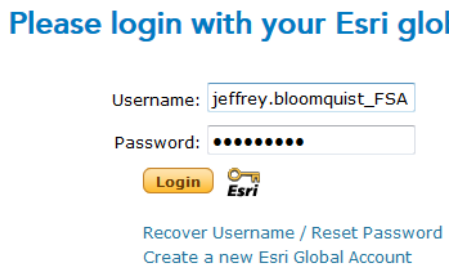
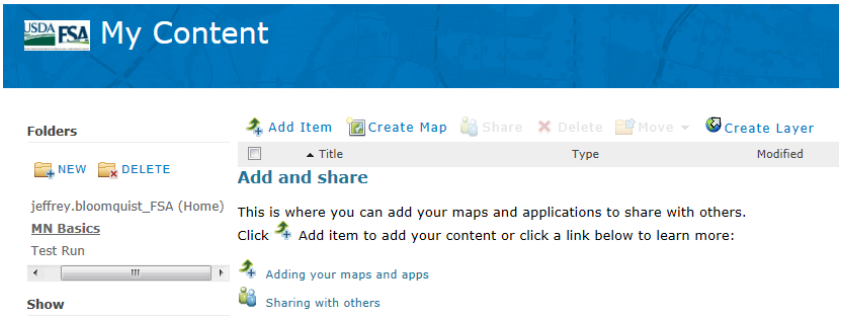
C Steps for Windows Explorer and WinZip (Continued)

Step	Instructions
5	CLICK "WinZip" and "Add to Zip file". 
6	Name the WinZip file.  **Note:** Keep files names short and do not use special characters. File names are limited to 16 characters.
7	CLICK "**Add**"  .
8	The Add Complete window will display. 
9	CLICK "**OK**".

Adding a Shapefile to AGOL (Continued)

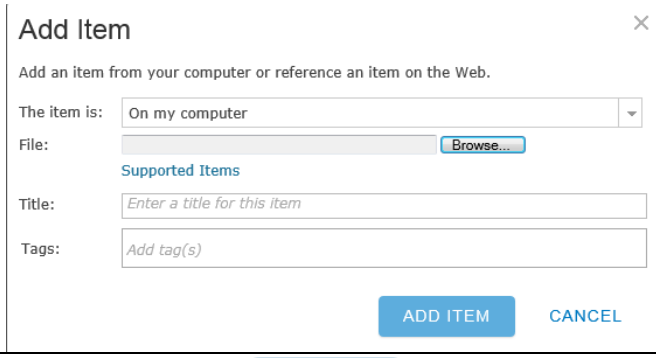
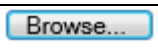
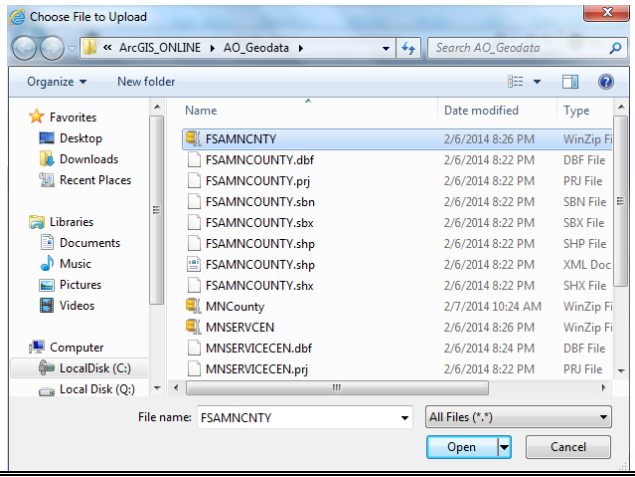
D Steps for AGOL Adding Data

Follow these steps to add data in AGOL.

Step	Instructions
1	Open Mozilla Firefox  or Google Chrome  .
2	Open AGOL at **https://www.arcgis.com/home/signin.html**.
3	Log into the USDA FSA ESRI Global Account. Accounts are assigned by Joan Biediger, APFO (**joan.biediger@slc.usda.gov**). 
4	The USDA FSA ArcGIS Online home page will display. 
5	CLICK “My Content”. 

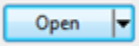
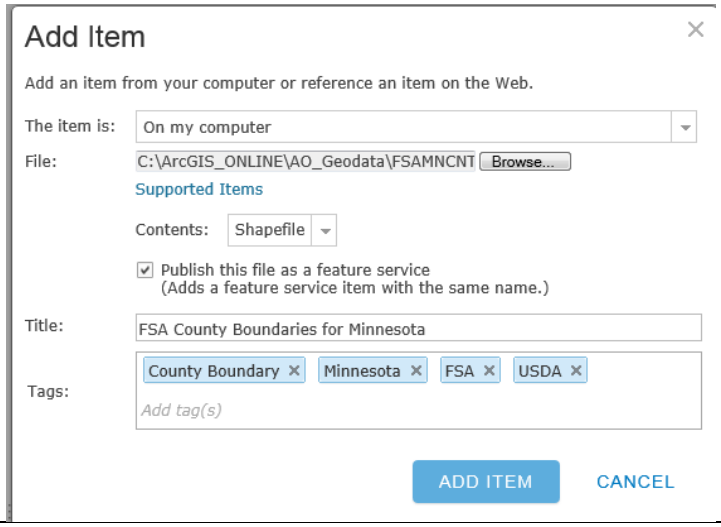
Adding a Shapefile to AGOL (Continued)

D Steps for AGOL Adding Data (Continued)

Step	Instructions
6	CLICK "Add Item"  .
7	The Add Item window will open. 
8	CLICK "Browse"  .
9	Select a WinZip file to upload to AGOL. 

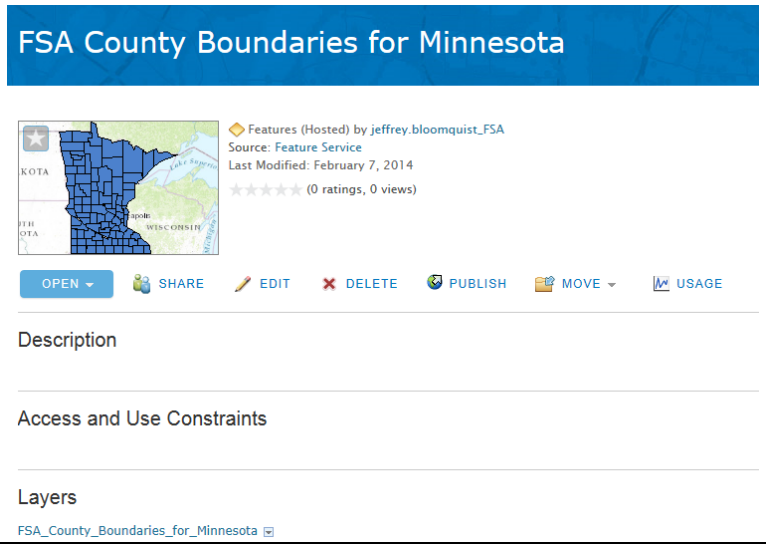
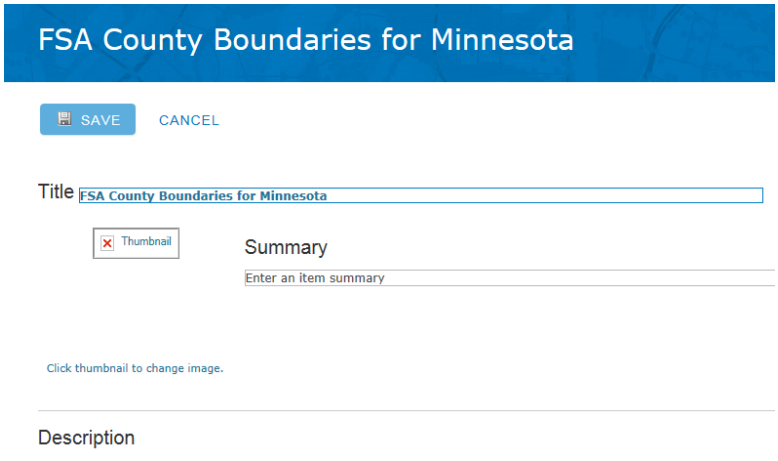
Adding a Shapefile to AGOL (Continued)

D Steps for AGOL Adding Data (Continued)

Step	Instructions
10	CLICK "Open"  .
11	Add a Title. 
12	Add Tags for reference of the item added.
13	CLICK "Add Item"  to upload data for use in AGOL.

Adding a Shapefile to AGOL (Continued)

D Steps for AGOL Adding Data (Continued)

Step	Instructions
14	The new layer will be added to AGOL. This layer is only available to the logged in user until it is shared. 
15	CLICK "Edit"  to update information regarding layer. 
16	CLICK "Save"  .

Saving Maps in AGOL

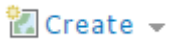
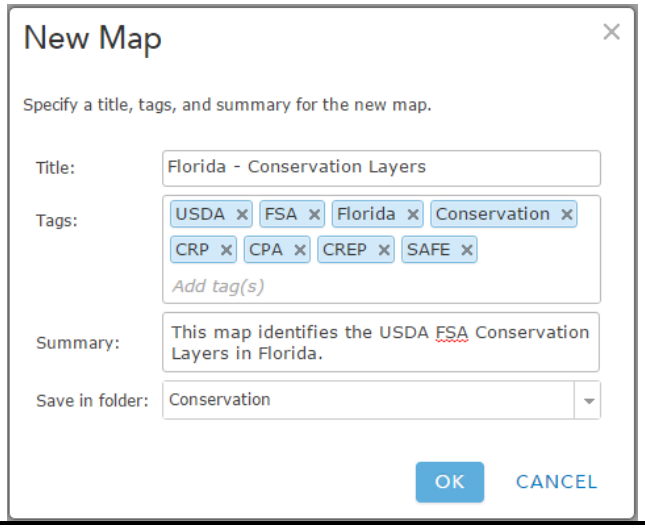
A Instructions to Save a Map in AGOL

These instructions outline the requirements for saving maps in AGOL.

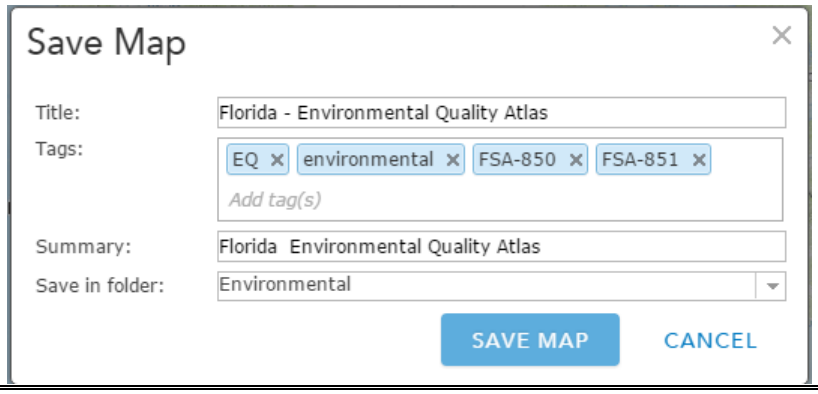
The folder structure outlined in this field guide is based on the FSA Addendum to the Manual for Managing Geospatial Dataset in AGOL.

B Create a New Map - Saving Maps in AGOL

Follow these steps to create and save a new map in AGOL.

Step	Instructions
1	From My Content, navigate to the folder that the data is stored.
2	CLICK "Create"  .
3	CLICK "Map".
4	Enter a logical title, including the State name spelled out. **Example:** Florida – Conservation Layers
5	Enter applicable tags, such as, CRP, NAP, etc.
6	Enter a summary description of the purpose of the map.
7	Ensure that the folder is the desired folder.
8	CLICK "**OK**". 

B Create a New Map - Saving Maps in AGOL (Continued)

Step	Instructions
9	From the desired existing AGOL map, CLICK "Save".
10	CLICK "Save As".
11	Enter a logical title, including the State name spelled out. **Example:** Florida – Environmental Quality Atlas
12	Enter applicable tags, such as, CRP, NAP, etc.
13	Enter a summary description of the purpose of the map.
14	Ensure that the folder is the desired folder.
15	CLICK "**OK**". 

Using File Geodatabases in AGOL

A Instructions to Upload a File Geodatabase to AGOL

File geodatabases allow users to create tile packages for faster online rendering. Editing features in the feature classes in a file geodatabase from a desktop application, allows users to upload the edited file geodatabase and replace the data in the hosted feature layer.

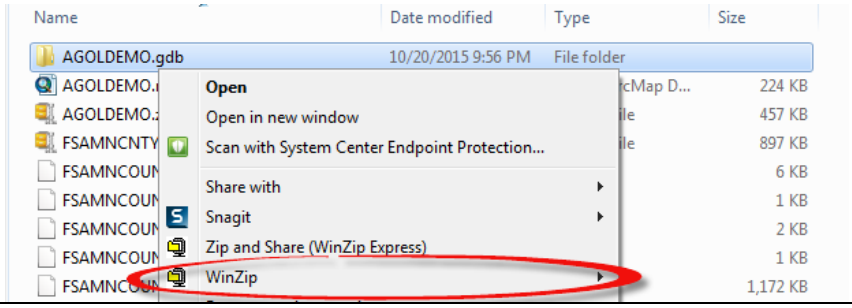
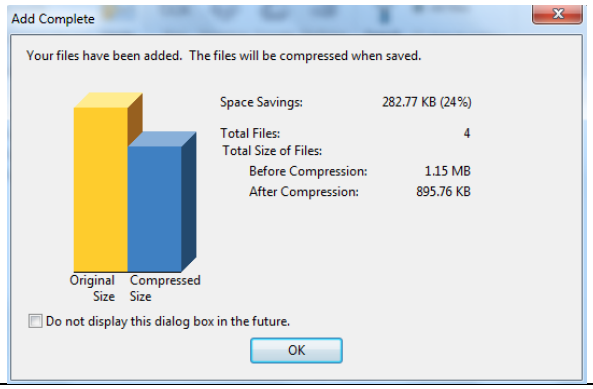
The following use specifications must be observed when using AGOL.

- Mozilla Firefox or Google Chrome Internet browser is the preferred for optimal performance with AGOL.
- JavaScript is required.
- If Internet Explorer is used Internet Explorer 9 is needed for most shapefiles because of size constraints.
- Additional Information is available at **http://www.esri.com/software/arcgis/arcgisonline**.
- Files are stored in My Content in AGOL.
- To web enable a file geodatabase the layer must be packaged as a file geodatabase.
- The datatypes published using the fgdb format include feature classes (coordinates are dropped), tables, attachments and relationship classes.
- 1000 Feature Limit for shapefiles in AGOL.
- File development should be completed on the local C Drive using the C:\Geodata Structure.
- GIS Specialists should create C:\ArcGIS_ONLINE and C:\ArcGIS_ONLINE\AO_Geodata folders and subfolders.
- Directions assume file geodatabase has been created or available.

Using File Geodatabases in AGOL (Continued)

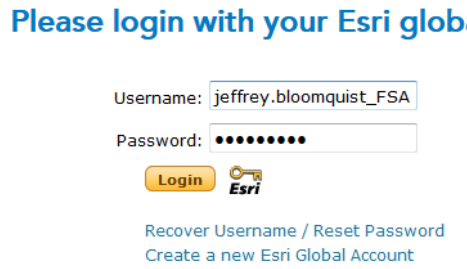
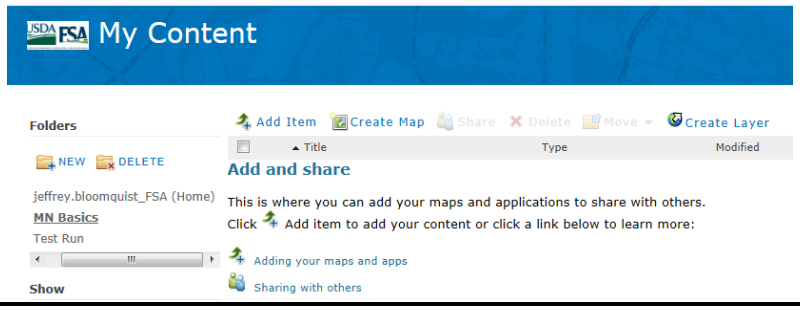
B Steps for Windows Explorer and WinZip

The following instructions define how to upload the edited file geodatabase, and replace the data in the hosted feature layer use the following instructions.

Step	Instructions
1	Open My Computer or Windows Explorer on the Desktop  .
2	Navigate to C:\ArcGIS_ONLINE\AO_Geodata.
3	Select the .gdb file. 
4	Right-click the files.
5	CLICK “WinZip” and “Add to Zip file”.
6	Name the WinZip file. **Note:** Keep files names short and do not use special characters. File names are limited to 16 characters.
7	CLICK “**Add**”  .
8	The Add Complete window will display. 
9	CLICK “**OK**”.

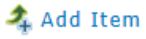
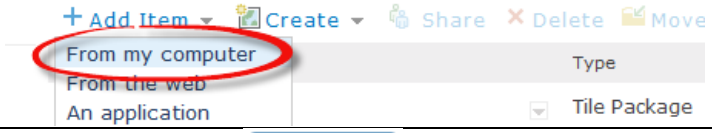
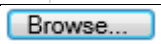
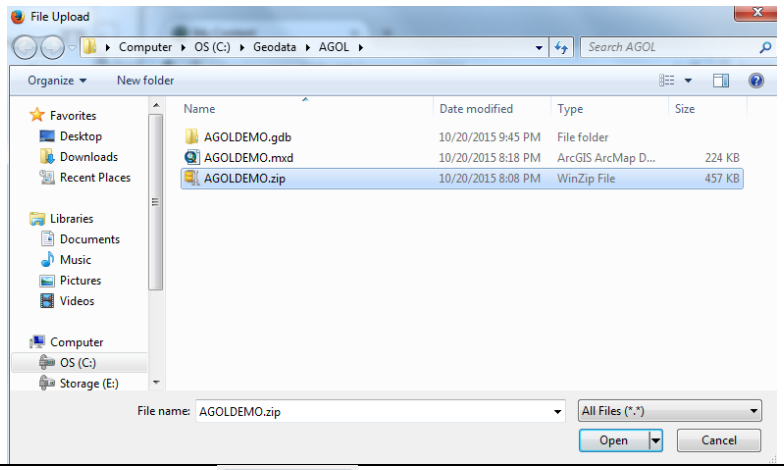
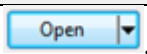
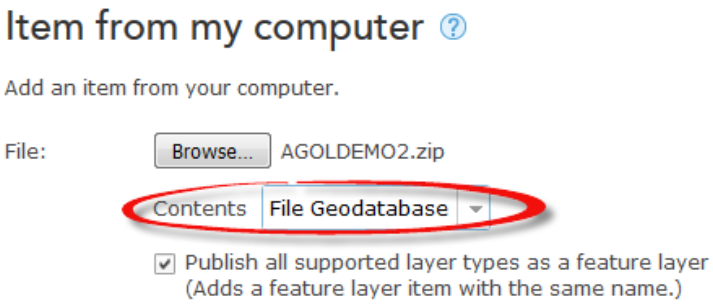
Using File Geodatabases in AGOL (Continued)

B Steps for Windows Explorer and WinZip (Continued)

Step	Instructions
10	Open Mozilla Firefox or Google Chrome.
11	Open AGOL at **http://resources.arcgis.com/apps/login/index.php?lg=en**.
12	Log into the USDA FSA ESRI Global Account. Accounts are assigned by Joan Biediger, APFO (**joan.biediger@slc.usda.gov**). 
13	The USDA FSA ArcGIS Online home page will display. 
14	CLICK “My Content”. 

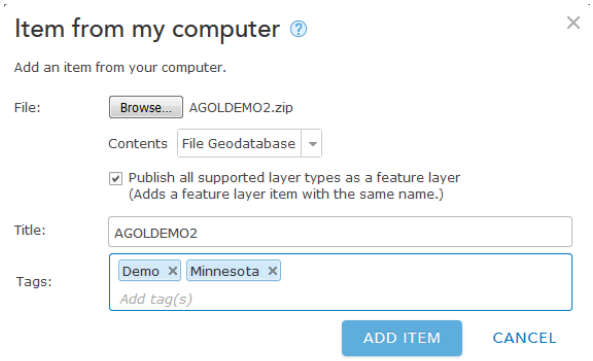
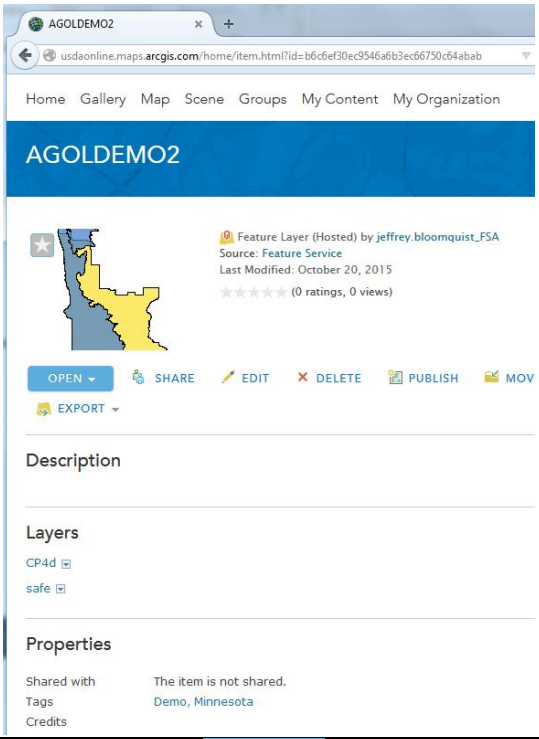
Using File Geodatabases in AGOL (Continued)

B Steps for Windows Explorer and WinZip (Continued)

Step	Instructions
15	CLICK "Add Item"  .
16	CLICK "From my computer". 
17	CLICK "Browse"  .
18	Select a WinZip file to upload to AGOL. 
19	CLICK "Open"  .
20	Contents must be set to "File Geodatabase". 

Using File Geodatabases in AGOL (Continued)

B Steps for Windows Explorer and WinZip (Continued)

Step	Instructions
21	Add a Title.
22	Add Tags for reference of the item added. 
23	CLICK "Add Item"  to upload data for use in AGOL.
24	The new layer will be added to AGOL. This layer is only available to the logged in user until it is shared. 
25	CLICK "Save"  .

Create a Statewide County Boundary Dataset in a File Geodatabase for AGOL

These instructions:

- outline the process to build a State's county boundary in a file geodatabase for use in AGOL
- define the stripped-down version of the county boundary

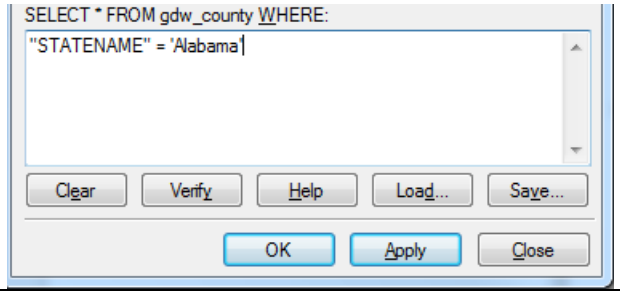
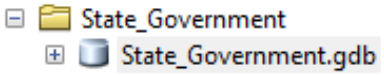
  Note: It is essential that layers that are uploaded to AGOL to be as lean as possible when it comes to the number of fields.

- only need to be done once per state and are to be shared with all of FSA.

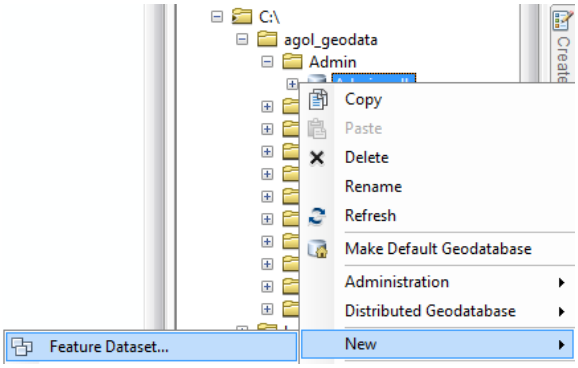
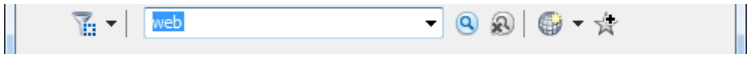
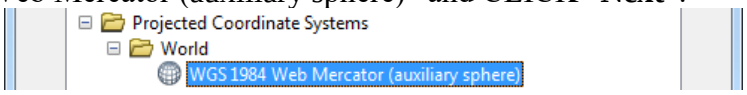
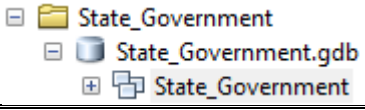
  Note: States with split counties will need to create 2 hosted feature services. One for the regular county boundaries and 2 for the split FSA county boundaries. Split the county boundaries and represent any of the even FIPS code counties.

Step	Instructions
1	Sign into Citrix and open Windows Explorer.
2	Navigate to the I:\Government Units folder.
3	Select and copy all of the files for the gdb_county.shp file.
4	Paste the files into the C:\agol_geodata\State_Government folder.
5	Open Desktop ArcMap and add the shapefile to the map document.
6	Click the "Selection" drop-down menu.
7	Select "Select by Attributes".

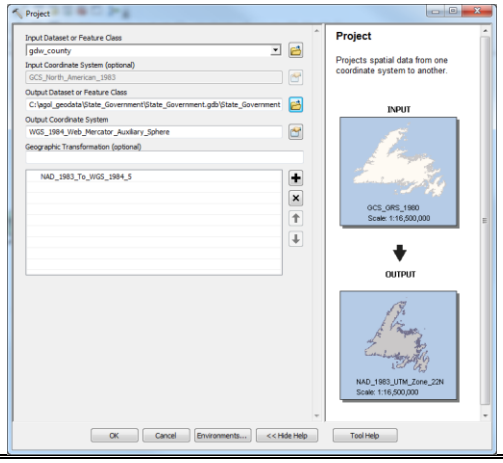
Create a Statewide County Boundary Dataset in a File Geodatabase for AGOL (Continued)

Step	Instructions
8	Create the equation to select the desired State. • Double-click on "STATENAME". • CLICK "=". • CLICK "**Get Unique Values**". • Double-click the desired State name. • CLICK "**OK**". 
9	From the Catalog window, create a new file geodatabase, in the C:\agol_geodata\State_government folder. • Right-click the "National" folder. • CLICK "New" and "File Geodatabase" to rename the geodatabase as the same as the above folder. 

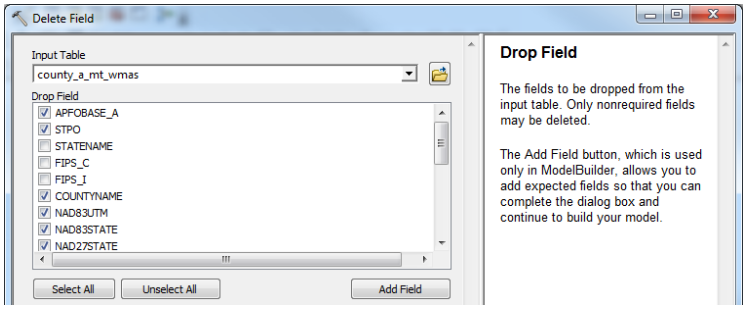
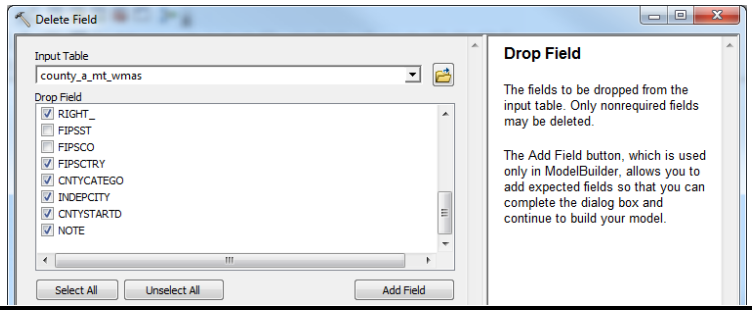
Create a Statewide County Boundary Dataset in a File Geodatabase for AGOL (Continued)

Step	Instructions
10	Create a Feature Dataset with the WMAS projection. • Right-click the newly created file geodatabase. • CLICK "New" and "Feature Dataset".  • ENTER "State_Government".  • CLICK "**Next**". • ENTER "web" into the "Search" box and click the "Search" button .  • Navigate to "Projected Coordinate Systems" and "World". • CLICK "WGS 1984 Web Mercator (auxiliary sphere)" and CLICK "**Next**".  • CLICK "**Next**" to the "vertical" coordinate system. • CLICK "**Finish**" to the "XY Tolerance". 

Create a Statewide County Boundary Dataset in a File Geodatabase for AGOL (Continued)

Step	Instructions
11	Project the feature class into the destination Feature Dataset. • Open ArcToolbox and navigate to "Data Management Tools" and "Projections and Transformations". **Note:** The directory to the "Project Tool" is "Data Management Tools", "Projections and Transformations", and "Feature in ArcGIS 10.x". • Double-click on "Project". • Select "gdw_county" from the drop-down menu for the Input Dataset or Feature Class data. • The input Coordinate System will default if there is a projection system defined. • Change the Output Dataset or Feature Class to the new Feature Dataset in the new file geodatabase and name the file "county_a_<st>_wmas". • The Output Coordinate System should default to "WGS 1984 Web Mercator (auxiliary sphere)". • Click the "Geographic Transformation" drop-down box and select "NAD_1983_To_WGS_1984_5". • Within the list, select "WGS_1984_(ITRF00)_To_NAD_1983". • Click the black "X" to the right of the list to remove the unnecessary transformation. • CLICK "**OK**". 

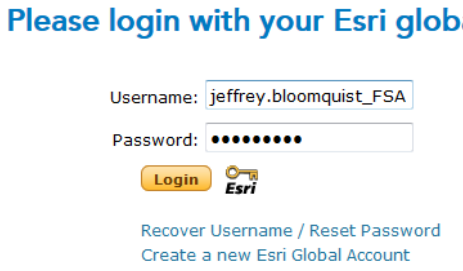
Create a Statewide County Boundary Dataset in a File Geodatabase for AGOL (Continued)

Step	Instructions
12	Delete the unnecessary fields from the feature class within the file geodatabase. **Note:** By deleting the excess fields, the feature class is more streamlined for AGOL. This in effect will allow the layer to render faster in the web map. This is also why it is desired to create a secondary dataset for AGOL. • Open ArcToolbox and navigate to "Data Management Tools" and "Fields". • Double-click on "Delete Field". • For Input Table, select the "county_a_<st>_wmas" layer from the drop-down menu. • For the "Drop Field" box, CLICK "**Select All**". **Note:** Uncheck the following fields to preserve the fields within the layer: "STATENAME", "FIPS_C", "FIPS_I", "FIPSST", and "FIPSCO". • CLICK "**OK**".  

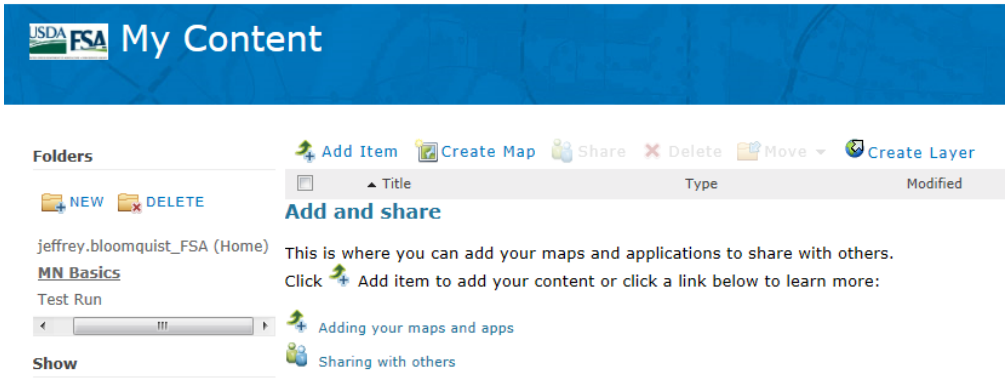
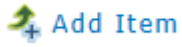
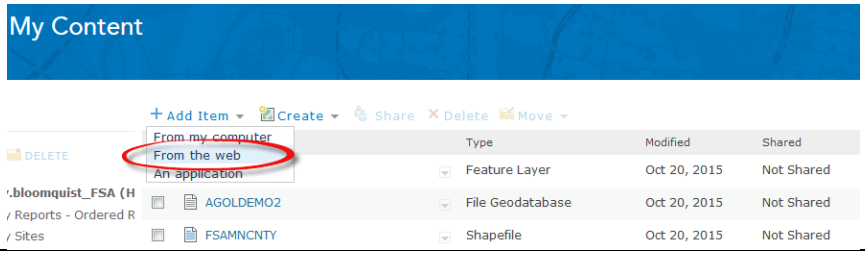
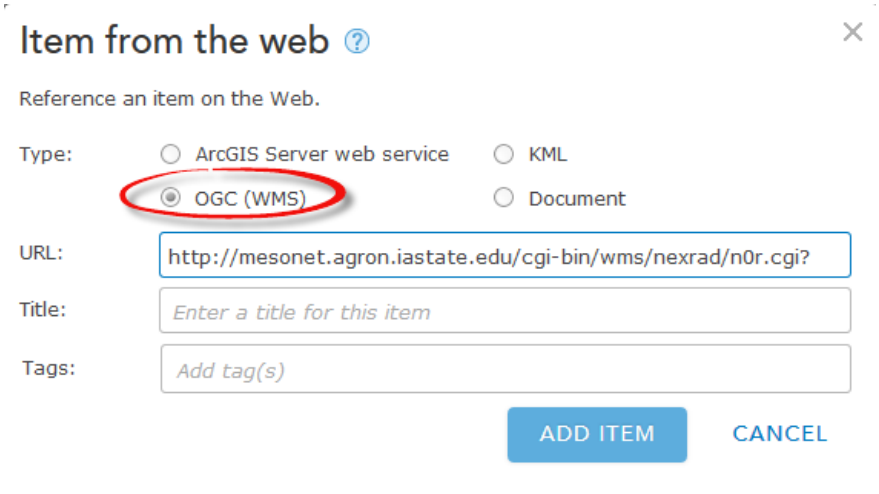
Adding Web Mapping Services in AGOL

The following use specifications must be observed when using AGOL.

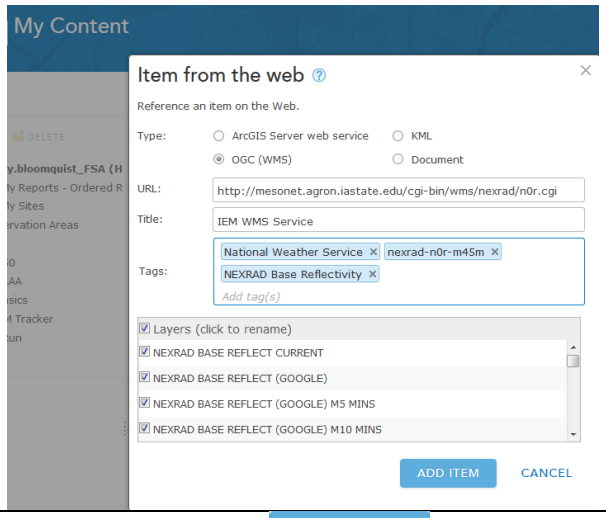
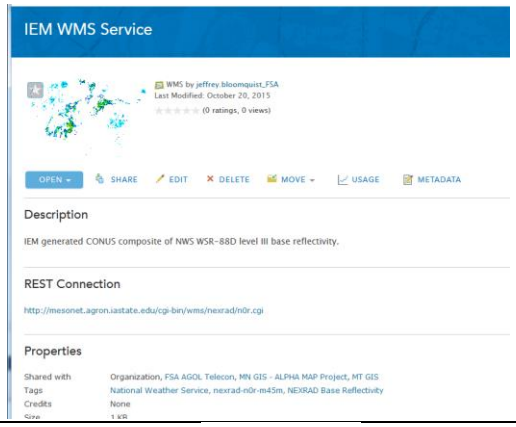
- Mozilla Firefox or the Google Chrome Internet browser is the preferred for optimal performance with AGOL.
- JavaScript is required.
- If Internet Explorer is used Internet Explorer 9 is needed for most shapefiles because of size constraints.
- Files are stored in My Content.
- Maintain a list in ArcCatalog of useful State and national web-based mapping services.

Step	Instructions
1	Open Mozilla Firefox or the Google Chrome browser.
2	Open AGOL at **http://resources.arcgis.com/apps/login/index.php?lg=en**.
3	Log into the USDA FSA ESRI Global Account. Accounts are assigned by Joan Biediger, APFO (**joan.biediger@slc.usda.gov**). 
4	The USDA FSA ArcGIS Online home page will display. 

Adding Web Mapping Services in AGOL (Continued)

Step	Instructions
5	CLICK "My Content". 
6	CLICK "Add Item"  .
7	The Add Item window will open. 
8	CLICK "From the web".
9	Click the "OGC (WMS)" radio button. 

Adding Web Mapping Services in AGOL (Continued)

Step	Instructions
10	Add URL.
11	Add Title.
12	Add Tags for reference of the item added. 
13	CLICK “Add Item”  to upload data for use in AGOL.
14	The new layer will be added to AGOL. This layer is only available to the logged in user until it is shared. 
15	CLICK “Edit”  to update information regarding layer.
16	CLICK “Save”  .

Creating a Tile Package for AGOL

A Instructions to Create a Tile Package for AGOL

The following use specifications must be observed when using AGOL.

- Mozilla Firefox or the Google Chrome Internet browser is the preferred for optimal performance with AGOL.
- JavaScript is required.
- Tile packages work most efficiently from a file geodatabase.
- Using tile packages make maps run faster but scales must be considered.
- Users should be reminded that the attribute files are included for AGOL when using this option.

B Steps for ArcGIS

A tile package is just a collection of images that are preprocessed using Desktop ArcMap. Tiles are wrapped into a single .tpk file that allows the user to upload to AGOL.

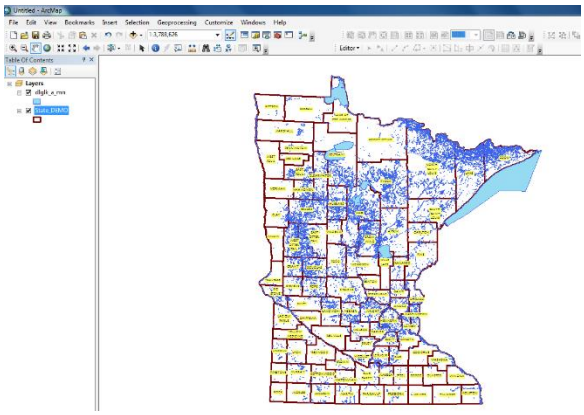
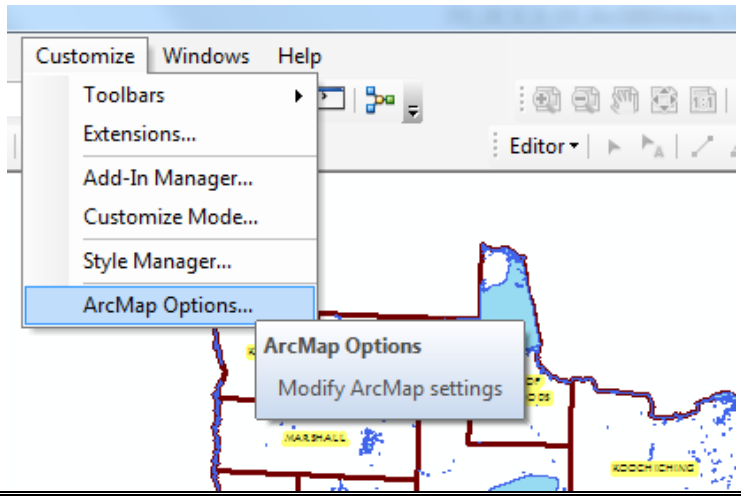
The following steps identify how to:

- create a Tile Package that range from small to moderate in data size (State based) in ArcGIS Desktop
- store files
- update the tile package formats
- update tile descriptions.

Step	Instructions
1	Start ArcGIS Desktop  .

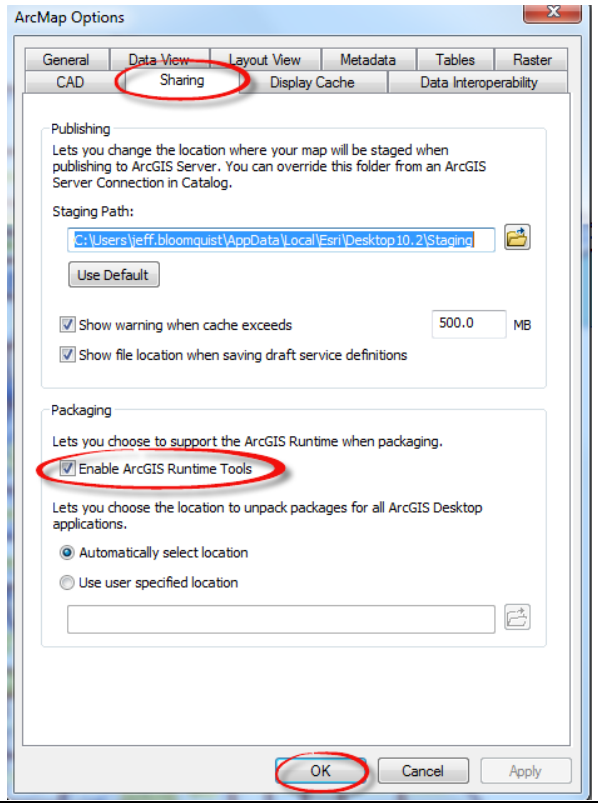
Creating a Tile Package for AGOL (Continued)

B Steps for ArcGIS (Continued)

Step	Instructions
2	Add file geodatabases and set up map that will be used for AGOL.  **Note:** Considerations should be made for labels, annotation and other related cartographic elements that will be needed in the .tpk file. Additionally, it is recommended that AGOL users fine-tune their maps for accurate generalization, symbology, and labeling, as these details will need to be viewable at different scales. It will be important to run tests to determine the optimal scales for each State.
3	CLICK "Customize" and "ArcMap Options". 

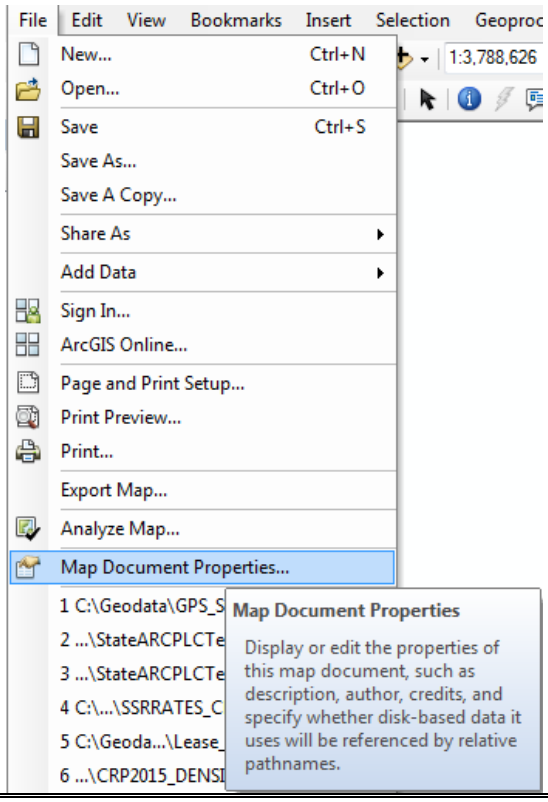
Creating a Tile Package for AGOL (Continued)

B Steps for ArcGIS (Continued)

Step	Instructions
4	Click the "Sharing" tab. 
5	Under the "Packing" section, check the "Enable ArcGIS Runtime Tools" box.
6	CLICK "**OK**" to close the dialog.

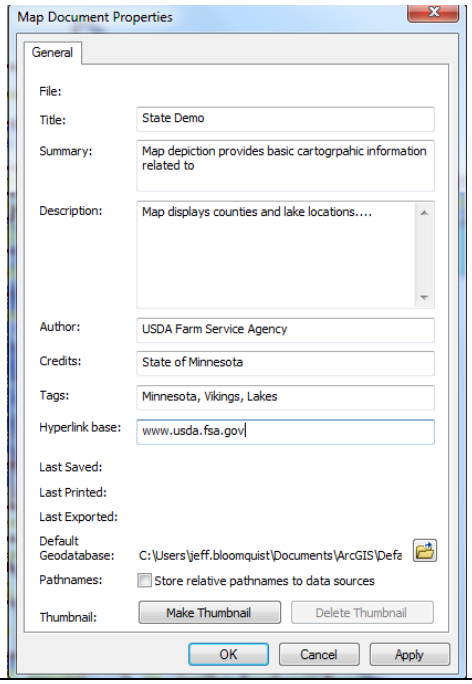
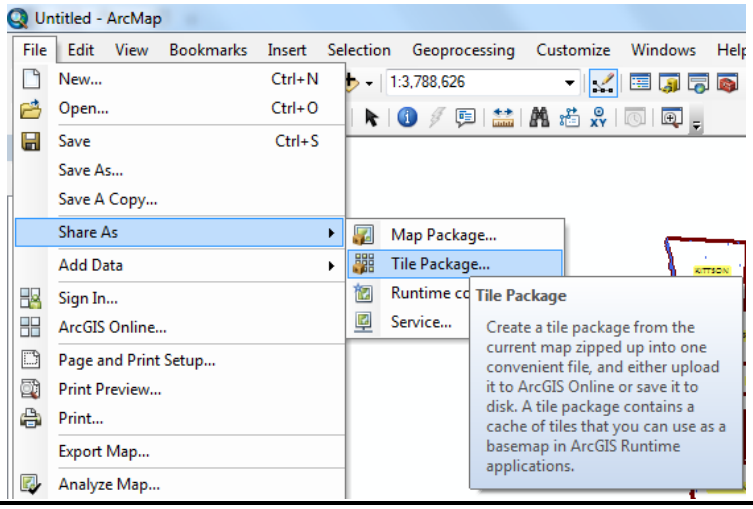
Creating a Tile Package for AGOL (Continued)

B Steps for ArcGIS (Continued)

Step	Instructions
7	Set the Map Document Properties, CLICK “File” and “Map Document Properties”. 

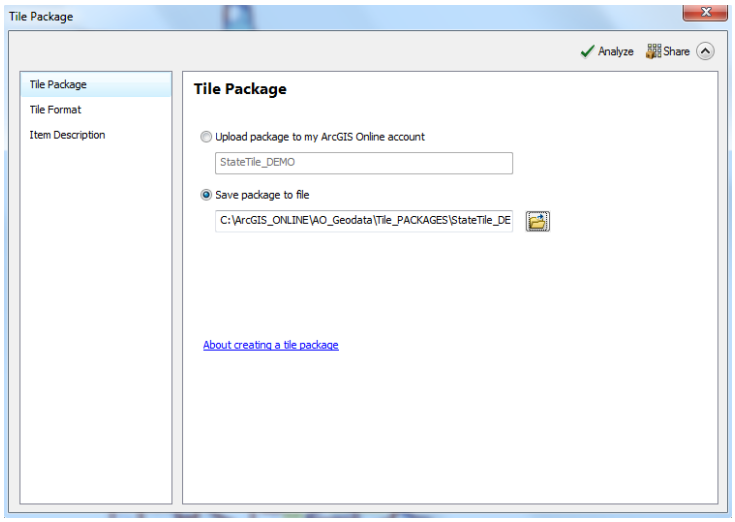
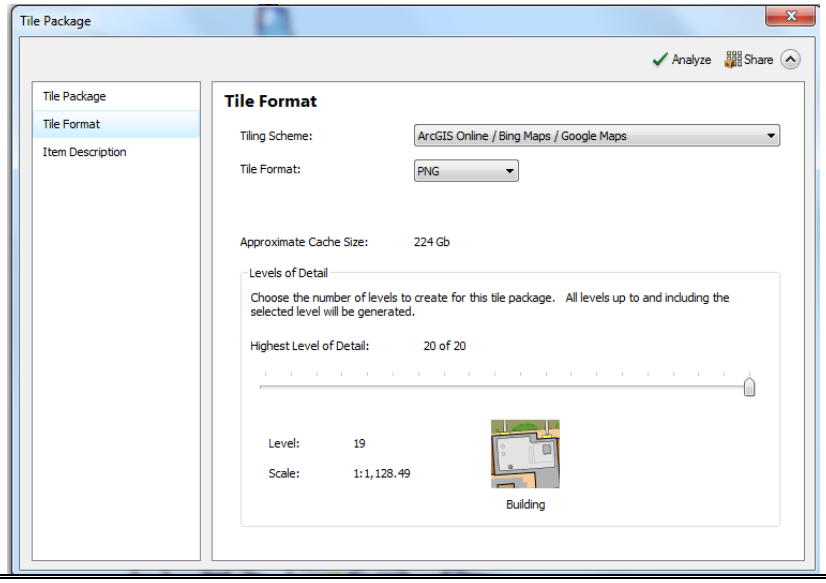
Creating a Tile Package for AGOL (Continued)

B Steps for ArcGIS (Continued)

Step	Instructions
8	Add necessary data into the Map Document Properties window. 
9	CLICK "**Make Thumbnail**".
10	CLICK "**OK**" to close the Map Document Properties dialog box.
11	Navigate to "File", "Share As", and "Tile Package". 

Creating a Tile Package for AGOL (Continued)

B Steps for ArcGIS (Continued)

Step	Instructions
12	Specify the location that the tile package will be shared under Tile Package.  **Note:** When creating the tile packages, refreshing data, or making other updates, it is important to complete these tasks on the local C Drive rather than a network drive. Users should be aware that this process can be time-consuming depending on the complexity of the data. The example above uses folder structure C:\ArcGIS_ONLINE\AO_Geodata\Tile_PACKAGES. Storing the .tpk files in a separate folder will help to facilitate file management.
13	Click on "Tile Format" in the left window pane and set the "Tiling Scheme" drop-down to "ArcGIS Online / Bing Maps / Google Maps" (this is the default). 

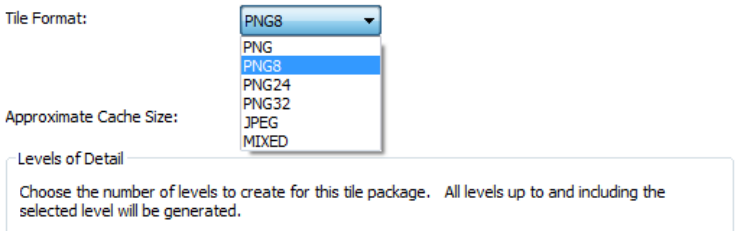
Creating a Tile Package for AGOL (Continued)

B Steps for ArcGIS (Continued)

Step	Instructions
14	Select a tiling scheme. **Note:** The tiling scheme options includes several levels, time dimensions and the tile origin for the cache. This property will define where the tile boundaries exist. Options: • **ArcGIS Online/Bing Maps/Google Maps** – This tiling scheme allows users to overlay the cache to be created with tiles from these mapping services. File sizes matter when choosing this option and disk storage space can be an important consideration. This is typically used to publish a small to moderate sized tile package such as a State and county boundary file with labels/annotation. This is the preferred method for most data layers. • **An existing map service** – This option is used when an organization has already created a tiling scheme for an existing service and users are wanting to match this. • **A tiling scheme file** – All tiling scheme packages have a tiling scheme file conf.xml in the package directory. Users can browse to this file to use, share, and replicate a previously existing tile scheme.

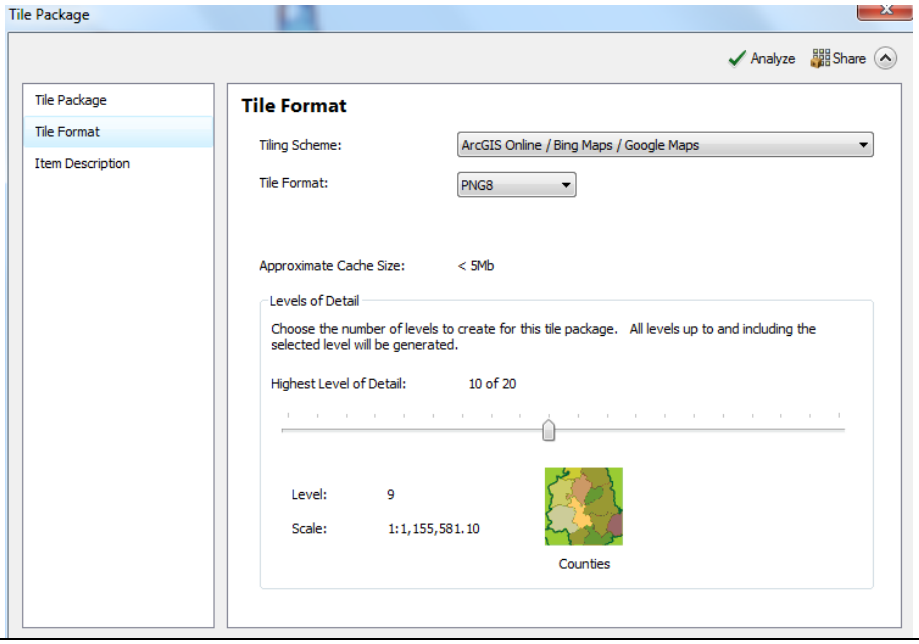
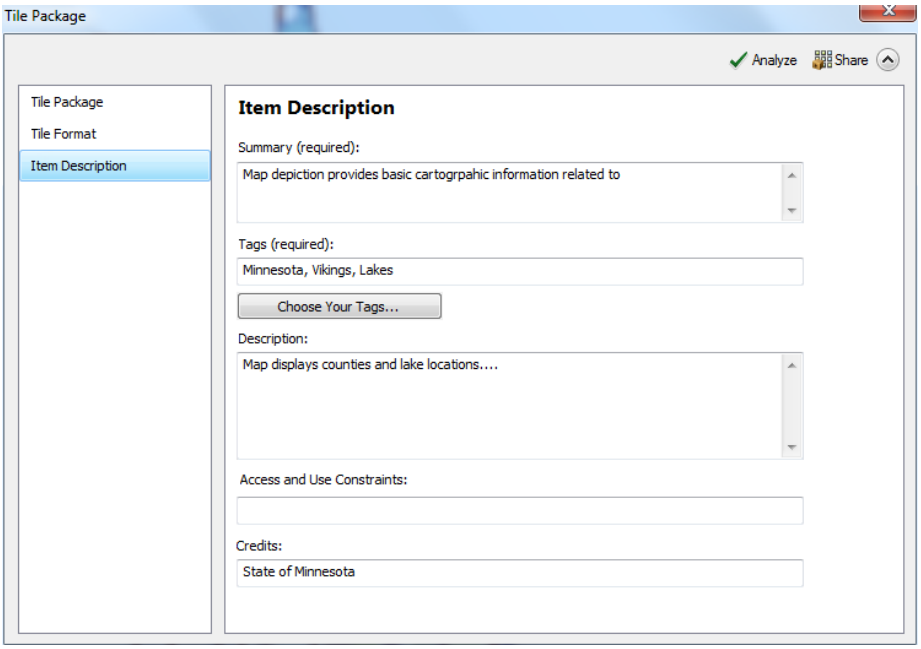
Creating a Tile Package for AGOL (Continued)

B Steps for ArcGIS (Continued)

Step	Instructions
15	Select a tile format.  Options: • **PNG/PNG8** –Typically used when transparent backgrounds may be needed. Creates tiles of very small size on disk with no loss of information. • **PNG24** – Used when more the 256 colors are needed. If fewer than 256 use PNG8. • **PNG32** – Files are fully supported on all browsers. Especially good for enabled lines or text. • **JPEG** – Use this format for base map services that have large color variations. JPEG is a glossy image format it attempts to remove data without affecting the appearance of the image. Can cause noise or blurry area around lines. • **MIXED** – Uses both JPEG and PNG32. Used when overlaying raster packages on other layers

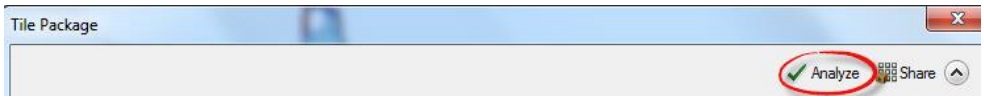
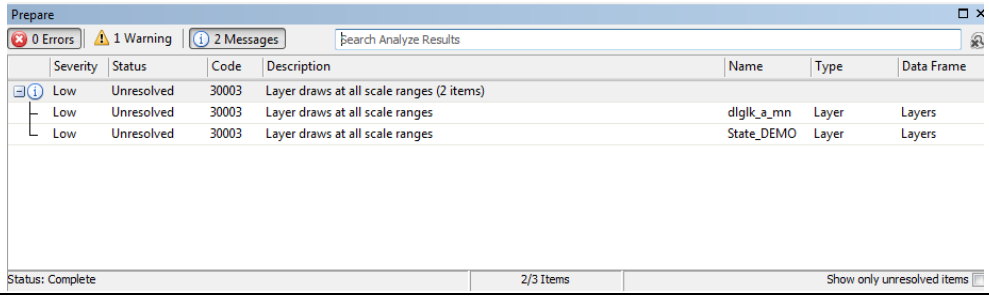
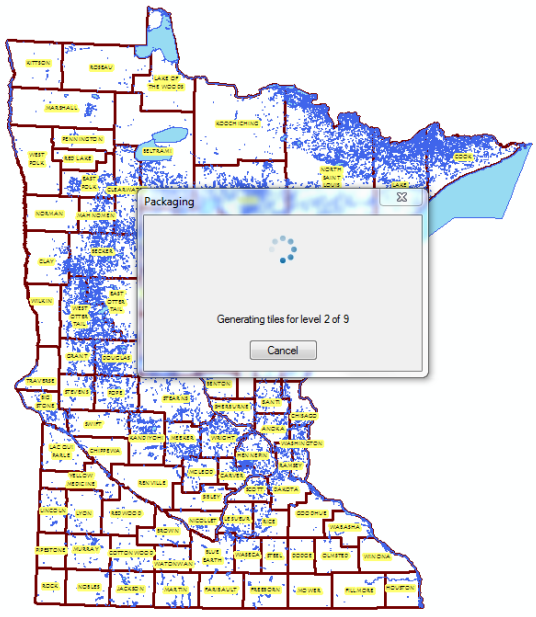
Creating a Tile Package for AGOL (Continued)

B Steps for ArcGIS (Continued)

Step	Instructions
16	Set the Highest Level of Detail to be used. 
17	Update the "Item Description".  **Note:** The Item Description details are automatically inherited from the Map Document properties. Update as needed.

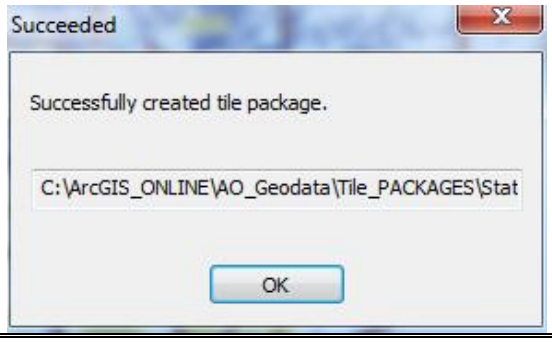
Creating a Tile Package for AGOL (Continued)

B Steps for ArcGIS (Continued)

Step	Instructions
18	CLICK "**Analyze**". **Note:** The "**Analyze**" function reviews the tile package for errors. Any issues need to be addressed and corrected before moving the tile package to AGOL. This process also provides messages to the user in the event that additional information needs to be communicated. Messages will communicate additional information about the map.  
19	CLICK "**Share**" to generate the tile map package.  

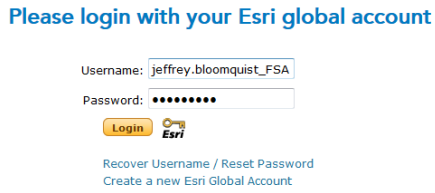
Creating a Tile Package for AGOL (Continued)

B Steps for ArcGIS (Continued)

Step	Instructions
20	Dialog will display when files have completed. 

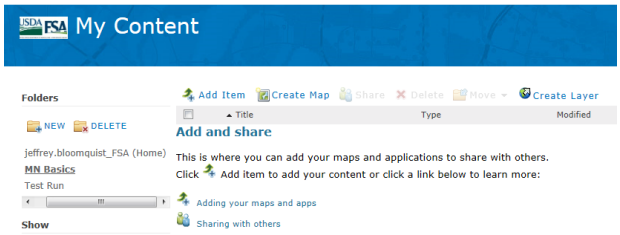
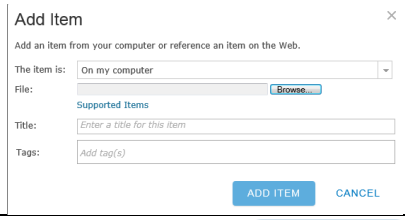
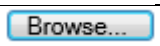
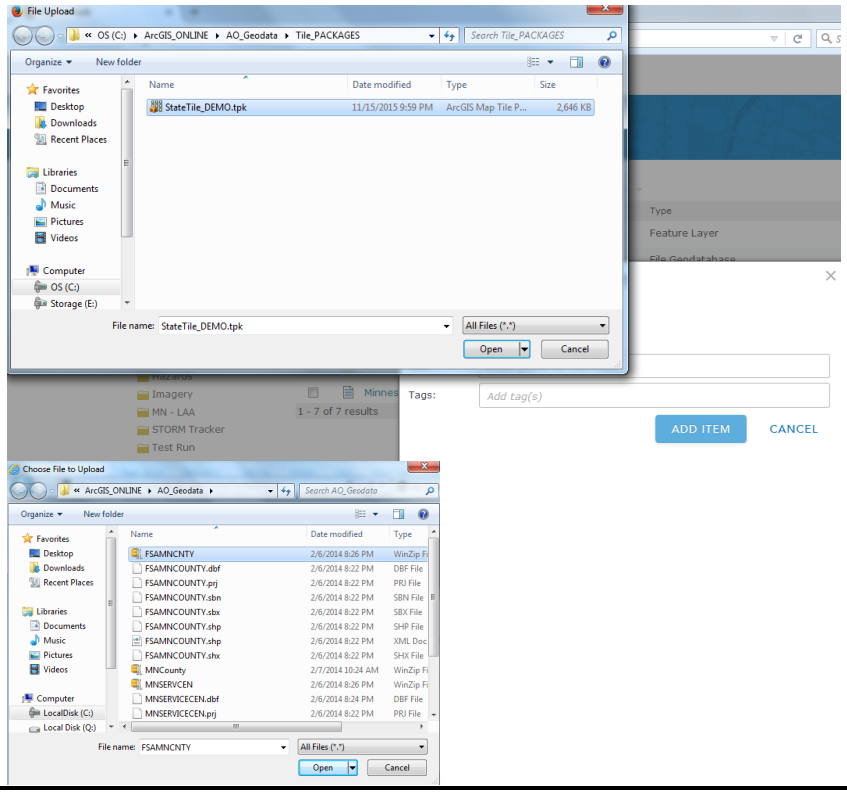
C Steps for Adding Tile Packages to AGOL

Follow these steps to add tile packages to AGOL.

Step	Instructions
1	Open Mozilla Firefox or Google Chrome.
2	Open AGOL at **http://resources.arcgis.com/apps/login/index.php?lg=en**.
3	Log into the USDA FSA ESRI Global Account. Accounts are assigned by Joan Biediger, APFO (**joan.biediger@slc.usda.gov**). 
4	The USDA FSA ArcGIS Online home page will display. 

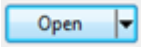
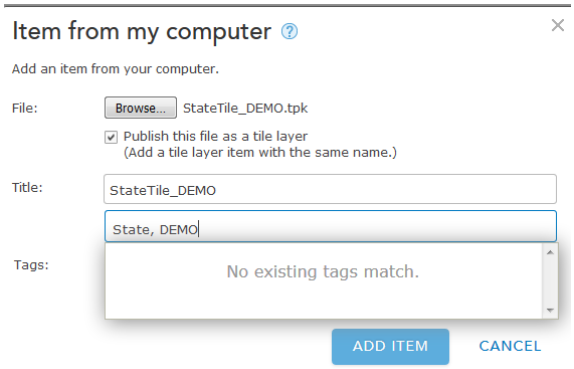
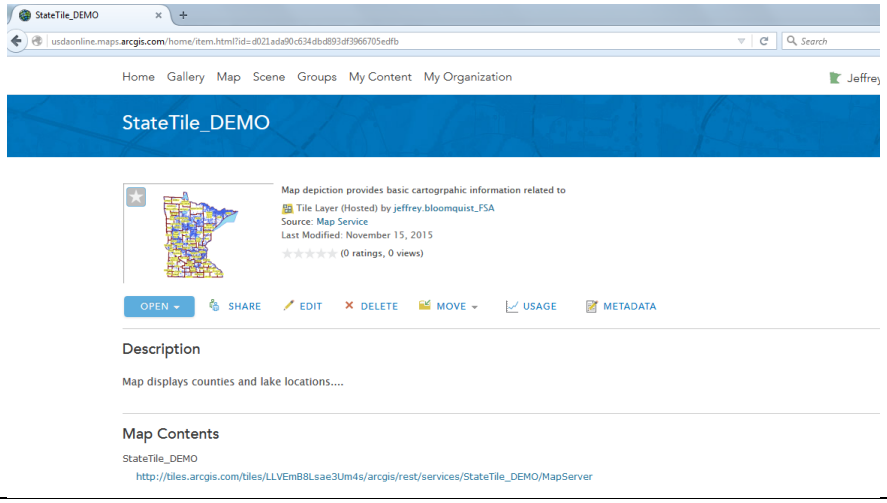
Creating a Tile Package for AGOL (Continued)

C Steps for Adding Tile Packages to AGOL (Continued)

Step	Instructions
5	CLICK “My Content”. 
6	CLICK “Add Item”.
7	The Add Item window will open. 
8	CLICK “**Browse**”  .
9	Select a .tpk file to upload to AGOL. 

Creating a Tile Package for AGOL (Continued)

C Steps for Adding Tile Packages to AGOL (Continued)

Step	Instructions
10	CLICK "**Open**"  .
11	Add a "Title". 
12	Add "Tags" for reference of the item added.
13	CLICK "**ADD ITEM**"  to upload data for use in AGOL.
14	The new layer will be added to AGOL. This layer is only available to the logged in user until it is shared. 
15	CLICK "**Edit**"  to update information regarding layer.
16	CLICK "**Save**"  .

Adding a Hosted Feature Service to AGOL

A Instructions for Adding a Hosted Feature Service

These instructions:

- outline the process to build a Hosted Feature Service, which can contain symbology and labels defined within the feature service itself
- require the use of Desktop ArcGIS to develop and refine map symbolization and to streamline the data

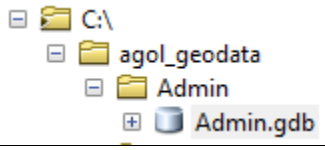
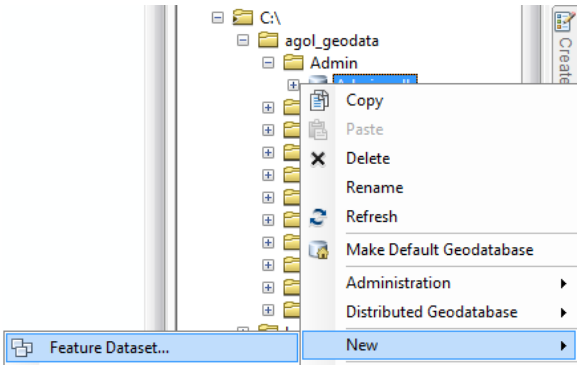
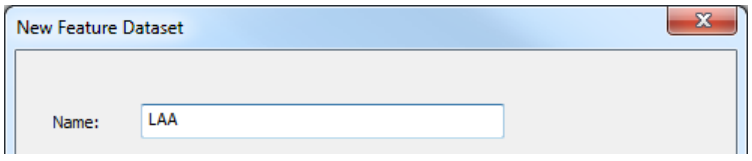
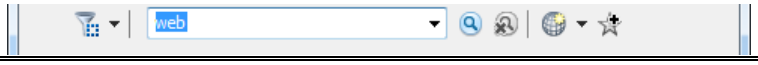
  Note: Users will need to determine what attributes are appropriate based on need.

- require the creation of a file geodatabase that is specific to AGOL before adding the layers to a Hosted Feature Service.

Step	Instructions
1	Open a blank a Map Document in Desktop ArcMap.
2	Sign into AGOL. • CLICK "File" and "Sign In". • Enter the FSA AGOL username and password. • CLICK "**Sign In**".
3	Name and save the map document to a logical location for AGOL, C:\agol_geodata. Generally, the map document should be saved in the same folder as the file geodatabase that is used for the AGOL feature classes. An AGOL file geodatabase should be created within the folder structure that is outlined in **Exhibit 178**. **Note:** When building Hosted Feature Service, many times there is a common theme such as the Conservation layers. The Conservation layers are not limited to CPA's and Priority Zones, SAFE, CP25 Rare and Declining Habitat, and CRP Grasslands, etc.

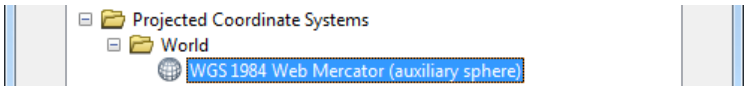
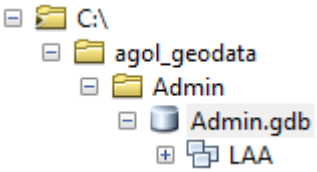
Adding a Hosted Feature Service to AGOL (Continued)

A Instructions for Adding a Hosted Feature Service (Continued)

Step	Instructions
4	Create a new file geodatabase, if one does not exist in the desired AGOL geodata subfolder. • Create the desired folder structure, see **Exhibit 178** for more information. • Right-click the desired folder in which to create the new file geodatabase. • CLICK "New" and "File Geodatabase" to rename the geodatabase as the same as the above folder. 
5	Create a Feature Dataset with the WMAS projection. • Right-click the newly created file geodatabase. • CLICK "New" and "Feature Dataset".  • Enter a logical name. See the following example.  • CLICK "**Next**". • ENTER "web" into the "Search" box and click the "Search" button . 

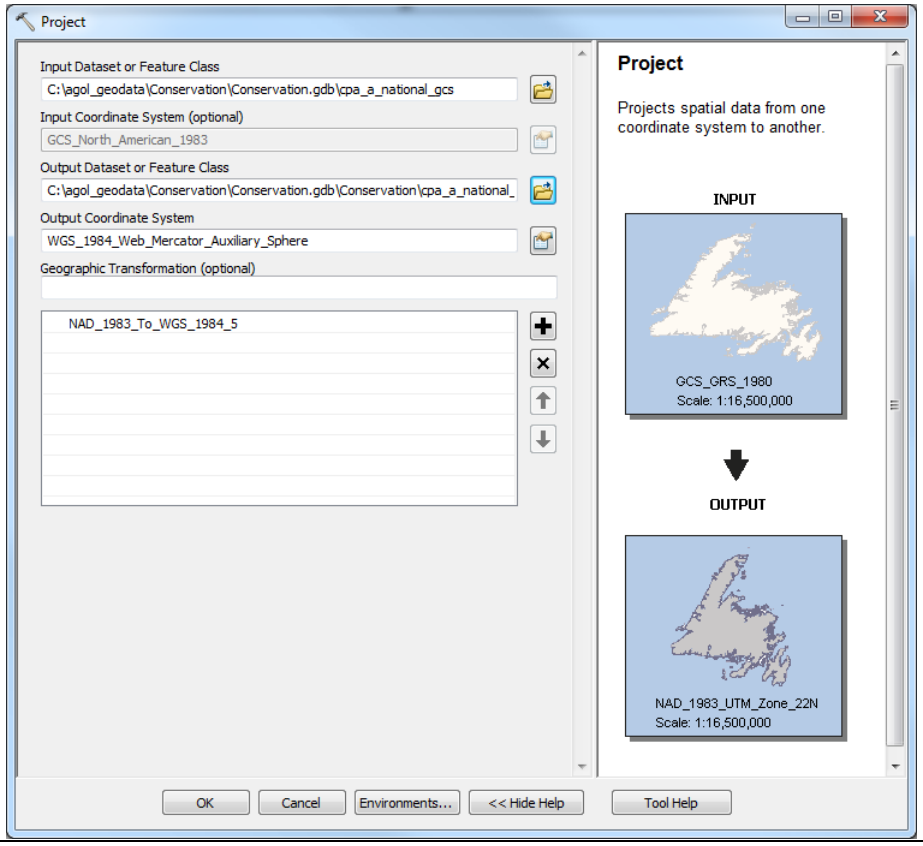
Adding a Hosted Feature Service to AGOL (Continued)

A Instructions for Adding a Hosted Feature Service (Continued)

Step	Instructions
5 (Cntd)	• Navigate to "Projected Coordinate Systems" and "World". • CLICK "WGS 1984 Web Mercator (auxiliary sphere)" and CLICK "**Next**".  • CLICK "**Next**" to the "vertical" coordinate system. • CLICK "**Finish**" to the "XY Tolerance". 
6	Import and project the desired feature classes into the destination Feature Dataset. • Open ArcToolbox and navigate to "Data Management Tools" and "Projections and Transformations". **Note:** The directory to the "Project Tool" is "Data Management Tools", "Projections and Transformations", and "Feature in ArcGIS 10.1". • Double-click on "Project". • Add the Input Dataset or Feature Class data. • The input Coordinate System will default if there is a projection system defined. • Change the Output Dataset or Feature Class to the new Feature Dataset in the new file geodatabase. • The Output Coordinate System should default to "WGS 1984 Web Mercator (auxiliary sphere)". • Click the "Geographic Transformation" drop-down box and select "NAD_1983_To_WGS_1984_5".

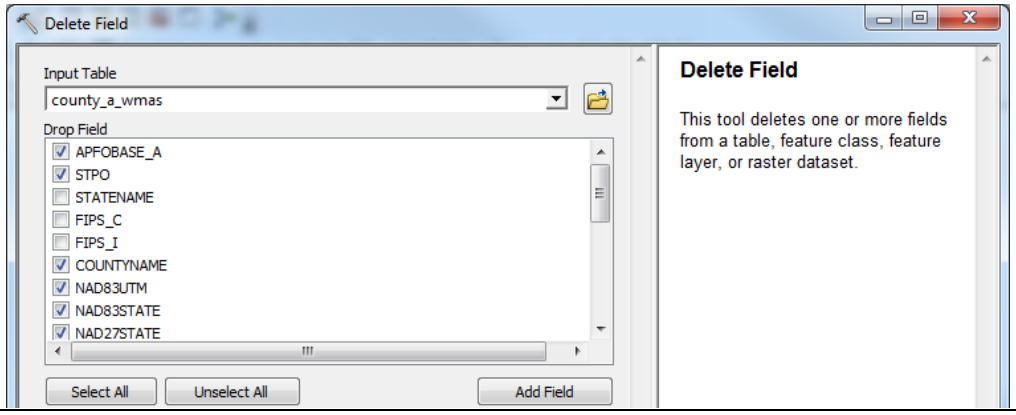
Adding a Hosted Feature Service to AGOL (Continued)

A Instructions for Adding a Hosted Feature Service (Continued)

Step	Instructions
6 (Cntd)	• Within the list, select "WGS_1984_(ITRF00)_To_NAD_1983". • Click the black "X" to the right of the list to remove the unnecessary transformation. • CLICK "**OK**". 
7	Delete the unnecessary fields from the feature class within the file geodatabase. **Note:** By deleting the excess fields, the feature class is more streamlined for AGOL. This in effect will allow the layer to render faster in the web map. This is also why it is desired to create a secondary dataset for AGOL. • Open ArcToolbox and navigate to "Data Management Tools" and "Fields". • Double-click on "Delete Field".

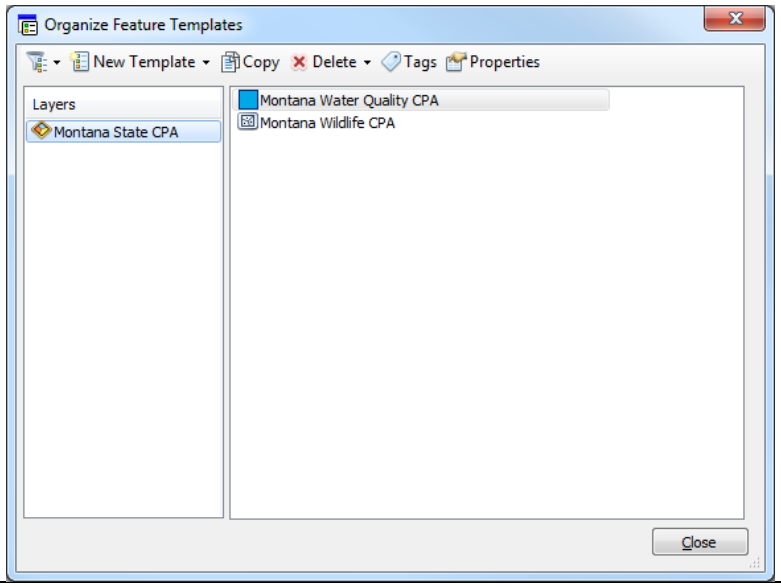
Adding a Hosted Feature Service to AGOL (Continued)

A Instructions for Adding a Hosted Feature Service (Continued)

Step	Instructions
7 (Cntd)	• Add the desired Input Table. • For the "Drop Field" box, CLICK "**Select All**". **Note:** Uncheck the necessary fields to preserve the fields within the layer. • CLICK "**OK**". 
8	Symbolize the feature class as desired for AGOL. Incorporate transparency, it is highly recommended using transparency when symbolizing layers for AGOL.
9	Label the feature class, if necessary. Labels can be created in the AGOL map.
10	Open an Edit session. • Open the Editor Toolbar, CLICK "Customize", "Toolbars", and "Editor". • CLICK "Editor" on the Editor Toolbar Editor. CLICK "Start Editing".
11	From the Editor Toolbar, CLICK "Create Features".
12	From the Create Features window, CLICK "Organize Templates".

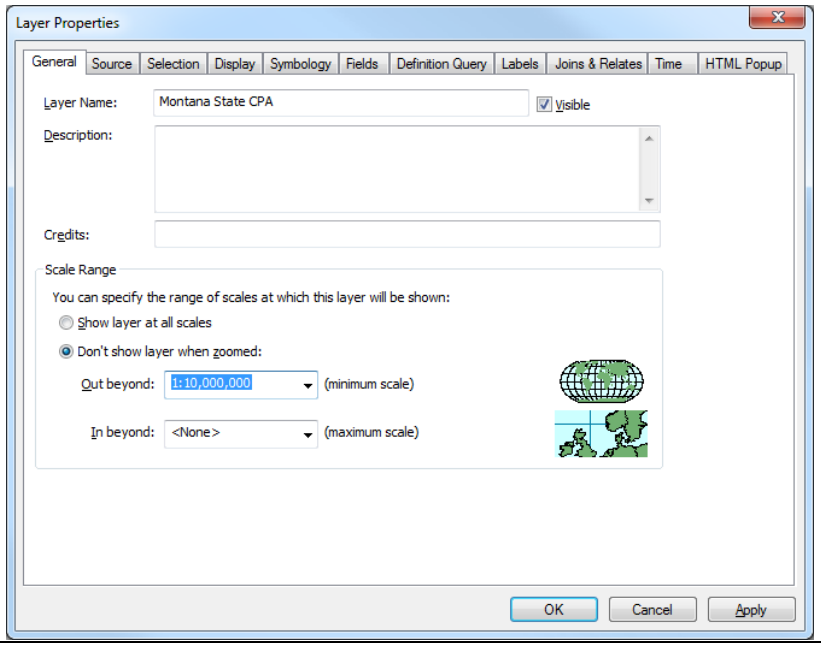
Adding a Hosted Feature Service to AGOL (Continued)

A Instructions for Adding a Hosted Feature Service (Continued)

Step	Instructions
13	CLICK "**Close**". 
14	From the Editor Toolbar, CLICK "Editor" and then "Stop Editing".
15	Set the scale references for each layer. This is not required, but highly recommended. **Notes:** It is recommended that users document the scale that works best for the respective State. Smaller Feature Classes: it is recommended to set the minimum scale to slightly beyond the State scale. This will allow the end user to see the layer when zoomed to the entire State. Larger Feature Classes, including those for national maps: Set the scale to work in conjunction with Tiled services. The Tile services should be viewed at small scales and then the hosted feature service can be viewed at larger scales. • Double-click the layer to open the Properties window. • Click the "General" tab.

Adding a Hosted Feature Service to AGOL (Continued)

A Instructions for Adding a Hosted Feature Service (Continued)

Step	Instructions
15 (Cntd)	• Set a logical scale. The scale can be reset within AGOL, however, it is recommended the scale to be visible for the intended use. Such as, at the State, county, tract, level. 
16	Set the Data Frame Extent. • Zoom the map to an extent that all layers can be viewed. • CLICK "View" and "Data Frame Properties". • From the "Data Frame" tab under the "Extent Used by Full Extent" command, check "Other". • CLICK "**Specify Extent**". • Check "Current Visible Extent". CLICK "**OK**".
17	Save the map document.

Adding a Hosted Feature Service to AGOL (Continued)

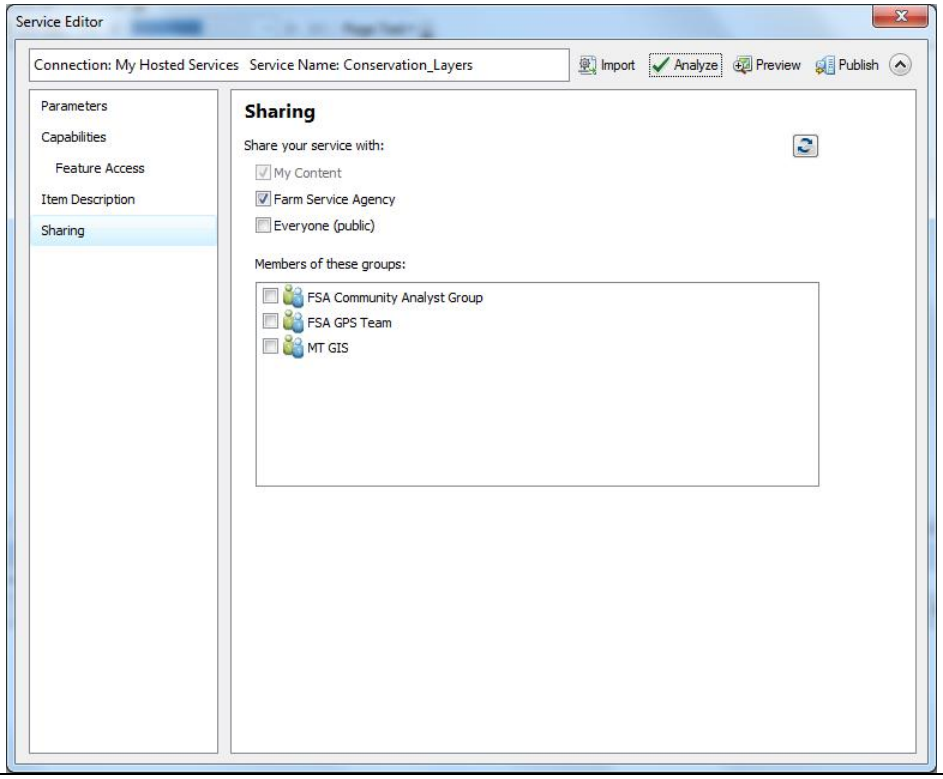
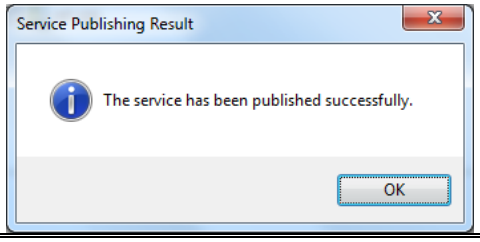
B Publish a Hosted Feature Service to AGOL

Follow these steps to publish a hosted feature service to AGOL.

Step	Instructions
1	Once all of the feature classes have been properly symbolized, the feature service can be uploaded to AGOL, CLICK "File", "Share As", and "Service".
2	CLICK "**Next**" to "Publish a Service".
3	When signed in properly, the default should be "My Hosted Service (Farm Service Agency)".
4	Enter a logical name. The default will be the Map Document name. **Note:** No spaces or special characters other than underscores. Layer names can be renamed in the AGOL map.
5	CLICK "**Continue**".
6	From the Service Editor window, CLICK "Capabilities".
7	Check "Feature Access" and uncheck "Tiled Mapping". **Note:** If "Tile Mapping" is unchecked before "Feature Access" is checked, the user will receive an error message.
8	CLICK "Feature Access". The default should only have query checked. This is good for maps that are only going to be queried. The other checkboxes are for editing data in AGOL. **Note:** Additional field guides will be developed to describe the functions of the checkboxes.
9	CLICK "Item Description".
10	Enter the required summary and tags of the feature service.
11	Enter the optional description, access and use constraints, and credits, if applicable. **Note:** If FSA datasets are being used, then credit goes to "USDA Farm Service Agency".
12	CLICK "Sharing".
13	Check the desired audience. **Note:** In general, most layers can be shared with the Farm Service Agency. However, there may be times when the data is only shared with a specific group, for a specific project. More information on groups can be found in the AGOL FSA Guide.

Adding a Hosted Feature Service to AGOL (Continued)

B Publish a Hosted Feature Service to AGOL (Continued)

Step	Instructions
14	In the top right corner of the Service Editor window, CLICK "**Analyze**".
15	Within ArcMap, the Prepare window will display. If any items display in the window, the description of the message will identify the resolution. 
16	In the top right corner of the Service Editor window, CLICK "**Publish**". The processing may take several minutes to publish. 

Adding a Hosted Feature Service to AGOL (Continued)

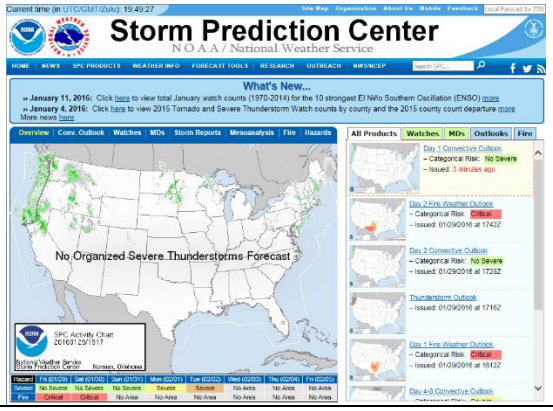
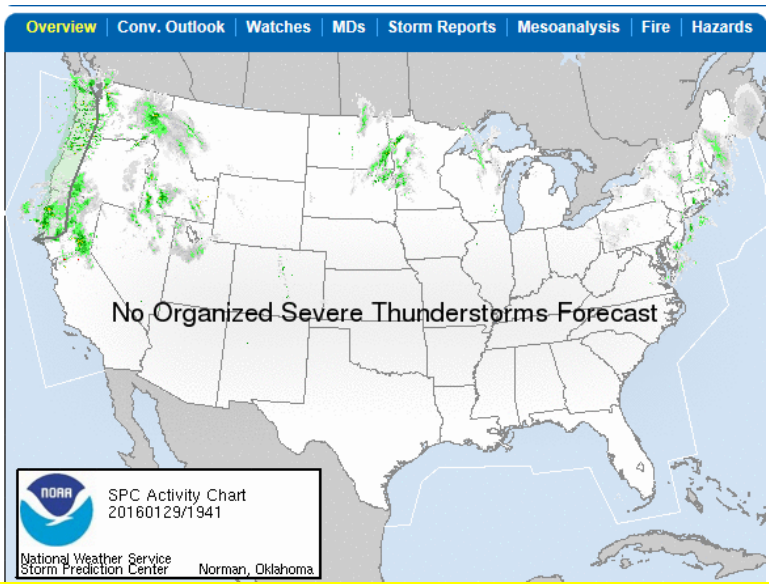
B Publish a Hosted Feature Service to AGOL (Continued)

Step	Instructions
17	Once the service has been published, log into AGOL through a web browser. ArcMap may remain logged into AGOL.
18	Navigate to "MY CONTENT".
19	The newly published layer will display in "My Content". **Note:** It is necessary to move the layers into the respective folder structure. See **Exhibit 178** for additional information.
20	Identify a logical folder for the new layer, create a folder if necessary.
21	Check the newly added layers, CLICK "Move", and select the desired folder location.

Using Storm Prediction Center Data

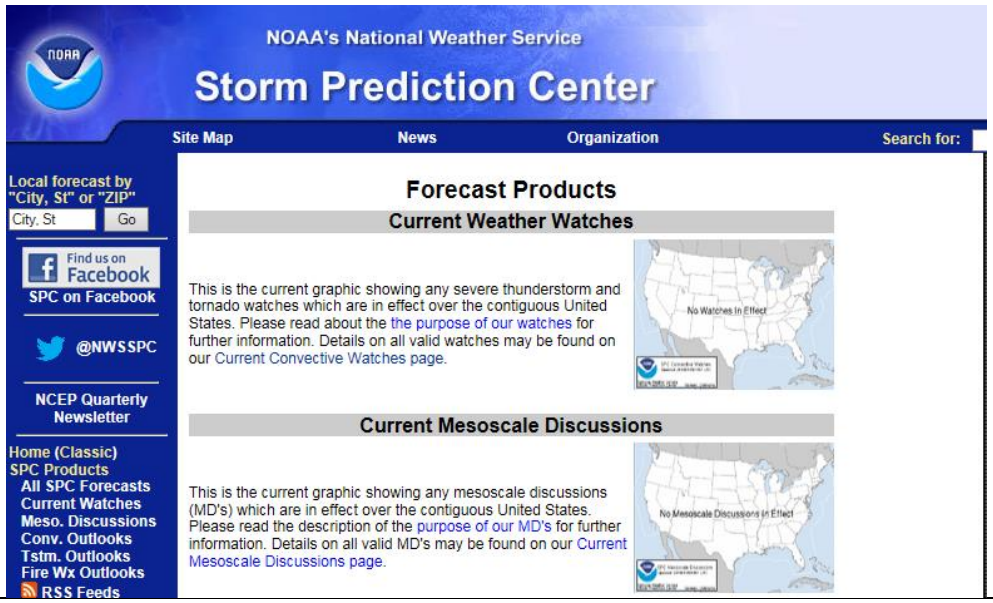
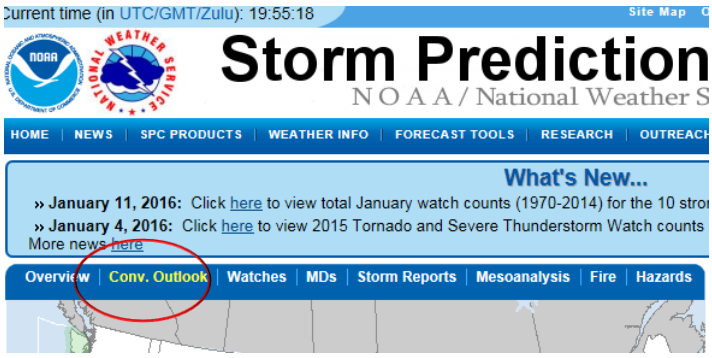
A Instructions and Options for SPC

Follow these instructions and options for SPC.

Step	Instructions
1	Open **http://www.spc.noaa.gov/** in a web browser. 
2	The Overview window provides an overall weather view.  **Note:** SPC is responsible for forecasting the risk of severe weather caused by severe thunderstorms, specifically those producing tornadoes, hail of 1 inch (2.5 cm) in diameter or larger, and/or winds of 58 miles per hour (93 km/h) or greater.

Using Storm Prediction Center Data (Continued)

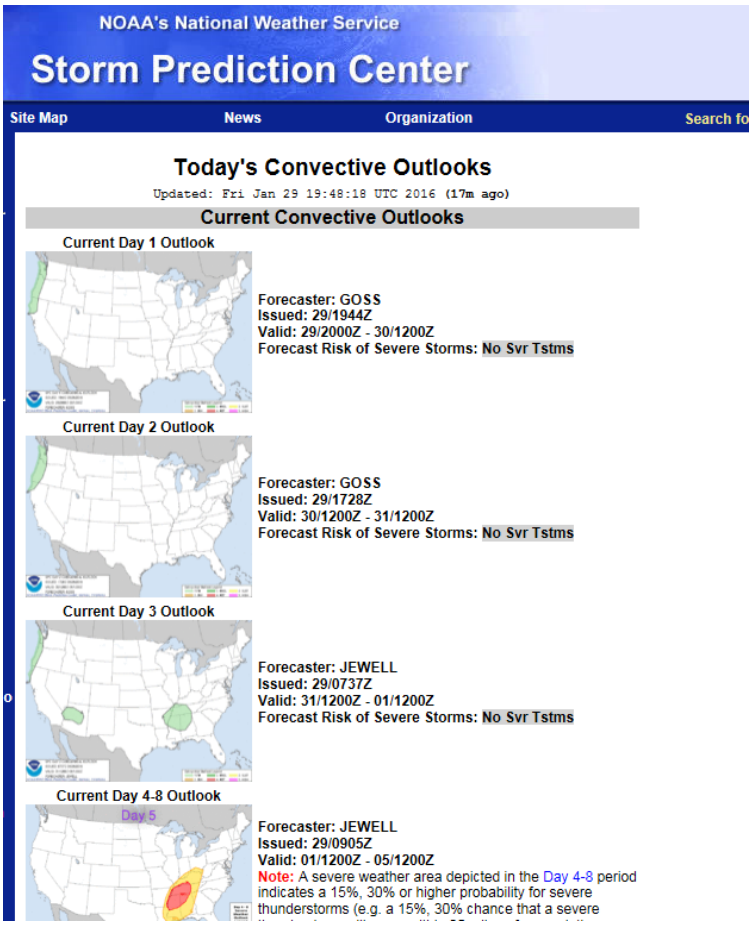
A Instructions and Options for SPC (Continued)

Step	Instructions
3	Click the "Overview" tab to provide a list of forecast products. 
4	The Conv. Outlook (Convective Outlook) window provides a quick view of the SPC's issued convective outlooks that consist of categorical and probabilistic forecasts related to severe weather.  **Note:** Public severe weather outlooks (PWO) are issued when a significant widespread outbreak is expected for storms. Being aware of these for FSA is important for understanding possible crop damage and upcoming workloads.

Using Storm Prediction Center Data (Continued)

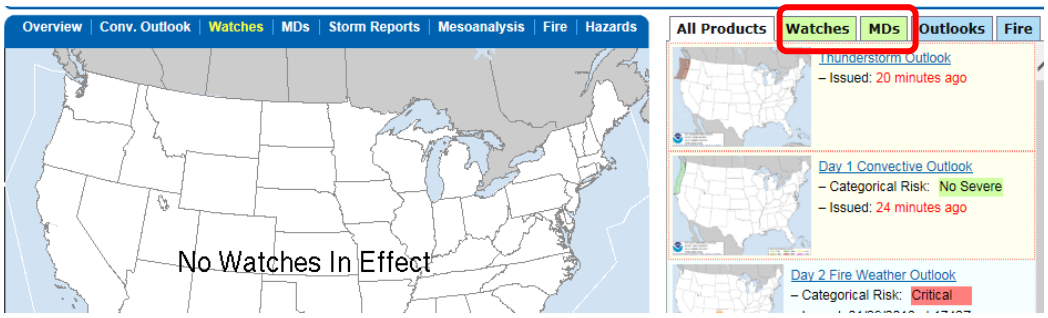
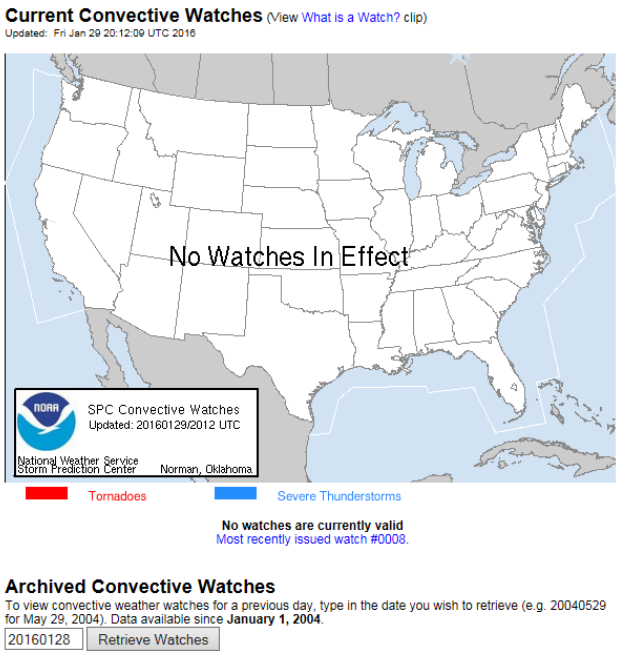
A Instructions and Options for SPC (Continued)

Step	Instructions
5	Click the "Conv. Outlook" tab to provide a list of forecast products.



Note: See **https://en.wikipedia.org/wiki/Storm_Prediction_Center** for detailed information on outlook probabilities.

A Instructions and Options for SPC (Continued)

Step	Instructions
6	The Watches window provides a quick view of current weather watches that includes thunderstorms and fire risk.  **Note:** Watches are intended to be issued preceding the arrival of severe weather from 1 to 6 hours. Watches indicate that conditions are favorable for thunderstorms capable of severe weather such as large hail, straight line winds or tornadoes.
7	Click the "Watches" tab to display current watches or allow for a query to identify past storms. 

Using SPC Using Storm Prediction Center Data (Continued)

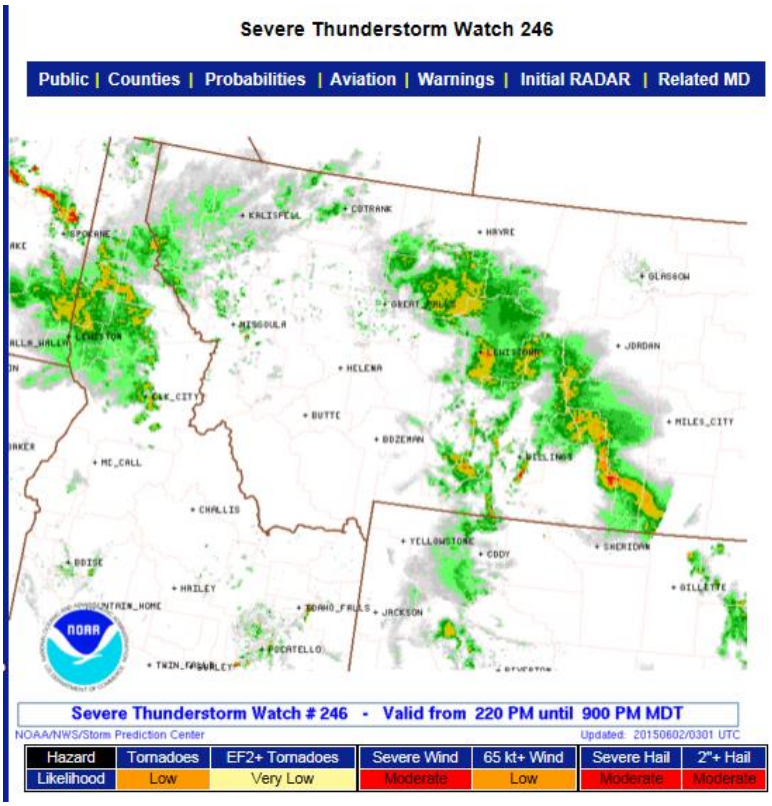
A Instructions and Options for SPC (Continued)

Step	Instructions
8	Enter a date to retrieve historical watches that have already occurred.
9	Click the .html to view watches that occurred on a particular date.



Using Storm Prediction Center Data (Continued)

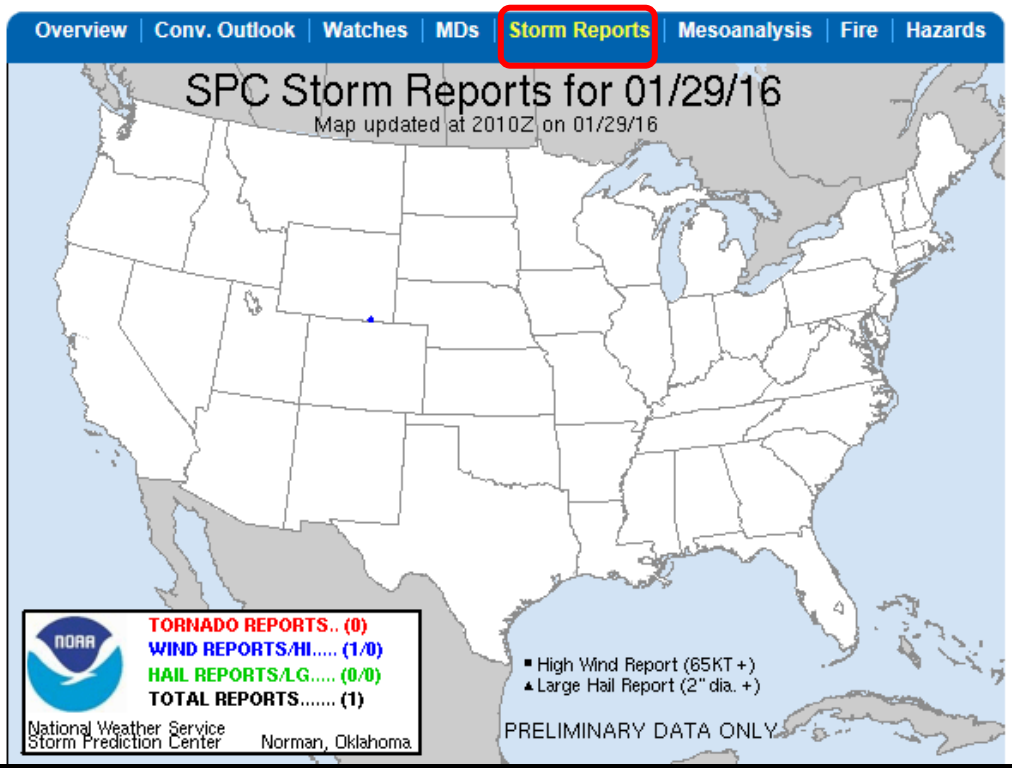
A Instructions and Options for SPC (Continued)

Step	Instructions
10	Link provides a zoomed view to the extent of the watch.  **Note:** Historical watches provide a starting point for addressing storm damage in a county/state and serve as a general reference for documenting storm damage. GIS Specialist can use this information to start collecting other weather/hazard geospatial data to identify crop damage.

Using Storm Prediction Center Data (Continued)

A Instructions and Options for SPC (Continued)

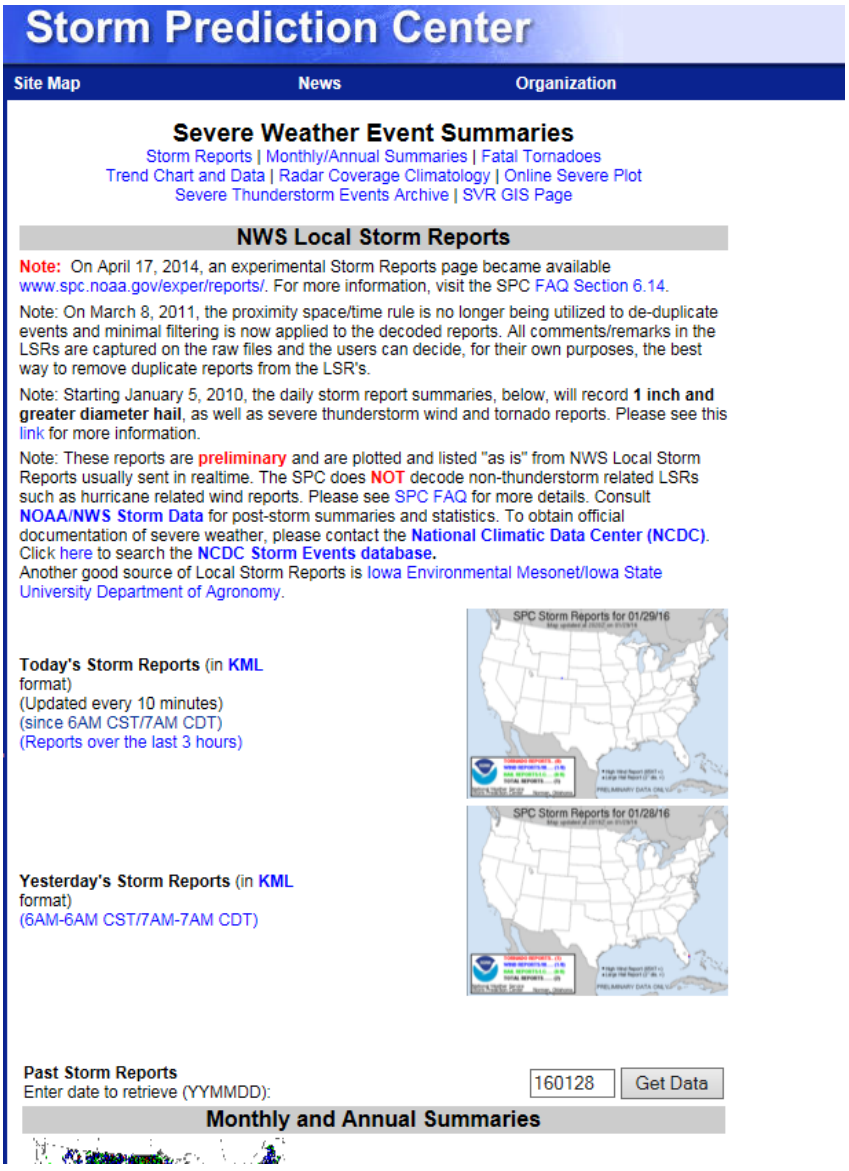
Step	Instructions
11	The Storm Reports window provides a quick view of Storm reports from the previous day for tornado reports, wind reports and hail reports.



Using Storm Prediction Center Data (Continued)

A Instructions and Options for SPC (Continued)

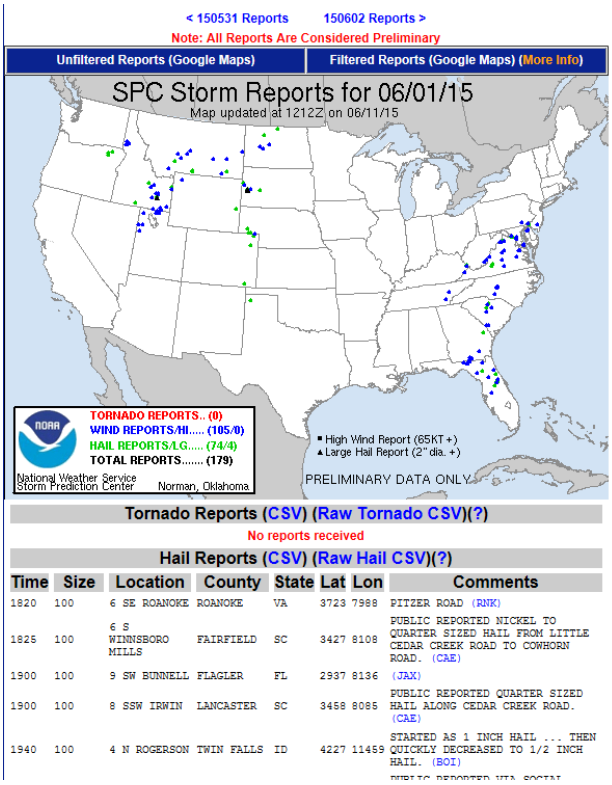
Step	Instructions
12	Click the "Storm Reports" tab to display information related to current and historic storm report data.



Note: SPC storm reports allows users to pinpoint specific dates and times of storm events. Summary files are produced from local weather spotters and serves as a starting point for documenting storm damage.

Using Storm Prediction Center Data (Continued)

A Instructions and Options for SPC (Continued)

Step	Instructions
13	Enter a date to retrieve historical watches that have already occurred. **Past Storm Reports** Enter date to retrieve (YYMMDD): 150601 Get Data
14	A SPC Report for the designated day is produced.  **Tornado Reports (CSV) (Raw Tornado CSV)(?)** No reports received **Hail Reports (CSV) (Raw Hail CSV)(?)** Time Size Location County State Lat Lon Comments 1820 100 6 SE ROANOKE ROANOKE VA 3723 7988 PITZER ROAD (RNK) 1825 100 6 S WINNSBORO MILLS FAIRFIELD SC 3427 8108 PUBLIC REPORTED NICKEL TO QUARTER SIZED HAIL FROM LITTLE CEDAR CREEK ROAD TO COWHORN ROAD. (CAE) 1900 100 9 SW BUNNELL FLAGLER FL 2937 8136 (JAX) 1900 100 8 SSW IRWIN LANCASTER SC 3458 8085 PUBLIC REPORTED QUARTER SIZED HAIL ALONG CEDAR CREEK ROAD. (CAE) 1940 100 4 N ROGERSON TWIN FALLS ID 4227 11459 STARTED AS 1 INCH HAIL ... THEN QUICKLY DECREASED TO 1/2 INCH HAIL. (BOI) **Note:** A .CSV file can be plotted in ArcMap as an XY Event theme. Comments associated with each report for Tornado, Wind and Hail reports can be viewed from weather spotters for damage and size, speed information. These reports are only a starting point for addressing storm damage. Specific data products can be created to identify the duration, extent and damage estimates for crops. Users can also toggle between the prior date or the next date to document the length of a storm and use this to request NEXRAD datasets.

Using Storm Prediction Center Data (Continued)

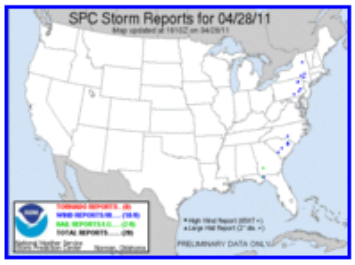
B Steps to Use SPC CSV Data

NWS SPC collects reports of tornadoes, large hail and damaging wind in chronological order. Each report includes a time, location, coordinates and a description of the event. All events are available in .CSV format which may be displayed as X/Y events in ArcMap.

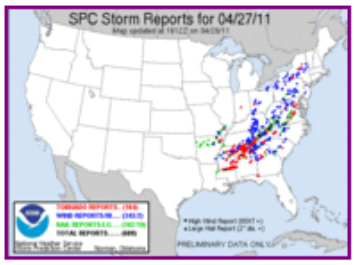
Note: Point locations are approximate and are generally dependent on a storm event being observed. Tornadoes tend to be very well documented, as well as hail that damages property. However, hail events that are damaging to agriculture may not be adequately reported on this page and other resources may be necessary.

Step	Instructions
1	Open **http://www.spc.noaa.gov/climo/online/** in a web browser.
2	Access the SPC site and select either Today's Storm Reports or Yesterday's Storm Reports, or enter in a date for a past storm report.

Today's Storm Reports (in KML format)
(Updated every 10 minutes)
(since 6AM CST/7AM CDT)
(Reports over the last 3 hours)



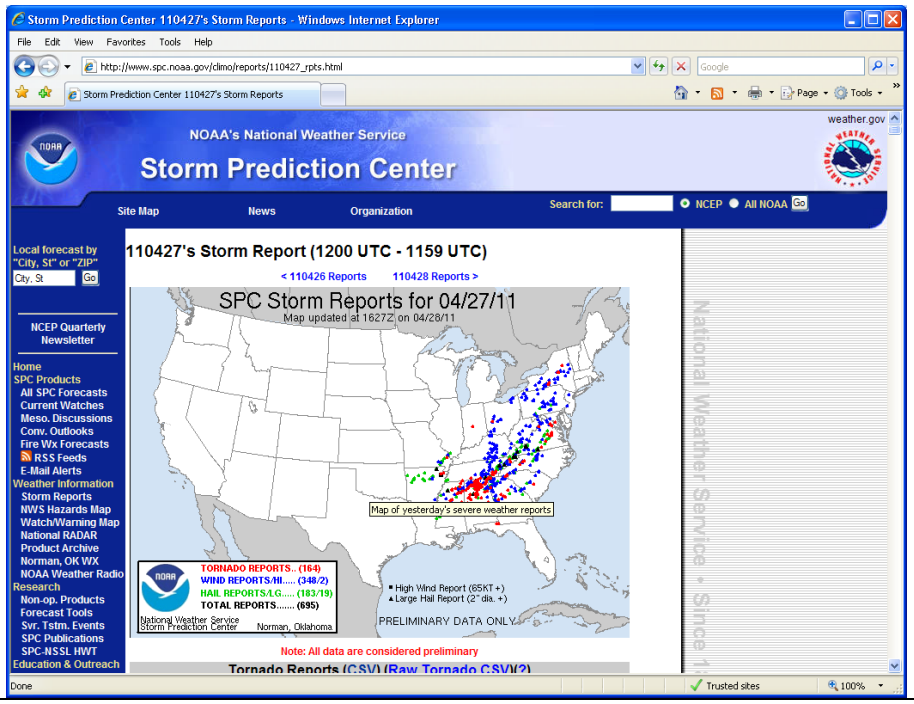
Yesterday's Storm Reports (in KML format)
(6AM-6AM CST/7AM-7AM CDT)



Past Storm Reports
Enter date to retrieve (YYMMDD): 110427 Get Data

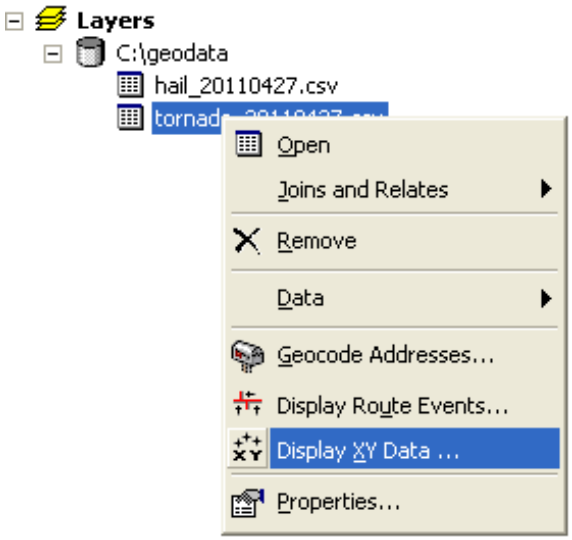
Using Storm Prediction Center Data (Continued)

B Steps to Use SPC CSV Data (Continued)

Step	Instructions
3	The Storm Report page will display a national map showing where all reported events occurred, with a tabular summary of each event type listed as follows. Scroll down to the see the .CSV link for Tornado Reports. Click the link, then save the .CSV file. It is recommended to save the .CSV file with a recognizable name, e.g. tornado_20110427.csv. 
4	After the .CSV file is downloaded, open it in Microsoft Excel.
5	In the Tornado report list, change the "**F-Scale**" column name to "**F_Scale**" . Hyphens in column headers are not handled properly by ArcMap. Save the changes to the .CSV file.
6	Hail and wind reports may be downloaded in a similar manner, but column names do not need to be changed.
7	Start ArcMap.
8	Add the desired .CSV files.

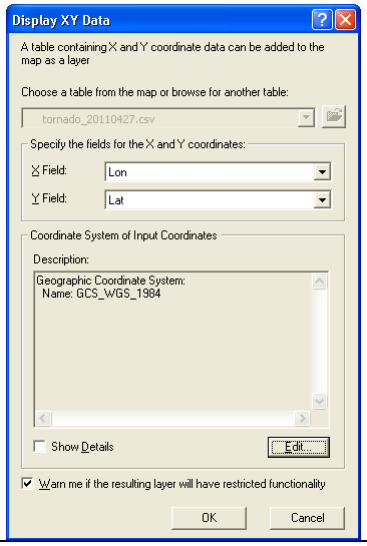
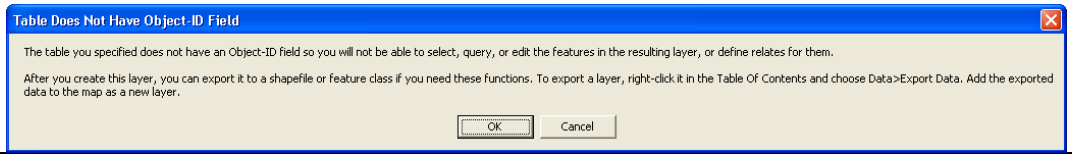
Using Storm Prediction Center Data (Continued)

B Steps to Use SPC CSV Data (Continued)

Step	Instructions
9	Right-click the tornado.csv file and CLICK "**Display XY Data**". 
10	Click the "Edit" button in the "Coordinate System" box.
11	CLICK "**Select**".
12	Browse to Geographic Coordinate Systems/World/WGS_1984.prj.
13	CLICK "**OK**".
14	Ensure that the "X Field" is set to "Lon" (Longitude).

Using Storm Prediction Center Data (Continued)

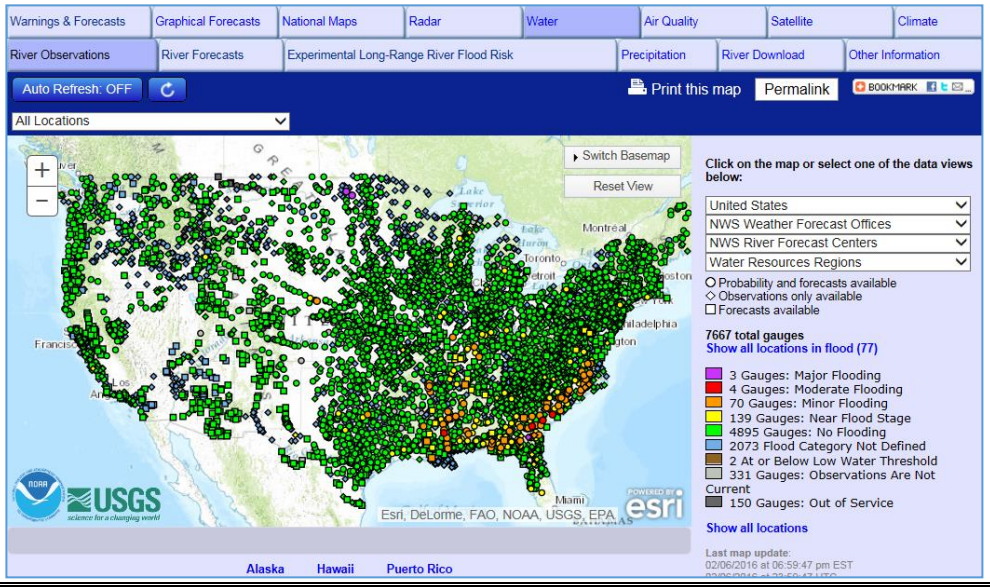
B Steps to Use SPC CSV Data (Continued)

Step	Instructions
15	Ensure that the "Y Field" is set to "Lat". 
16	CLICK "**OK**".
17	CLICK "**OK**" if warned about the "Object-ID" field. 
18	Points will now be displayed in ArcMap. The XY points may be exported to shapefile format for future use.
19	Add additional layers for context as desired. At a minimum, a county boundary file should be added.

USGS Flood Forecasting

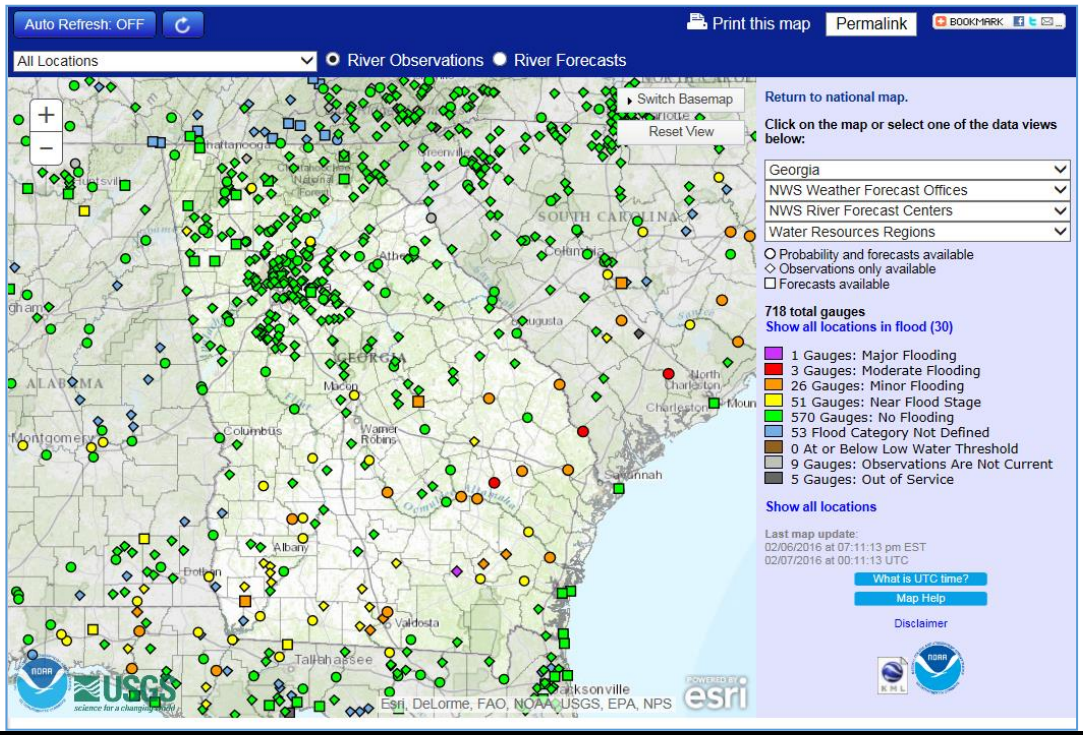
A Instructions

The following instructions are required to assist in flood predictions.

Step	Instructions
1	Open **http://water.weather.gov/ahps/index.php** in a web browser. This map shows the status of river stations at various sites across the county. 

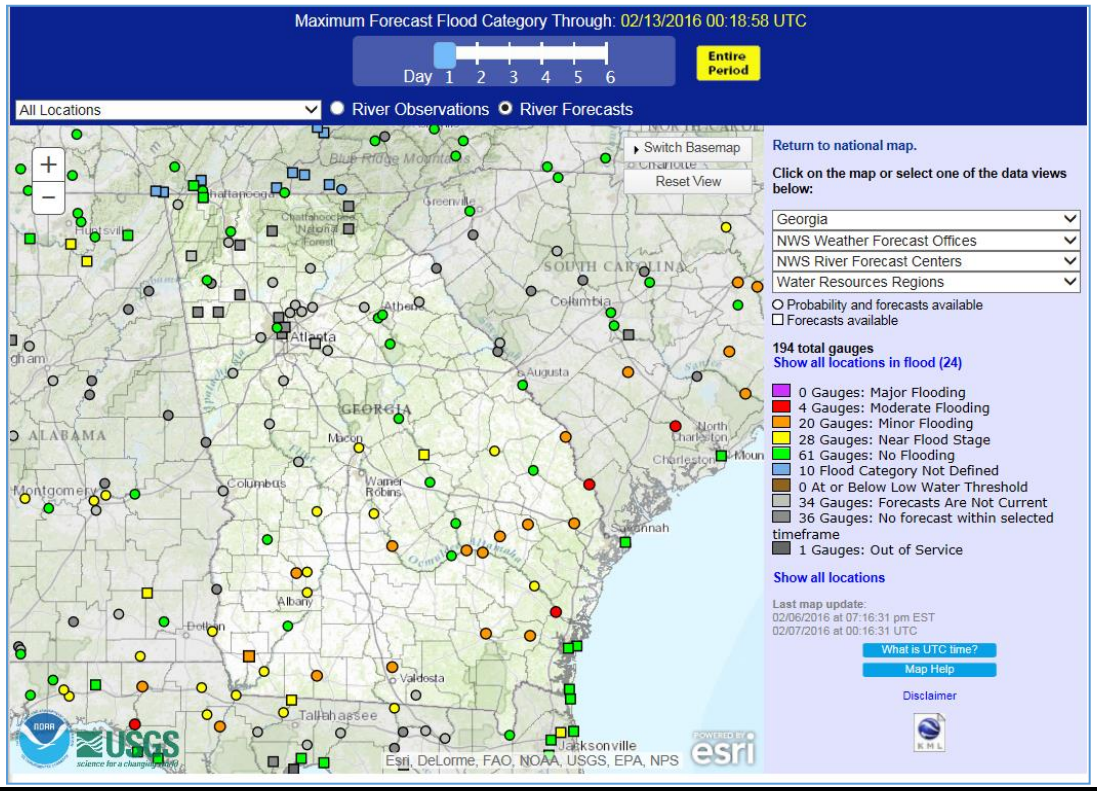
USGS Flood Forecasting (Continued)

A Instructions (Continued)

Step	Instructions
2	Change the "United States" view to desired State (upper right-hand side). This map shows current river observations on guages in Georgia. 

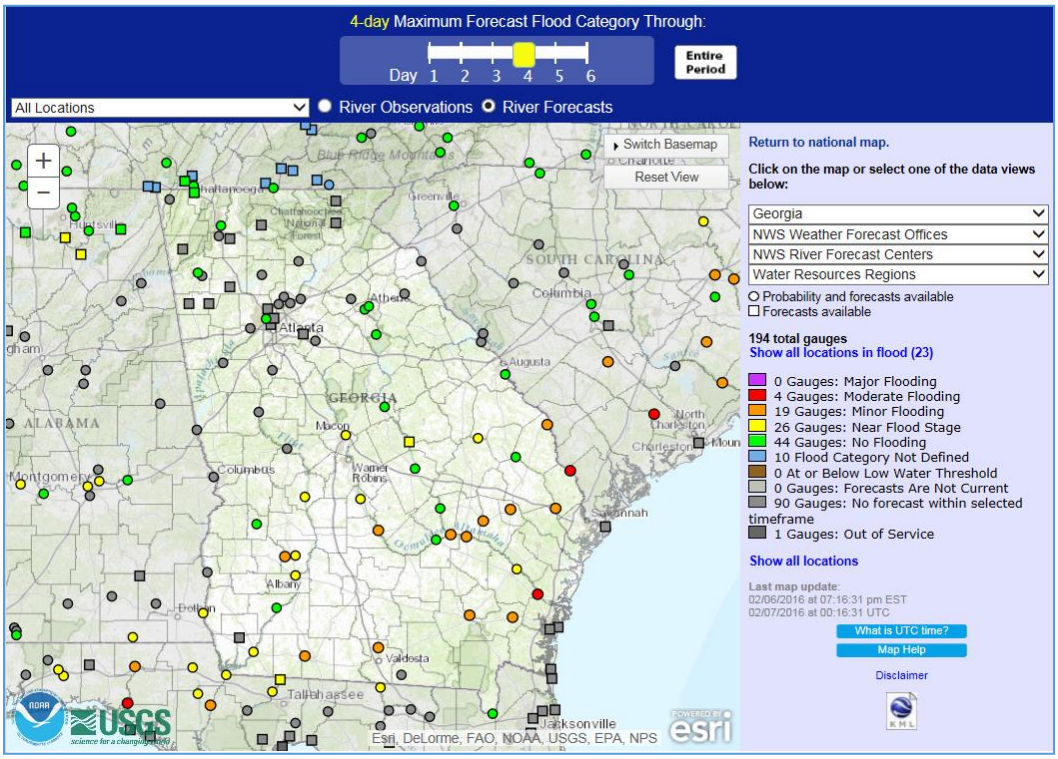
USGS Flood Forecasting (Continued)

A Instructions (Continued)

Step	Instructions
3	For forecast information, click the “River Forecasts” radio button (top center). This map shows the 1-day river forecast in Georgia. 

USGS Flood Forecasting (Continued)

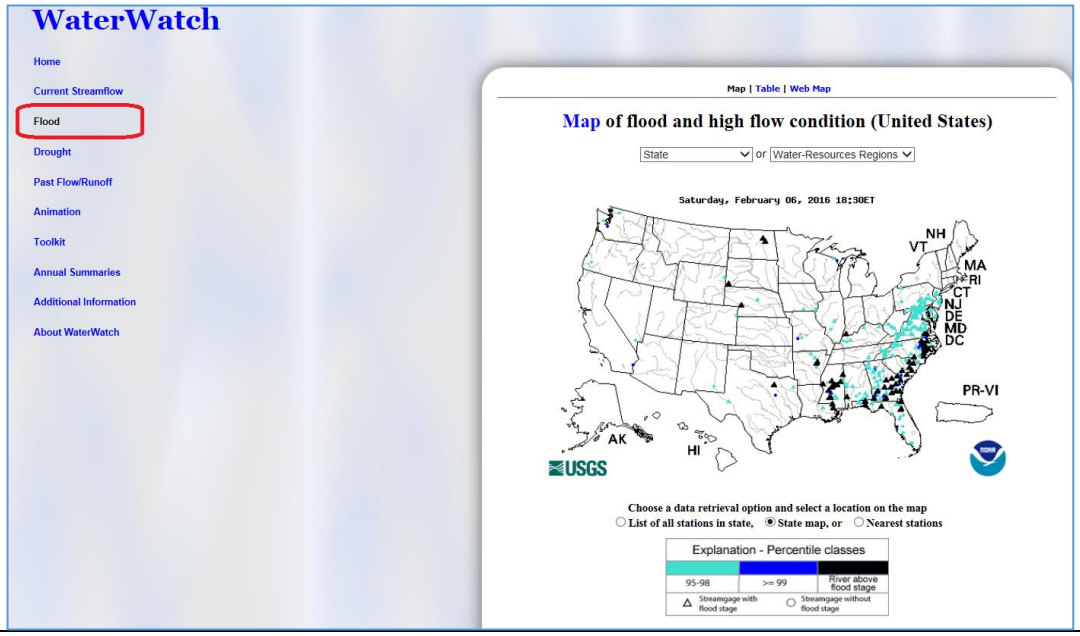
A Instructions (Continued)

Step	Instructions
4	Adjust the value on the day slider bar (top center) for forecasts further in the future. This map shows the 4-day river forecast in Georgia. 

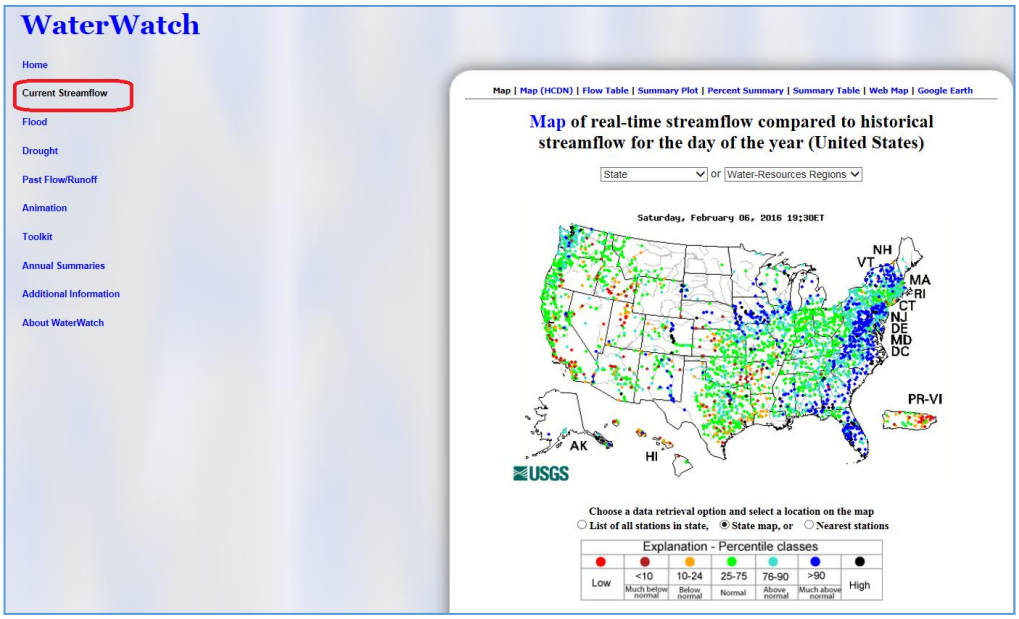
USGS Flood Forecasting (Continued)

B Steps for Viewing USGS WaterWatch Data (Flood and Streamflow)

Follow these steps to view USGS WaterWatch data (flood and streamflow).

Step	Instructions
1	For current flooding information, open **http://waterwatch.usgs.gov/new/index.php?id=ww_flood** in a web browser. This map shows site recordings of near capacity, capacity, and flooding. 

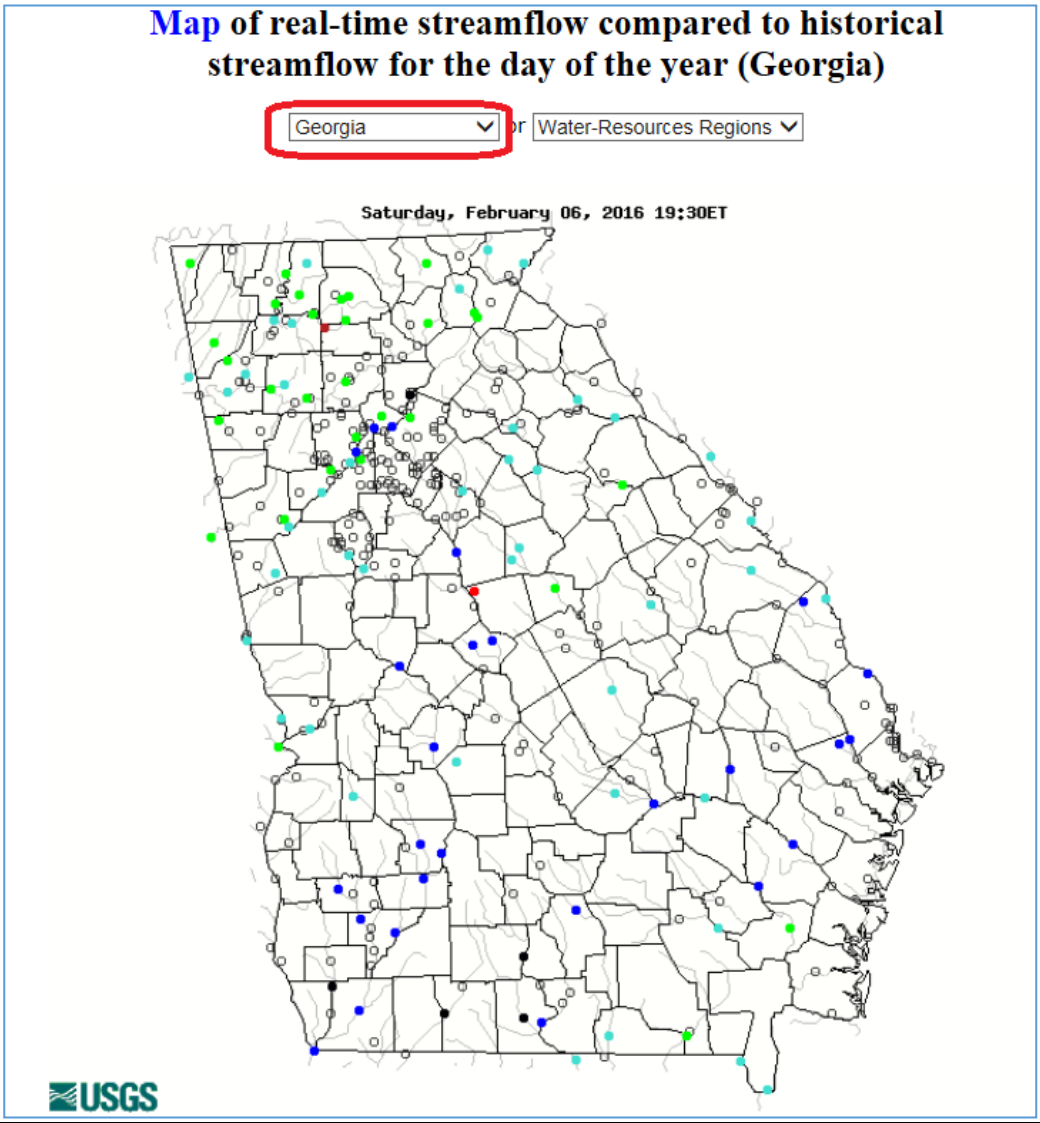
B Steps for Viewing USGS WaterWatch Data (Flood and Streamflow) (Continued)

Step	Instructions
2	For current flooding information, open **http://waterwatch.usgs.gov/new/index.php?id=ww_current** in a web browser. This map shows sites streamflow by historical percentage. 

USGS Flood Forecasting (Continued)

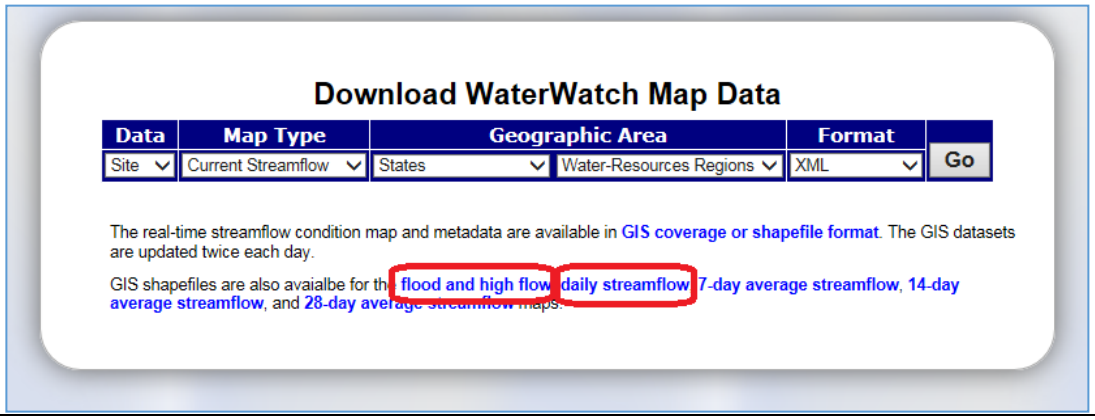
B Steps for Viewing USGS WaterWatch Data (Flood and Streamflow) (Continued)

Step	Instructions
3	For either dataset (Flood or Streamflow), select the desired State (top left).

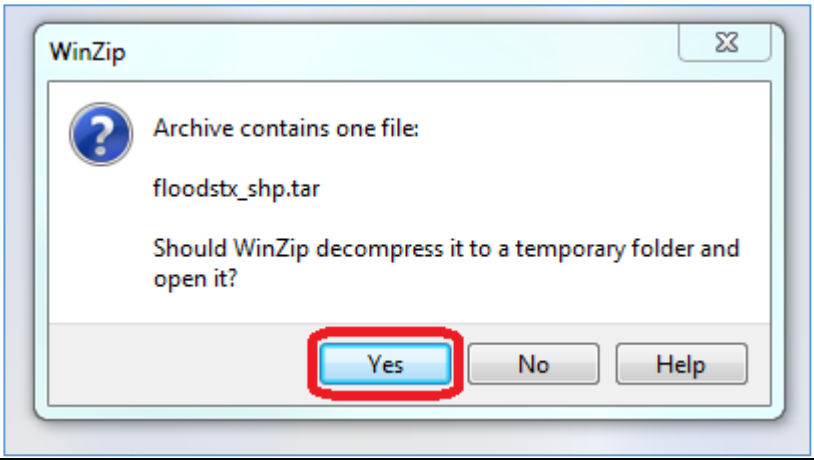


C Steps for Downloading and Projecting Current Flood and Streamflow USGS WaterWatch GIS Data

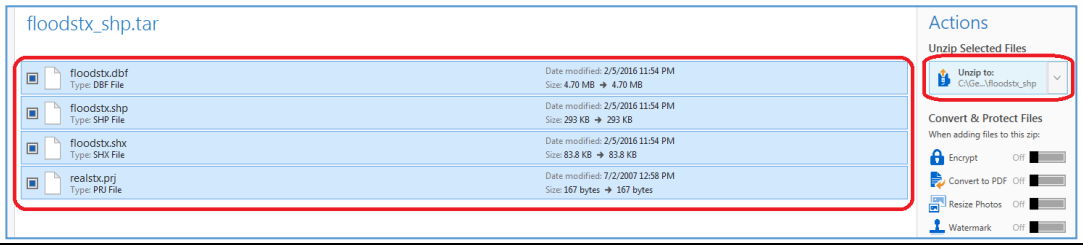
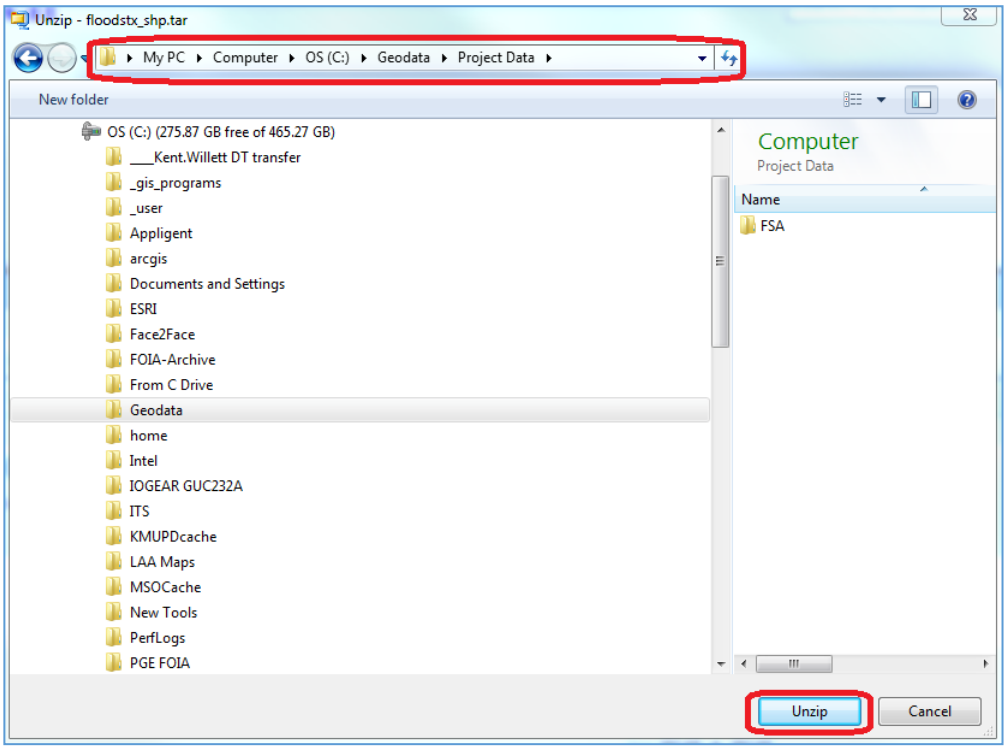
Follow these steps to download and project current flood and streamflow USGS WaterWatch GIS data.

Step	Instructions
1	To download current USGS WaterWatch data, open **http://waterwatch.usgs.gov/new/index.php?id=download** in a web browser.
2	Select the current Flood **or** Streamflow information by clicking the designated link. 
3	CLICK “Open” for the data set. 

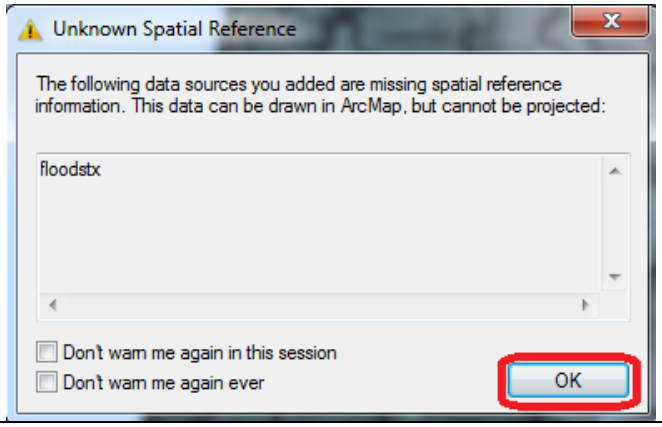
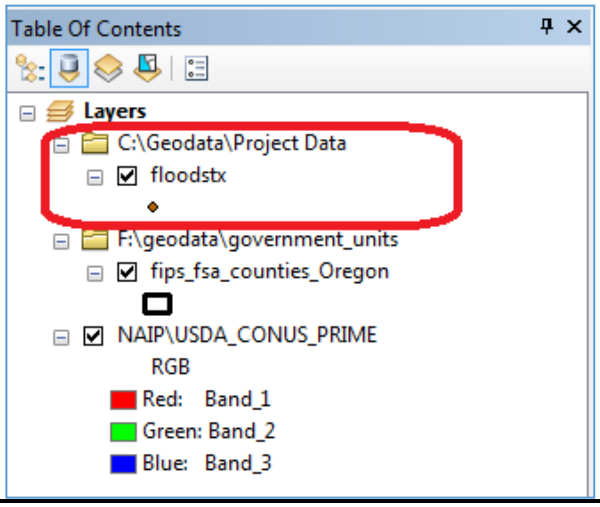
C Steps for Downloading and Projecting Current Flood and Streamflow USGS WaterWatch GIS Data (Continued)

Step	Instructions
4	CLICK "Yes" to decompress and open the folder. 

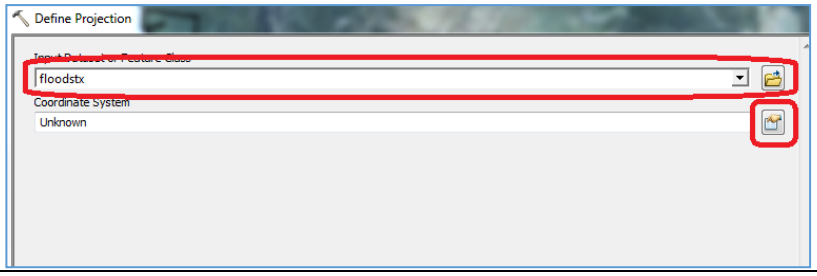
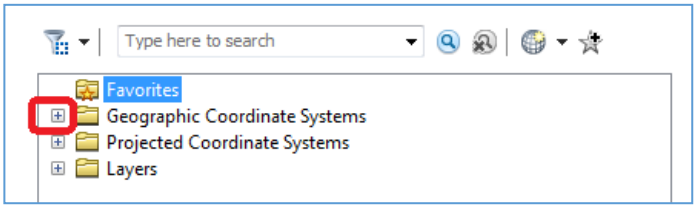
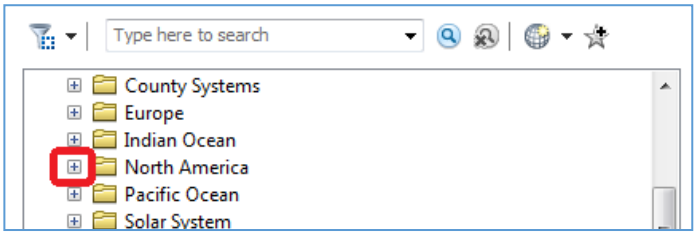
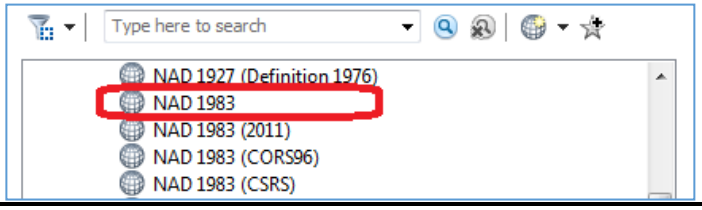
C Steps for Downloading and Projecting Current Flood and Streamflow USGS WaterWatch GIS Data (Continued)

Step	Instructions
5	Select the files (blue) and CLICK “Unzip to”. 
6	Select the location where the data will be stored and CLICK “Unzip”.  Example shows data is downloaded to C:Geodata\Project_Data.

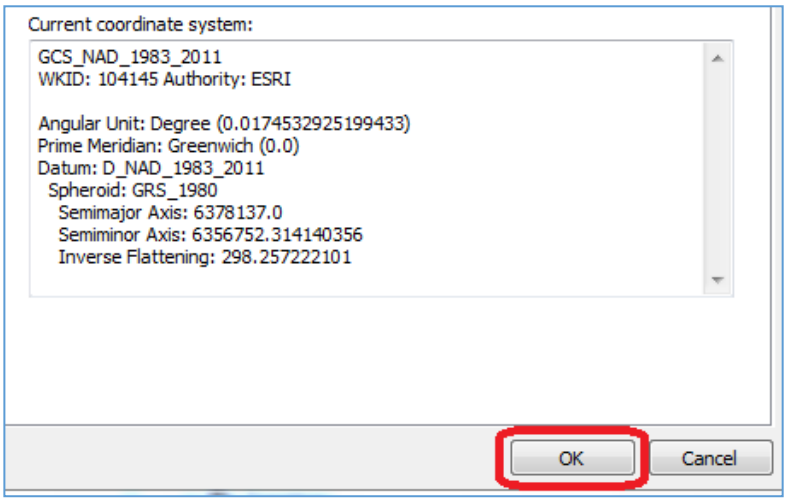
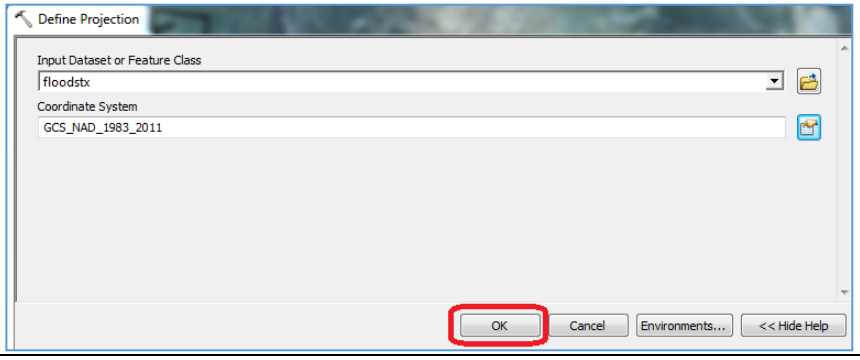
C Steps for Downloading and Projecting Current Flood and Streamflow USGS WaterWatch GIS Data (Continued)

Step	Instructions
7	Open an ArcMap 10.1 project and try adding the downloaded data (for example, floodstx found in C:\Geodata\Project_Data) into the project. The data does not have a projection. CLICK "**OK**" to the following window. 
8	The layer has successfully been loaded into the project but it is not properly aligned. To define the projection for the layer (floodstx) open the "Define Projection" tool. 

C Steps for Downloading and Projecting Current Flood and Streamflow USGS WaterWatch GIS Data (Continued)

Step	Instructions
9	With the Define Projection window, input the data (floodstx) and browse for the coordinate system. 
10	With the Spatial Reference Properties window, open "Geographic Coordinate Systems".  Scroll and open "North America".  Scroll and select "NAD 1983". 

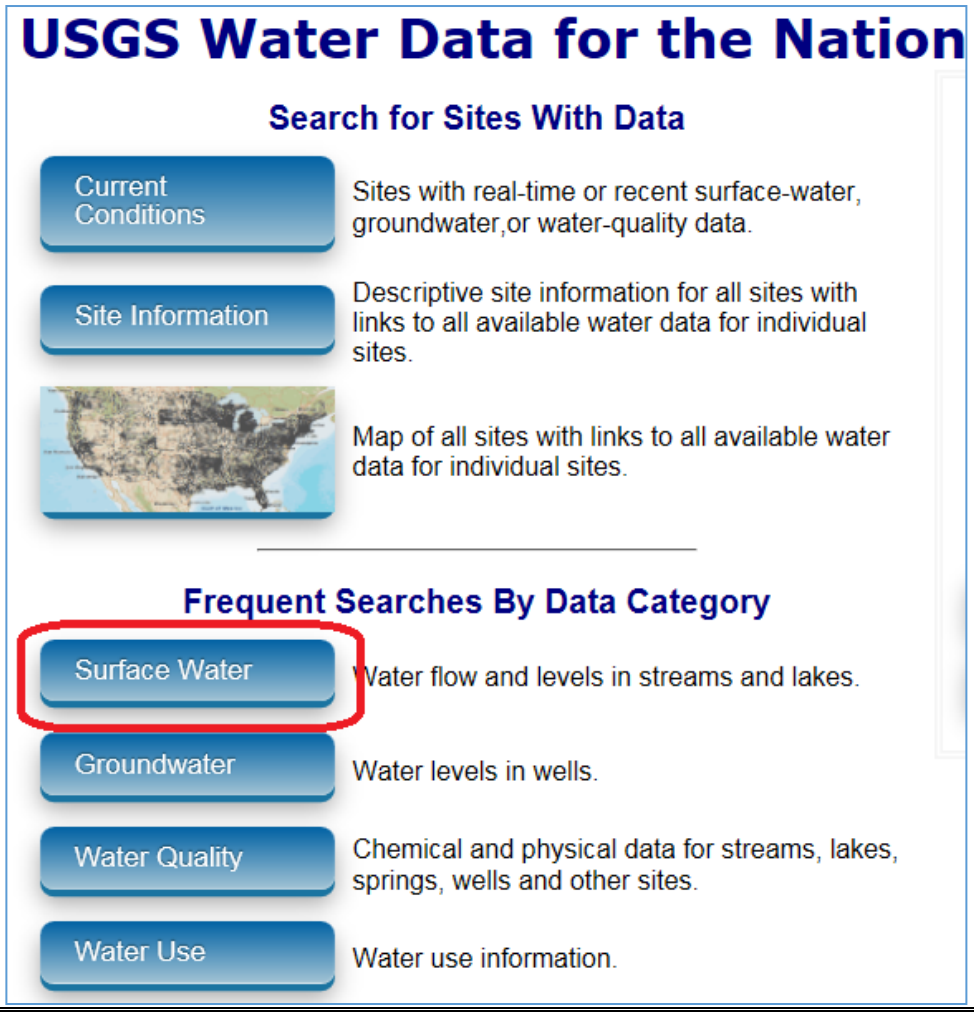
C Steps for Downloading and Projecting Current Flood and Streamflow USGS WaterWatch GIS Data (Continued)

Step	Instructions
10 (Cntd)	CLICK "**OK**".  CLICK "**OK**" on the Define Projection window. 
11	The data now has a coordinate system and aligns with other layers on our ArcMap 10.1 project.

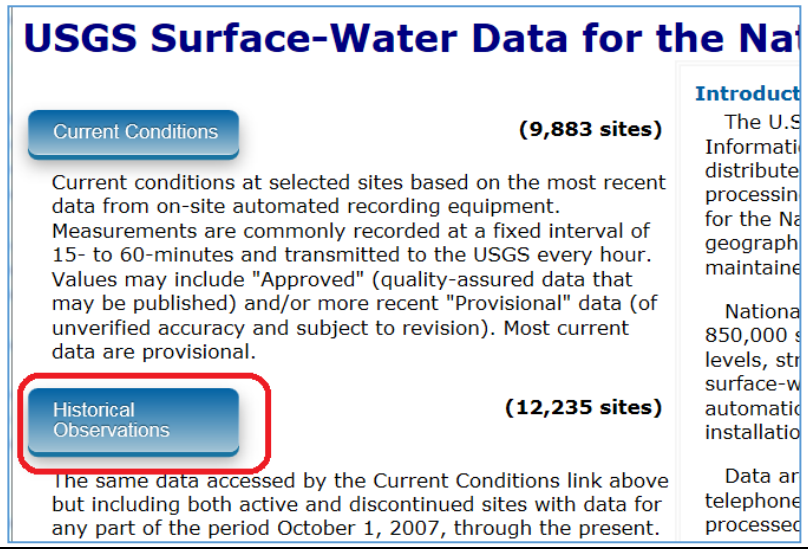
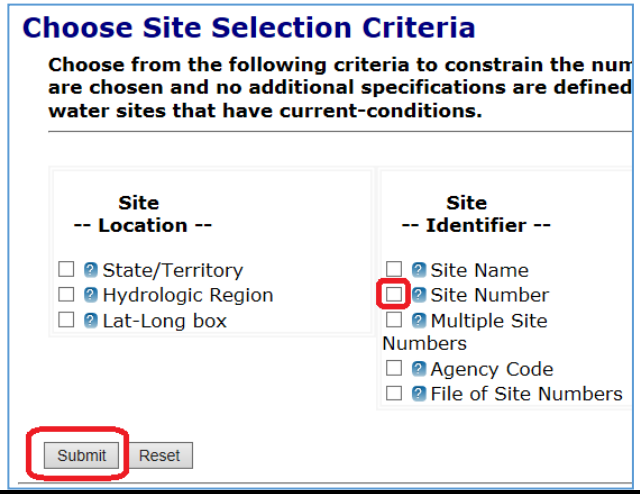
USGS Flood Forecasting (Continued)

D Steps for Accessing Historical Flood and Streamflow USGS WaterWatch GIS Data

Follow these steps to access historical flood and streamflow USGS WaterWatch GIS data.

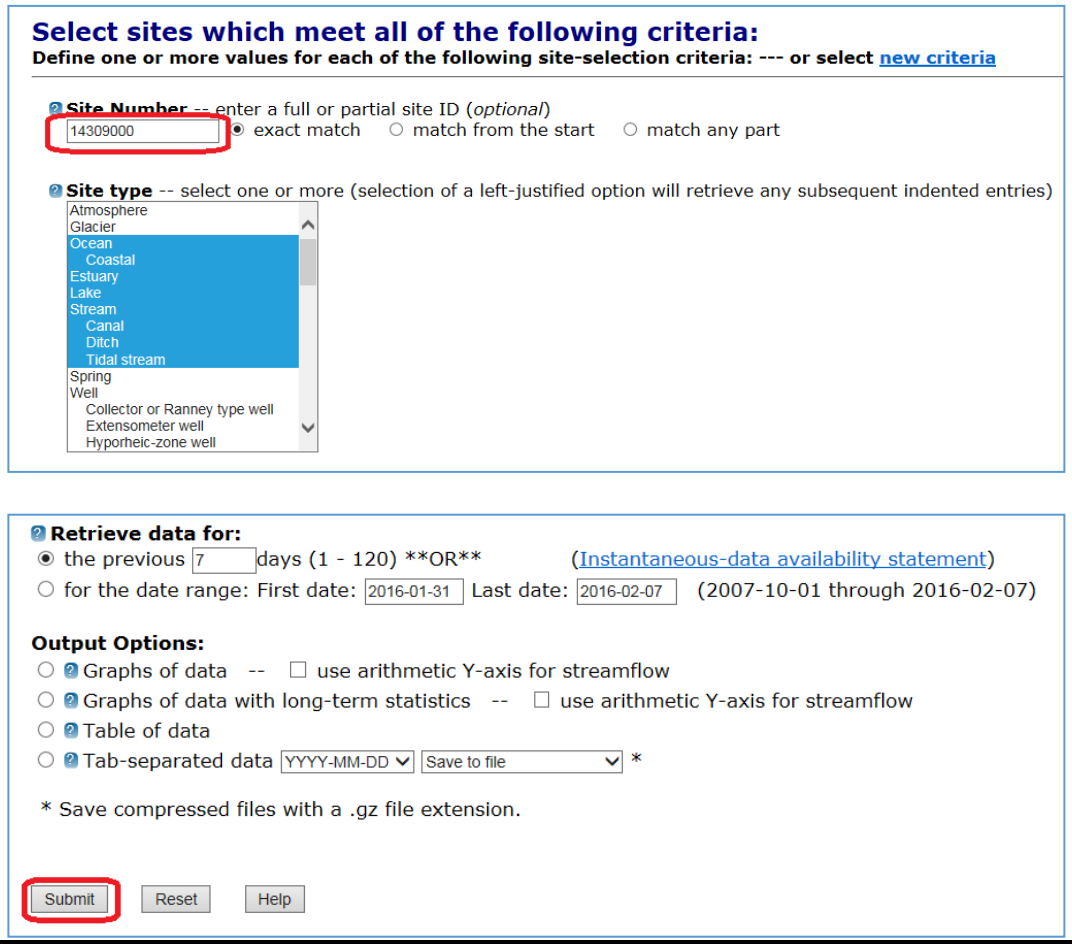
Step	Instructions
1	To access historical USGS WaterWatch data, open **http://waterdata.usgs.gov/nwis/** in a web browser.
2	Scroll down and CLICK "Surface Water". 

D Steps for Accessing Historical Flood and Streamflow USGS WaterWatch GIS Data (Continued)

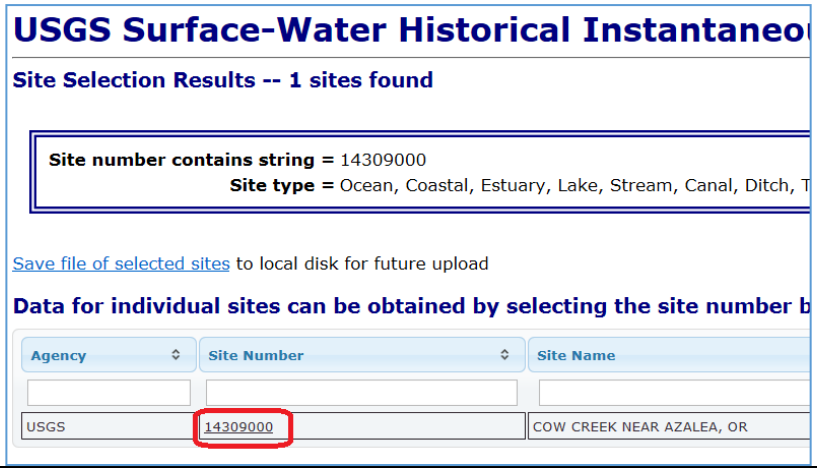
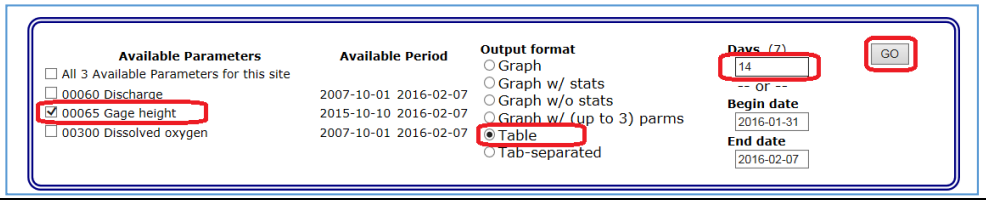
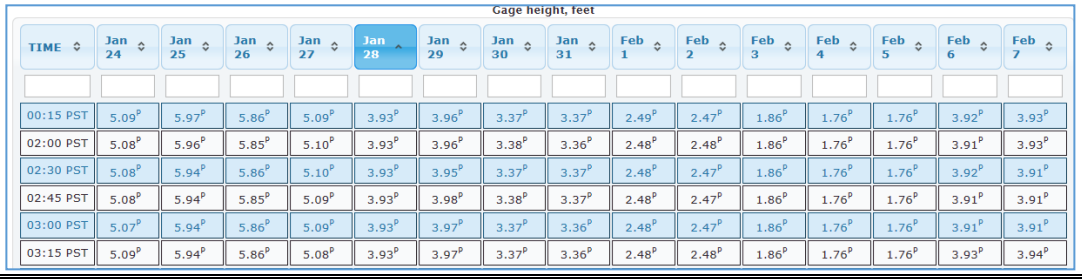
Step	Instructions
3	Scroll down and CLICK “Historical Observations”. 
4	Because Flood and Streamflow data is recorded multiple times in a day (or an hour) it is best to perform a search for data for a single specific site. Site identifiers (site names and site numbers can be determined from attributes from the previously created GIS layer. From the previous step check “Site Number” and check “Submit”. 

D Steps for Accessing Historical Flood and Streamflow USGS WaterWatch GIS Data (Continued)

Step	Instructions
5	In this example, site "14309000" (Cow Creek near Azalea, OR) is being used. ENTER "14309000" under "Site Number" and scroll to the bottom of the page and CLICK "Submit".

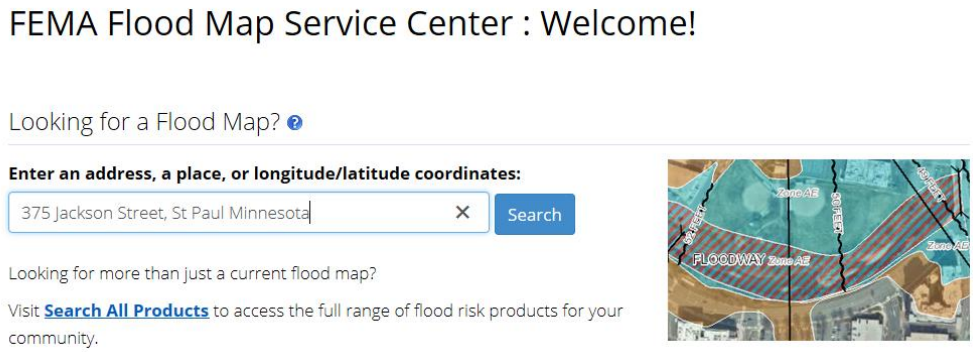


D Steps for Accessing Historical Flood and Streamflow USGS WaterWatch GIS Data (Continued)

Step	Instructions
6	The website has successfully found the site. To find the data available at the site, click the link under "Site Number". 
7	The data available at the site is displayed with the option of how days of data is requested is given. In this example, a table showing Gage Height for the last 14 days is needed. To perform this search, check "Gage Height", check "Table", designate "14" days, and CLICK "GO". 
8	The desired data for the site will be displayed. 

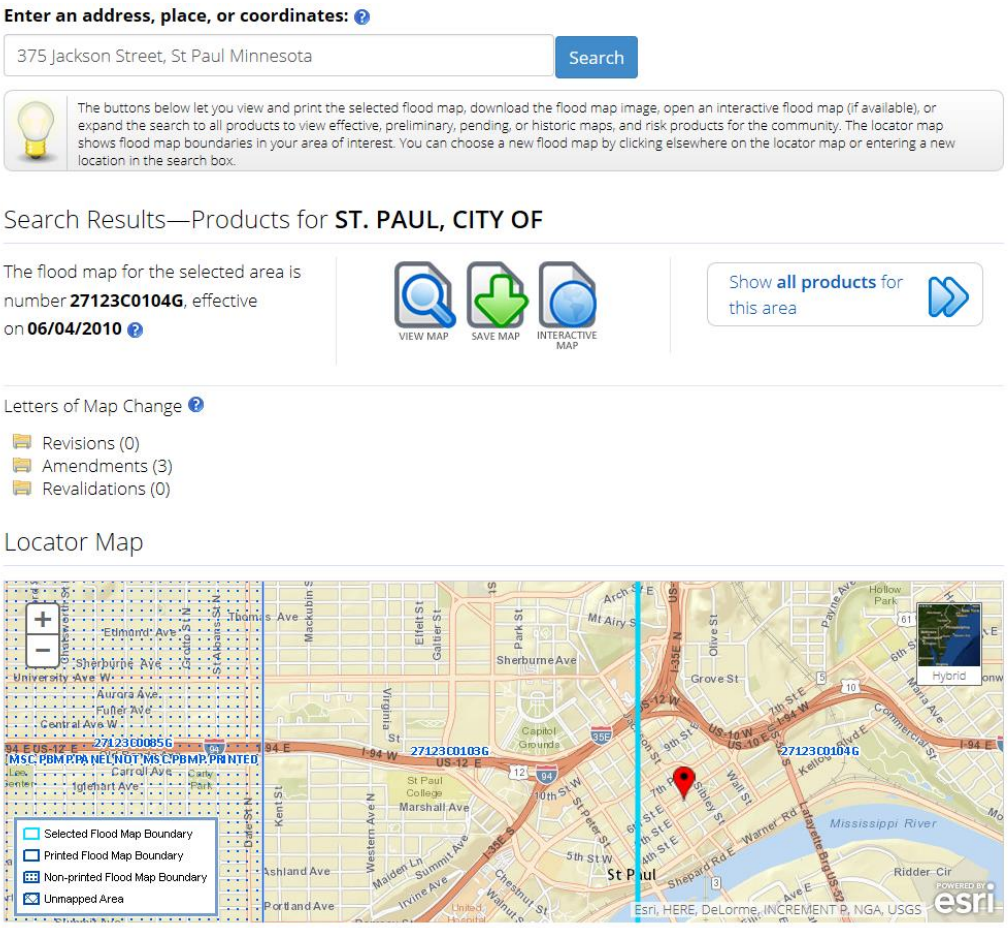
FEMA Flood Map Service Center

Follow these steps for the FEMA Flood Map Service Center.

Step	Instructions
1	Open **http://msc.fema.gov/portal** in a web browser.
2	Enter an address. 

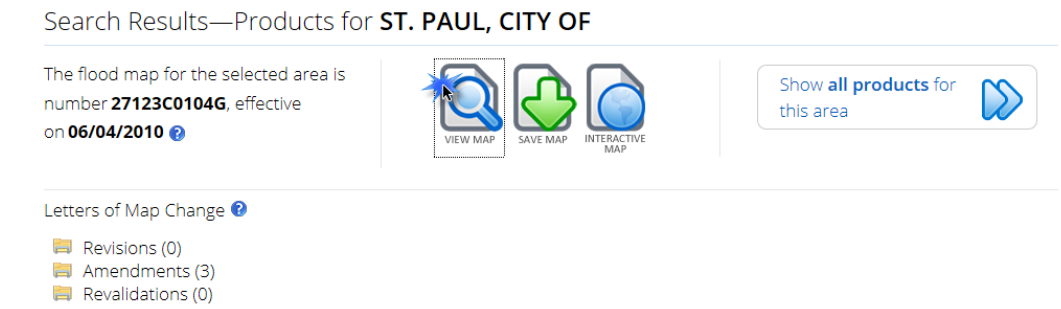
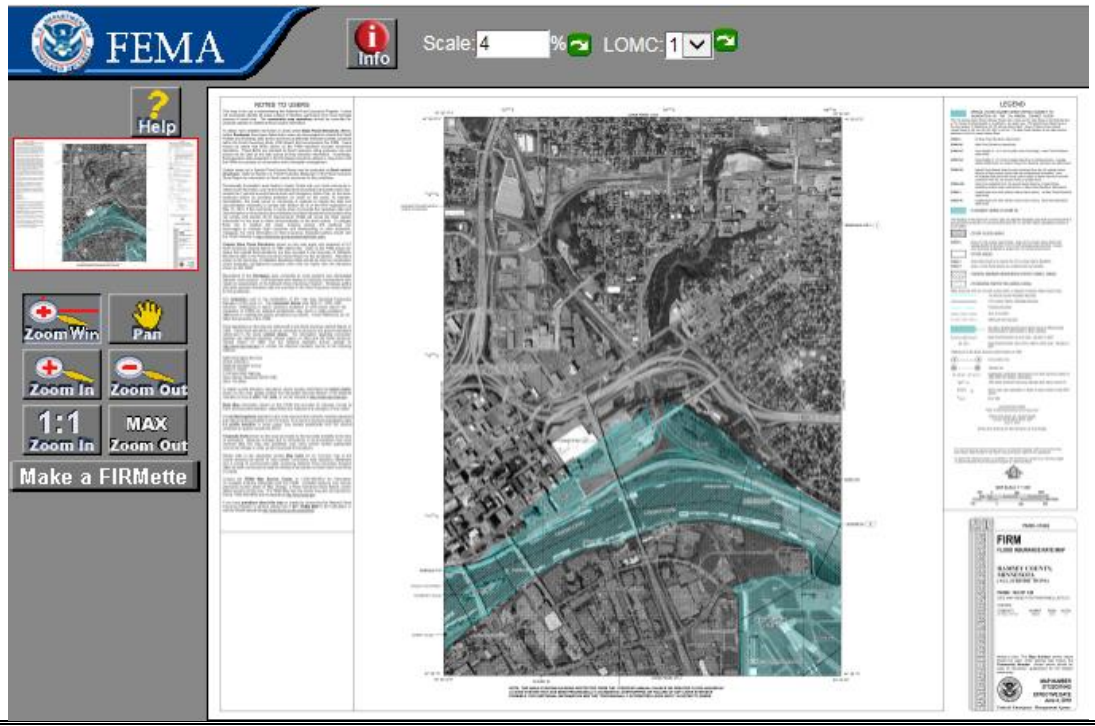
FEMA Flood Map Service Center (Continued)

Step	Instructions
3	CLICK "Search" to show the Results page.

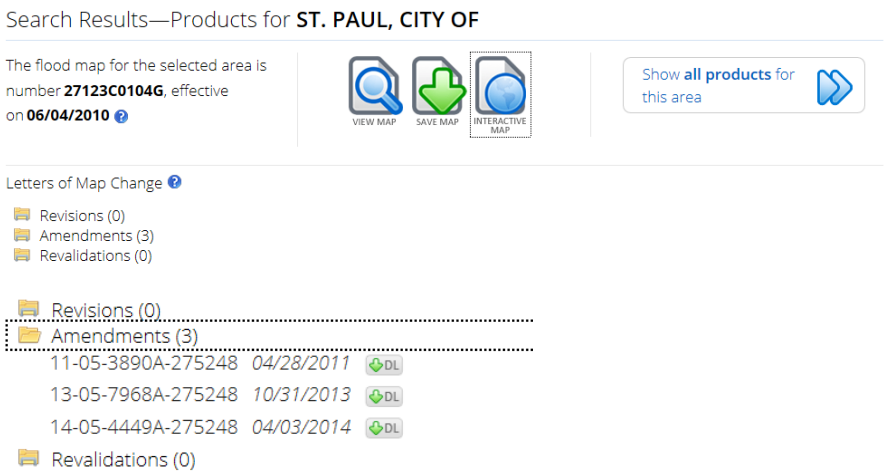
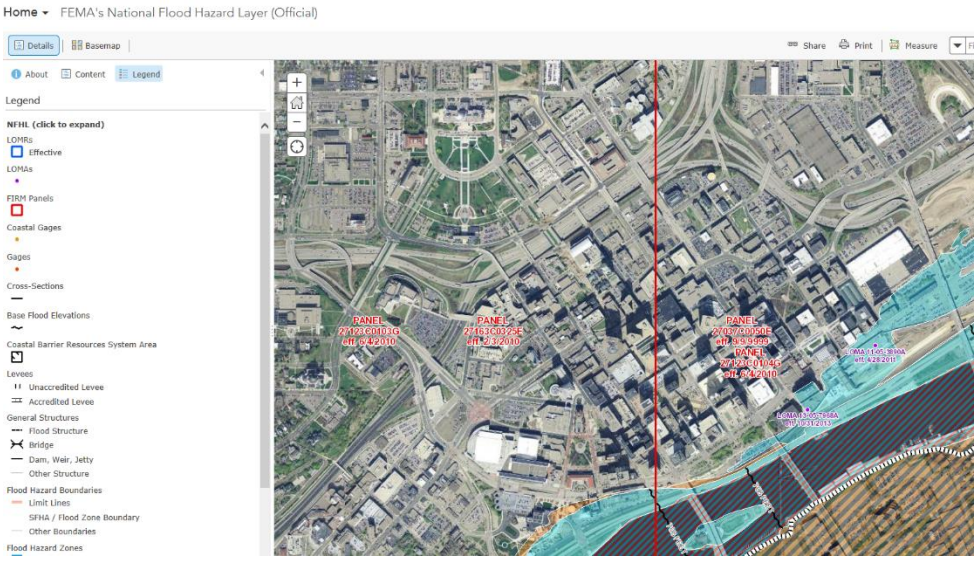


Note: The site provides an updated map showing the status of the Flood Map Boundary based on an area and FIRM panel.

FEMA Flood Map Service Center (Continued)

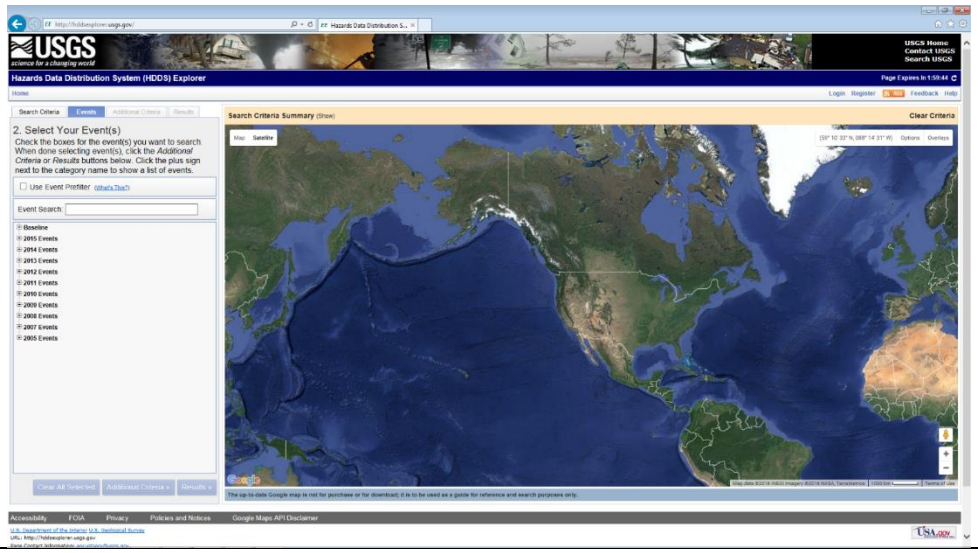
Step	Instructions
4	CLICK "View Map" to view the FEMA Viewer of the FIRM Map. 
5	Map Viewer will open. 

FEMA Flood Map Service Center (Continued)

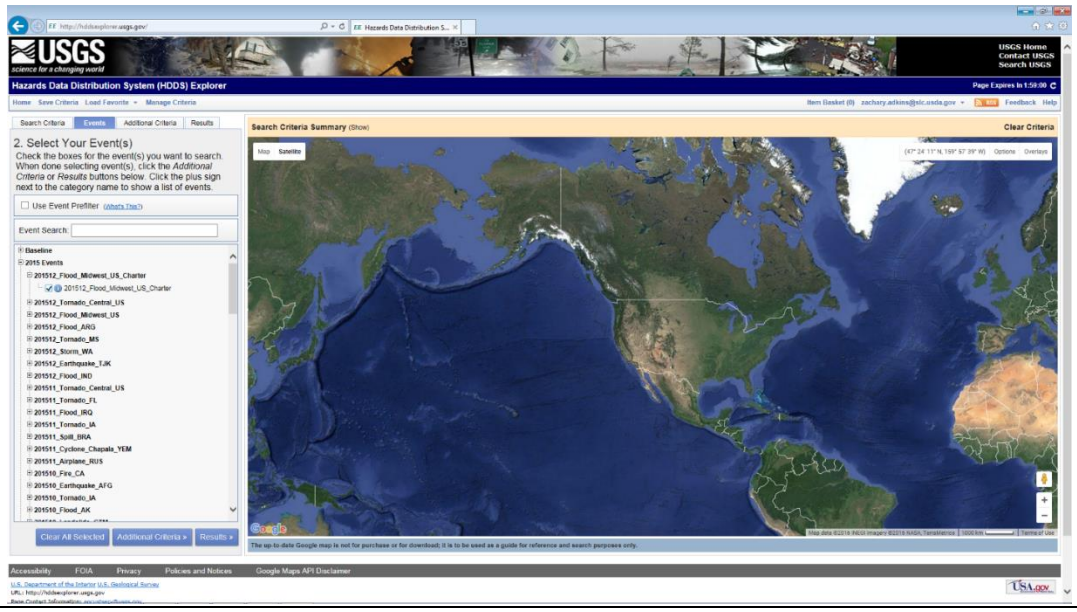
Step	Instructions
6	Revisions and Amendments can be viewed here. 
7	The site also offers an interactive map viewer.  **Note:** Users can see flood hazard zones, levees, bridges, and flood hazard boundaries along with FIRM panel numbers.

Accessing and Using HDDS

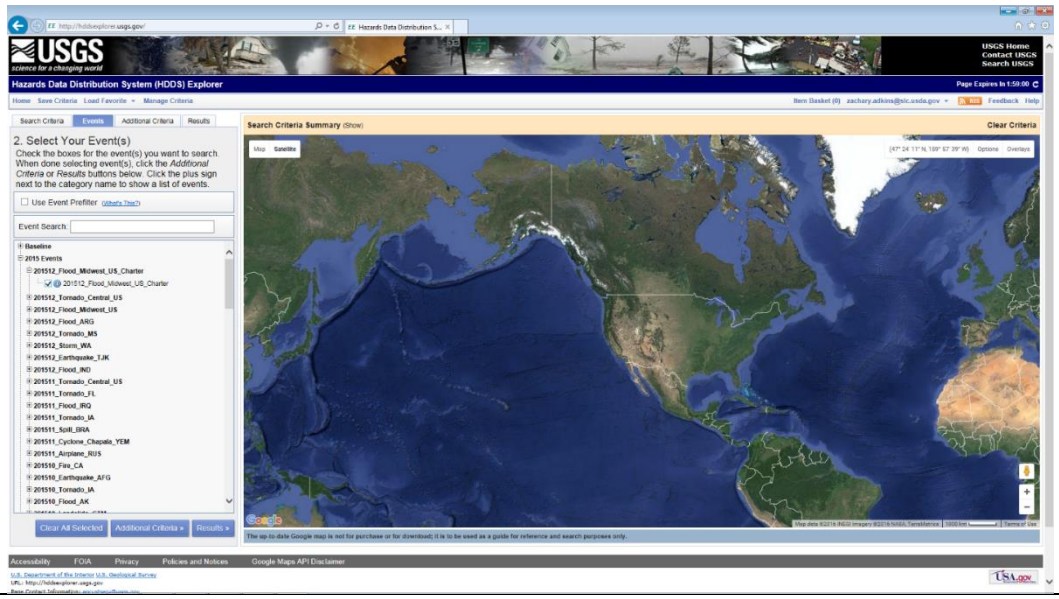
Follow these steps to access and use HDDS.

Step	Instructions
1	Go to the USGS HDDS Explorer website at **http://hddsexplorer.usgs.gov/**. 
2	If this is the first time using HDDS, CLICK "Register". If the user already has an account, CLICK "Login". It is not required to login or register, but to access certain restricted data sets, it is necessary to register with a .gov e-mail address. The viewer uses Google maps as the base image. On the left side of the website will be a list of disaster events organized by year. Events can be entered by keyword or selecting the drop-down for a certain year.

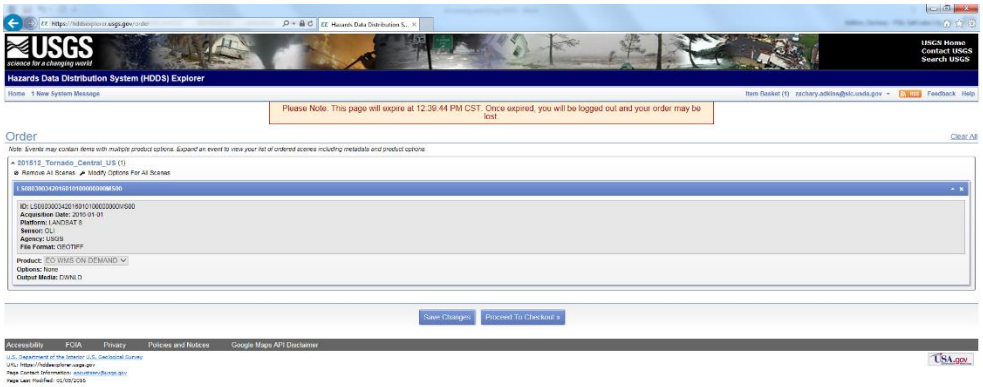
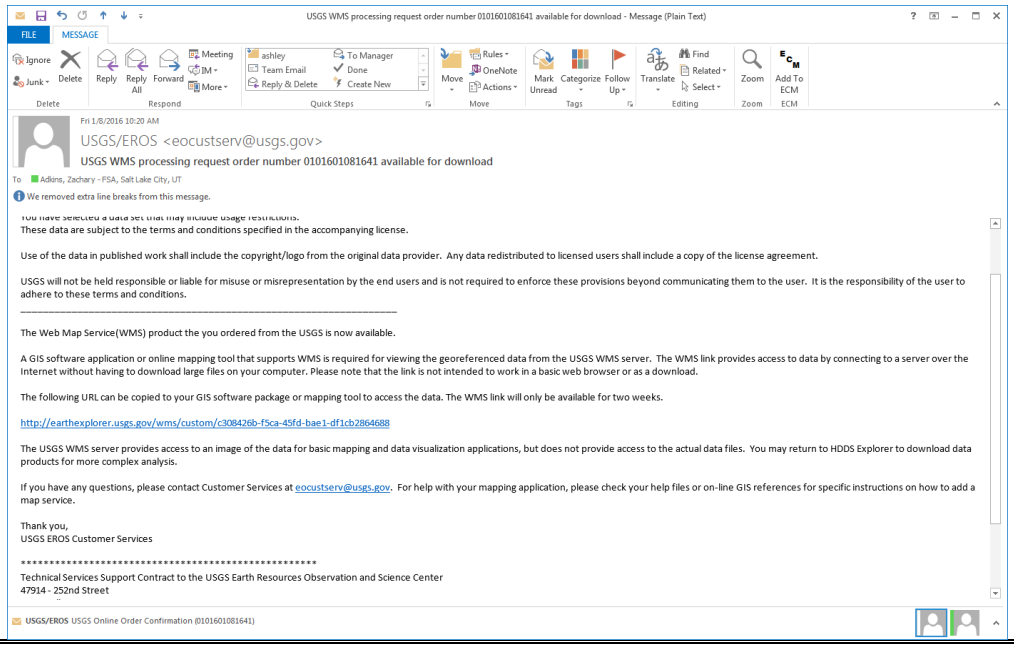
Accessing and Using HDDS (Continued)

Step	Instructions
3	Next, select a disaster event from the drop-down menu. The list of disasters is quite thorough, but if an option is not available, a search using USGS EarthExplorer may be a better option (see EarthExplorer instructions). After choosing an event, click the "Additional Criteria" tab. 
4	The "Additional Criteria" tab is where more options are selectable for the search. This includes sensor type, cloud cover percentage, image acquisition date, processing level (i.e. orthorectified, georeferenced), etc. Once any additional search criteria have been added, click the "Results" tab.
5	All available imagery (based on the search criteria) will be displayed on the left-hand side. Some controls can also be designated to choose how the imagery will be displayed. This is in the "Show Result Controls" drop-down menu. The footprints of the imagery can be displayed or the actual scenes.

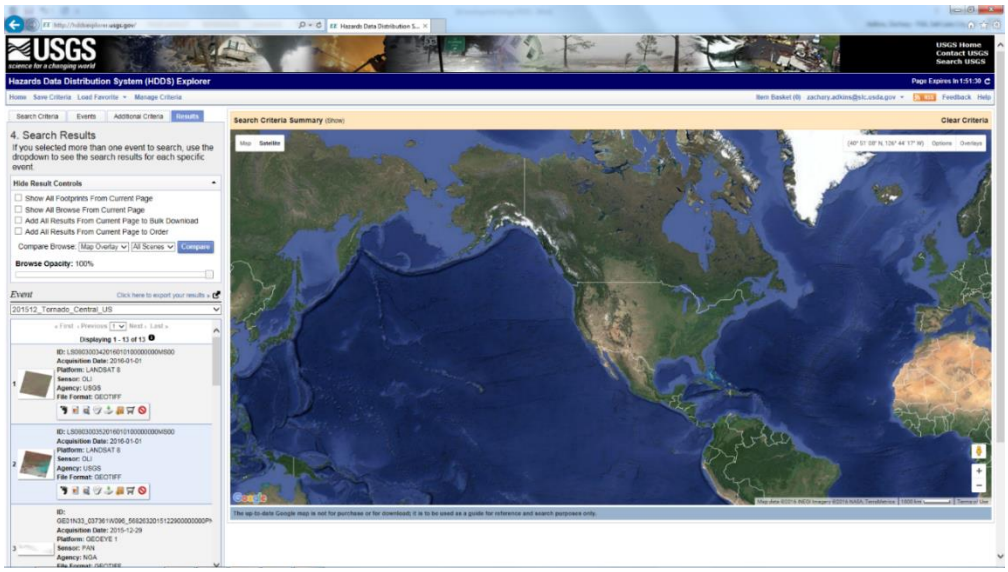
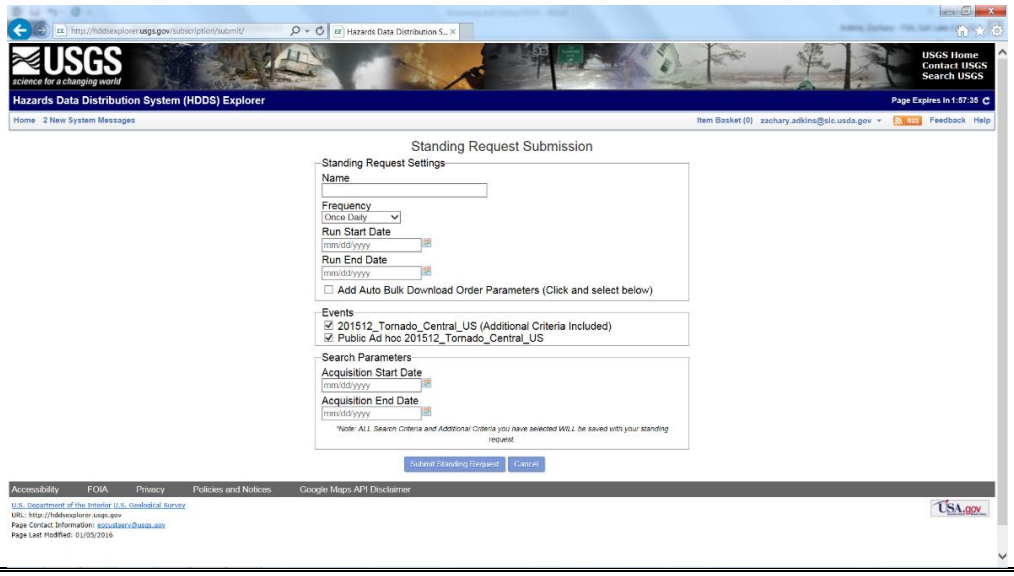
Accessing and Using HDDS (Continued)

Step	Instructions
6	There is also the option to export the search results by clicking the export results link. The data can be exported to .kmz, comma delimited, pipe delimited, .SHP, FGDC, or .CSV files. 
7	Each image has some brief information along with 8 icons. Each icon represents a different feature for the image. • The first icon allows the user to toggle the footprint on and off. • The second icon allows the user to toggle the actual image on and off. • The third icon allows the user to compare 2 or more images if "compare browse" is checked in the result controls. • Clicking the fourth icon will bring up a detailed FGDC compliant metadata file about the image. • The fifth icon will show download options. They are full resolution, low quality JPEG, medium quality JPEG, and the FGDC metadata file. The full resolution tile may be the ideal download, but it will be the largest in file size. • The sixth icon allows the user to add the image to the bulk download tool (see bulk download instructions). • Clicking the seventh icon will order the image and send it to the checkout basket. • Clicking the last icon will exclude the image from the results panel.

Accessing and Using HDDS (Continued)

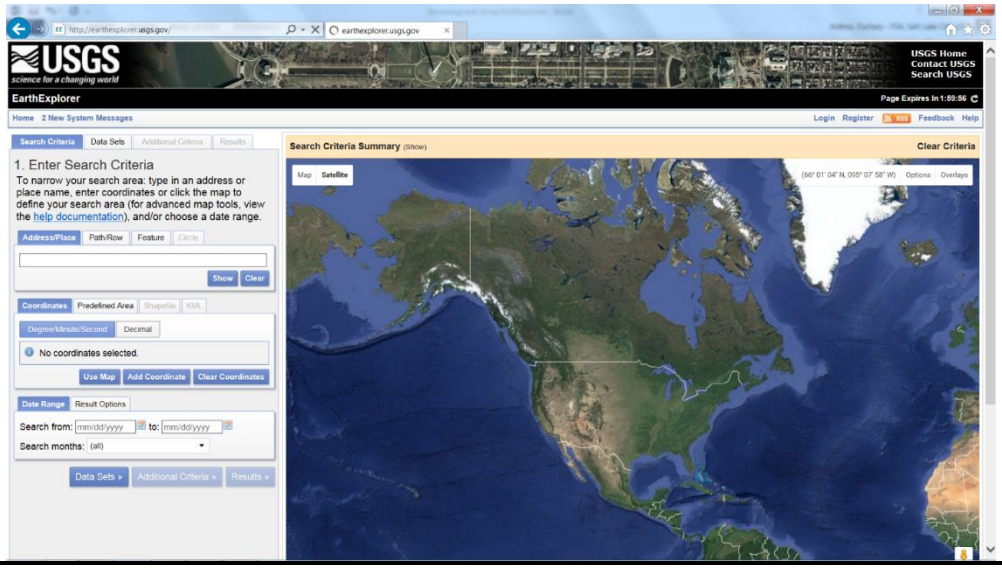
Step	Instructions
8	When all options have been set and are ready to download the data, CLICK "View Item Basket". This will bring up a new view where the user can confirm the download. 
9	If changes were made, CLICK "Save Changes" and "Proceed to Checkout". In the checkout, CLICK "Submit Order", or if changes are needed, CLICK "Return to Item Checkout". Once the order is submitted, the user will see a screen with the order number and order contents. Two e-mails will be sent to the address previously registered; one will confirm the order and one will confirm the download is available. The download confirmation will have a link to download the data. See the following example. 

Accessing and Using HDDS (Continued)

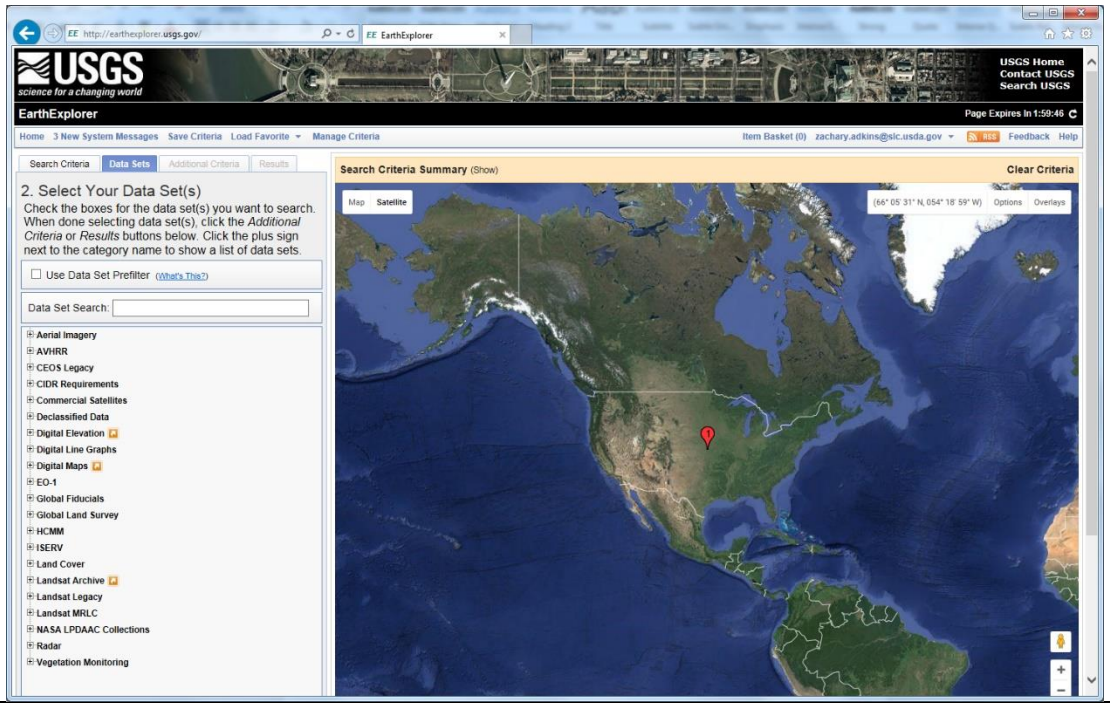
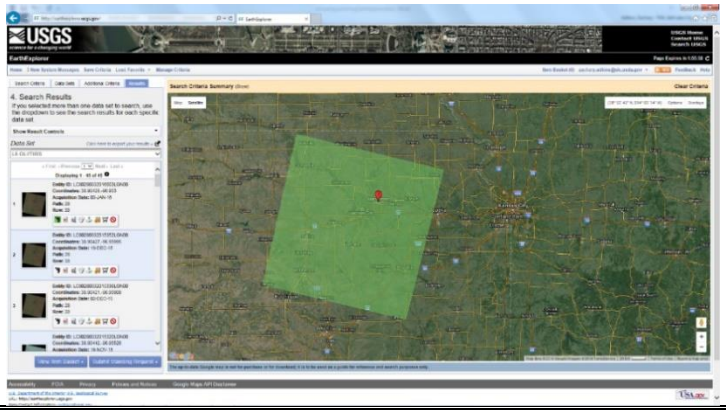
Step	Instructions
10	The user can save the search criteria on the home screen. This is a good idea if there is a specific set of criteria that is commonly used. On the home screen, there are tabs where the option to save, load, and manage any search criteria is available.  There is an option to create a standing request for a certain date range. There are several parameters available to the user for the request. Anytime new data is available based on the criteria, the user will be notified. 

Accessing and Using Earth Explorer

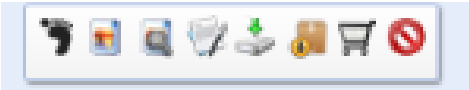
The following instructions are required to provide users the capability to query and order satellite imagery.

Step	Instructions
1	Go to the USGS EarthExplorer website at **http://earthexplorer.usgs.gov**.
2	If this is the first time using EarthExplorer, CLICK "**Register**". If the user already has an account, CLICK "**Login**". It is not required to login or register. However, if the user wants access to certain restricted data sets, it will be necessary to register with a .gov e-mail address.
3	On the left side of the page is a search criteria option. A user can search by location, satellite path/row, coordinates, and specify a date range. Enter the search criteria desired. 

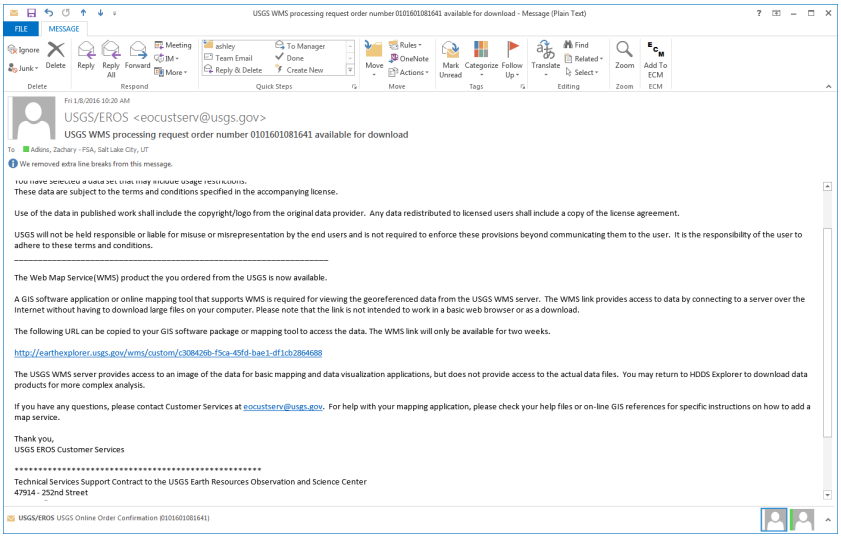
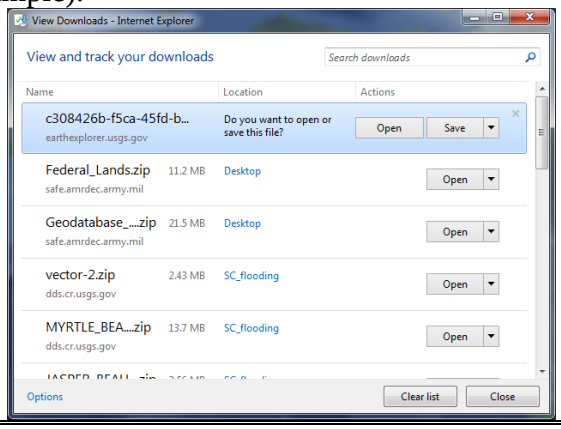
Accessing and Using Earth Explorer (Continued)

Step	Instructions
4	After the search criteria is entered, click the "**Data Sets**" tab. There is a lot of data available to download including, satellite imagery, LiDAR, aerial imagery, land cover datasets, etc. If a specific data set is needed, enter it into the "Search" feature option. 
5	Once the datasets have been selected, the "Additional Criteria" tab is available to select more options. These options are specific to each dataset but often include sensor type, cloud cover percentage, image acquisition date, processing level (i.e. orthorectified, georeferenced), etc. Once any additional search criteria have been added, click the "**Results**" tab.
6	All available imagery (based on the search criteria) will be displayed on the left-hand side. The "Show Result Controls" drop-down menu allows some controls for how the available imagery will be displayed. Choose to display the footprints of the imagery or the actual scenes. There is an option to add all of the images to the basket or select the bulk download tool. 

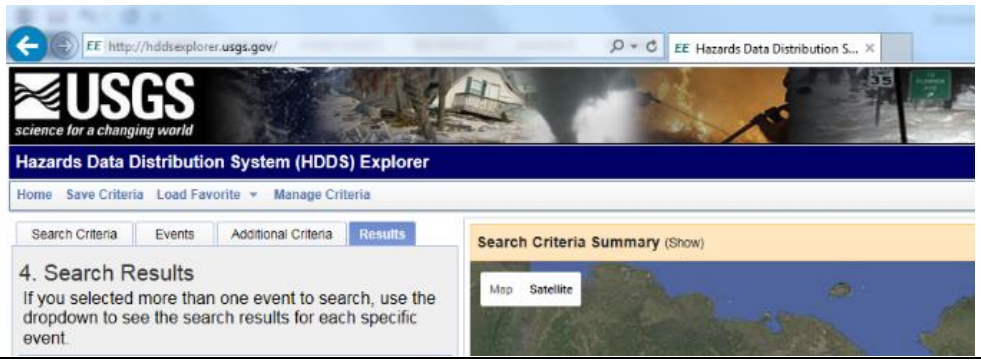
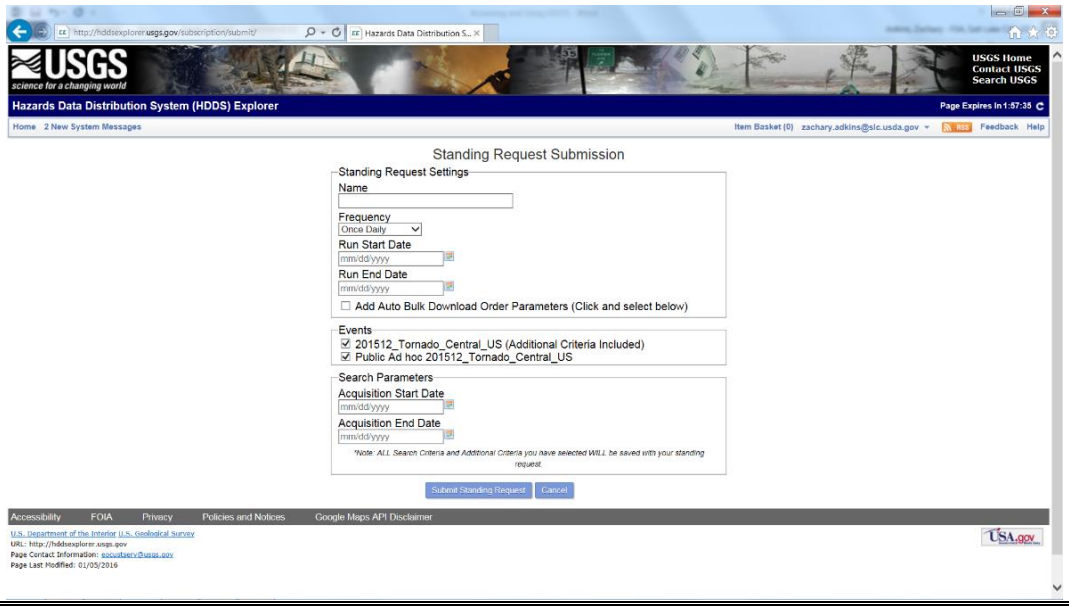
Accessing and Using Earth Explorer (Continued)

Step	Instructions
6 (Cntd)	There is an option to export the search results by clicking the export results link. The data can be exported to .kmz, comma delimited, pipe delimited, .shp, FGDC, or .csv files.
7	Each image has some brief information along with 8 icons. Each icon represents a different feature available for working with the image.  • The first icon allows the user to toggle the footprint on and off. • The second icon allows the user to toggle the actual image on and off. • The third icon allows the user to compare 2 or more images if "compare browse" is checked on in the result controls. • Clicking the fourth icon will bring up a detailed FGDC compliant metadata file about the image. • The fifth icon will show the download options. They are full resolution, low quality JPEG, medium quality JPEG, and the FGDC metadata file. The full resolution tile may be the ideal download, but it will be the largest in file size. • The sixth icon allows the user to add the image to the bulk download tool (see bulk download instructions). • Clicking the seventh icon will order the image and send it to the checkout basket. • Clicking the last icon will exclude the image from the results panel. When all the options are set and ready to download the data, CLICK "**View Item Basket**". This will bring up a new view to confirm the download.

Accessing and Using Earth Explorer (Continued)

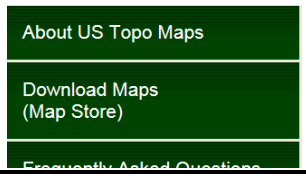
Step	Instructions
8	If made any changes were made, CLICK "**Save Changes**" and "**Proceed to Checkout**". • In the checkout, CLICK "**Submit Order**" or "**Return to Item Checkout**" to make additional changes. Once the order is submitted, there will be a screen with the order number and order contents. The user will also receive 2 e-mails to the address previously registered; one will confirm the order and one will confirm the download is available.  • The download confirmation will have a link to download the data (see the following example). 

Accessing and Using Earth Explorer (Continued)

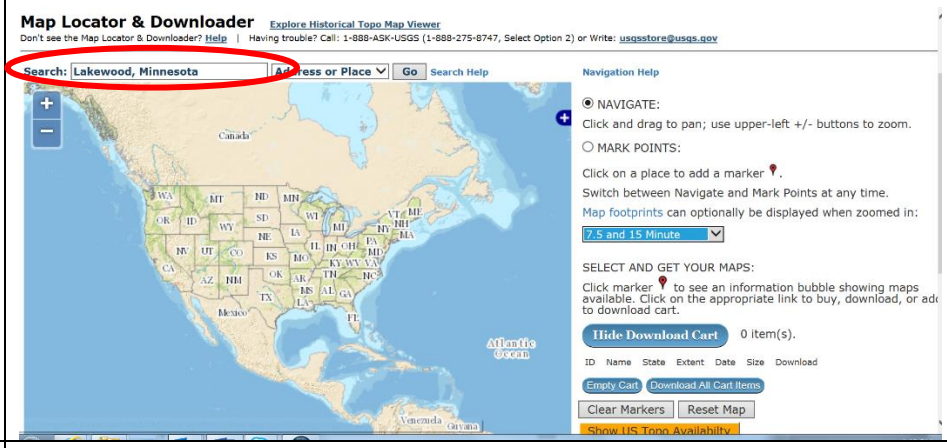
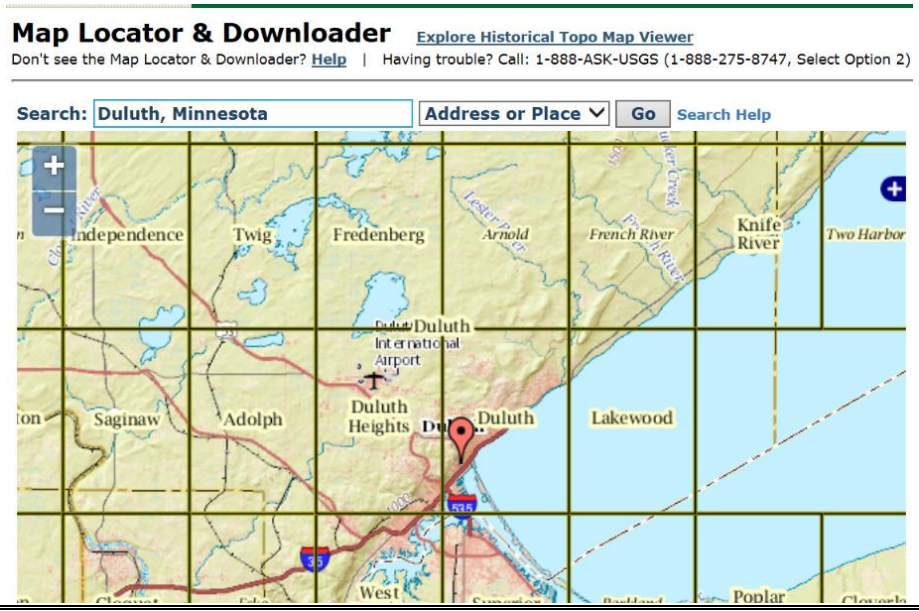
Step	Instructions
9	At the **home** screen, there are tabs where a user can save, load, and manage any search criteria. Save the search criteria on the home screen. This is recommended if requesting a specific set of criteria that is commonly used. 
10	Optional: Create a standing request for a certain date range. There are several parameters that can be entered for the request. Anytime new data is available based on the criteria, the user will be notified. 

New Generation TOPO Maps

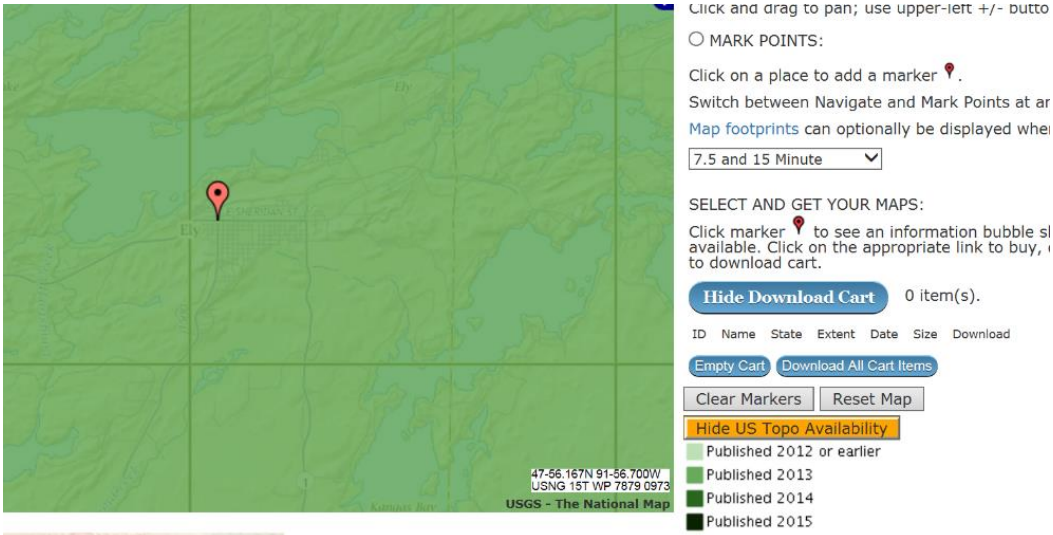
The following instructions are required to provide guidance on how to access topographic maps.

Step	Instructions
1	Navigate to **http://nationalmap.gov/ustopo**.
2	On the left-hand side of the webpage, CLICK “Download Maps (Map Store)”. 

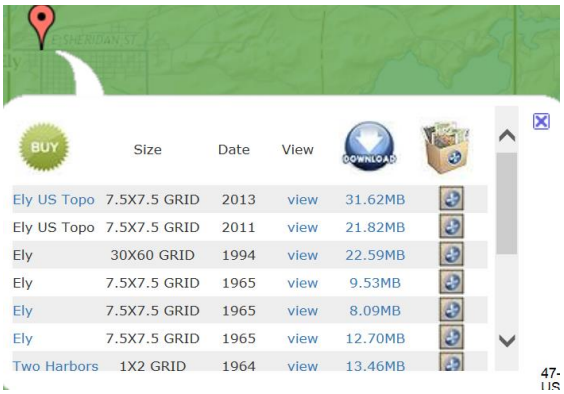
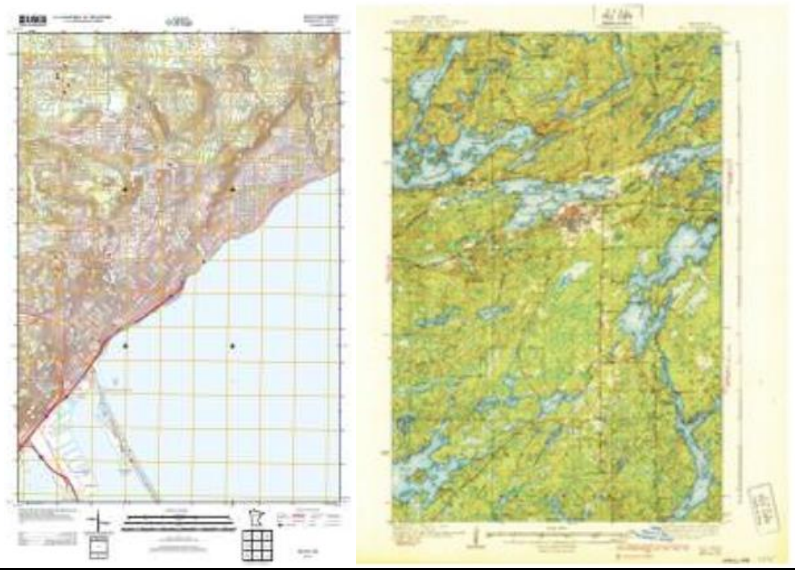
New Generation TOPO Maps (Continued)

Step	Instructions
3	Enter in a location in the "Search" dialogue box and PRESS "Enter". 
4	The site will zoom to the entered location showing the requested.
5	Topo name and other surrounding topo names. 

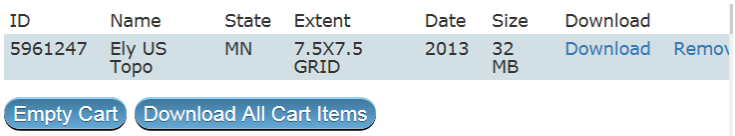
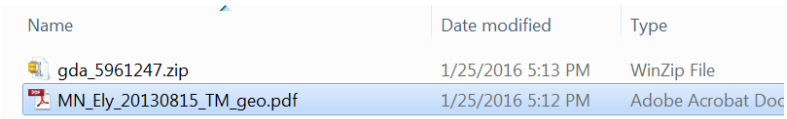
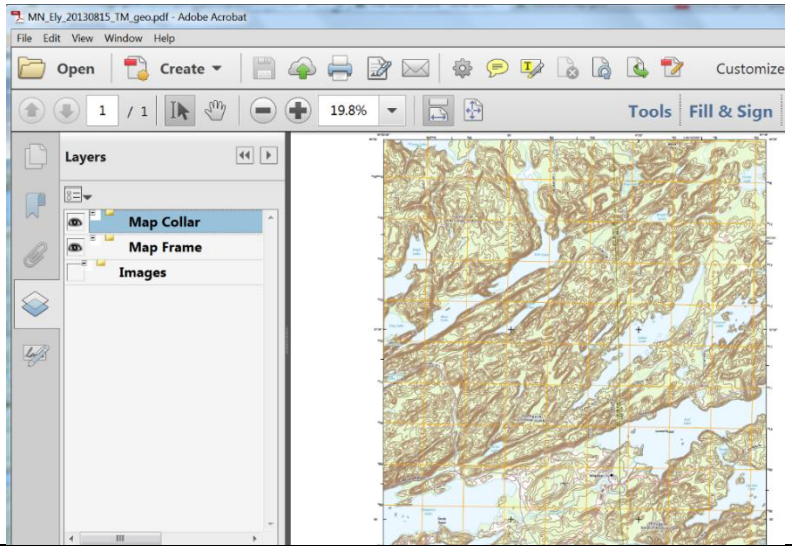
New Generation TOPO Maps (Continued)

Step	Instructions
6	On the right-hand side of the webpage, CLICK "Show US Topo Availability" to see what years are available. 
7	Click the locator pin that displays on the map  .

New Generation TOPO Maps (Continued)

Step	Instructions
8	A pop-up box will display to select different products and years. Click to download the desired year or CLICK "View" to see a thumbnail of the topo of choice.  Thumbnail view. The first view is the most current and the other is from 1939. 
9	Click the "plus" icon on the far right to download the topo of choice. 

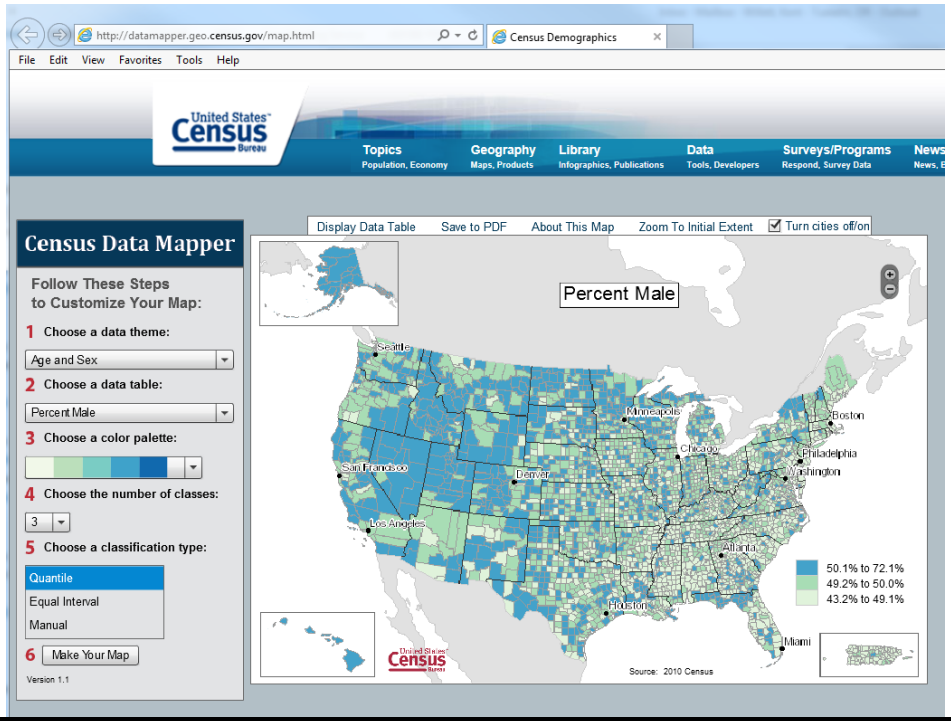
New Generation TOPO Maps (Continued)

Step	Instructions
10	The user will notice the option to complete the download on the right-hand side of the webpage or choose to download other topos. Click the "Download All Cart Items" button. 
11	Save the .PDF file. **Note:** These files are considered temporary and can be stored and deleted on the local C:\ drive. It is suggested to save these files at C:\Geodata\topographic_images.
12	Open the .ZIP file to extract the .PDF. 
13	Double-click the .PDF file to open. 
14	The user can choose to print the map or continue to pan around or zoom in and out for further analysis.

Census Data Mapper

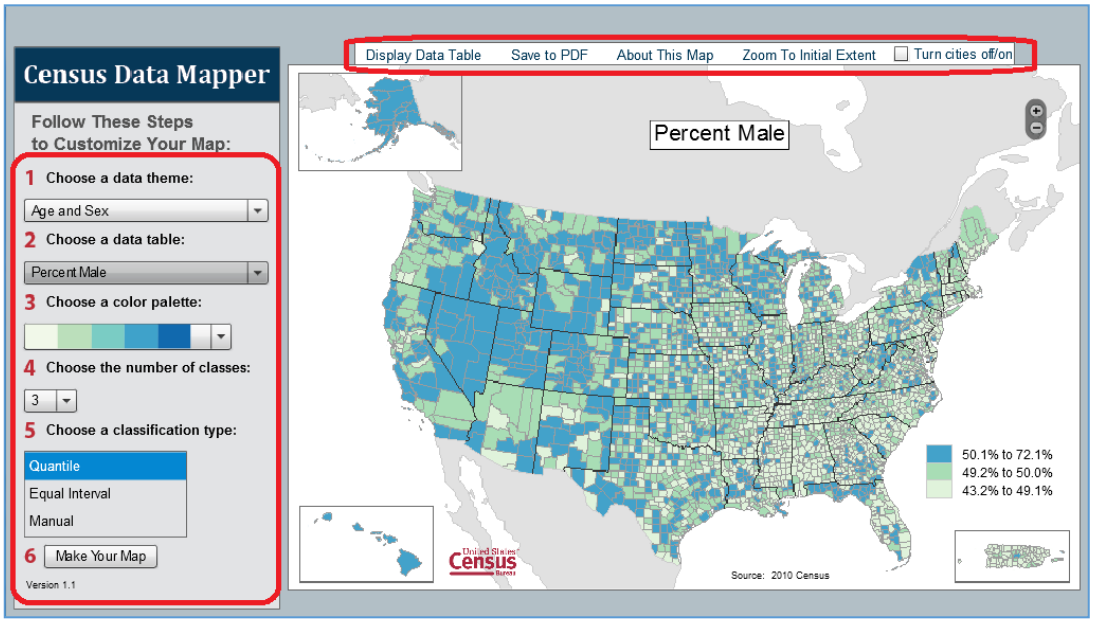
A Generating Online Maps (Census Data Mapper)

The following instructions are required to provide assistance for creating online maps.

Step	Instructions
1	To access the Census Data Mapper, open **http://datamapper.geo.census.gov/map.html** in a web browser. 

Census Data Mapper (Continued)

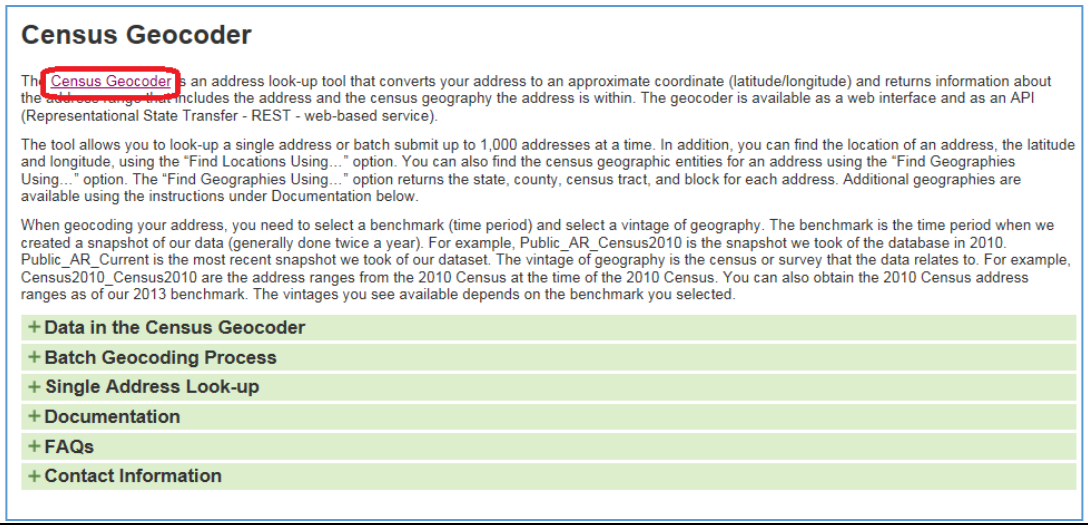
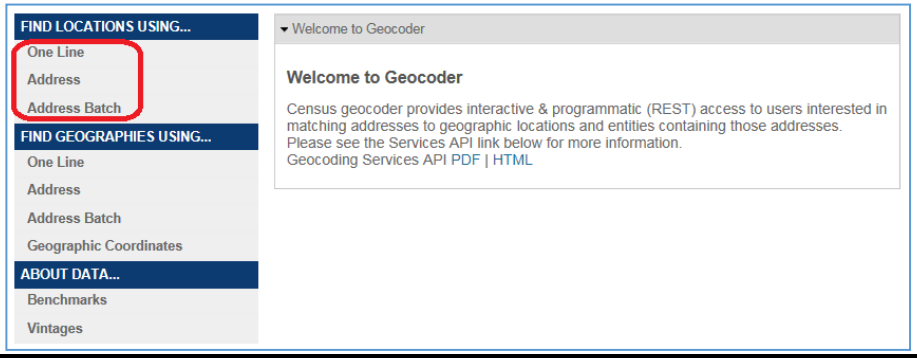
A Generating Online Maps (Census Data Mapper) (Continued)

Step	Instructions
2	On the left-hand side, users have the option to select the data theme, the table within the theme, the color palette, the number of classes, choose a classification type (including manual), and use the "Make Your Map" button. On the top users have the option to display any particular county by name, save the map to specified location in a .PDF format, as well as obtain information about the map, zoom to initial extent, and turn on/off major cities. From within the map, the extent can be increased/decreased to focus on a desired State or county.  **Note:** All data displayed in Census Data Mapper is from the 2010 Census.

Census Data Mapper (Continued)

B Accessing Census Geocoder (Census Data Mapper)

The following instructions are required to access the Census Geocoder (Census Data Mapper).

Step	Instructions
1	To access the U.S. Census Geocoding software, open **http://www.census.gov/geo/maps-data/data/geocoder.html** in a web browser.
2	To access the tool, click the "Census Geocoder" link. 
3	The Geocoder is able to give X/Y coordinates for most addresses. The tool can accept addresses in a "One Line" format, a traditional "Address" format, and can accept "Addresses Batch". 

Census Data Mapper (Continued)

C Accessing GIS Information From U.S. Census

The following instructions are required to access GIS information from the U.S. Census.

Step	Instructions
1	To access the U.S. Census Geocoding software, open **http://www.census.gov/geo/maps-data/data/tiger.html** in a web browser.
2	The GIS data readily available is displayed as follows. Select the product by clicking the corresponding link (left side).

Which product should I use?

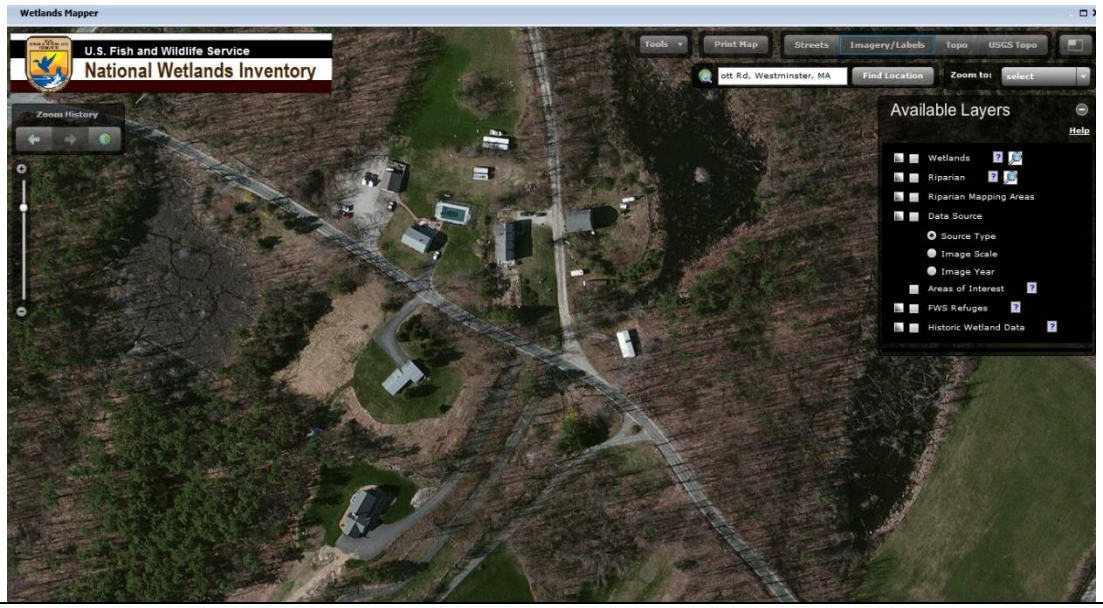
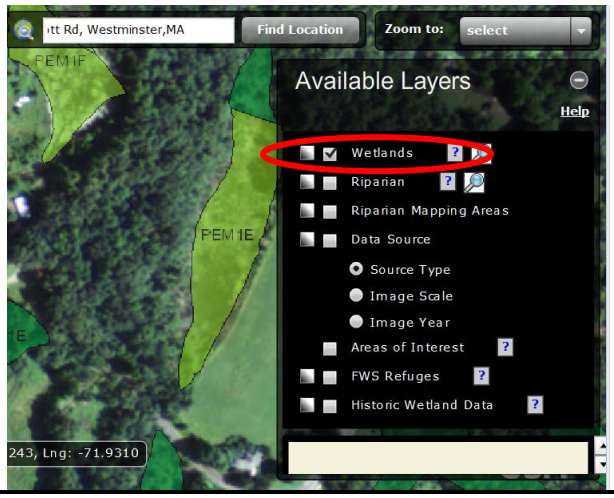
Product	Best For...	File Format	Type of Data	Level of Detail	Descriptive Attributes	Vintages Available
TIGER/Line Shapefiles	Most mapping projects--this is our ***most comprehensive dataset***. Designed for use with GIS (geographic information systems).	Shapefiles (.shp) and database files (.dbf)	Boundaries, roads, address information, water features, and more	Full detail (not generalized)	Extensive	2006 - 2015, CD 113
TIGER Geodatabases	Useful for users needing national datasets or all major boundaries for by state. Designed for use in ArcGIS. Files are extremely large.	Geodatabase (.gdb)	Boundaries, roads, address information, water features, and more	Full detail (not generalized)	Limited	2013-2014
TIGER/Line with Selected Demographic and Economic Data	Data from selected attributes from the 2010 Census, 2006-2010 ACS 5- year estimates, 2007-2011 ACS 5-year estimates, 2008-2012 ACS 5-year estimates and County Business Patterns (CBP) for selected geographies. Designed for use with GIS.	Shapefiles (.shp) and Geodatabases	Boundaries, Population Counts, Housing Unit Counts, 2010 Census Demographic Profile 1 attributes, 2006-2010 ACS 5-year estimates data profiles, 2007-2011 ACS 5-year estimates data profiles, CBP data.	Full detail (not generalized)	Limited	2012 CBP, 2010, 2006-2010 ACS, 2007-2011 ACS, 2008-2012 ACS
Cartographic Boundary Shapefiles	Small scale (limited detail) mapping projects clipped to shoreline. Designed for thematic mapping using GIS.	Shapefiles (.shp)	Selected boundaries	Less detail (generalized)	Limited	2014, 2013, 2010, 2000, 1990
KML - Cartographic Boundary Files	Viewing data or creating maps using Google Earth, Google Maps, or other platforms that use KML.	KML (.kml)	Selected boundaries	Less detail (generalized)	Limited	2014, 2013
TIGERweb	Viewing spatial data online or streaming to your mapping application.	Interactive viewer, HTML data files, plus REST and WMS map services	Boundaries, roads, address information, water features, and more	Detailed	Extensive	2012, 2010, 2012 ACS and 2011 ACS

Using the Wetland Mapper

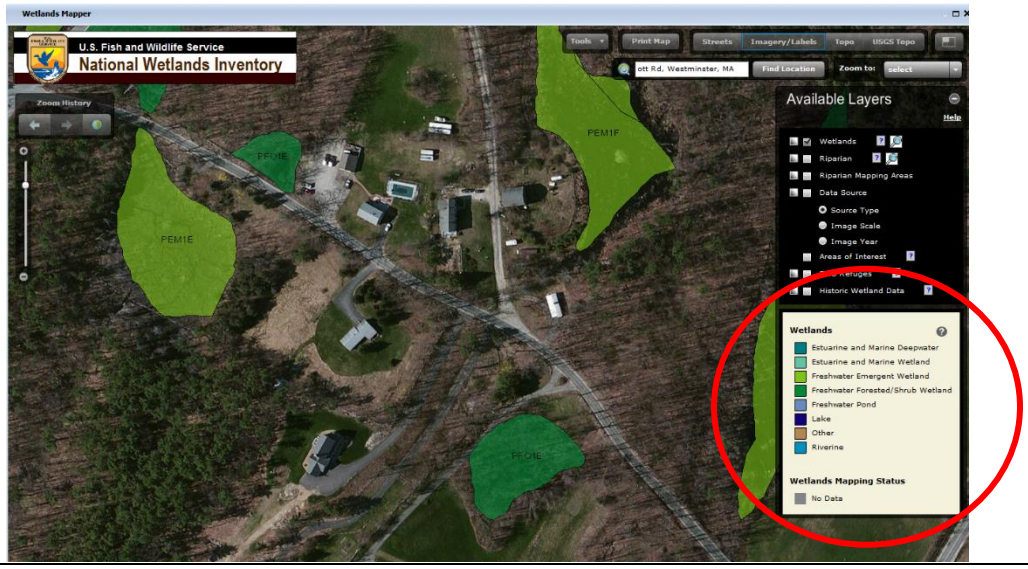
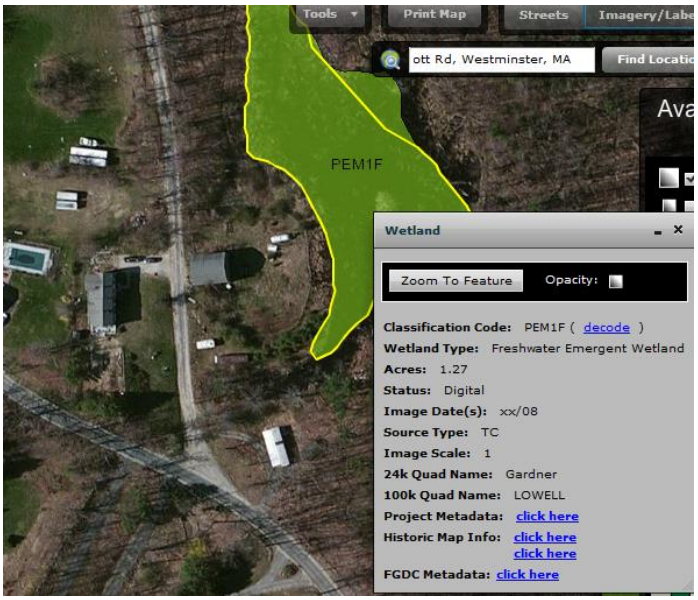
The following instructions are required to use the Fish and Wildlife Wetland Mapper.

Step	Instructions
1	Log on to **http://www.fws.gov/wetlands/Data/Mapper.html**. The Wetlands Mapper page will display. 
2	Enter in a location in the “Search” dialogue box. **Example:** 24 Minott Rd, Westminster, MA 

Using the Wetland Mapper (Continued)

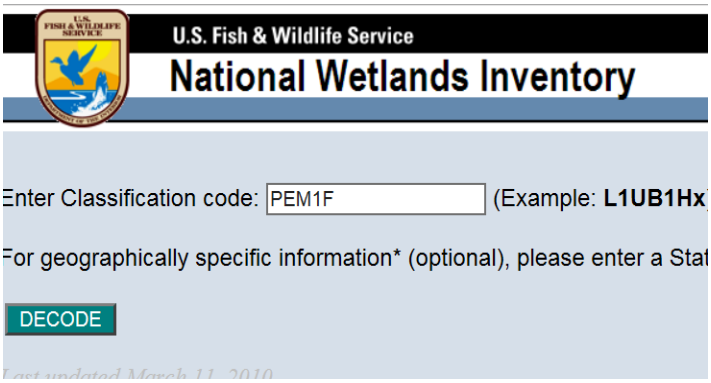
Step	Instructions
3	Zoom or pan as needed. 
4	On the right-hand side of the mapper, click to check on the Wetland data to display the wetland polygons for the area. 

Using the Wetland Mapper (Continued)

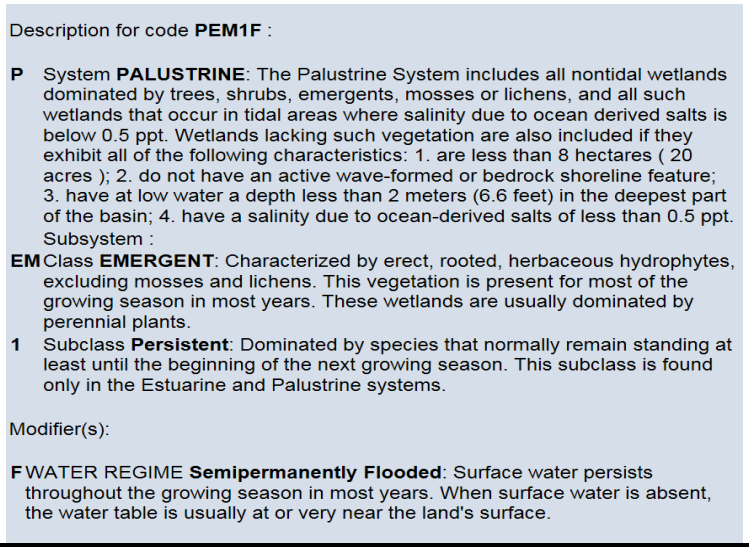
Step	Instructions
5	Users will see a display showing the wetland types. 
6	Click any of the green color polygons to find information on these polygons.  **Note:** The polygon will be selected in a yellow color and will bring up a wetland dialogue box with information on the selected wetland.

Using the Wetland Mapper (Continued)

Step	Instructions
7	CLICK "Decode" twice on the next to dialogue boxes.



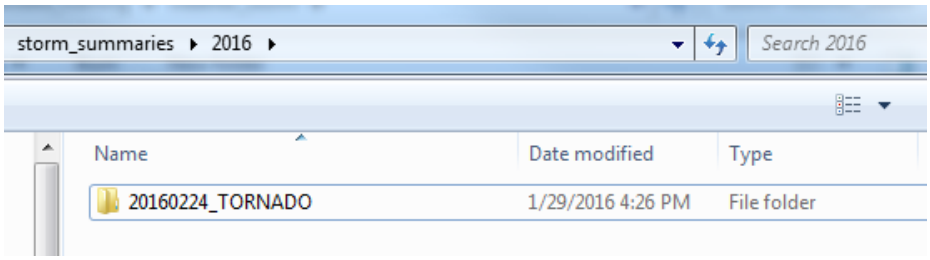
Note: A description box will display of the map unit symbol that represents the polygon that was selected with the information on the selected wetland polygon.



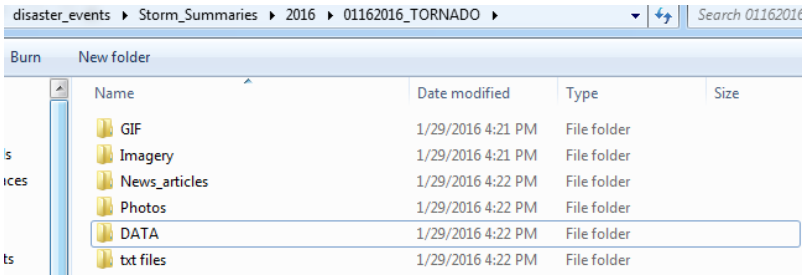
Basic Data Management and Preparation for Severe Weather and Hazard Incidents

A Instructions for File Management

These instructions identify the steps for managing the file structure.

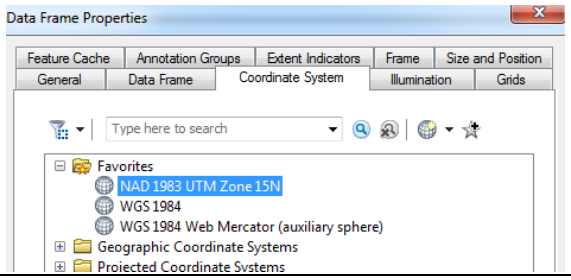
Step	Instructions
1	Navigate to F:\geodata\Disaster_Events\Storm_Summaries\<Year>.
2	Create a subfolder with a date and identify event type.  **Note:** Folders should only be created for active events. Names should be descriptive enough to make it clear what and when event has taken place. Once the folders/files should be created they should be retained for future reference and use.

A Instructions for File Management (Continued)

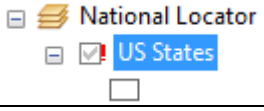
Step	Instructions
3	Create the following additional subfolders for documenting storm/hazard events: • GIF • Imagery • news_articles • photos • DATA • Txt.  **Note:** A best practice would be to create a template folder, so that these can be quickly copied/cut and pasted as needed. Subfolders can be created to further organize data as needed and based on the complexity of the incident within these major folders. Files should be named in a manner that makes the readily apparent on what the data actually is. The structure is created to create uniformity nationwide and to support disaster events on a regional basis.
4	The SITREP_ST_DATE.doc (report) and the SITREP_MAP_TEMPLATE will be stored under: F:\geodata\Disaster_Events\Storm_Summaries. **Note:** Files will be copied and pasted as needed into each event and updated from the event folder.

B Instructions for Managing the SITREP MAP/REPORT

These instructions identify the steps for managing the SITREP MAP/REPORT.

Step	Instructions
1	Open the SITREP_MAP_TEMPLATE in ArcMap. This map template is located on FSA GIS SharePoint at **https://sharepoint.fsa.usda.net/mgr/FSA_GIS/FSA-GIS/Disaster/default.aspx**. **Note:** The template is using an AGOL background layer to display basic information for the detail area. This can be changed by logging into AGOL for Desktop.
2	Update the Projection system to dominate UTM zone for each map area. 
3	Update the Detailed Area layers with the !. 

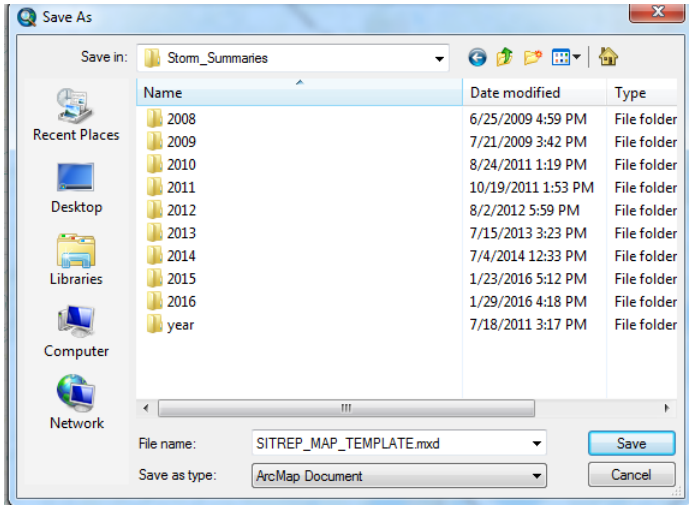
B Instructions for Managing the SITREP MAP/REPORT (Continued)

Step	Instructions
4	Right-click the layer. CLICK "Properties" and then click the "Source" tab.
5	CLICK "Set Data Source". Complete for: • Complete for FSA Service Center Locations • County Boundary • Cities • Townships • PLSS, if applicable.
6	Add any additional data layers that would be of use such as: • Rivers/Streams • Roads/Rail • Lakes • Weather/Hazard Data.
7	Update the National Area layers with the  . 
8	Right-click the layer. CLICK "Properties" and then click the "Source" tab.
9	CLICK "Set Data Source". Complete for U.S. States.

B Instructions for Managing the SITREP MAP/REPORT (Continued)

Step	Instructions
10	Add any additional data layers that would be of use such as: • Extent of area • Weather/Hazard Data (only if needed).
11	Update the State Area layers with the . 
12	Right-click the layer. CLICK “Properties” and then click the “Source” tab.
13	CLICK “Set Data Source”. Complete for: • U.S. States • County boundary.
14	Add any additional data layers that would be of use such as: • Extent of area • Weather/Hazard Data (only if needed).
15	Update the Contact Information. Contact Information Here Name Title USDA Farm Service Agency State Office Address City, ST, ZIP Email Phone **Note:** This is important so maps can be updated/storm/hazard data shared.

B Instructions for Managing the SITREP MAP/REPORT (Continued)

Step	Instructions
16	Update the Title/Incident Name and Date. USDA **County, State** **Incident Name - Date**
17	Save the file to: F:\geodata\Disaster_Events\Storm_Summaries.  **Note:** A best practice is to make the SITREP report map available on the C drive and the F drive for an .mxd file. Very important for having this data on a laptop so that emergency situations the basic data is ready to go and prepped.

Obtaining Hail Data From Various Sources

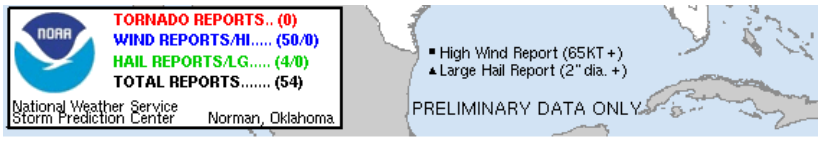
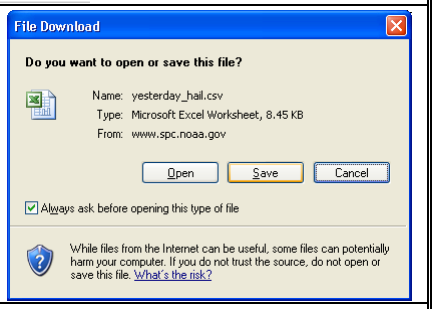
A Download Hail Reports From SPC

These instructions download hail reports from SPC.

Step	Instructions
1	Navigate to **http://www.spc.noaa.gov/climo/online/**. **Today's Storm Reports** (in **KML** format) (Updated every 10 minutes) (since 6AM CST/7AM CDT) (Reports over the last 3 hours)  **Yesterday's Storm Reports** (in **KML** format) (6AM-6AM CST/7AM-7AM CDT)  **Past Storm Reports** Enter date to retrieve (YYMMDD): 160129 Get Data
2	Click the Today's Storm Reports Map or enter a date to retrieve older data or to determine date and time for a storm.

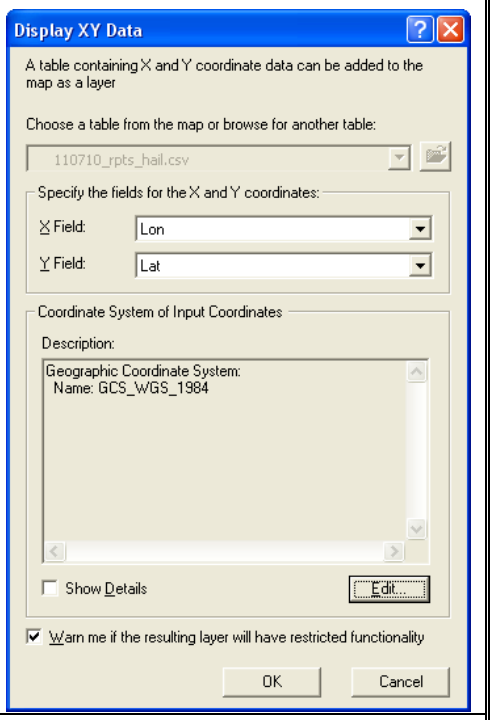
Obtaining Hail Data From Various Sources (Continued)

A Download Hail Reports From SPC (Continued)

Step	Instructions
3	Scroll to Hail Reports.  **Tornado Reports (CSV) (Raw Tornado CSV)(?)** No reports received **Hail Reports (CSV) (Raw Hail CSV)(?)** Time Size Location County State Lat Lon Comments 1810 100 MONMOUTH KENNEBEC ME 4424 7002 (GYX) 1843 100 LITCHFIELD KENNEBEC ME 4413 6997 (GYX) 0055 100 GOULD HARMON OK 3467 9977 VIA KSWO (OUN) 0115 100 GOULD HARMON OK 3467 9977 VIA KSWO (OUN)
4	If reports exist, CLICK “CSV” to download the text file. 
5	CLICK “**Save**”.
6	Change the directory to F:\geodata\disaster_events\Storm_Summaries\<year>\<eventDate>.
7	Change the file name to “YYMMDD_rpts__hail.csv”.
8	CLICK “**Save**”.
9	CLICK “**Close**” after the file is downloaded.
10	Open an ArcMap document that contains base map information (e.g. county boundaries, CLU, etc.).
11	Add the hail reports .CSV file downloaded from the SPC site.

Obtaining Hail Data From Various Sources (Continued)

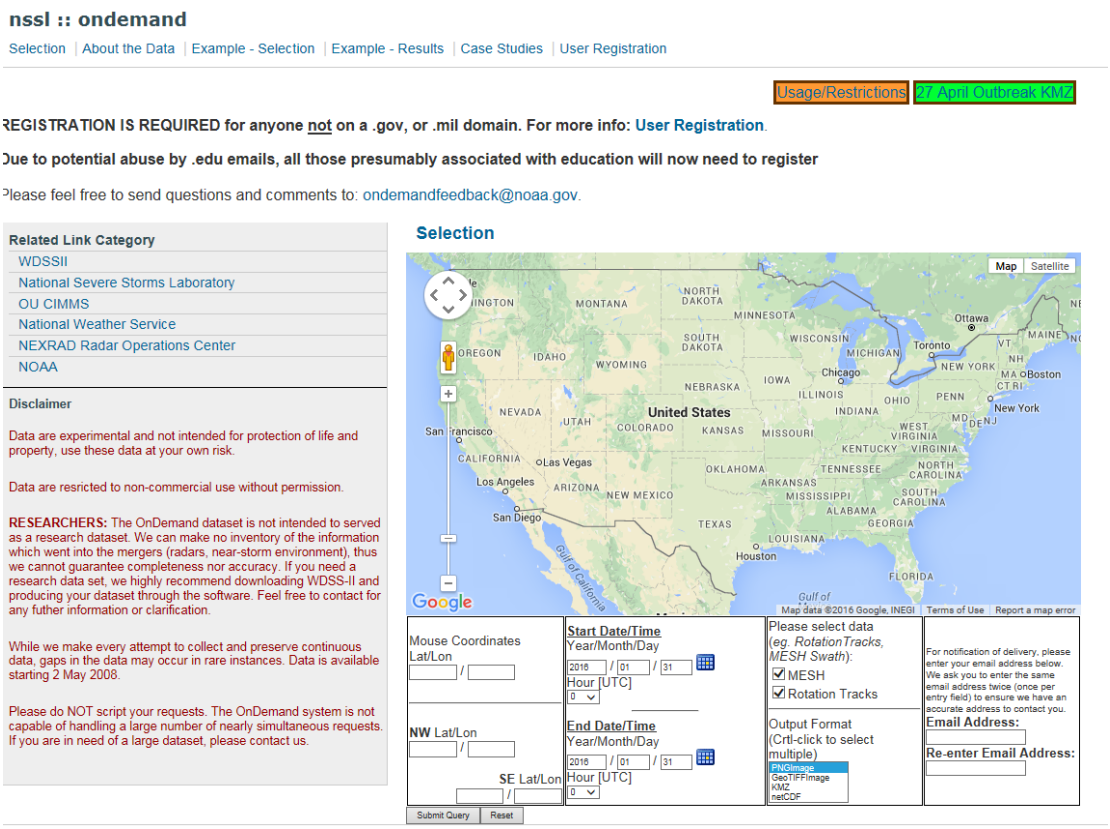
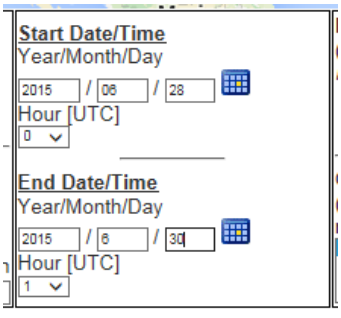
A Download Hail Reports From SPC (Continued)

Step	Instructions
12	Right-click the .CSV file in the Table of Contents and select “Display XY Data”. 
13	Set the “X Field” to “Lon”.
14	Set the “Y Field” to “Lat”.
15	CLICK “**Edit**” on the coordinate system.
16	CLICK “**Select**” on the Spatial Reference Properties window.
17	Select “Geographic Coordinate Systems/World/WGS 1984.prj”.
18	CLICK “**OK**” on the Spatial Reference Properties window.
19	CLICK “**OK**” on the Display XY Data window. The storm reports will display as points on the map.

Obtaining Hail Data From Various Sources (Continued)

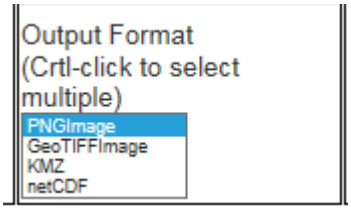
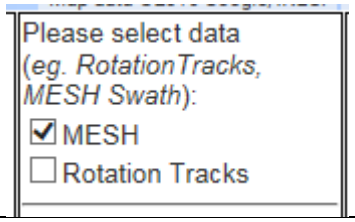
B Download MESH Data

These instructions download MESH data.

Step	Instructions
1	Navigate to **http://ondemand.nssl.noaa.gov/**.  **Note:** SPC Date and Time data is important for knowing when to request information from this site.
2	Identify the Start Data and Time (reminder Zulu time is used here).  **Note:** Only a 24-hour period can be entered.

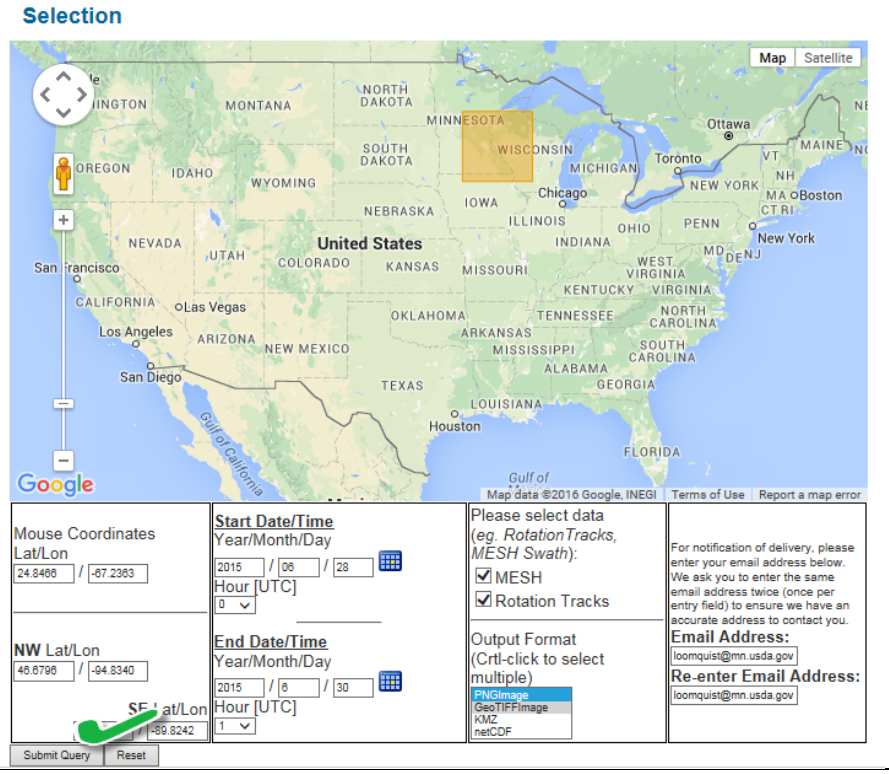
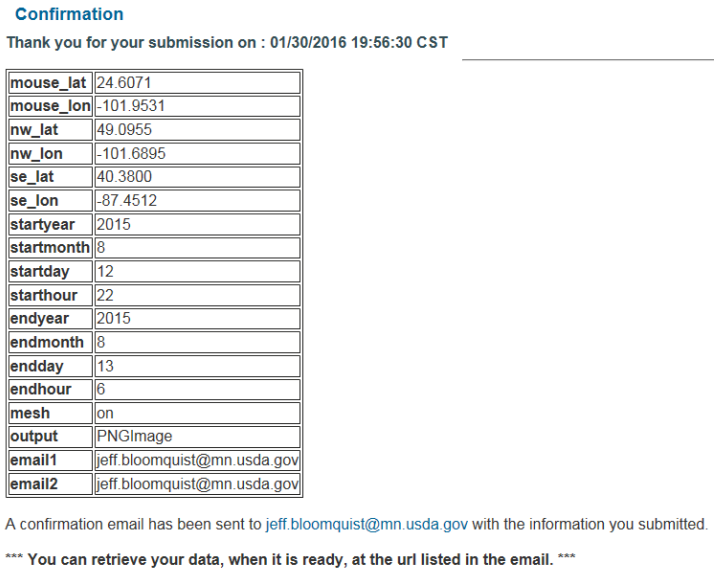
Obtaining Hail Data From Various Sources (Continued)

B Download MESH Data (Continued)

Step	Instructions
3	Select the output format. 
4	Only have “MESH” checked. 
5	Select the area of interest. 
6	The applicable .gov e-mail address will be entered by the user.  **Note:** Users may need to register the .gov e-mail for faster and more relavent data requests.

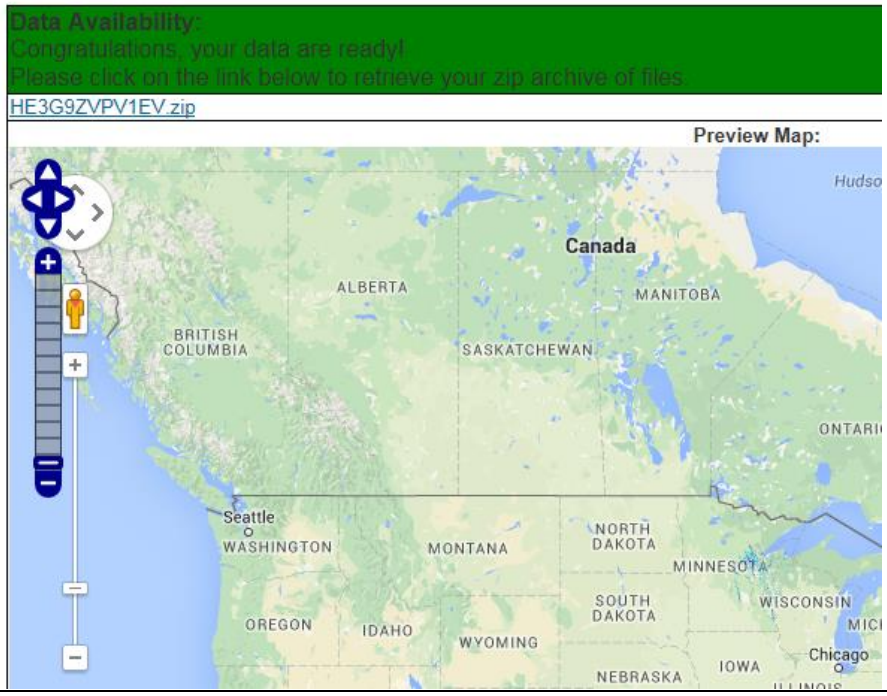
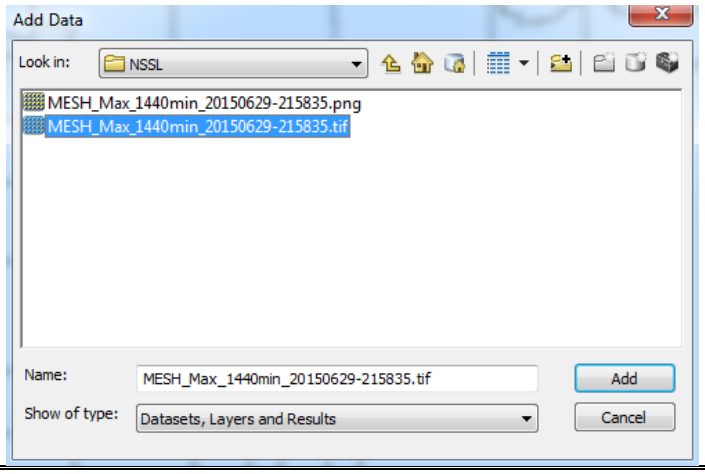
Obtaining Hail Data From Various Sources (Continued)

B Download MESH Data (Continued)

Step	Instructions
7	CLICK "Submit Query". 
8	The Confirmation Screen displays. 

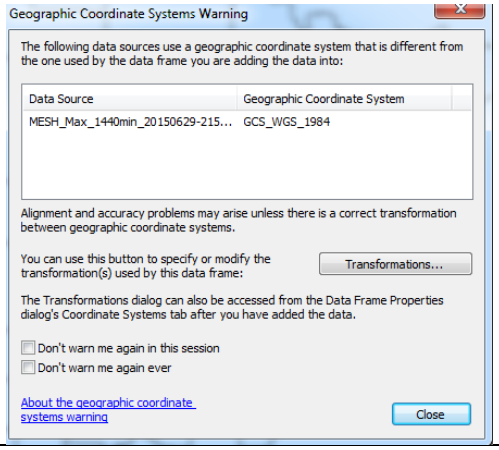
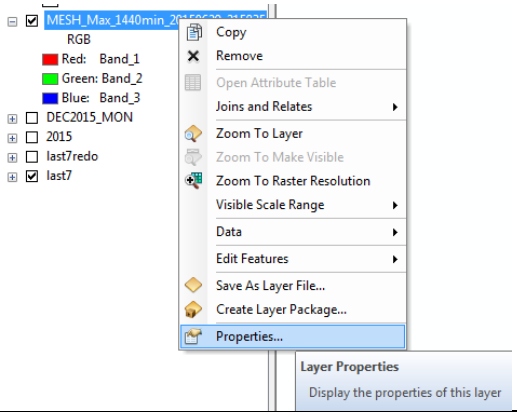
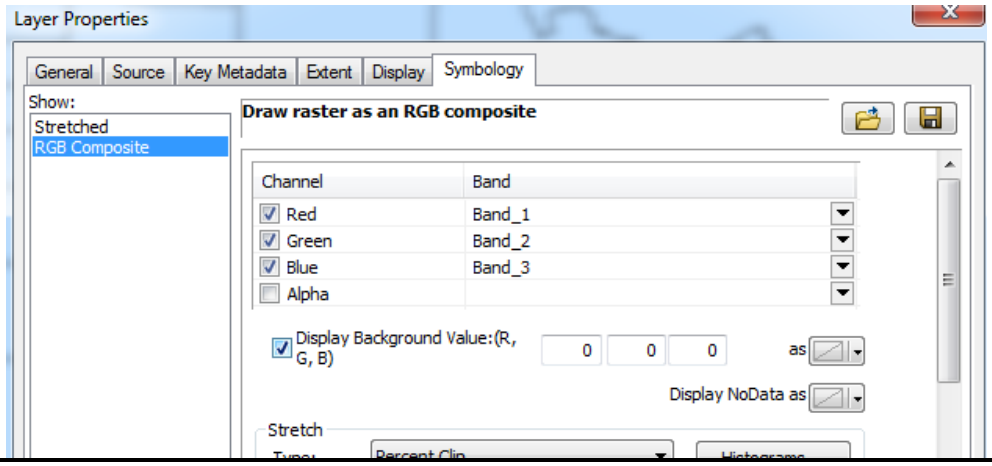
Obtaining Hail Data From Various Sources (Continued)

B Download MESH Data (Continued)

Step	Instructions
9	An e-mail will be sent. 
10	Click the .ZIP file in the e-mail.
11	Save data to F:\geodata\disaster_events\Storm_Summaries\<year>\<eventDate>.
12	Open ArcMap. **Note:** The County/State boundary layer should be added to ArcMap at this time as well.
13	Add the .TIF image. 

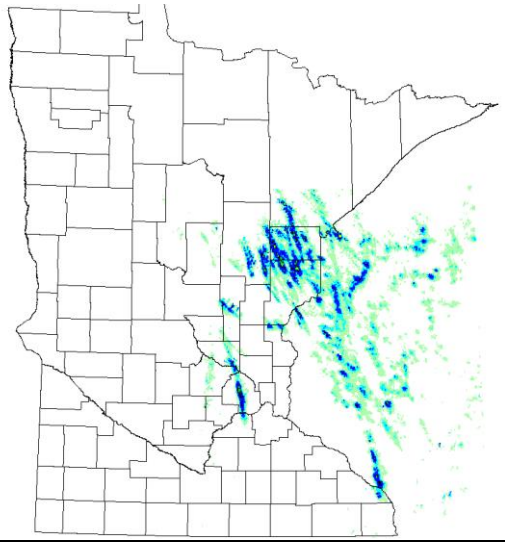
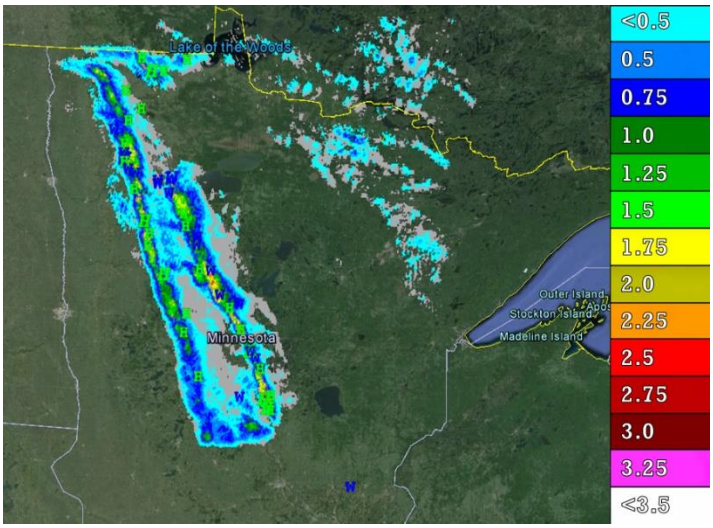
Obtaining Hail Data From Various Sources (Continued)

B Download MESH Data (Continued)

Step	Instructions
14	CLICK "**Close**". 
15	Right-click the MESH Tiff file and CLICK "Properties". 
16	Check "Display Background Value". 

Obtaining Hail Data From Various Sources (Continued)

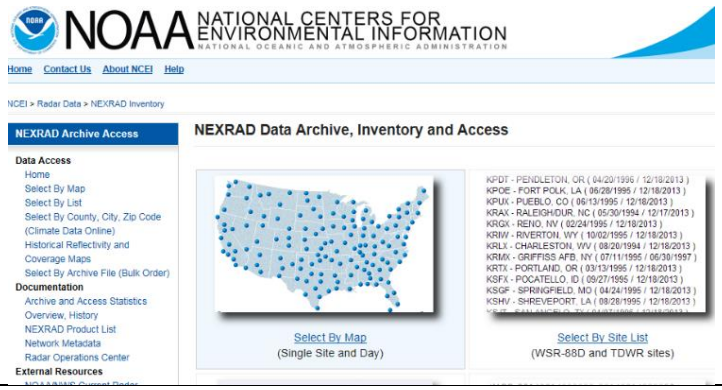
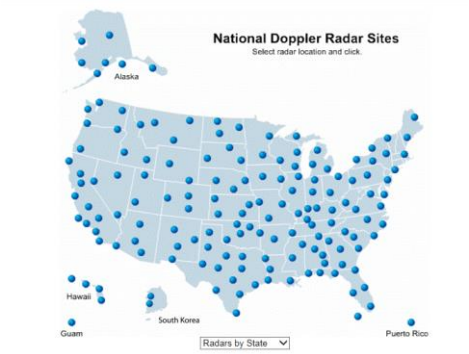
B Download MESH Data (Continued)

Step	Instructions
17	CLICK "**OK**". 
18	Add SPC Data or NEXRAD Hail data for additional spatial analysis. **Note:** This example shows both the SPC data (H) combined with the MESH data and a chart showing hail size.  **Note:** Processing files on the C:\ drive for precipitation allows for faster processing. Files can be moved to the F:\ drive when complete. As a best practice the folder structure (not all the files) can be replicated on the C:\ drive for Geodata.

Obtaining Hail Data From Various Sources (Continued)

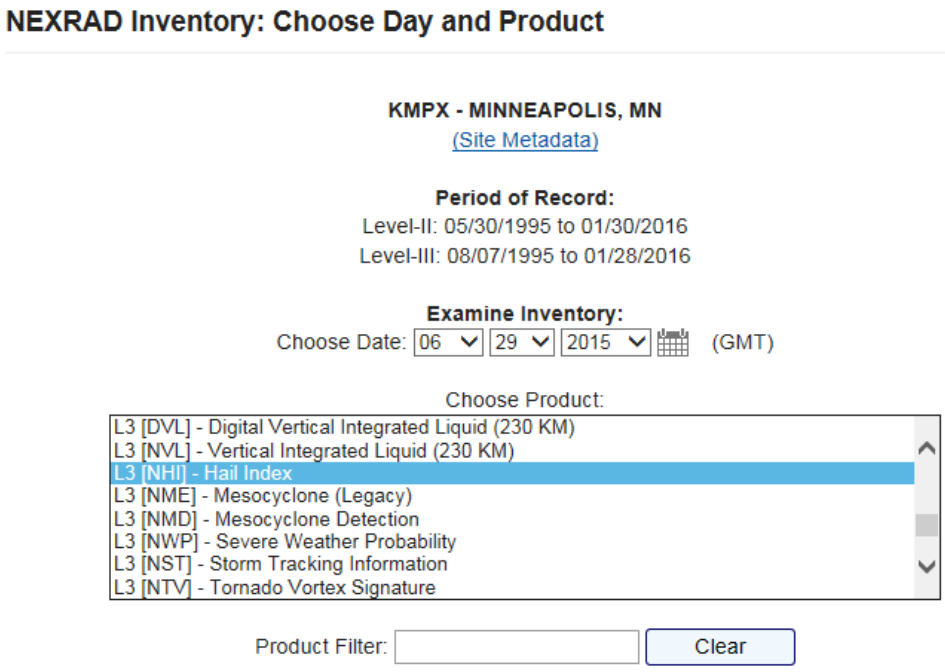
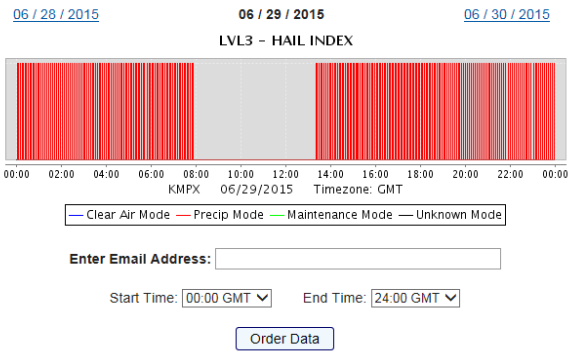
C Download NCDC NEXRAD Hail Index Data

These instructions download NCDC NEXRAD hail index data.

Step	Instructions
1	Navigate to **www.ncdc.noaa.gov/nexradinv**. 
2	CLICK "Select by Map". 
3	Click the NEXRAD site closest to the storm event  . **Note:** Multiple sites will need to be selected to cover data collection from different radar views. For example, Minnesota would use five NEXRAD site locations.

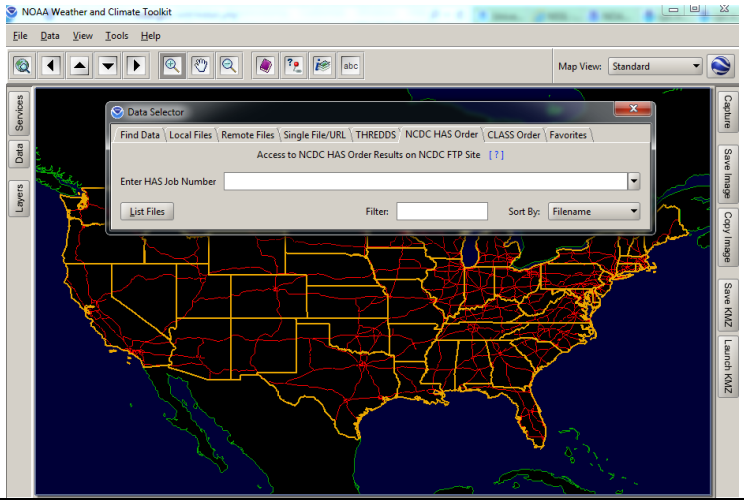
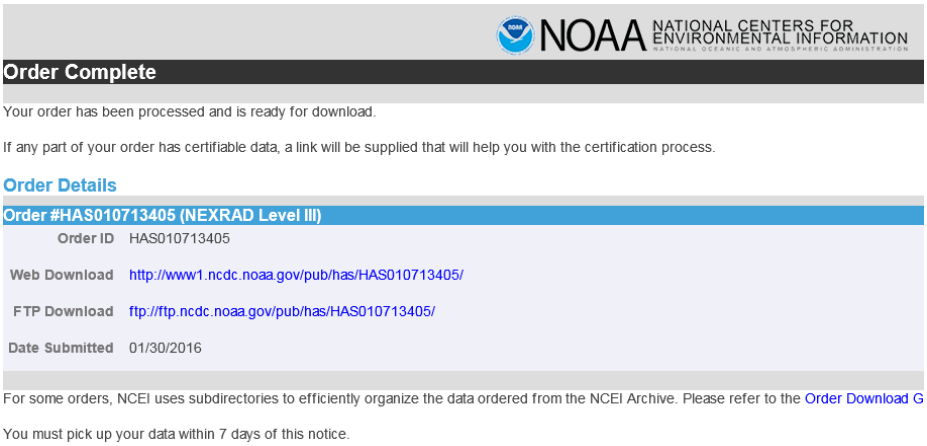
Obtaining Hail Data From Various Sources (Continued)

C Download NCDC NEXRAD Hail Index Data (Continued)

Step	Instructions
4	Select the date of the storm event.
5	Scroll through the inventory list and select the "L3 [NHI] – Hail Index" product. 
6	CLICK "Create Graph".  **Note:** Repeat for each NEXRAD Site for additional radar data.
7	Enter the e-mail address and CLICK "Order Data".
8	Once the e-mail is received navigate to **http://www.ncdc.noaa.gov/oa/wct/install.php**.

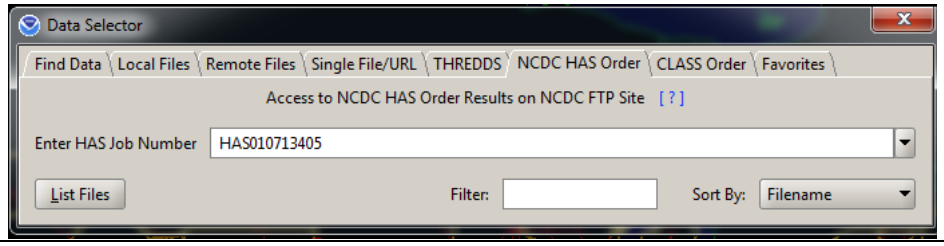
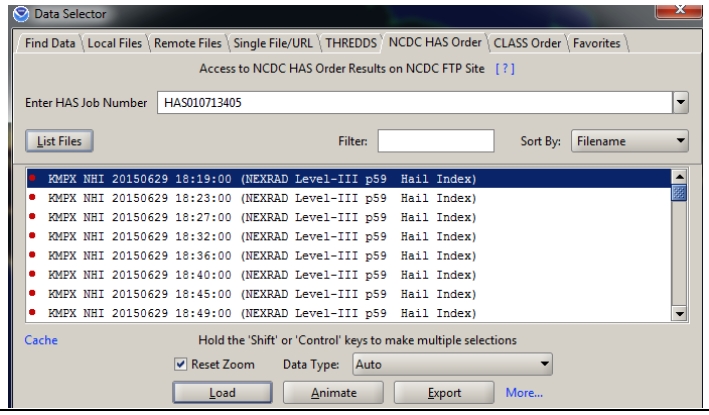
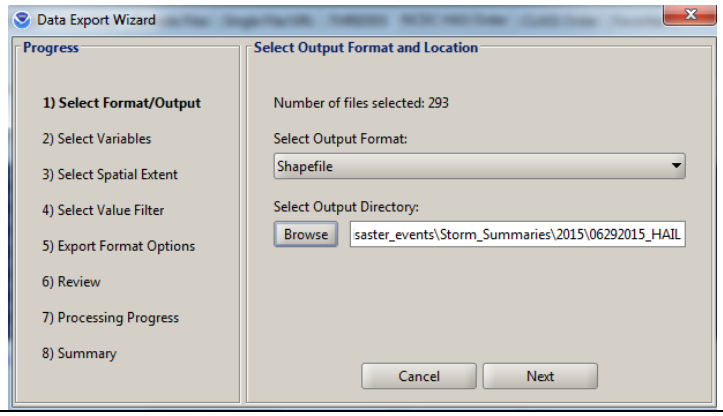
Obtaining Hail Data From Various Sources (Continued)

C Download NCDC NEXRAD Hail Index Data (Continued)

Step	Instructions
9	CLICK "**Launch**".  **Note:** This is approved software that is usable on USDA computers. No local installs occur.
10	The NOAA Weather and Climate Toolkit will open. 
11	Retrieve e-mail of the data completion. 

Obtaining Hail Data From Various Sources (Continued)

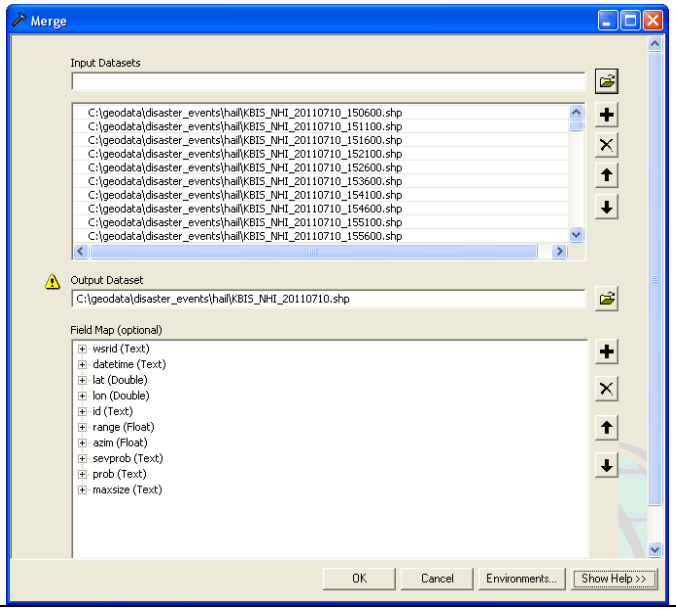
C Download NCDC NEXRAD Hail Index Data (Continued)

Step	Instructions
12	In the Data Selector window, click the "NCDC HAS Order" tab. 
13	Copy HAS job number from the e-mail and paste into the "Enter HAS Job Number" field and CLICK "**List Files**".
14	Hail files will list. 
15	Select all the files to export.
16	CLICK "**Export**". The Data Exporter Wizard will open.
17	CLICK "**Browse**" to change the export directory. 
18	After the directory is selected, CLICK "Next" for each dialog window.
19	CLICK "**Start Export**". **Note:** Repeat for each NEXRAD Data Set before proceeding to step 20.

Obtaining Hail Data From Various Sources (Continued)

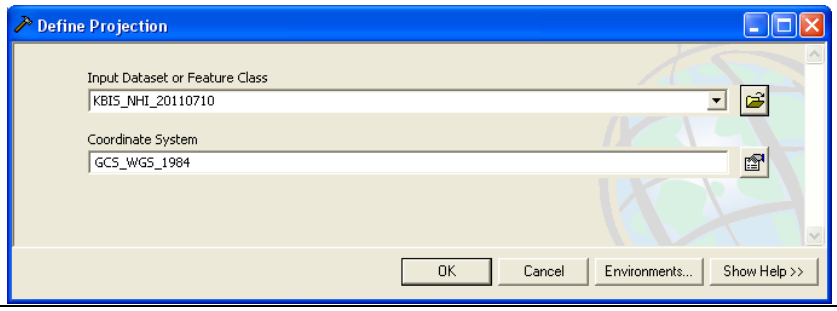
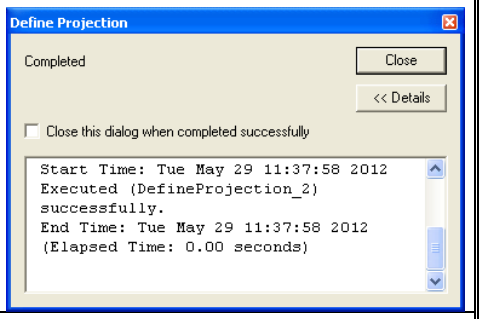
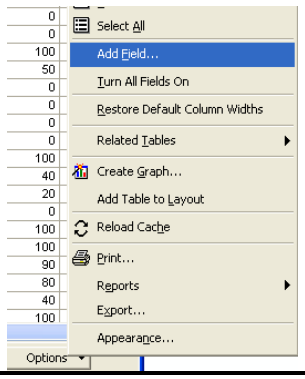
D View NCDC NEXRAD Hail Index Data With ArcMap

These instructions view NCDC NEXRAD hail index data with ArcMap.

Step	Instructions
1	Start ArcMap.
2	Open the ArcToolbox window.
3	Expand the Data Management toolbox.
4	Expand the General toolset.
5	Double-click the Merge tool.
6	Under “Input Datasets”, click the “Browse” button.
7	Browse to the folder that contains the exported hail shapefiles.
8	Select all the desired NHI shapefiles. It helps to sort the files by type before selecting.
9	CLICK “Add”.
10	Under Output dataset, specify the desired directory and filename. The file name should be set to show the radar station name, data type, and date, e.g. MPSX_NHI_20150629.shp. 
11	CLICK “**OK**” to run the merge tool.
12	After the merge process is complete, close the progress window. **Note:** Setting the projection starts here.
13	In ArcToolbox, ensure that the Data Management toolbox is open.
14	Expand the Projections and Transformations toolset.
15	Double-click the Define Projection tool.

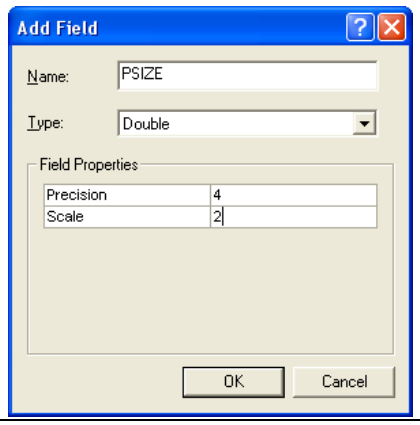
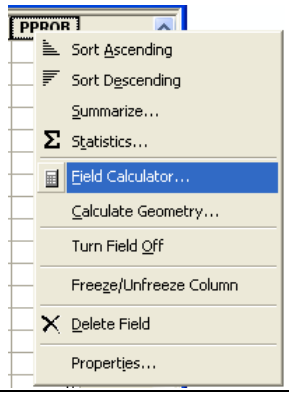
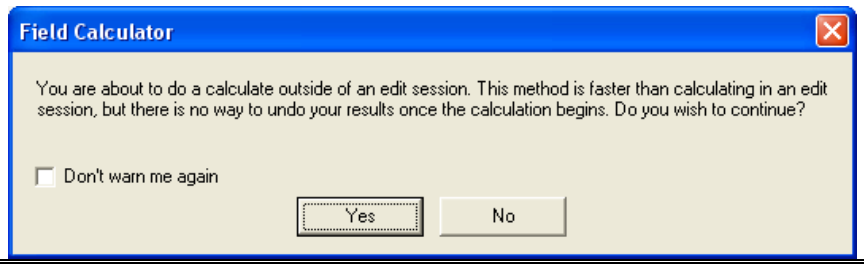
Obtaining Hail Data From Various Sources (Continued)

D View NCDC NEXRAD Hail Index Data With ArcMap (Continued)

Step	Instructions
16	Set the Input Dataset to the exported hail shapefile.
17	Under "Coordinate System", click the "Spatial Reference Properties" button.
18	In the Spatial Reference Properties window, CLICK "Select".
19	Open the Geographic Coordinate Systems folder.
20	Open the World folder.
21	Select "WGS 1984.prj".
22	CLICK "**Add**".
23	CLICK "**OK**". 
24	CLICK "**OK**" to run the Define Projection tool.
25	CLICK "**Close**" on the Define Projection progress window when the process is complete. **Note:** Adding the Numeric Size Column Starts Here. 
26	Right-click the hail layer in the Table of Contents.
27	CLICK "**Open Attribute Table**".
28	CLICK "Options" and "Add Field". 

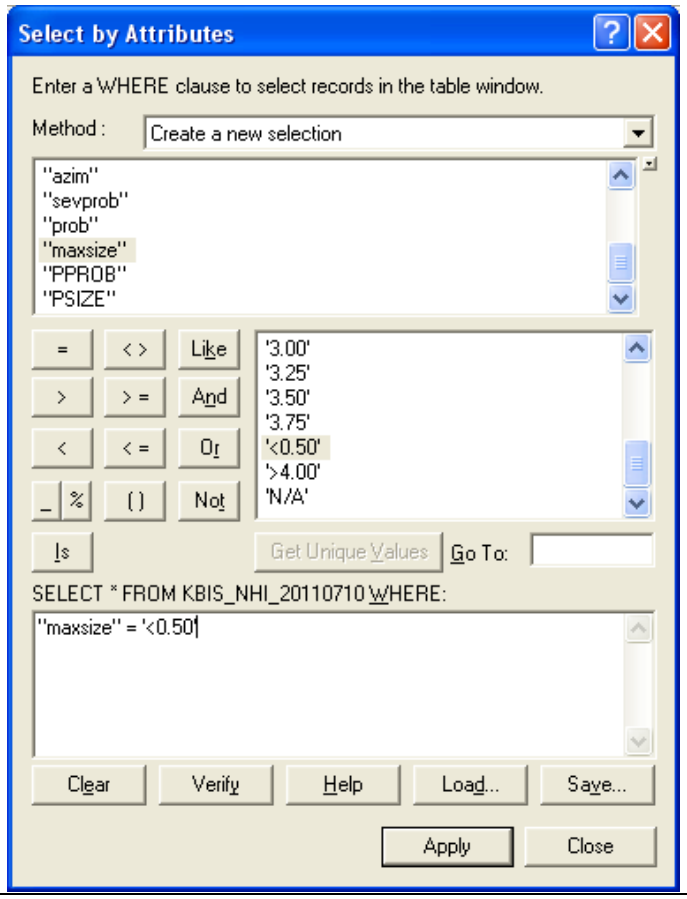
Obtaining Hail Data From Various Sources (Continued)

D View NCDC NEXRAD Hail Index Data With ArcMap (Continued)

Step	Instructions
29	In the **Add Field** window, ENTER "PSIZE" in the "Name" field.
30	Change the "Type" field to "Double".
31	Set the Precision to 4.
32	Set the Scale to 2. 
33	CLICK "**OK**".
34	Right-click the newly added "PSIZE" column and CLICK "Field Calculator". 
35	CLICK "**OK**" if warned about calculating values outside of an edit session. 

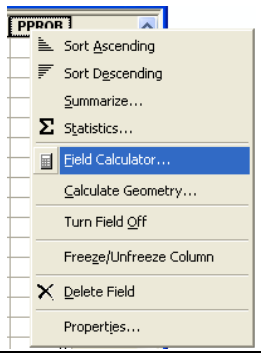
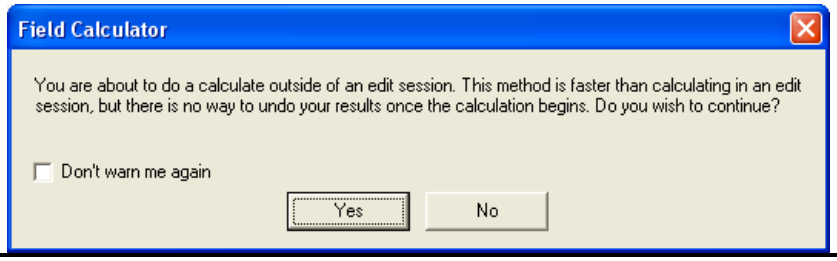
Obtaining Hail Data From Various Sources (Continued)

D View NCDC NEXRAD Hail Index Data With ArcMap (Continued)

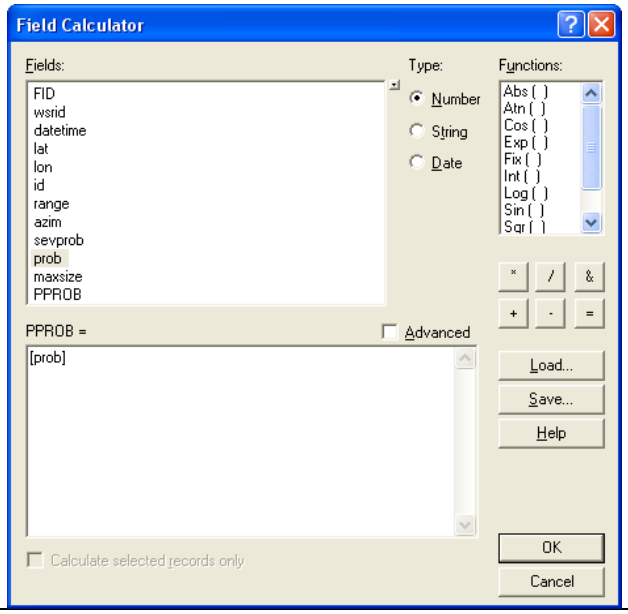
Step	Instructions
36	In the Field Calculator window, double-click on “maxsize”.
37	CLICK “**OK**”. **Note:** Nonnumeric values (e.g. “N/A”) in the “Probability” column will generate an error. CLICK “**Yes**” to continue calculating. 
38	In the Attribute Table, CLICK “Options” and “Select by Attributes”.
39	Double-click on “maxsize”.
40	CLICK “=”.
41	CLICK “**Get Unique Values**”.
42	From the unique values list, double-click on “<0.50”. 
43	CLICK “**Apply**”.

Obtaining Hail Data From Various Sources (Continued)

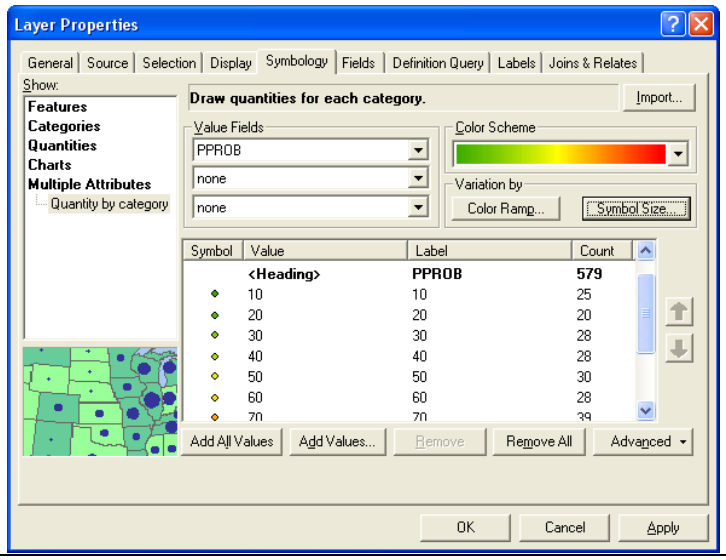
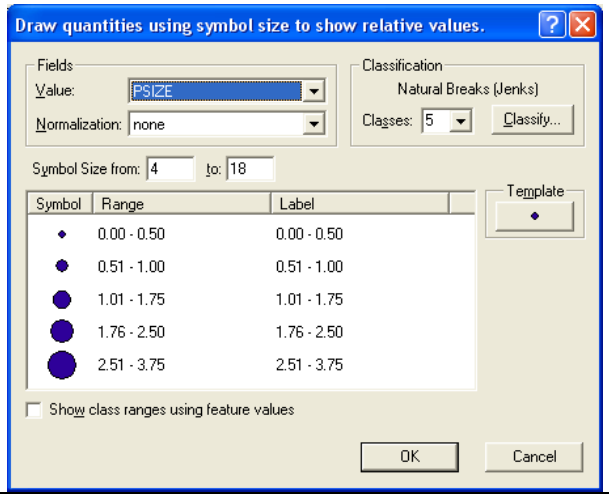
D View NCDC NEXRAD Hail Index Data With ArcMap (Continued)

Step	Instructions
44	Right-click the “PSIZE” column.
45	CLICK “Field Calculator”.
46	Set the new value to 0.25.
47	Ensure that “Calculate selected records only” is selected.
48	CLICK “**OK**”.
49	In the Attribute Table, CLICK “Options” and “Select by Attributes” again.
50	Change the query text to “maxsize” = ‘>4.00’.
51	CLICK “**Apply**”.
52	Right-click the “PSIZE” column.
53	CLICK “Field Calculator”.
54	Set the new value to 4.25.
55	Ensure that “Calculate selected records only” is selected.
56	CLICK “**OK**”.
57	Close the Attribute Table. **Note:** Next Steps Add the Numeric Probability Column.
58	Right-click the hail layer in the Table of Contents.
59	CLICK “**Open Attribute Table**”.
60	CLICK “Options” and “Add Field”.
61	In the Add Field window, ENTER “PPROB” in the “Name” field.
62	Change the “Type” field to “Short Integer”.
63	CLICK “**OK**”.
64	Right-click the newly added “PPROB” column and CLICK “Field Calculator”. 
65	CLICK “**OK**” if warned about calculating values outside of an edit session. 

D View NCDC NEXRAD Hail Index Data With ArcMap (Continued)

Step	Instructions
66	In the Field Calculator window, double-click on "**prob**". 
67	CLICK "**OK**".
68	Non numeric values (e.g. "N/A") in the "Probability" column will generate an error. CLICK "**Yes**" to continue calculating. 
69	After the calculation is complete, close the Attribute Table. **Notes:** Create symbology to display size and probability. Points can be symbolized by size and color to display the relative size and probability of hail at a given location. Points represent the size of the hail, not the areal extent of the hail event. Create symbology to display size and probability.
70	In ArcMap, right-click the NHI Hail layer in the Table of Contents.
71	CLICK "Properties".
72	Click the "Definition Query" tab.
73	Set the Definition Query to "pprob" <> 0.
74	CLICK "**Apply**".
75	Click the "Symbology" tab.
76	CLICK "**Multiple Attributes**".
77	Set the first "Value Fields" drop-down menu to "PPROB".

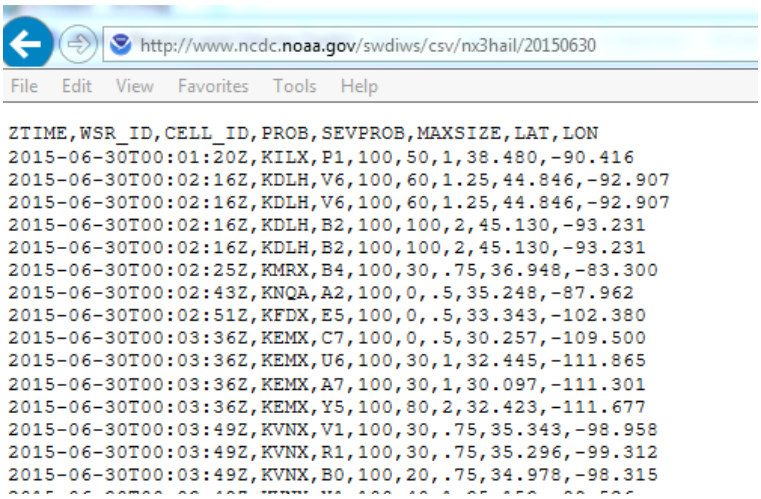
D View NCDC NEXRAD Hail Index Data With ArcMap (Continued)

Step	Instructions
78	CLICK "**Add All Values**".
79	Set the Color Scheme to Red to Green (1). **Note:** To switch to the name of the color scheme instead of the graphic representation, right-click the color gradient and CLICK "Graphic View".
80	The color scheme should show 10 percent as green and 100 percent as red. If the colors are backwards, right-click the first value and CLICK "Flip Symbols". 
81	Under "Variation", CLICK "Symbol Size".
82	Set the "Value" field to "PSIZE". 
83	CLICK "**OK**".
84	CLICK "**OK**" to apply the changes and close the Properties window. **Note:** Files can be combined the MESAH Data for additional Analysis.

Obtaining Hail Data From Various Sources (Continued)

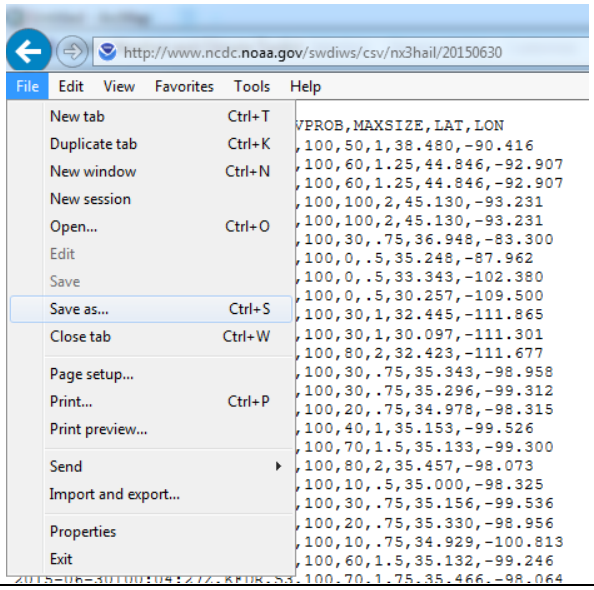
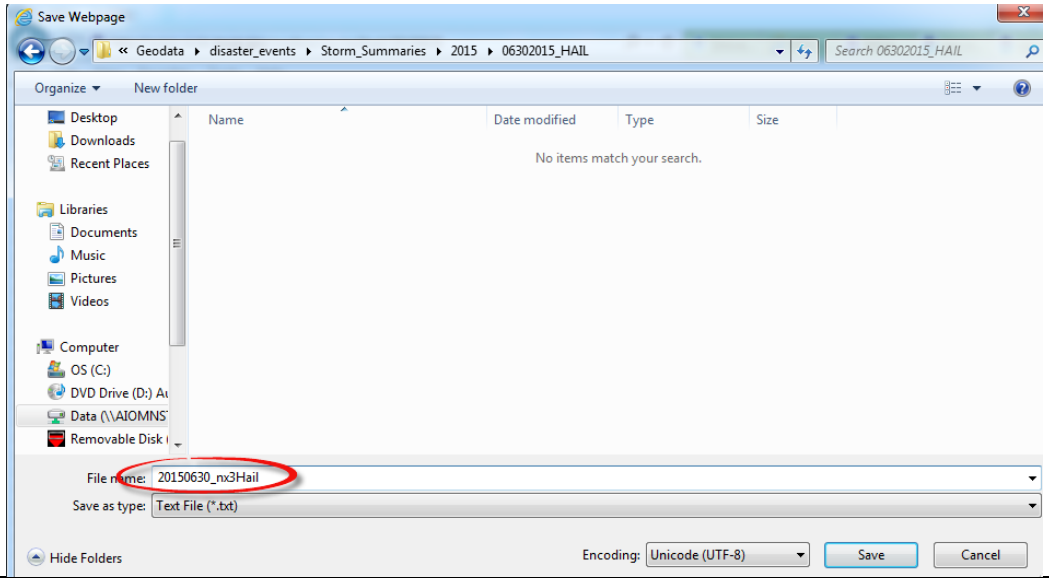
E Download Severe Weather Data Inventory Data

These instructions download severe weather data inventory data.

Step	Instructions
1	Open Internet Explorer.
2	Go to **https://www.ncdc.noaa.gov/swdiws/**. **Note:** This is a REST Web Services that will use common URL syntax to query the SWDI database for hail ('nx3hail'-(Point) NEXRAD Level-3 Hail Signatures. These web services use common URL syntax to query the SWDI database. The basic syntax is **http://www.ncdc.noaa.gov/swdiws/{outputFormat}/{dataset}/{dateRange}**.
3	The entered string for hail should look like **http://www.ncdc.noaa.gov/swdiws/{outputFormat}/{dataset}/{dateRange}**; such as, **http://www.ncdc.noaa.gov/swdiws/csv/nx3hail/20150630**. **Examples:** 20050601:20050607 - returns all data from June 1, 2005, through June 6th, 2005. 200506011030:200506011430 - returns all data from June 1, 2005, between 10:30 and 14:30 GMT. **Note:** This can be copied and pasted into the URL since this is not a website but a portal to query NEXRAD Weather data.
4	Data will display.  **Note:** This data pull is for all hail for an entire date for all NEXRAD sites.

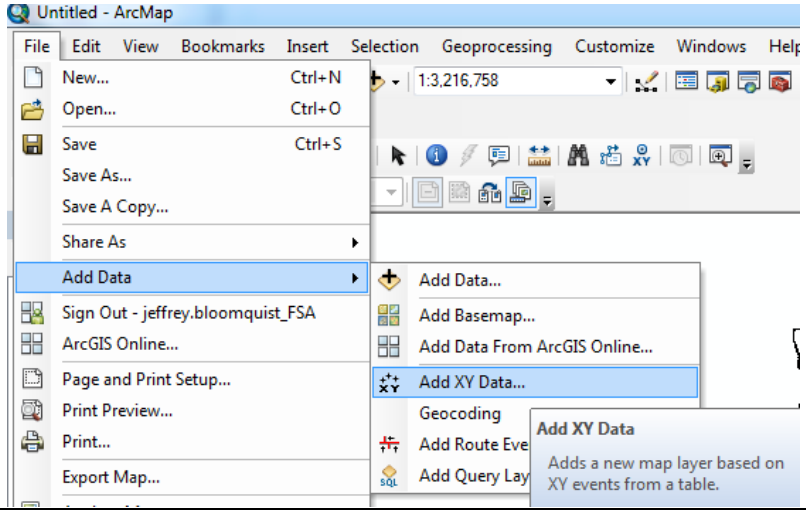
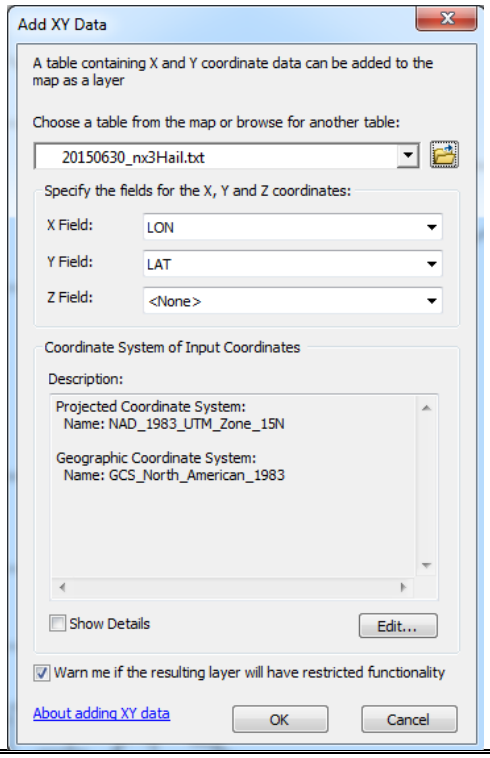
Obtaining Hail Data From Various Sources (Continued)

E Download Severe Weather Data Inventory Data (Continued)

Step	Instructions
5	CLICK “File” and “Save as”. 
6	Save data to F:\geodata\disaster_events\Storm_Summaries\<year>\<eventDate>. 
7	Name file with date and add_nx3Hail at the end of the name for later reference.
8	CLICK “**Save**”.
9	Open ArcMap.

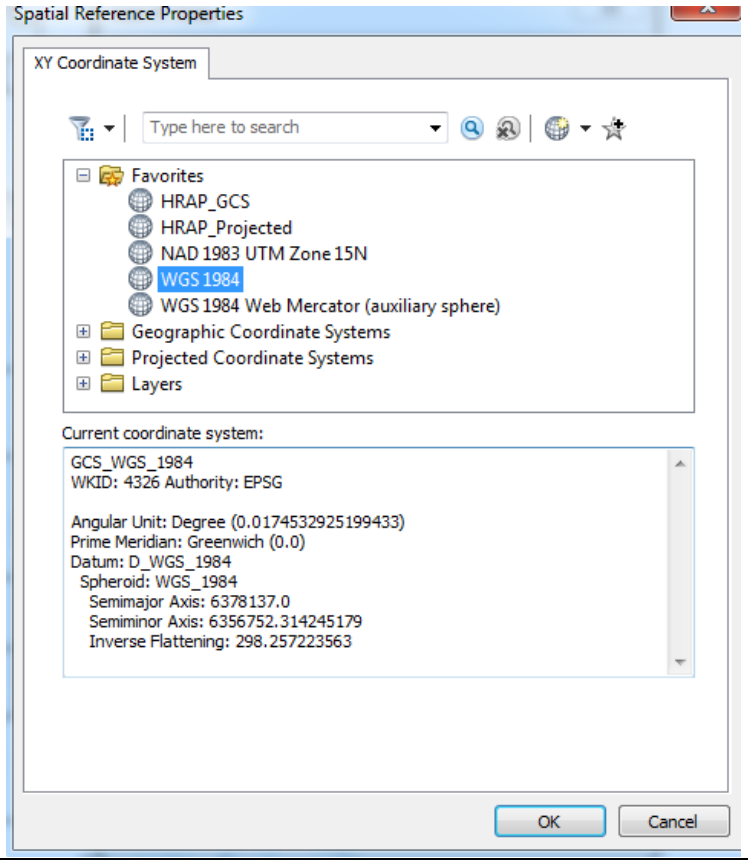
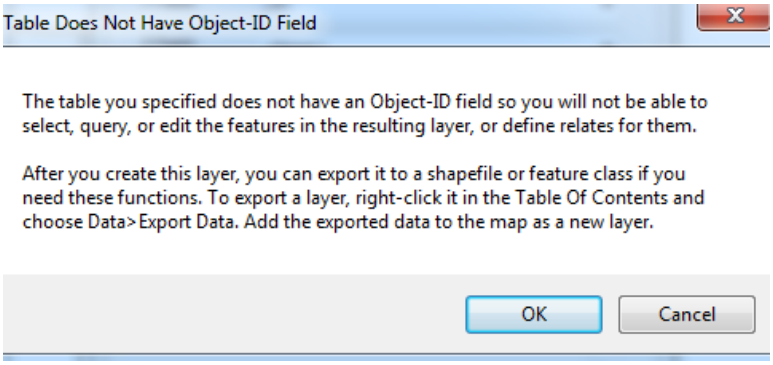
Obtaining Hail Data From Various Sources (Continued)

E Download Severe Weather Data Inventory Data (Continued)

Step	Instructions
10	Navigate to “File”, “Add Data”, and “Add XY Data”. 
11	Navigate to the location of the data F:\geodata\disaster_events\Storm_Summaries\<year>\<eventDate>. 

Obtaining Hail Data From Various Sources (Continued)

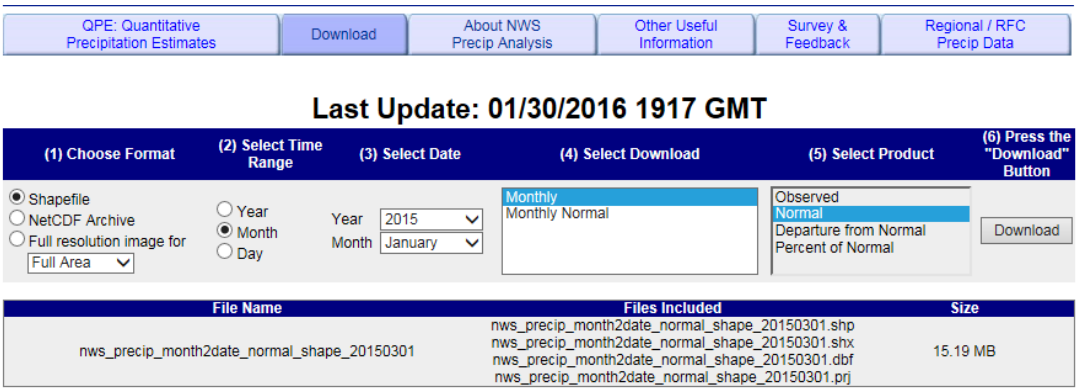
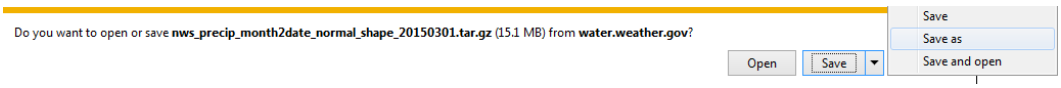
E Download Severe Weather Data Inventory Data (Continued)

Step	Instructions
12	Edit the Projection System. 
13	CLICK "**OK**".
14	CLICK "**OK**" on the "Table Does Not Have Object-ID Field" box.  **Note:** See NCDC NEXRAD Hail section to further manipulate files.

AHPS for Precipitation

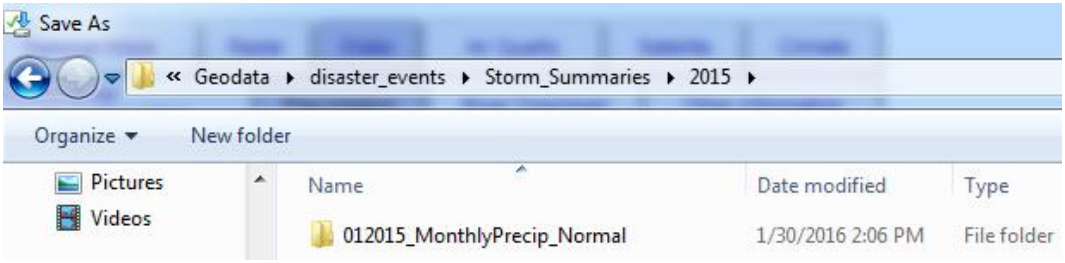
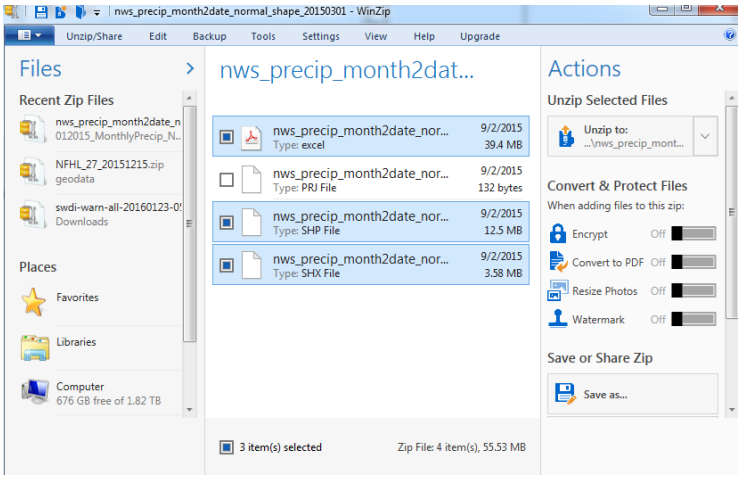
A Instructions for Downloading AHPS Data

These instructions identify the steps managing the file structure.

Step	Instructions
1	Navigate to **http://water.weather.gov/precip/download.php**.
2	Click the "Download" tab. 
3	Click the "Shapefile" radio button.
4	Select the time range: "Year", "Month", or "Day".
5	Select the date.
6	Select the download needed.
7	Select the product needed.
8	CLICK "Download".
9	Save the selected data file. 

AHPS for Precipitation (Continued)

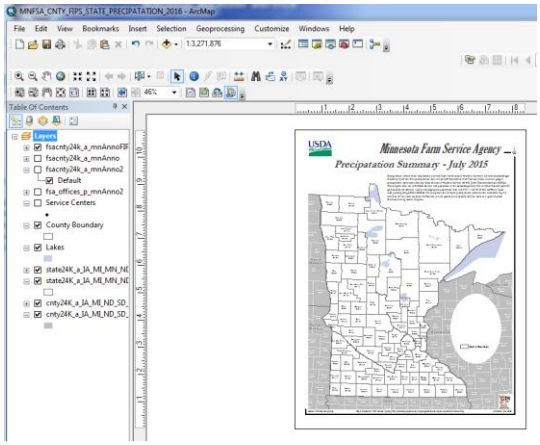
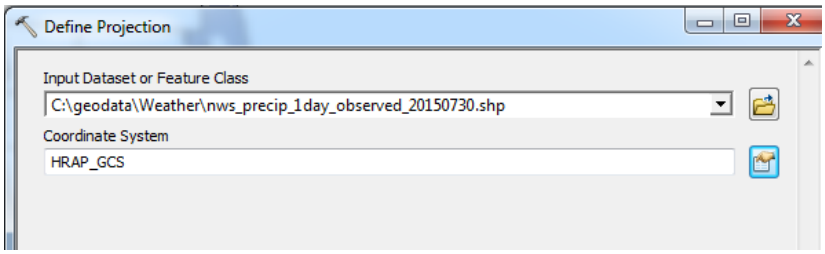
A Instructions for Downloading AHPS Data (Continued)

Step	Instructions
10	Files should be saved to C:\geodata\Disaster_Events\Storm_Summaries\<year>\<subfolder>.  **Note:** Files should be named with the date the properly identifies the data download and type of product so that it is clear what data is available or already downloaded. These files should only be retained on the State Office F Drive. The type of subfolder will vary based on what precipitation data is required.
11	Unzip the .tar file using WinZip (double-click the file).
12	Save the selected data file to the proper folder under C:\geodata\Disaster_Events\Storm_Summaries\<year>\<subfolder>. **Note:** Only extract the .dbf, .shx and .shp files – Do not copy over the .prj.  **Note:** Processing files on the C:\ drive for precipitation allows for faster processing. Files can be moved to the F:\ drive when complete. As a best practice the folder structure (not all the files) can be replicated on the C:\ drive for Geodata.

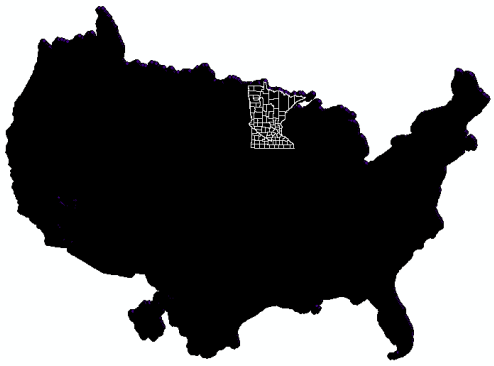
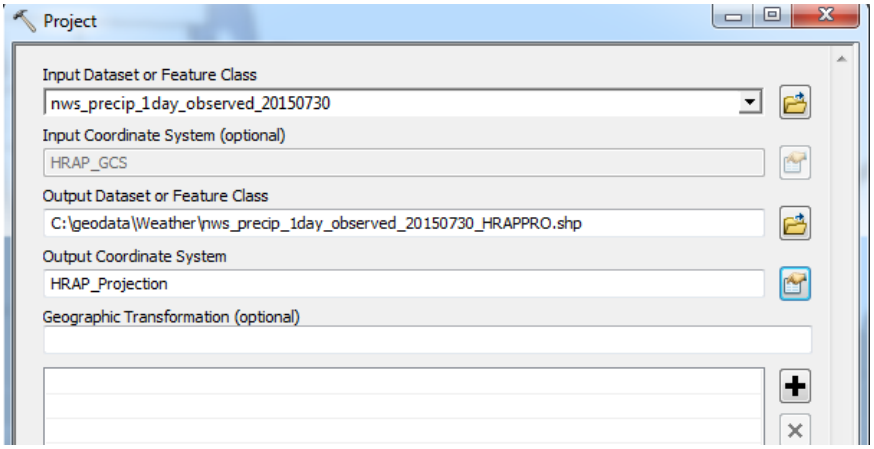
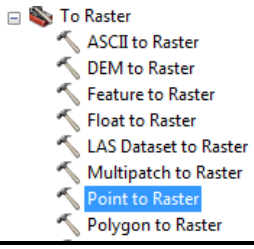
AHPS for Precipitation (Continued)

B Instructions for ArcMap Using AHPS Data

These instructions are for ArcMap using AHPS data.

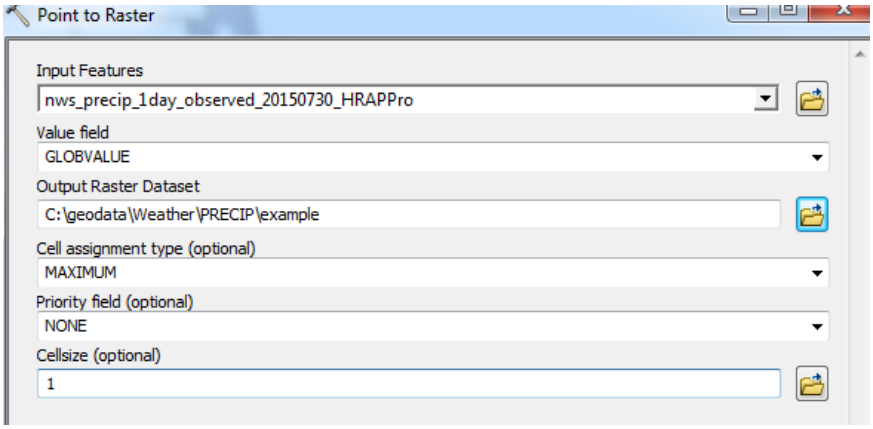
Step	Instructions
1	Open ArcMap and add a county boundary layer.  **Note:** As a best practice GIS Specialists should create a starter map template when working with the precipitation data from the AHPS data. Data can always be moved into a SITREP map document if needed but these maps are often just used for information summaries for precipitation received in a State.
2	Open the Projections and Transformations toolbox and CLICK "Define Projection".  **Note:** HRAP_GCS projection can be downloaded from the National GIS Specialist SharePoint site. The Projections must be imported into ArcMap and will display in the favorites.

B Instructions for ArcMap Using AHPS Data (Continued)

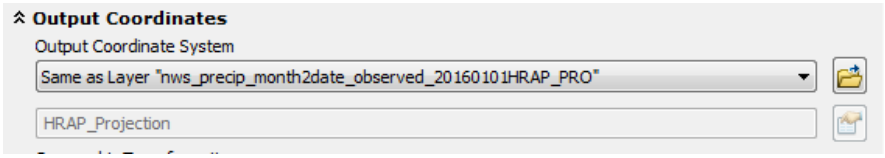
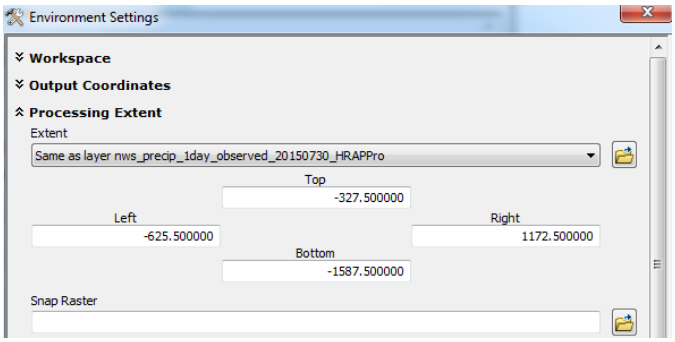
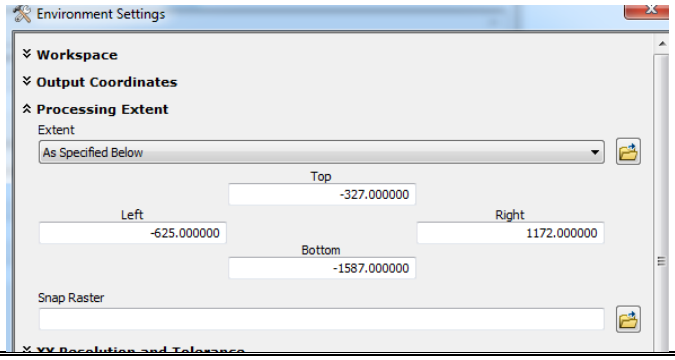
Step	Instructions
3	The AHPS data is added into ArcMap. 
4	Open the Projections and Transformations toolbox and CLICK "**Project**".  **Note:** HRAP_Projection projection can be downloaded from the National GIS Specialist SharePoint site. The Projections must be imported into ArcMap and will display in the favorites.
5	Open ArcToolbox and CLICK "Conversion Tools". 

AHPS for Precipitation (Continued)

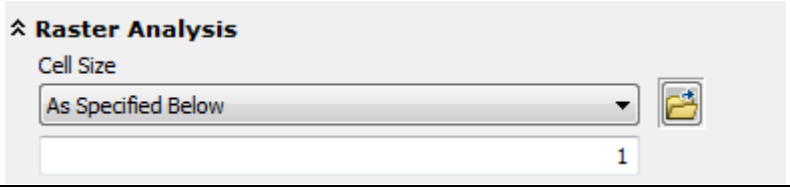
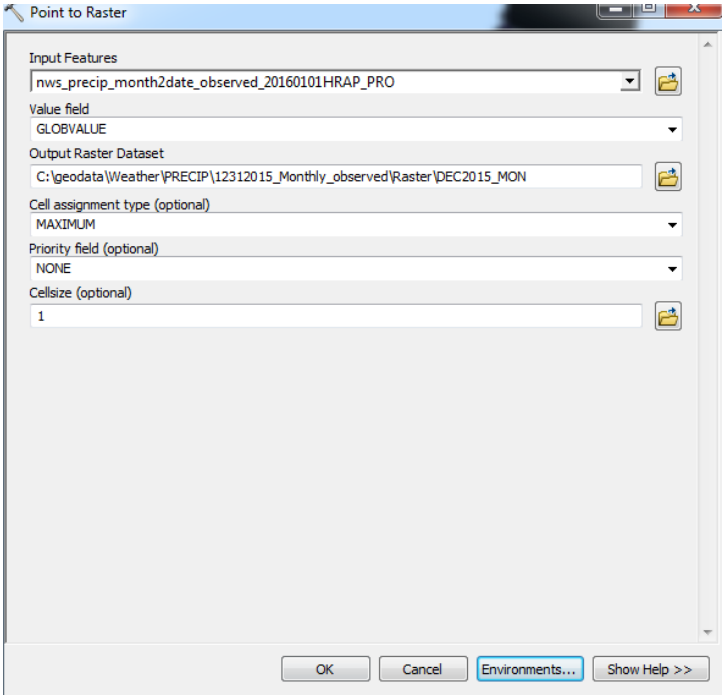
B Instructions for ArcMap Using AHPS Data (Continued)

Step	Instructions
6	Set variables to: • "GLOBVALUE" in the "Value" field • the accepted default name in the "Output Raster Dataset" field accept • "MAXIMUM" in the "Cell assignment type" field • "1" in the "Cellsize" field.  **Notes:** Output Raster files should initially be created on the C:\Geodata\Disaster_events| folder. These are large datasets and processing them over the network only adds to the time. When the files have been completed they can be moved to the same folder where the data is stored on the F: Drive in the State Office. Users may use a subfolder for the raster data to keep the files in one place. Data naming is shortened to under ten characters for Raster files in ArcMap. Make file names descriptive so they can be reused and it's clear what the files represent. When creating these files setting these up to run overnight or as a background process is highly recommended processing time can take some time.

B Instructions for ArcMap Using AHPS Data (Continued)

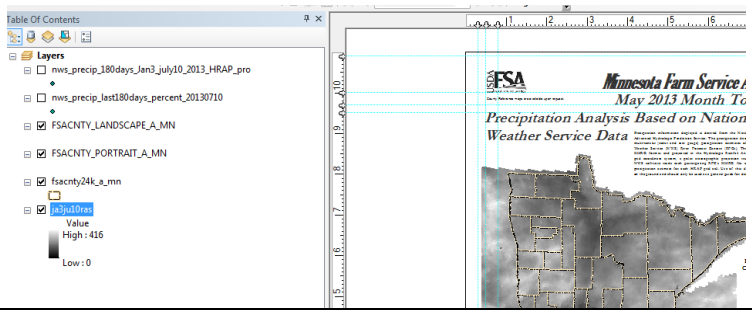
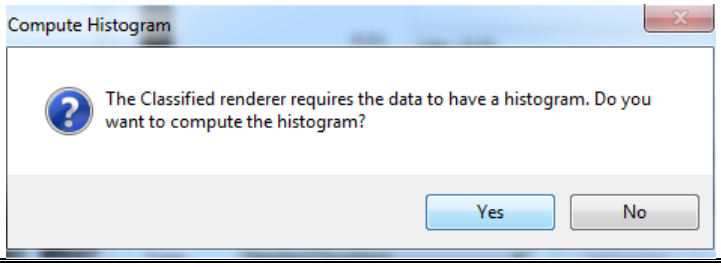
Step	Instructions
7	CLICK "Environment Settings" and then set "Output Coordinates".  **Note:** Ensure to select the HRAP Projection File for this step.
8	CLICK "Environment Settings" and then set "Processing Extent" to the file projected to HRAP Projection.  **Note:** If .500000 is not showing up repeat the projection process and ensure that the data is first defined and then projected.
9	Now modify the Extent Values be carefully removing the .5 portion of the filed leaving the original integer values. 

B Instructions for ArcMap Using AHPS Data (Continued)

Step	Instructions
10	Navigate to Raster Analysis Settings, select “As Specifed Below”, and set to “1”. 
11	CLICK “**OK**” on both windows to process the Point to Raster Tool.  **Note:** This process can take up to 10 minutes. 

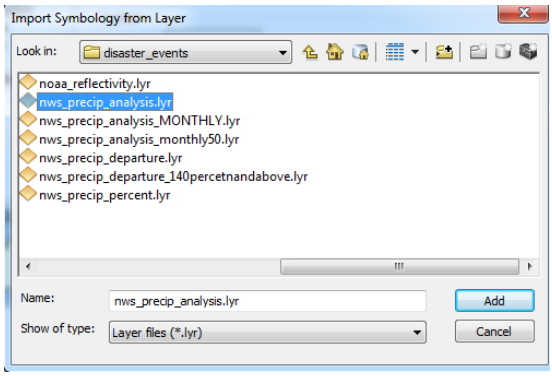
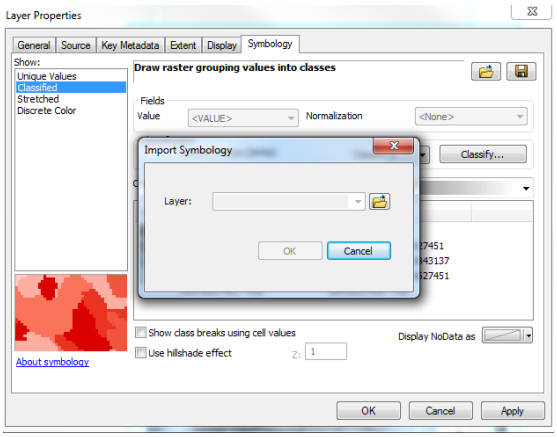
AHPS for Precipitation (Continued)

B Instructions for ArcMap Using AHPS Data (Continued)

Step	Instructions
12	Uncheck the point data set for precipatation data.
13	Right-click the raster file layer added. 
14	CLICK “Symbology” and then “Classified”.
15	CLICK “Yes”. 

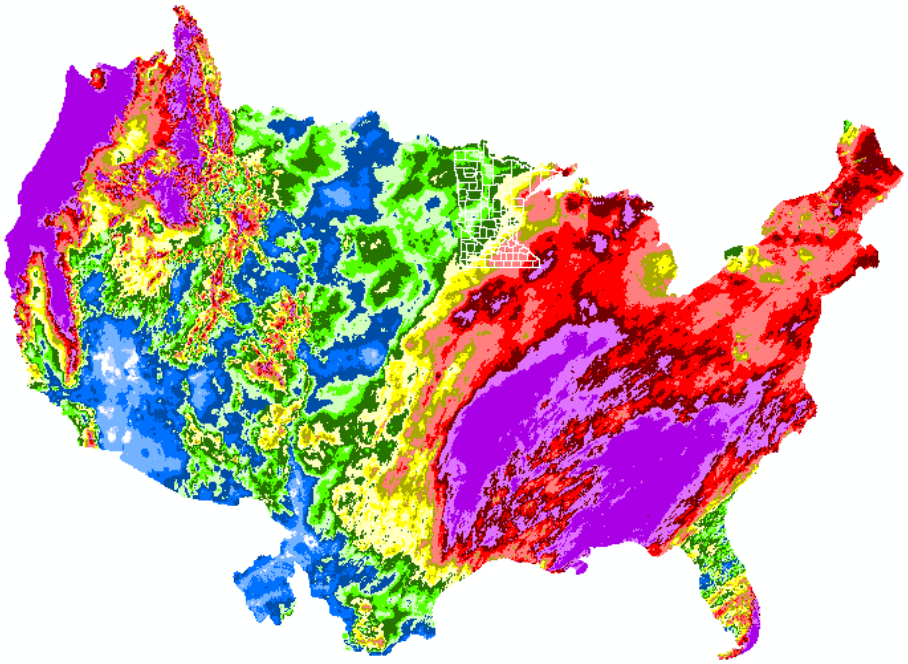
AHPS for Precipitation (Continued)

B Instructions for ArcMap Using AHPS Data (Continued)

Step	Instructions
16	Import the necessary precipation layer files.   **Note:** Standardized precipitation layer files are available on the National GIS Specialist SharePoint site under Heavy Precipitation. These can be adjusted to address state normal or differences between wet to dry years.

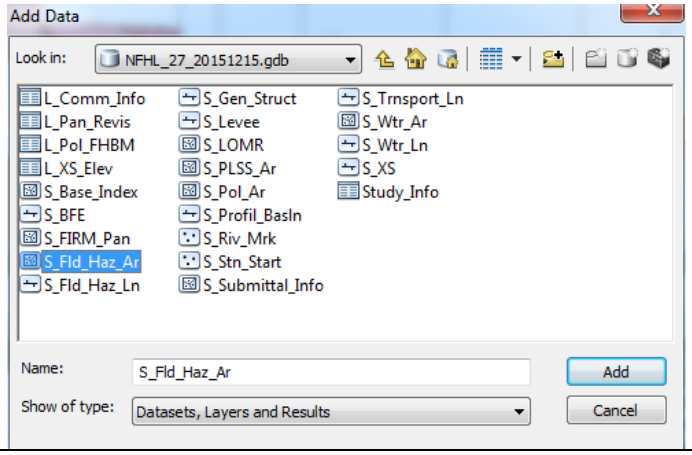
AHPS for Precipitation (Continued)

B Instructions for ArcMap Using AHPS Data (Continued)

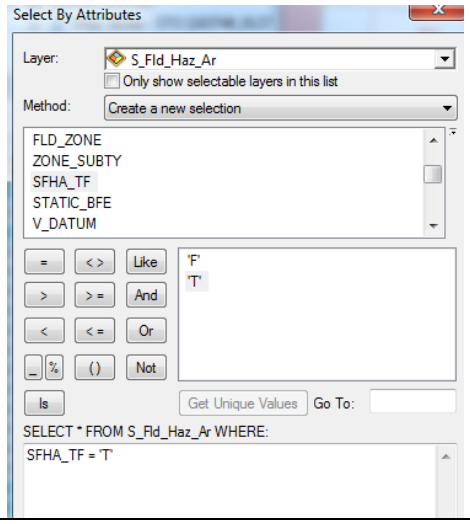
Step	Instructions
17	Create a state level map or use data driven pages to create county level views. 
18	Add Standard Map Text related to Precipitation: Precipitation information displayed is derived from the NWS's AHPS. The precipitation data are quality-controlled, multi-sensor (radar and rain gauge) precipitation estimates obtained from NWS River Forecast Centers. The original data are in XMRG format and projected in the Hydrologic Rainfall Analysis Project grid coordinate system, a polar stereographic projection true at 60°N / 105°W. NWS software reads each participating RFC's XMRG file and grabs the 24-hour precipitation estimate for each HRAP grid cell. Use of this data requires verification on the ground and should only be used as a general guide for determining storm impacts. USDA FSA maps are for FSA program administration only. This map provides basic information related to issues relevant to FSA.

Creating FEMA 100-Year Flood Shapefile for TERRA

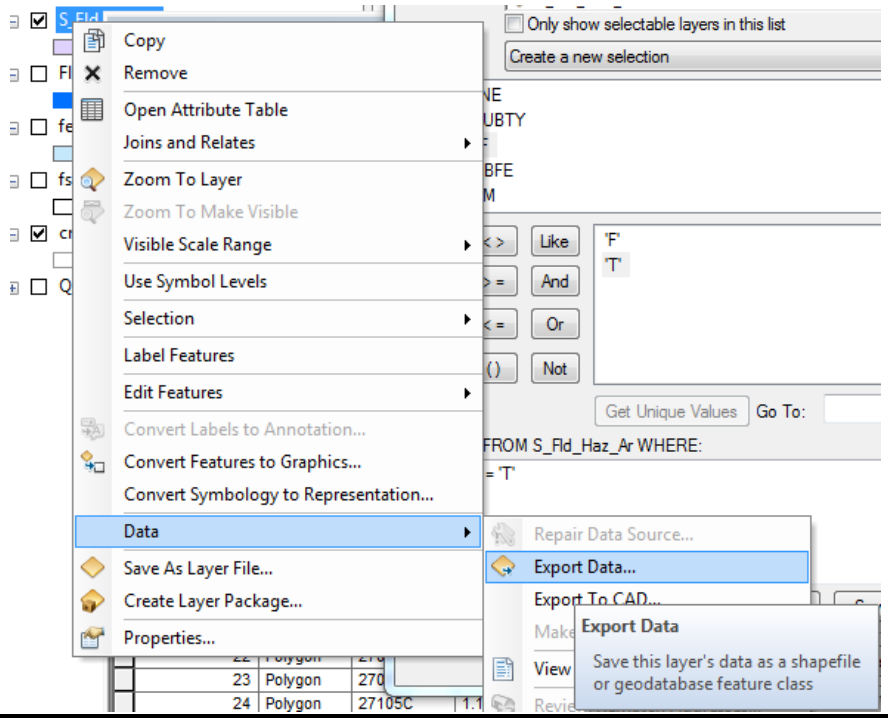
The following instructions are required to create a custom floodplain shapefile within the TERRA Tool.

Step	Instructions
1	In ArcMap navigate to the F:\Geodata\hazard_site folder to access the most current NHFL file geodatabase.
2	Add County Boundary layer into ArcMap.
3	Add the feature class S_Fld_Haz_Ar from the NHFL_<st>_<date> file geodatabase. 
4	CLICK “Selection”.
5	CLICK “Select by Attributes”.

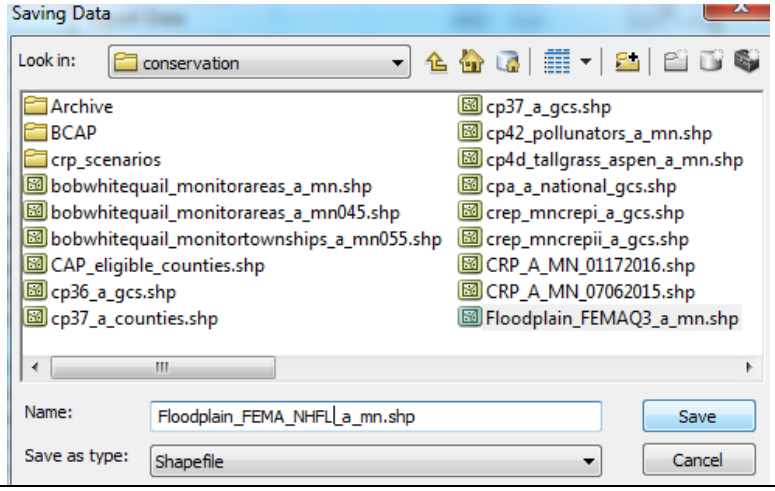
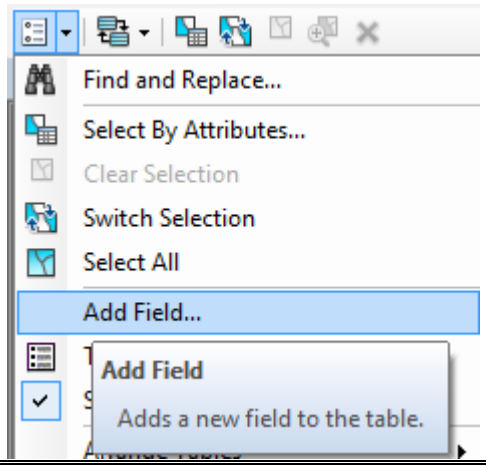
Creating FEMA 100-Year Flood Shapefile for TERRA (Continued)

Step	Instructions
6	Select the 100-year floodplain areas by using the query: SFHA_TF = 'T'. **Note:** "SFHA" (Special flood hazard area) queries out the 100-year flood areas for TERRA. 
7	CLICK "**OK**".

Creating FEMA 100-Year Flood Shapefile for TERRA (Continued)

Step	Instructions
8	CLICK "File", "Data", and "Export Data". 

Creating FEMA 100-Year Flood Shapefile for TERRA (Continued)

Step	Instructions
9	Navigate to F:\Geodata\Conservation and save the file as floodplain_FEMA_NHFL_a_<state>.shp. 
10	CLICK "**OK**".
11	Add the shapefile to ArcMap.
12	Open the Attribute Table of the Floodplain_FEMA_NHFL_a_<st>.shp.
13	Add the 4 required fields used by TERRA. 

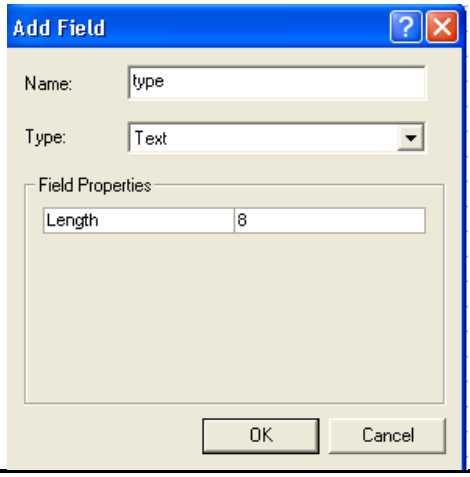
Creating FEMA 100-Year Flood Shapefile for TERRA (Continued)

Step	Instructions
13 (Cntd)	**Note:** The following screen shots are provided to clarify how each of the 4 new fields in the Attribute Table need to be defined.









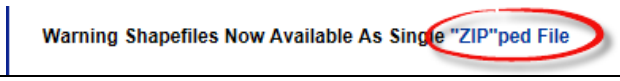
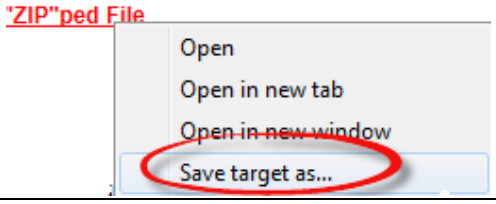
Creating FEMA 100-Year Flood Shapefile for TERRA (Continued)

Step	Instructions
13 (Cntd)	<table><tr><th>state</th><th>name</th><th>Type</th><th>code</th></tr><tr><td>MN</td><td>100 YEAR Flood Plain</td><td>FLOODP</td><td>MN_FLOOD</td></tr><tr><td>MN</td><td>100 YEAR Flood Plain</td><td>FLOODP</td><td>MN_FLOOD</td></tr><tr><td>MN</td><td>100 YEAR Flood Plain</td><td>FLOODP</td><td>MN_FLOOD</td></tr><tr><td>MN</td><td>100 YEAR Flood Plain</td><td>FLOODP</td><td>MN_FLOOD</td></tr><tr><td>MN</td><td>100 YEAR Flood Plain</td><td>FLOODP</td><td>MN_FLOOD</td></tr><tr><td>MN</td><td>100 YEAR Flood Plain</td><td>FLOODP</td><td>MN_FLOOD</td></tr><tr><td>MN</td><td>100 YEAR Flood Plain</td><td>FLOODP</td><td>MN_FLOOD</td></tr></table>
14	Project the file as needed for the F:\ drive to the dominate UTM zone.
15	Reproject the file for TERRA using GCS. • Output Coordinate System is GCS from NAD83. • Transformation is NAD_1983_To_WGS_1984_5 for Conus. **Note:** Shapefile for TERRA on the K:\ drive should be named Floodplain_FEMA_NHFL_a_<st>_gcs or floodplain_FEMAQ3_a_<st>_gcs.
16	Update files on the K:\ drive and F:\ drive as updates occur.
17	Coordinate with the state government to keep current with changes to this dataset as they can occur yearly, bi-annually or monthly.

Using National Warning GIS Shapefiles/AGOL and Archives

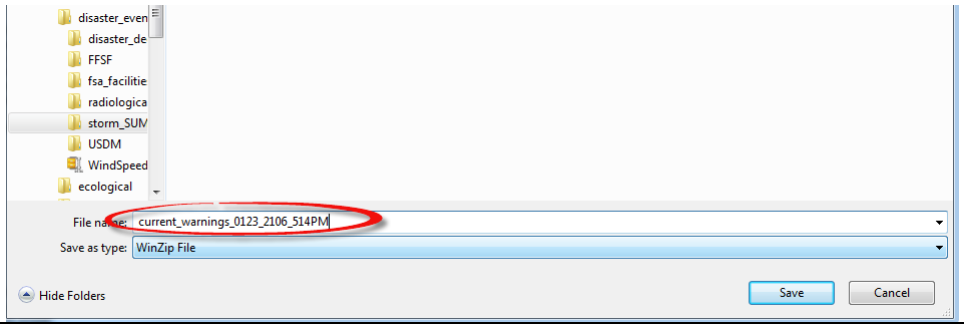
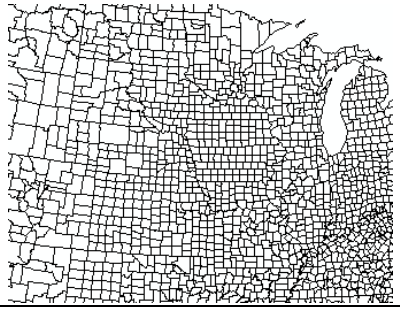
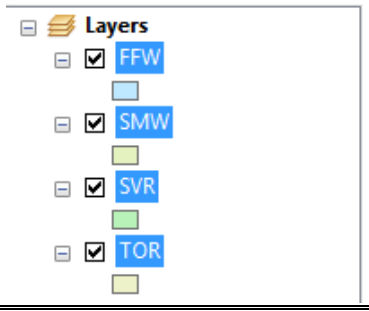
A Instructions for Short-Term Weather Warning Shapefile for Most Current Available

The current daily shapefiles are available at **http://www.nws.noaa.gov/regsci/gis/shapefiles/**. These are only the most current shapefiles, so if something is needed for a past day, see SWDI in this document.

Step	Instructions
1	Navigate to: http://www.nws.noaa.gov/regsci/gis/shapefiles/. 
2	Right-click the **"ZIP"ped** file. 
3	CLICK "Save target as". 
4	Navigate to F:\Geodata\disaster_events\storm_SUMMARIES\<YEAR>\<EventDate>.

Using National Warning GIS Shapefiles/AGOL and Archives (Continued)

A Instructions for Short-Term Weather Warning Shapefile for Most Current Available (Continued)

Step	Instructions
5	Save with a Julian Date and add time file was taken from. **Example:** current_warnings_20160124_1326. 
6	Unzip File from F:\Geodata\disaster_events\storm_SUMMARIES\<year>\<eventdate>.
7	Open ArcMap Desktop.
8	Add a State or County Boundary file for reference. 
9	Add the Flash Flood Warning (FFW), Special Marine Warning (SMW), Severe Thunder Storm Warning (SVR), and Tornado Warning (TOR). 

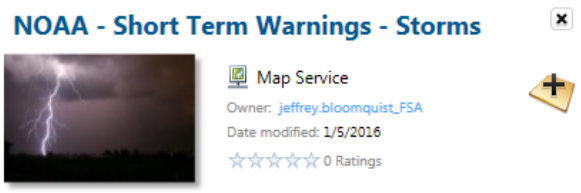
Using National Warning GIS Shapefiles/AGOL and Archives (Continued)

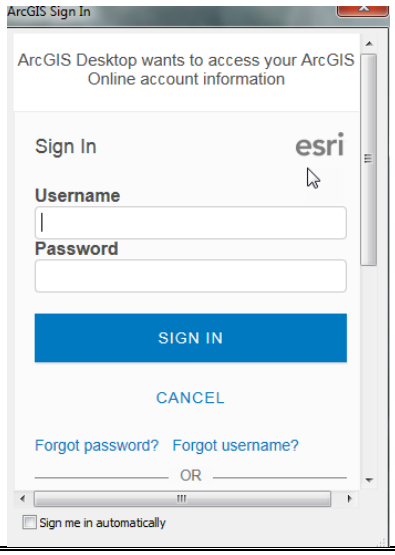
A Instructions for Short-Term Weather Warning Shapefile for Most Current Available (Continued)

Step	Instructions
10	Add most current version of Crop Data to query possible damage impacts based.
11	Add Service Center Locations for proximity analysis. **Note:** This process is for working in real-time based on current conditions this may not always be practical but can provide up to the minute information in an incident command center for very large storms that are being tracked.

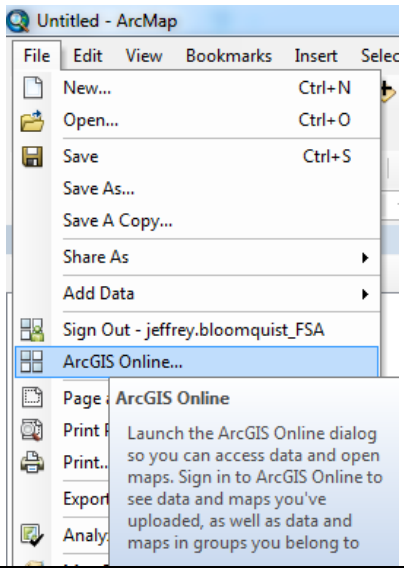
B Instructions for AGOL Short-Term Weather Warning

AGOL Access can be found at (must be logged into account using Desktop ArcMap).

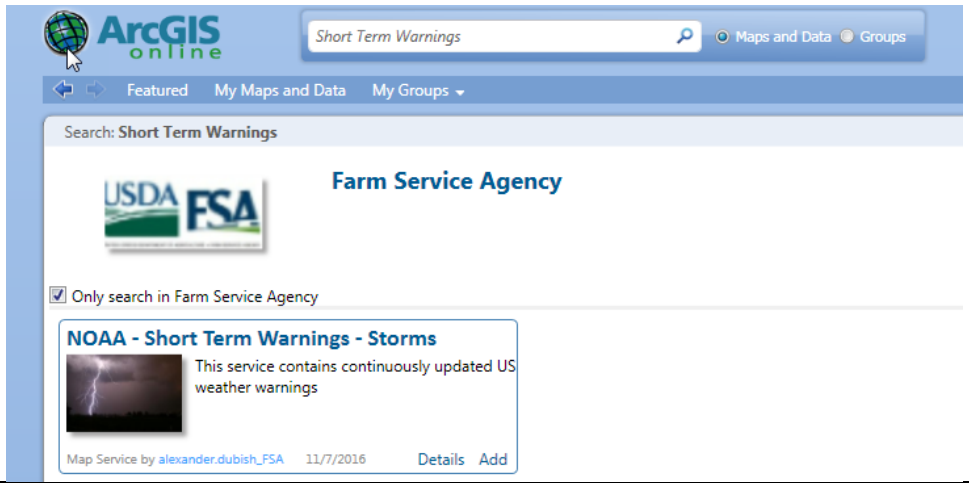
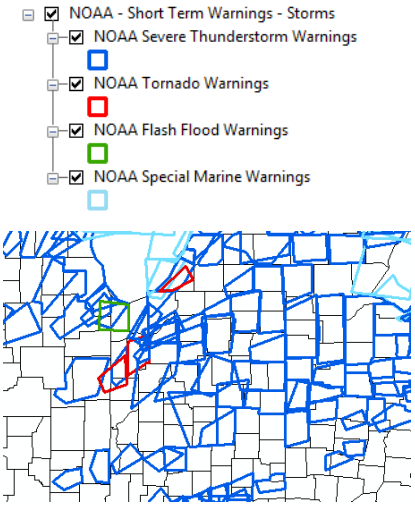


Step	Instructions
1	From ArcMap Desktop, sign into AGOL. 

B Instructions for AGOL Short-Term Weather Warning (Continued)

Step	Instructions
2	CLICK "File" and "ArcGIS Online". This will then prompt the user to sign in to AGOL. 
3	Search for "Short Term Warnings". 

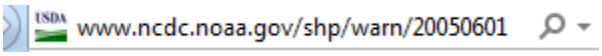
B Instructions for AGOL Short-Term Weather Warning (Continued)

Step	Instructions
4	Shared Warning Services will display. 
5	CLICK "**Add**" for the NOAA – Short Term Warnings - Storms.
6	The real time data is added to ArcMap.  **Note:** This is real-time data but files will change and information is not preserved. This is viewing only option.

C Instructions for SWDI Short-Term Weather Warning

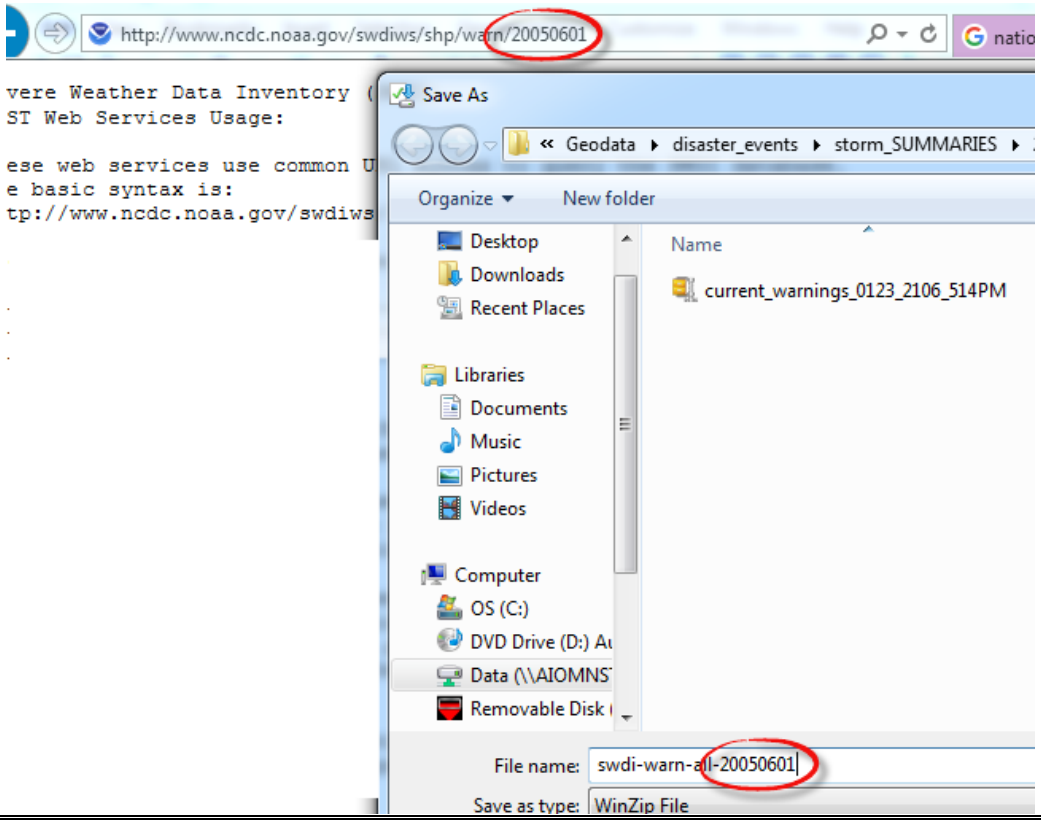
Warning Shapefile are archived by Date and can be accessed at the Severe Weather Data Inventory (SWDI). This is a REST Web Service Usage site see the following instructions.

Note: Users will need to know the dates of the range of the storm to get accurate information. Be as precise as possible, as this will impact the results received. See Storm reports submitted by the County Offices and NWS for detailed time/event/duration information.

Step	Instructions
1	Open Internet Explorer and go to **http://www.ncdc.noaa.gov/swdiws/shp/warn/'yyyymmdd'**. **Note:** The basic syntax tax is **http://www.ncdc.noaa.gov/swdiws/{outputFormat}/{dataset}/{dateRange}**.  **Note:** The following syntax is used to define date ranges. These values are substituted for {dateRange} in the URL syntax example. Range syntax is 'startDate:endDate' or special option of 'periodOfRecord'. **Note:** StartDate is inclusive and endDate is exclusive. All dates and times are in GMT. The current limit of the date range size is 1 year. Such as: • 'yyyymmdd' • 'yyyymmdd:yyyymmdd" • 'yyyymmddhh:yyyymmddhh' or 'yyyymmddhhmi:yyyymmddhhmi'. **Examples:** 20050601:20050607 - returns all data from June 1, 2005, through June 6, 2005. 200506011030:200506011430 - returns all data from June 1, 2005, between 10:30 and 14:30 GMT. The special option of 'periodOfRecord' returns the beginning and ending dates for the specified dataset.
2	The operation request will retrieve an archived file for the short-term warnings in shapefile format.

Using National Warning GIS Shapefiles/AGOL and Archives (Continued)

C Instructions for SWDI Short-Term Weather Warning (Continued)

Step	Instructions
3	Save the shapefile to F:\Geodata\disaster_events\storm_SUMMARIES\<year>\<month>. **Note:** The file date will need to be renamed retain the SWDI-WARN-ALL naming convention. 
4	Rename the Zip file with the date used in the syntax query. 

Using National Warning GIS Shapefiles/AGOL and Archives (Continued)

C Instructions for SWDI Short-Term Weather Warning (Continued)

Step	Instructions
5	Unzip the files. **Note:** If no data is in the Zip file an error message will display.
6	Add Files to ArcMap.
7	Add most current version of Crop Data to query possible damage impacts based.
8	Add Service Center Locations for proximity analysis. **Note:** This process is for working with storm data after the event to start to identify areas of impact. These files are meant to serve as a starting point for initial state or national level damage assessment areas.