Iowa State University

Agricultural Conservation Planning Framework: Land Use and Field Boundary Development

making crop boundaries great again ...

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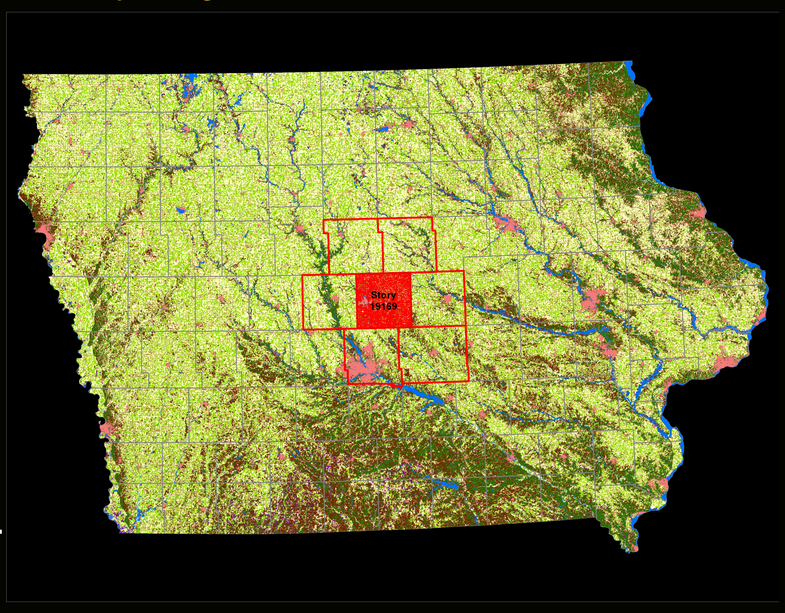
Introduction

The Agricultural Conservation Planning Framework (ACPF) is a planning framework with a database to facilitate field-level and watershed-scale analyses, and ArcGIS toolbox with Python scripts to identify specific options for placement of conservation practices.

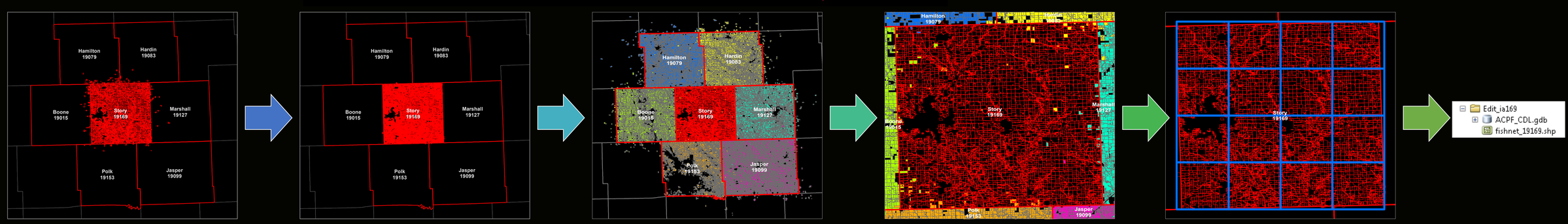
The ACPF requires mapping and updating crop and field boundaries for the area of focus. We describe the process to edit publicly available pre-2008 USDA Farm Service Agency Common Land Unit (CLU) field boundary data to provide a field boundary-land use input coverage for use in the ACPF.

The structure of the ACPF database, which contains land use, crop history, and soils information is available for download for 6091 HUC12 watersheds located across Iowa, Illinois, Minnesota, and parts of Kansas, Missouri, Nebraska, and Wisconsin and comprises information on 2.74 x 10^6 agricultural fields.



1. Pre-processing Common Land Units

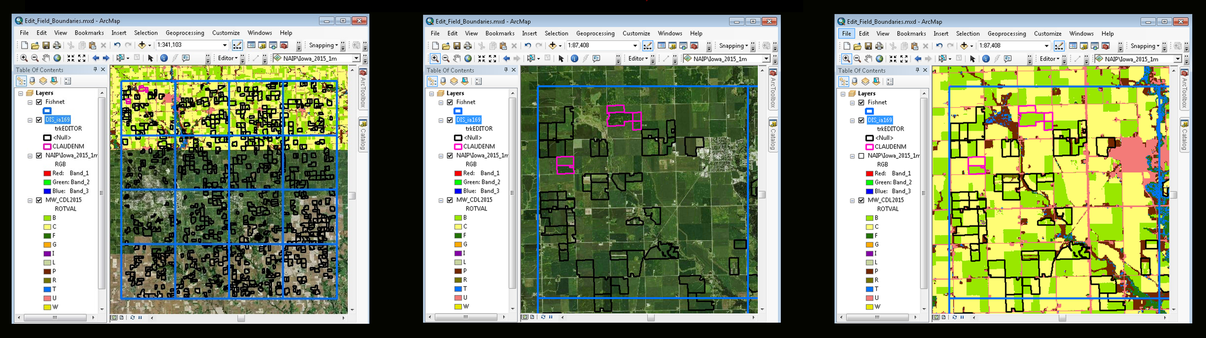
Clean Up Raw CLU Data → Working With Neighboring Counties → Append → Create Fishnet → Build Geodatabase



2. Editing Field Boundaries

Data Layers → Field Boundary Editing → Geoprocessing Tools

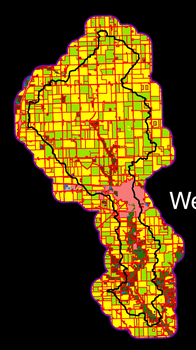
- Fishnet shapefile
- County feature class (2008 DIS_ia169)
- 1-meter aerial photograph (2015 NAIP)
- Cropland Data Layer (2015 CDL)



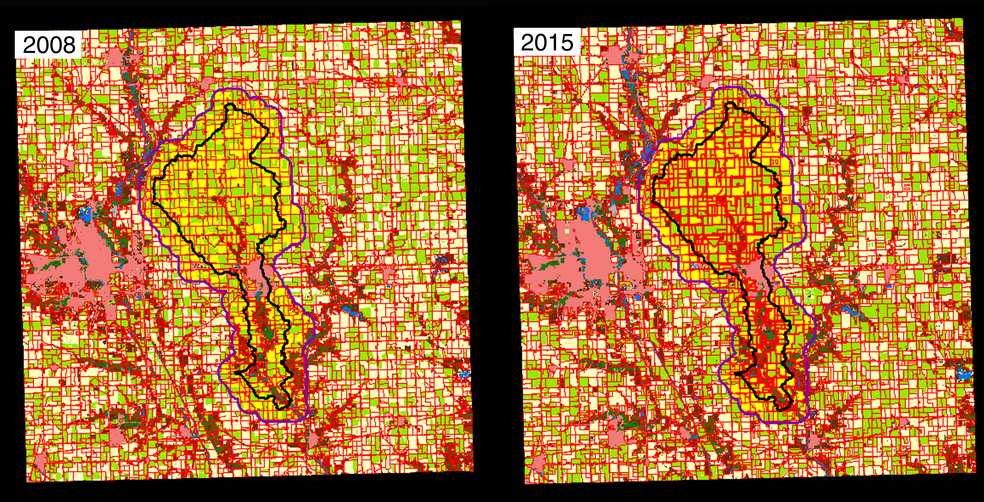
- Zonal Statistics as Table
- Join Field
- Dissolve
- Calculate Geometry

3. Post-processing Updated Field Boundaries

Build HUC12 Watershed Library → Build Soil Survey → Build Land Use → Uploaded to ACPF Database for Public Use



West Indian Creek HUC12 Watershed
Story County, Iowa
2015



More information on QR codes

Tomer, M. D., D. E. James, and C. M. J. Sandoval-Green. 2017. Agricultural Conservation Planning Framework: 3. Land Use and Field Boundary Database Development and Structure. J. Environ. Qual. 46:676-686. doi:10.2134/jeq2016.09.0363

JEQ Paper | ACPF Website | ACPF Database | Daily Erosion Project

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USDA ARS United States Department of Agriculture Agricultural Research Service

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