

Appendix E

Part 1

Natural Resource Conservation Service Farmed Wetland and Prior Converted Cropland Assessment Methodology



**U.S. Army Corps of Engineers
Memphis District**

United States Department of Agriculture



Natural Resources Conservation Service
601 Business Loop 70 West, Parkade Center Suite 250
Columbia, Missouri 65203

June 20, 2013

Edward P. Lambert
Chief, Environmental Compliance Branch
Department of the Army, Memphis District Corps of Engineers
Regional Planning and Environmental Division South
176 North Main Street B-202
Memphis, Tennessee 38103-1894

Dear Mr. Lambert,

As requested, Natural Resources Conservation Service (NRCS) is providing the assessment of farmed wetlands for the St. John's Bayou and New Madrid Floodway Project. The enclosed Farmed Wetland Evaluation, dated September 29, 2005, was originally provided to the Memphis District Corps of Engineers on October 5, 2005.

In order to add additional clarity to this information, in the fall of 2011, NRCS made another effort to estimate the number of farmed wetlands, this time digitally. This information is attached in the spreadsheet and map. We have included a summary of the wetland acres and associated methodology (attached). The map provides a graphic of the mapped wetlands in the St. John's Bayou and New Madrid Floodway Project.

If you have any questions please contact Harold Deckerd, Assistant State Conservationist-Water Resources, at (573) 876-0912.

Sincerely,

A handwritten signature in blue ink that reads "J.R. Flores".

J.R. Flores
State Conservationist

Enclosures

cc:

Harold L. Deckerd, Assistant State Conservationist-Water Resources, NRCS, Columbia, MO
Dwayne Gelnar, State Resource Conservationist, NRCS, Columbia, MO
Jorge Lugo-Camacho, State Soil Scientist, NRCS, Columbia, MO
Kevin Dacey, Biologist/WRP Coordinator, NRCS, Columbia, MO
Chris Hamilton, State Wildlife Biologist, NRCS, Columbia, MO

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Wetland Type	New Madrid Watershed Wetlands (Ac)	St. John's Bayou Watershed Wetlands (Ac)	Combined (Ac)
Artificial Wetland (AW)	1112.7	1026.7	2139.4
Converted Wetland (CW)	29.6	32	61.6
Farmed Wetland (FW)	306	791.5	1097.5
Mitigated Wetland (MW)	0	6.5	6.5
Wetland Emergent (WE)	245.4	257.3	502.7
Wetland Open Water (WO)	233.3	62.8	296.1
Wetland Scrub-Shrub (WS)	202	296.8	498.8
Wooded Wetland (WW)	5212.9	3855.6	9068.5
TOTAL	7341.9	6329.2	13671.1

Notes on how these wetland acres were acquired: Wetland polygons were originally marked on circa 1986 hard copy base photography using non-certified, remote sensing techniques following the 1985 Food Security Act (as referred to in the report "USDA-Natural Resources Conservation Service's Farmed Wetland Evaluation for the U.S. Army Corps of Engineer's St. John's Bayou/New Madrid Floodway Project" dated September 29, 2005). Because of being hard copy, acres figures from these photos could only be estimated. The referenced report describes using a transect method in the field to substantiate these estimates. Subsequently, the wetland polygons were heads-up transferred to digital photography (1996 digital orthophotography, the closest in age digital base photography to the original information). Recent digital imagery, including the 2009 CIR and 2010 NC NAIP imagery, were also consulted to aid in the digital transfer, however the original mapping polygons were not altered despite visible changes in the newer photography. Once digital, the wetland acres could be summarized as presented above.

**USDA – Natural Resources Conservation Service's
Farmed Wetland Evaluation
for the
U. S. Army Corps of Engineer's
St. John's Bayou/New Madrid Floodway Project**

**Pat Graham, Biologist
Clayton Lee, Soil Scientist
Nancy Ayers, Wetland Team Coordinator (SE-MO)
September 29, 2005**

Background Information:

The Missouri NRCS conducted its original Food Security Act wetland inventory (non-certified determinations) using remote sensing techniques that referenced 1984-1989 Farm Service Agency compliance slides, 1980 base photography, color infrared photography, Fish & Wildlife Service National Wetland Inventory Maps, and soil surveys.

The COE's St. John's Bayou/New Madrid Floodway Project, Environmental Impact Statement included an estimate of impacts to wetlands [including those that meet the NRCS Farmed Wetland (FW) definition].

Since the project would impact wetlands (including FWs), questions about USDA program participant eligibility arose. NRCS and the Farm Service Agency make program eligibility determinations based on certified wetland determinations. Because of this, Missouri NRCS was advised to review the original wetland inventory (non-certified wetland determinations) for accuracy.

Follow-up Actions:

NRCS assembled a three person team and evaluated the original wetland inventory (within the COE's project area) from September 26-29, 2005 for its use in this project's planning stage.

The COE estimated/identified impacted farmed wetlands (backwater flooding in the New Madrid floodway and headwater flooding in the St. John Bayou) using an elevation of 290.5 feet. This elevation was chosen as a conservative level and is noted in narratives in the impact statement.

Staff assembled remote sensing resource materials and noted the climatic conditions:

- A. Mississippi County – Farm Service Agency “compliance slides,” we used three (3) wet and two (2) dry/normal years. Aerial photos: 1975 soil survey (dry), 1980 wetland inventory (dry), March 1988 Farm Service Agency base maps (dry), and June 2003 color infrared.
- B. New Madrid County – Farm Service Agency “compliance slides,” we used two (2) wet and two (2) dry/normal years. Aerial photos: 1974 soil survey (normal), 1980 wetland inventory (dry), March 1992 Farm Service Agency base maps (dry), and June 2003 color infrared.

We selected three one-mile wide transects/sample areas to evaluate the accuracy and applicability to the Wetland Conservation provisions (the sample areas represent ~20% of the project area as outlined by the COE):

1. Transect #1 – East edge starts at: T. 24 N., R. 14 E., Section 11 and ends at T. 24 N., R. 17 E., Section 10 (~17 ½ miles).
2. Transect #2 – East edge starts at: T. 23 N., R. 15 E., Section 6 and ends at T. 23 N., R. 17 E., Section 2 (~17 miles).
3. Transect #3 – East edge starts at: T. 23 N., R. 14 E., Section 35 and ends at T. 23 N., R. 17 E., Section 35 (~7 miles).

Findings:

Our sampling shows the original wetland inventory to be adequate for delineating farmed wetlands (FW) for planning purposes in the project area.

None of the slides available for our sample showed any wide spread effects of backwater flooding or river level stages that would initiate gate closure for the St. John's Bayou (no headwater flooding was observed). Most wetland signatures were due to inundation or moisture due to precipitation & local flooding events.

NRCS reviewed the difference between NRCS and the COE in elevations used for determining FWs. NRCS' elevation (281.0 feet) was completed in 1989 by determining a 2 year 15 day elevation at the Chester, Illinois and Memphis, Tennessee gages; profiles were plotted between these points by paralleling COE profiles on the Mississippi river.

The COE elevation (290.5 feet) represents a 2 year peak discharge elevation. Since the COE is more conservative, NRCS used it to outline the greatest possible area affected; this area was then spot checked using remote sensing techniques as outlined above. For planning purposes, NRCS supports the COE's elevation.

Summary:

This sampling procedure verified that the original Food Security Act wetland inventory is adequate for estimating FWs in the project area. The most reliable method is to conduct an acre by acre analysis with current mapping conventions to obtain exact data. Due to the lack of landowner requests, this method is not possible at this point.

The observation that the use of new mapping conventions would yield greater amounts of wetlands did not hold true in our sample. Wetland kinds and acres provided in previous NRCS correspondence are valid.

The COE's projections of the affected wetlands and the resulting mitigation are more than adequate for NRCS wetland conservation provisions of the Food Security Act.

Food Security Act Farmed Wetlands - New Madrid and St. John's Bayou

