Grant # C9994861-02

The Green River Watershed Demonstration Project

Subproject 3 – Final Report

Work Plan Number: 02-06

Memorandum of Agreement Number: M-04090740

July 1, 2003 – December 31, 2005

Submitted by:

Jay Nelson – Green River CREP Coordinator
Adair County Conservation District
Edmonson County Conservation District
Taylor County Conservation District

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Funding for The Green River Watershed Demonstration Project was provided in part by a grant from the U.S. Environmental Protection Agency (USEPA) through the Kentucky Division of Water, Nonpoint Source Section, to KYDOC as authorized by the Clean Water Act Amendments of 1987, §319(h) Nonpoint Source Implementation Grant #M-02272796. The contents of this document do not necessarily reflect the views and policies of the USEPA, KDOW or KYDOC nor does the mention of trade names or commercial products constitute endorsement. This document was printed on recycled paper.

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Acknowledgments

Partners of the Green River CREP:

USDA Farm Service Agency
USDA Natural Resources Conservation Service
Office of the Governor (KY)
Kentucky General Assembly
KY Division of Conservation
Mammoth Cave National Park
The Kentucky Chapter of the Nature Conservancy
KY Soil/Water Conservation Commission
KY Department of Fish & Wildlife Resources
Adair County Conservation District
Edmonson County Conservation District
Taylor County Conservation District
KY Division of Forestry
KY Division of Water
KY State Nature Preserves Commission

Special Thanks: (for those not recognized in previous reports)

Adair County Ag Extension Office for providing meeting site for CREP informational meeting.

Larry Wisdom, Bob Reid, Lonzo Foley, and Joe Wheet, producers in Adair County, for allowing Adair County Conservation District to host CREP field workshops at their farms.

Adair, Edmonson, and Taylor County Conservation Districts for administration of CREP Technician.

Figure 1: Agricultural Field Day at Adair Co. CREP Site

Executive Summary

The Green River Conservation Reserve Enhancement Program (CREP) is a significant conservation program located in the South Central portion of Kentucky. The program has had significant impacts on water quality within the Green River Basin. The CREP section of the Green River Watershed includes 917,197 acres in the counties of Adair, Barren, Edmonson, Green, Hart, Metcalfe, Russell, and Taylor. This includes several major tributaries, including, but not limited to the Little Barren River, Russell Creek, Big Pittman Creek, and Big Brush Creek. Land use in the region is primarily dominated by cropland and pastureland, with a higher percentage of forested land in the eastern portion. The topography here is gently rolling, with the western half of the region nearly entirely dominated by karst topography and hydrology.

Although Green River CREP is a $110 million program, no money was designated within this effort for the increased workloads involved with partner agencies in the field or for the monitoring involved to determine success. Because of this, 319(h) funding was sought to employ a Green River CREP Coordinator and water quality technicians within the Green River CREP region to assist with a variety of activities, ranging from public relations, environmental education, field assistance with program implementation, and some water quality monitoring assistance. A KY Division of Conservation employee served as the Green River CREP Coordinator. The CREP Coordinator's primary function was to be the central point of contact for the program. Three water quality technicians were hired within this eight-county area to assist with the CREP program. Technicians were assigned to work primarily in 2 counties each, with some variation allowed so that remaining counties will be covered as well. The pairings were, per tech, Taylor-Green, Russell-Adair, and Metcalfe-Edmonson, with Barren and Hart receiving assistance as needed. The technicians' duties within the scope of this program were highly varied, depending on the needs of the counties in which that person worked. Duties ranged from public relations to office support to field work in implementing BMPs. Upon the writing of this report, 9,542.1 acres were enrolled into BMPs within CREP. Our technicians were a tremendous asset to this program.

Section 319(h) funding was allocated for Western KY University to conduct two years of post-BMP monitoring during 2006 and 2007 in the Green River CREP area. Other funding was appropriated by the federal government therefore Clean Water Act Section 319(h) funding was not needed for that project. The Division of Conservation returned the unused funds designated for monitoring and the water quality technician personnel funding to the Division of Water in April 2008 for re-obligation.

Introduction and Background

The Green River is the most biologically diverse and rich branch of the Ohio River system. The greatest aquatic diversity occurs in a 100-mile section of unhindered river that flows from the Green River Reservoir dam through Mammoth Cave National Park (the world's longest and most diverse cave system) in south central Kentucky. This section of the Green River Watershed includes 917,197 acres in the counties of Adair, Barren, Edmonson, Green, Hart, Metcalfe, Russell, and Taylor. Data indicates that agricultural runoff contributes high levels of sediment, nutrients, pesticides, and pathogens to the Green River and Mammoth Cave System. There are currently seven species listed as endangered by the U.S. Fish and Wildlife Service in the Green River System. In addition, the project area also includes several ecosystems recognized as endangered ecosystems of the United States, including native prairies, hardwood savannahs, canebrakes, and old-growth deciduous forests.

On August 29, 2001, USDA and the Commonwealth of Kentucky agreed to implement a Conservation Reserve Enhancement Program (CREP) on the above referenced section of the Green River to restore up to 100,000 acres. The Nature Conservancy also was a primary contributor, offering permanent easements to landowners in addition to CREP contracts.

Goals and objectives of Green River CREP:

- To reduce by 10% the amount of sediment, nutrients, and pesticides from agricultural sources entering the tributaries and main stem of the Green River and Mammoth Cave System through the installation of Best Management Practices (BMP's) designed for that purpose, and other conservation practices designed to improve water quality.
- To enhance habitats and populations of wildlife, including those listed as state and federal special concern, rare, threatened and endangered.
- To sustain and restore the composition, structure, and function of riparian habitat corridors associated with the Green River and tributary watersheds.
- To reconnect habitat types in order to restore the full range of ecosystem function.
- To establish buffers around sinkholes, targeting 1000 high priority sinkholes.
- To sustain and restore non-riparian wetlands.
- To protect and restore subterranean ecosystems.
- To collect, store, and analyze data to enhance planning for sustaining the health of the watershed.
- To develop an outreach program targeting all active agricultural producers in the area.
- To utilize native species, including warm season grasses, to the greatest extent possible.

What Is CREP?

CREP is an enhanced version of the United States Department of Agriculture (USDA) Conservation Reserve Program (CRP), which has been the federal government's largest, most comprehensive private lands environmental improvement program. CRP and CREP help save millions of acres of topsoil from erosion, protect surface and ground waters by reducing runoff and sedimentation, increase wildlife habitat, and improve air quality. Because the section of the Green River referenced above has been identified as such a special place, partner agencies felt that the enhanced version of the CRP would be ideal for this area. This "enhancement" is primarily financial, thus directly benefiting the producer/landowner in CREP areas (for example, some practices installed under a CREP contract can pay up to a 100% increase over standard CRP rental payments for the same practice). This is an entirely voluntary land "set aside" program, offering enhanced annual rental, cost share, and incentive payments that exceed that of CRP. In addition to the payments referenced above, landowners may elect to enter this land into a supplemental permanent conservation easement to receive additional incentive payments. CREP contracts may last from 10 to 15 years, and signup is continuous within the eight-county CREP region within Kentucky.

For further information on the Green River CREP, or CREP in general, please refer to www.usda.gov, or go to www.conservation.ky.gov and follow CREP link.

Materials and Methods

The CREP section of the Green River Watershed includes 917,197 acres in the counties of Adair, Barren, Edmonson, Green, Hart, Metcalfe, Russell, and Taylor. This includes several major tributaries, including, but not limited to the Little Barren River, Russell Creek, Big Pittman Creek, and Big Brush Creek. Land use in the entire area is primarily dominated by cropland and pastureland, with a higher percentage of forested land in the eastern portion of the region. The topography here is gently rolling, with the western half of the region nearly entirely dominated by karst topography and hydrology.

This project in conjunction with non-federal match provided by the KY Division of Conservation funded a Green River CREP Program Coordinator position. The CREP Coordinator acted as a central point of contact for the program, and worked in all eight counties of the CREP program area. The CREP Coordinator's job duties are listed below:

- Making individual landowner contacts to promote the program
- Organizing, planning, and conducting public meetings about CREP

- Writing public service announcements and articles for local newspapers
- Conducted field visits to potential CREP sites for evaluation
- Calculating (and subsequent paperwork and filing) for CREP state cost share payments
- Supervision of the CREP technicians when applicable
- Composition of the CREP annual report, along with other required reporting
- Acted as a liaison among CREP partner agencies, and between management & field staff
- Conducted CREP Partner meetings, and organized and conducted meetings of a CREP field committee and a CREP monitoring team

Three water quality technicians were hired within the eight-county CREP area to assist with the implementation of the program. Technicians were assigned to work primarily in 2 counties each, with some variation allowed so that remaining counties will be covered as well. The pairings were, per tech, Taylor-Green, Russell-Adair, and Metcalfe-Edmonson, with Barren and Hart receiving assistance as needed. The water quality technicians' duties within the scope of this program were highly varied, depending on the needs of the counties in which that person worked. Early duties included primarily public relations work to educate the local producers on the program. This was often done on a one-on-one basis. This evolved into working with local authorities on planning and conducting field days, local meetings, writing news articles for local papers, producing radio ads, and various other forms of public relations. These techs also worked closely with local Natural Resources Conservation Service (NRCS) and Farm Service Agency (FSA) personnel to put BMPs on the ground. This included a variety of work from office work such as report writing, landowner tracking, and contract work to field work such as measuring, practice guidance, and general assistance on the installation of BMPs. Technician duties continued to evolve to meet the needs of the program. A partial summary of the technician's duties is attached in Appendix A as part of the Adair and Edmonson Counties Milestones.

Section 319(h) funding was allocated for Western KY University to conduct two years of post-BMP monitoring during 2006 and 2007 in the Green River CREP area. Other funding was appropriated by the federal government and Clean Water Act Section 319(h) funding was not needed for that work. Therefore the Division of Conservation returned the monitoring and an un-used portion of the personnel funding to the Division of Water in April 2008 for re-obligation.

Results and Discussion

The focus of this program is to improve water quality through BMP installation. Due to the scope and length of this program, there will be no “final” results in this report, but rather updates on progress made to this point. Water quality monitoring is still in “baseline” stages (although a long-term plan has been developed by WKU and is currently in the implementation stage), so the primary tracking and assessment of success is through BMP installation and assessment. Upon the writing of this report, 9,542.1 acres have been enrolled into BMP’s within CREP. The dominant two BMPs being employed are Native Grass Plantings (CP-2) and Riparian Buffer (CP-22). There are 3,799.9 acres enrolled in Native Grass Plantings, and 5,494.6 acres enrolled in Riparian Buffers. The remaining acreage is in other BMPs such as introduced grasses, filter strips, and tree plantings. With regards to discussion on distribution of BMPs enrolled by county, several patterns have emerged. Riparian buffers seem to be the more dominant practice in counties which border the main-stem Green River, as buffers there may be 1000’, as opposed to 300’ on tributaries. The native grass planting is by far most prevalent in Barren County, a heavy agriculture county, which lies within the karst plain area of the region (which is characterized by an obvious lack of surface streams). It has also become evident that local attitudes, and public relations by CREP related employees play a significant role in interest in the program from county to county. For this reason, our technicians have been a tremendous asset to this program. Overall, more than 600 letters/postcards were sent to individual landowners within the CREP region, approximately 350 were contacted personally by a technician, 30 articles/advertisements were approved and published, and 12 producer meetings/workshops were conducted in which CREP was interpreted and BMP’s were demonstrated. A more specific breakdown, by practice and by county, can be viewed in Figure 2 on the following page of this report. In addition, specific accomplishments of each technician can be observed in appendix 1 at the end of this report.

Cumulative Program Acreage/Contracts by County

County	Approved Contracts		
	Practice	Number	Acres
Adair	CP1 Introduced Grasses	1	4
	CP2 Native Grasses	7	186.6
	CP3A Hardwood Tree Planting	2	5.8
	CP22 Riparian Buffer	105	1029.9
Barren	CP1 Introduced Grasses	1	2.7
	CP2 Native Grasses	61	2326.4
	CP3 Tree Planting	1	15.5
	CP22 Riparian Buffer	25	276
Edmonson	CP1 Introduced Grasses	1	22.7
	CP2 Native Grasses	2	122.1
	CP21 Filter Strip	1	1
Green	CP2 Native Grasses	8	157
	CP22 Riparian Buffer	82	1729.4
Hart	CP1 Introduced Grasses	6	150.1
	CP2 Native Grasses	4	56.5
	CP22 Riparian Buffer	47	1182.8
Metcalfe	CP2 Native Grasses	15	453.1
	CP22 Riparian Buffer	20	195.5
Russell	None	0	0
Taylor	CP2 Native Grasses	23	498.2
	CP3A Hardwood Tree Planting	2	45.8
	CP22 Riparian Buffer	89	1081
Totals	All	503	9542.1

CREP Region Totals:

Total Contracts: 503
Total Acres: 9,542.1

Practice Designations:

CP1 Permanent Introduced Grasses/Legumes
CP2 Permanent Native Grasses
CP3 Tree Plantings
CP21 Filter Strips
CP22 Riparian Buffer

Figure 2

Conclusions

As stated above, due to the ongoing nature of this program, there are not really any concrete conclusions that can be drawn on a large scale. One conclusion that can be drawn, however, is the extent to which the water quality technicians have helped to promote and implement CREP. These techs were in place for a relatively short amount of time, in a program that is very complicated. Their effectiveness was exhibited in several forms, including outreach and public relations, program implementation, and general assistance to partner agencies. There is no doubt that progress measured now by tracking BMP's should evolve into progress later that can be measured by water quality testing.

Appendix A of this document reflects the water quality technician's accomplishments. The Adair County technician was the final of the three positions that were still active. The Adair County Conservation District will not seek to fill this position at this time, thus ending this grant. It should be noted that the technician's primary duties were conducted in two counties that still were in the "growing" stages of this program. Adair County was able to install several BMPs in the past two years. Because of this, his time was split between outreach and public relations programs and BMP installation and monitoring. The tech positions assisted bordering counties with completing field and office work. The work conducted by all of the Water Quality Technicians was excellent in quality, and greatly helped to advance the Green River CREP program.

The primary reasoning for not renewing this grant is two-fold:

1. The first is that more staff has been hired in local offices within this region. The Kentucky Department of Fish and Wildlife Resources has three positions within the region that are designated for CREP assistance, and local Districts have also hired additional staff that may be available for assistance if needed.
2. The second being a compliment to the first, is that the 319 tracking and reporting requirements are often viewed as excessive and burdensome to local employees. While the need to properly track and account for funding is understood, the process by which 319(h) has evolved to accomplish this is often seen as excessive and redundant. The Conservation Districts have simply chosen not to continue to utilize this funding source due to that workload.

Project success has been assessed in two media:

1. The CREP partner agencies have tracked the acreage of BMPs installed. The goal of the Green River CREP is to restore 100,000 acres along the Green River and its tributaries. As of April 2008 Green River CREP has 90,000 acres committed.
2. The second component to assessing project success has been water quality monitoring conducted by Western KY University. Post BMP water quality monitoring is currently ongoing. Monitoring results will be published in the Green River CREP Final Report submitted to USDA.

Appendix A

Financial and Administrative Closeout

This appendix documents technician accomplishments and milestone status/completion, as well as budgetary information. Appendix A in this report is limited to the information for the Water Quality Technicians that were based in Adair County and Edmonson County.

Adair County
ATTACHMENT A

Section 319(h) Nonpoint Source Project Progress Report

Reporting Period: *August 1, 2003 – December 31, 2005* **Grant No:** *C9994861-02* **State:** *KENTUCKY*

Project Name: *GREEN RIVER WATERSHED DEMONSTRATION PROJECT – SUBPROJECT 2*

Contractor: *ADAIR COUNTY CONSERVATION DISTRICT*

Budget Period Start Date: *AUGUST 1, 2003* **End Date:** SEPTEMBER 30,*2004* **Total Project Cost:** *$105,000.00*

Expended this Period: *$ 5,871.60* **Total Expenditures to Date:** *$44,824.41*

Waterbody/Watershed Identification: *GREEN RIVER WATERSHED*

NPS Category: *AGRICULTURE*

Purpose Statement: The long-range goal of the Green River Conservation Reserve Enhancement Program (CREP) and this Watershed Demonstration Project shall be to improve or restore the Green River and its tributaries.

KY Division of Conservation's Milestones

Milestone	Expected Begin Date	Expected End Date	Actual Begin Date	Actual End Date
1. Submit all draft materials (agendas, announcements, flyers, training materials, manuals, pamphlets, newsletters, news articles, etc.) to the Cabinet for review and approval.	08/01/03	06/30/04	08/01/03	12/31/05
2. Submit advanced written notice on all workshops, demonstrations, and/or field days to the Cabinet.	08/01/03	06/30/04	08/01/03	12/31/05
3. Advertise for one water quality technician position.	08/01/03	06/30/04	08/01/03	12/31/05
4. Fill water quality technician position.	08/01/03	06/30/04	08/01/03	12/31/05
5. Implement and demonstrate BMPs with matching funds.	08/01/03	06/30/04	08/01/03	12/31/05
6. Water quality technician receives training and orientation on CREP.	08/01/03	06/30/04	08/01/03	12/31/05
7. Promote and track CREP interest among land users.	08/01/03	06/30/04	08/01/03	12/31/05
8. Track CREP participation by land users.	08/01/03	06/30/04	08/01/03	12/31/05
9. Submit Annual Reports and/or participate in the Cabinets sponsored biennial NPS Conference.	08/01/03	06/30/04	08/01/03	12/31/05
10. Prepare Final Report	08/01/03	06/30/04	12/01/05	12/31/05
11. Submit three copies of the Final Report and submit three copies of all products produced by this project.	08/30/03	06/30/04	12/01/05	12/31/05

Status of KY Division of Conservation's Milestones

Provide a brief sentence or two explaining the progress of each milestone.

1.) All materials submitted for review as required.

2.) Participated in CREP field days on July 22, 2004, and September 29, 2005.

3.) Solicited for interest in the Water Quality Technician position. 11/21/02

4.) Filled WQT position to work in Adair and Russell counties. 04/01/03 under previous 319(h) contract. This project is a continuation of FFY 99 Green River Watershed.

5.) Began developing contracts for the implementation of BMP's. Began development of contracts for CREP. Currently have 120 contracts, and 5 in planning. 12/31/05

6.) Technician has received orientation on CREP and also on the job training, servicing requests. 4/01/03 – 5/14/03 under previous 319(h) contract. This project is a continuation of FFY 99 Green River Watershed

7.) Contacted 186 landowners in promoting the CREP and helped field offices maintain the current tracking system of interested land users. 08/01/03 – 12/31/05

8.) Assists field office in tracking CREP participation by updating a hard copy tracking sheet and computer spreadsheet.
08/01/03 – 12/31/05

9.) Provided CREP coordinator with information vital to the completion of the final report, 08/01/03 – 12/31/05

10.) Provide CREP coordinator with information vital to the completion of the final report. 08/01/03 – 12/31/05

11.) No progress to report at this time.

PREPARED by:
Jason Stephens Water Quality Technician

Jason Stephens Water Quality Technician	**December 31, 2005**
Name, Title	**Date**

ATTACHMENT A

Section 319(h) Nonpoint Source Project Progress Report

Reporting Period: 7/1/03-12/31/04 **Grant No:** C9994861-02 **State:** Kentucky

Project Name: Green River Watershed Demonstration Project – Subproject 3

Contractor: Edmonson County Conservation District

Budget Period Start Date: 07/01/03 **End Date:** 06/30/06
Total Project Cost: $105,000
(Federal Dollars $63,000.00 Non-Federal Match $42,000.00)

Expended this Period: $__NA___**Total Expenditures to Date:** $_40,182.67____

Waterbody/Watershed Identification: Green River Watershed

NPS Category: Agriculture

Purpose Statement: The long-range goal of the Green River Conservation Reserve Enhancement Program (CREP) and this Watershed Demonstration Project shall be to improve or restore the Green River and its tributaries.

Conservation District's Milestones

Milestone	Expected Begin Date	Expected End Date	Actual Begin Date*	Actual End Date*
1. Submit all draft materials (agendas, announcements, flyers, training materials, manuals, pamphlets, newsletters, news articles, etc.) to the Cabinet for review and approval.	Duration	Duration	07/03	12/31/04
2. Submit advanced written notice on all workshops, demonstrations, and/or field days to the Cabinet.	Duration	Duration	07/03	12/31/04
3. Implement and demonstrate BMPs with matching funds.	04/03	06/06	07/03	12/31/04
4. Promote and track CREP interest among landusers.	04/03	06/06	07/03	12/31/04
5. Track CREP participation by landusers.	04/03	06/06	07/03	12/31/04
6. Submit Annual Reports and/or participate in the Cabinets sponsored biennial NPS Conference.	Duration	Duration	07/03	12/31/04
7. Prepare Final Report	05/06	06/06	01/04	12/31/04
8. Submit three copies of the Final Report and submit three copies of all products produced by this project.	05/06	06/06	01/04	12/31/04

* **Note:** Dates submitted in Actual Begin and Actual End Date Columns above are for the resigned Edmonson County Tech position only.

Status of Adair and Edmonson County Conservation District's Milestones

1.) Gave printed handouts about CREP to contacts. Articles ran in *Edmonton Herald, Metcalfe Light, Glasgow Daily Times, Barren County Progress, Edmonson News, Hart County News, Greensburg Record Herald*, and PSA's ran on WBKO, WKNK,WGRK, Q104, WLOC, WBVR, WOVO, and WGGC. (The articles ran in various counties in August 03, February 04, March 04, June 04, July 04, September 04, and October 04). All written materials were submitted to KyDOC and KyDOW for review before submission.

2.) Advance notice was submitted to Cabinet on all workshops, demonstrations and field days for which Technician was responsible for content and/or planning. Other events, that were planned and conducted entirely by partner agencies, were attended for this program. These events included:

8/5/03 Metcalfe Co. CREP Producer Meeting
9/2/03 Green County CREP Field Workshop
9/9/03 Metcalfe County Middle School Ag Education Day
6/17/04 Cave Country CREP Field Day/Meeting
7/15/04 Green County CREP Field Workshop
* Also attended various internal CREP local partner meetings, training sessions and Conservation District Board Meetings in CREP counties.

3.) KWP4 Installed in Warren County as part of the state cost share match. The practice will be demonstrated by the DC through site visits with local landowners.

4.) Contacted 138 landowners in person in promoting CREP and helped field offices maintain the current tracking system of interested persons. Warm season grass plantings for this year look great at this point, and trees are doing well also(though currently they are in dormancy). Calculated over 50 state cost share and incentive payments for CREP contracts in local offices.

5.) Assisted county offices in tracking CREP participation of over 175 landowners. This included both office and document tracking, and field reviews and inspections to determine status of BMP's on ground.

6.) Submitted to Green River CREP Coordinator.

7.) Submitted to Green River CREP Coordinator.

8.) Submitted to Green River CREP Coordinator.

PREPARED by:

Amy Branstetter Hogan, Water Quality Technician — 12/31/04
Name, Title — Date

Attachment A - Budget Summary

Original Budget

	Section 319(h)	Match	Total
Personnel	$276,295.11		$276,295.11
Supplies			
Equipment	$ 12,270.00		$ 12,720.00
Travel	$ 18,000.00		$ 18,000.00
Contractual	$100,934.00		$100,934.00
Operating Cost			
Other		$271,966.07	$271,966.07
Total	$407,949.11	$271,966.07	$679,915.18
Final Expenditures			
	Section 319(h)	Match	Total
Personnel	$206,582.66	$64,194.68	$280,107.79
Supplies			
Equipment			
Travel			
Contractual			
Operating Cost			
Other		$73,525.13	$64,194.68
	$206,582.66	$137,719.81	$344,302.47

The Division of Conservation is a sub grantee for the Division of Water and was allotted funds for the Green River CREP Project of $407,949.11. This project did not utilize all federal 319(h) funds and a total of $147,983.34 was returned to The Division of Water.

Personnel: 319(h) funds were utilized for one CREP Project Coordinator and 4 Water Quality Technicians. The Green River CREP coordinator's salary $96,295.00 was matched with personnel funds provided by the Division of Conservation.

Water Quality Technicians: A total amount of $45,301.43 federal dollars was allocated for Edmonson County, a total of $57,830.09 federal dollars for Adair County and $7,156.14 federal dollars for Taylor County for contractual services. Non-federal match was generated by the installation of BMPs within the Green River CREP area. Funding for the BMP installations was provided by the KY Soil Erosion and Water Quality Cost Share Fund. A total of $47,049.34 for WQT salary was not used & those funds were returned to DOW for re-obligation in April 2008.

A total of $22,663 of WQT personnel funds were not utilized and were re-obligated to project 02-14 for the printing of Kentucky Soil Erosion and Sediment Control Field Guides.

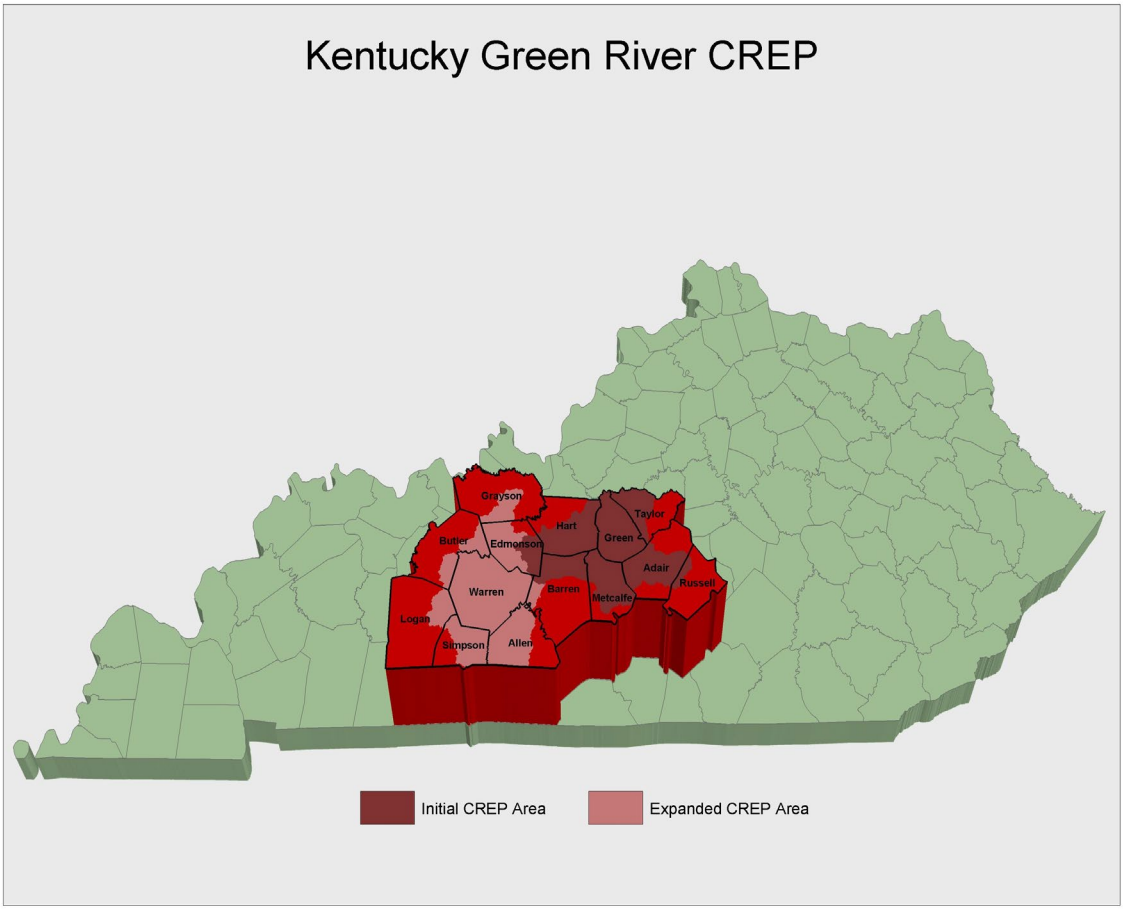
Equipment: A total of $12,270.00 was budgeted for equipment, however no equipment was purchased and funds were re-obligated to project 02-14 for the printing of Kentucky Soil Erosion and Sediment Control Field Guides.

Contractual: This project was to include two years of post-BMP monitoring as well as preparation of a monitoring report. However due to reasons beyond the Division of Conservation's control Western Kentucky University did not conduct monitoring and unused funds $100,934 were returned to the Division of Water for re-obligation in April 2008.

Travel: A total of $18,000 was budgeted for travel however no travel was used and funds were re-obligated to project 02-14 for the printing of Kentucky Soil Erosion and Sediment Control Field Guides.

Other: Non-Federal match in the amount of $73,525.13 was generated by the Kentucky Soil Erosion & Water Cost Share Program.

Appendix B


Kentucky Green River CREP
Grayson
Hart
Taylor
Butler
Edmonson
Green
Adair
Russell
Warren
Barren
Metcalfe
Logan
Simpson
Allen
Initial CREP Area
Expanded CREP Area

Appendix C

Project Measures of Success:

- Photographic documentation of improvements – *in progress, see p. 4*
- Change in aquatic community – *unknown, refer to WKU*
- Change in fecal coliform levels – *unknown, refer to WKU*
- Acres of riparian buffers established (target 5000) – *currently to 5493 ac.*
- Acres of wetland restored (target 60) – *unknown*
- Acres grassland established (target 3000) – *currently 3800 in CP2 only*
- Number of sinkholes protected – *unknown*
- Number of site-specific plans implemented – *503*
- Number of visits to farms (100 target) – *unknown total, but > 1000*
- Miles of stream protected – *at least 150*
- Numbers and types of BMP's installed as non-federal match – *unknown*
- Number of phone calls – *unknown*
- Number of personal contacts - *> 700*
- Number of public appearances - *> 50*
- Annual and final reports – *accomplished*

Appendix D

Examples of Public Relations Materials

- Due to the loss of a computer hard drive, many of our articles and agendas during this time frame were lost. Below are a couple of examples of those types of documents; Articles run in local newspapers:

Green River CREP Informational Meeting

Many of you may have heard of the Green River Conservation Reserve Enhancement Program (CREP). To date, this has been a very successful program, both in conserving soils and natural resources in the area, and in bringing much needed financial support to the local agricultural community. On June 17th, there will be an informational meeting on CREP at the American Cave and Karst Museum in Horse Cave at 8:30 AM. This meeting will include a description of the program, supporting open discussion, field visits to existing CREP-contracted farms, and updates on the program including the subject of sinkhole protection. In addition, a complimentary lunch will be provided upon completion of the meeting at the cave entrance located adjacent to the museum.

Anyone interested in CREP who may be eligible is encouraged to attend this meeting. Inquiries may be made with your local USDA service center with regards to CREP regional boundaries (generally, the CREP region includes:

Edmonson County – lands directly adjacent to Mammoth Cave National Park, and southward to Barren County line; Hart County – the southern two-thirds of the county, excluding Bacon Creek Watershed; Barren County – the northern one-third of the county…north of the Beaver Creek Watershed; and Metcalfe County – most of this county is within the boundaries, including all of the Little Barren Watershed). In addition, if you do plan to attend this meeting, please contact your local USDA Service Center/Conservation District Office to confirm; this information is needed no later than June 14 in order to properly plan the complimentary lunch portion of the program.

Green River CREP Informational Meeting

Many of you may have heard of the Green River Conservation Reserve Enhancement Program (CREP), or read one of several articles that have recently appeared in local publications on this program. To date, this has been a very successful program, both in conserving soils and natural resources in the area, and in bringing much needed financial support to the local agricultural community. With the recent tobacco buyout, many are looking at CREP as an alternative way to bring income off of their land. On Tuesday, April 19th, there will be an informational meeting on CREP at the Metcalfe County Extension Office in Edmonton at 6:00 PM. This meeting will include a presentation of the program by those currently working with it, supporting open discussion to answer any questions, and a complementary meal. There will also be information on continuous CRP, the parent program of CREP, for those who may be located outside of the CREP regional boundary.

Anyone interested in CREP who may be eligible is encouraged to attend this meeting. Inquiries may be made with the county USDA service center with regards to CREP regional boundaries (generally, the CREP region includes much of the county, including all of the Little Barren Watershed). In addition, if you do plan to attend this meeting, please contact the local USDA Service Center/Conservation District Office at 270-432-3191 to confirm so that meal arrangements may be made accordingly.

Appendix E

Conservation Reserve Enhancement Program

Practice Establishment Requirements

Fertility - Planned fertilizer rates will be 50-50-50 and 3 tons lime for introduced grasses and 0-50-50 and no lime for native grasses. No fertility is required for Native Grasses. Soil amendments and payments for soil amendments will be made according to a University of Kentucky or Mehlich III soil test recommendation with the exception of nitrogen and lime on native grass plantings. Payment is not authorized for nitrogen or lime for native grass plantings.

CP-1 Introduced Grasses and Legumes

Vegetation will be established according to the NRCS Conservation Cover (327) practice standard and the 2-CRP manual.

A minimum of 4 species with at least 2 introduced grasses and at least one legume. (No Fescue) All species must be planted evenly over the entire acreage devoted to the practice.

Seeding requirements and rates will be according to Table 1.

CP-2 Native Grasses

Vegetation will be established according to the NRCS Conservation Cover (327) practice standard and the 2-CRP manual.

A minimum of 4 species with at least 2 native grasses and 1lb of 4 forbs. All species must be planted evenly over the entire acreage devoted to the practice. Forbs should be recommended as the component species for native grass plantings. However, if a participant insists on using legumes, the legume seeding rates should be according to the NRCS Conservation Cover (327) practices standard.

Seeding requirements and rates will be according to Table 2.

CP-3 Tree Planting (Pine species)

Vegetation will be established according to the NRCS Tree and Shrub Establishment (612) practice standard and the 2-CRP manual.

Pine species planted at less than 500 trees per acre with 15 to 20% of the CP-3 acreage dedicated to openings. The openings shall be planted to a minimum of 4 species, at least 2 native grasses and at least one forb. All grass and forb species must be planted evenly over the entire acreage devoted to openings.

Utilize pine species recommended by a Kentucky Division of Forestry forester.
Native grass seeding requirements and rates will be according to Table 2.

CP-3A Hardwood Tree Planting

Vegetation will be established according to the Additional Criteria For Wetland Restoration and Wildlife in the NRCS Tree and Shrub Establishment (612) practice standard and the 2-CRP manual.

At least three hard mast species shall comprise ≥80% of the stand. One of the hard mast species must be from the red oak family and one must be from the white oak family.

Between 605 trees/acre with a 6' x 12' spacing and 681 trees per acre with a 8' x 8' spacing shall be planted.

See Table 6 for species information and additional planting requirements.

CP-4B Permanent Wildlife Habitat (Corridors)

Vegetation will be established according to the applicable NRCS practice standard and the 2-CRP manual.

(Corridor should be between 66' and 200' wide and should connect two existing wooded areas ≥5 acres in size that are not connected by a 66' wide corridor.)

A minimum of 5 species with at least;
-2 native grasses and at least 2 tree, shrub, or 1 lb of 4 forbs; or
-2 shrub or tree species, 1 native grass and 1 lb of 4 forbs.

At least five species must be planted evenly over the entire acreage devoted to the practice.

Native grass planting for CP-4B and CP-4D will be done according to Table 3.

If trees and/or shrubs are planned as part of this practice, the planting rate must be between 109 trees and/or shrubs per acre with a 20' x 20' spacing and 681 trees and/or shrubs per acre with a 8' x 8' spacing. See Table 6 for eligible species.

CP-4D Permanent Wildlife Habitat

Vegetation establishment will be done according to the applicable NRCS practice standard and the 2-CRP manual.

A minimum of 5 species with at least;
-2 native grasses and at least 2 tree, shrub, or 1lb of 4 forbs; or
-2 shrub or tree species, 1 native grass and 1lb of 4 forbs.

At least five species must be planted evenly over the entire acreage devoted to the practice.

Native grass planting for CP-4B and CP-4D will be done according to Table 3.

If trees and/or shrubs are planned as part of this practice, the planting rate must be between 109 trees and/or shrubs per acre with a 20' x 20' spacing and 680 trees and/or shrubs per acre with a 8' x 8' spacing. See Table 6 for eligible species.

CP-8A Grassed Waterways

Grassed waterways will be installed according to the NRCS Grassed Waterway (412) practice standard and the 2-CRP manual. Waterways can be vegetated out to twice the design width up to 100'. The vegetation outside the designed width can be the same as the vegetation inside the design width or may be established according to Table 5. Note: Outlet must be on cropland eligibility acres to receive cost-share.

CP-9 Shallow Water Area for Wildlife

Shallow water areas will be installed and managed according to the appropriate NRCS standards and the 2-CRP manual. Wetland Creation (658) and Shallow Water Management for Wildlife (646) may be used to develop and manage CP-9s.

A 10 acre maximum is allowed per CP-9 contract with 1 CP-9 contract per tract. However, multiple pool areas may be included on a contract as long as the cumulative contract acreage does not exceed 10 acres.

The CP-9 must a 6" to 18" average depth and provide water for the majority of the year.

A 20' to 120' filer strip or riparian buffer must be established around pool areas where an embankment is not present.

A CP-21 or CP-22 cannot be used to buffer a CP-9, the required buffer must be included in the CP-9 contract acreage.

Vegetative species in the buffer area of a CP-9 will be established according to Table 5 or the CREP CP-22 criteria. Vegetative cover on embankments will be established according to the NRCS (342) Critical Area practice standard. Fescue may be used on embankment areas.

CP-10 Vegetative Cover- Grass Already Established

Acreage may be enrolled as a CP-10 if; 1) it is currently enrolled in CRP and; 2) other eligibility criteria are met and; 3) the established cover was not fescue. If acreage currently enrolled in CRP does not meet the above cover criteria, the cover will have to be changed to meet the requirements of another eligible CREP practice.

Cost-share is not authorized for CP-10.

CP-11 Vegetative Cover-Trees Already Established

Acreage may be enrolled as a CP-11 if the tree cover was established under a CRP-1 and other eligibility criteria are met.

CP-12 Food Plots

Cost share is not authorized for CP-12s.

Food plots are limited by the lessor of either ten percent of the field size or 5 acres/field for the food plot.

CP-12 must be listed as a practice with the appropriate acreage on the CRP-1 as listed by FSA.

Individual food plots shall be located at least 100 yards apart.

Food plot must be established and managed according to the NRCS Upland Wildlife Habitat Standard (645) practice standard and the 2-CRP manual. The CP-12 shall only be used in conjunction with the following practices CP-1, CP-2, CP-3, CP-3A, CP-4D, CP-10, and CP-11.

CP-15A Contour Buffer Strips

Vegetation will be established according to the NRCS Contour Buffer Strip (332) practice standard and the 2-CRP manual.

Seeding rates and requirements will be according to Table 5.

CP-21 Filter Strips

Vegetation will be established according to the NRCS Filter Strip (393) practice standard and the 2-CRP manual.

Seeding requirements and rates will be according to Table 5.

Filter strips may be between 20’ and 120’ wide.

CP-22 Riparian Buffers

Riparian buffers will be installed according to the NRCS Riparian Buffer (391) practice standard and the special criteria for riparian buffer widths and vegetation in Kentucky Amendment 1 of the 2-CRP manual.

ZONE WIDTHS REQUIREMENTS

Zone 1 begins at the top of the bank and is 15’ wide.

Zone 2 begins at the end of Zone 1 and is a minimum of 35’ wide to a maximum of 145’ wide for 1st, 2nd, 3rd order streams. Fourth Order or Larger streams have a

minimum of 85’ wide to a maximum of 145’. Zone 2 minimums must occur on at least 80% of the linear length of the feature.

Zone 3 begins at the end of Zone 2 and is a minimum of 20’.

For Green River streams that are Strahler Stream Orders 1&2 (or on Sinking Streams, Sinkholes or eligible Ponds), Zone 3 may be extended to the point where the entire buffer width is a maximum of 300’ from the top of the bank.

For Green River streams that are Strahler Stream Orders 3 or larger, Zone 3 may be extended to the point where the entire buffer width is a maximum of 1,000’ from the top of the bank.

VEGETATION REQUIREMENTS

Zones 1 and 2 must be established to trees or a mixture of trees and shrubs.

Zone 3 can be planted to all grass, all trees, or a mixture of trees and shrubs.

Tree plantings shall include at least three hard mast species that comprise ≥80% of the stand. One of the hard mast species must be from the red oak family and one must be from the white oak family.

Between 605 trees/acre with a 6’ x 12’ spacing and 681 trees per acre with an 8’ x 8’ spacing shall be planted.

See Table 6 for tree and shrub species information and additional planting requirements.

Grass plantings shall include a minimum of 4 species, at least 2 native grasses and 1lb of 4 forbs. All species must be planted evenly over the entire acreage devoted to the practice. Forbs should be recommended as the component species for native grass plantings. However, if a participant insists on using legumes, the legume seeding rates should be according to the NRCS Conservation Cover (327) practices standard.

Native grass plantings in riparian buffers shall be according to Table 2.

ADDITIONAL REQUIREMENTS

Zone 3 is required when the upstream land use is cropland or other land use that can contribute a high sediment load. Zone 3 is optional when pasture, hayland, or woodland is the upstream land use.

CP-23 Wetland Restoration or CP-23A (non-floodplain)

Practice established according to the NRCS Wetland Restoration (657) practice standard.
Cropland eligibility must be met.

Offer must consist of at least 51% hydric soils and be within the 100-year flood plain of a perennial stream. CP-23A does not have to meet the floodplain criteria.

Riparian buffer or filter strip should be installed around the restored area when needed, however, the buffer should not exceed a 3 to 1 ratio of buffer to wetland.

Restored area must be planted to trees according to 657 standard. Hydrology restoration only required to the extent requested by the participant. Additional incentive payment based on 25% of cost of restoring hydrology.

CP-25 Rare and Declining Habitat Restoration

This practice shall be established according to the NRCS Restoration and Management of Declining Habitats (643) practice standard and the 2-CRP manual. Options include planting 3 lbs (5lbs for short grasses) of at least 3 Native Grasses and 2lbs of at 7 forbs or choosing a savannah planting. If the participant desires to complete a savannah planting, consult a state office biologist for guidance. Seeding rates and requirements will be according to Table 4.

CP-29 Marginal Pastureland Habitat Buffer

This practice shall be established according to the NRCS Field Border (386) practice standard and the 2-CRP manual.

Perennial/Seasonal Streams or Ponds with Seasonal Flow----20' – 300' Work limits

If at least 20 feet of existing trees are present (along 80% of the stream), the remaining width shall be planted to Native Grass/Forbs according to Table 4. If the minimum of 20' existing trees is not met, then two rows of at least 2 native shrubs shall be planted with the remaining width being planted in 3lbs (5lbs for short grasses) of at least 3 native grasses/forbs according to Table 4. Shrubs shall be planted on an 8x8 or 6x12 spacing according to Table 6.

Karst Basins----20' – 1,000' Work limits

Sinking Streams will adhere to the Perennial/Seasonal Stream criteria under CP-29.

Shrubs are not required on closed/open karst basins or sinkhole ponds. The native grass/forb acres will be established to according to Table 4. Shrubs may be planted on areas too steep for planting with a NWSG drill.

Table 1: Seeding requirements for introduced grass plantings on the CP-1. A minimum of 4 species with at least 2 introduced grasses and at least one legume is required. Introduced grass mixtures must include 10 pounds of grass PLS per acre. This minimum seeding rate may be increased by 25% when site conditions warrant.

Species	**Minimum Seeding Rate For Each Species (lbs. PLS/Acre)**	
Introduced Grasses	**Minimum 10 Pounds Grass PLS /Acre Required**	
Orchardgrass	5	
Red Top	Min. & Max. 0.5	
Timothy	5	
Legumes	**Single Legume**	**Multiple Legumes**
Alsike Clover	2	1
Ladino Clover	1	0.5
Red Clover	3	2.5
White Clover	1	0.5
Kobe Lespedeza	3	1.5
Korean Lespedeza	3	1.5

Table 2: Seeding requirements for native grass plantings on CP-2, CP-3, and CP-22. A minimum of 4 species with at least 2 native grasses and 1lb of 4 forbs is required for CP-2, CP-3, and CP-22. All native grass mixtures must include 5 pounds of grass PLS per acre. This minimum seeding rate may be increased by 25% when site conditions warrant. Forbs should be recommended as the component species for native grass plantings. However, if a participant insists on using legumes, the legume seeding rates should be according to the NRCS Conservation Cover (327) practices standard.

Species	**Minimum Seeding Rate For Each Species (lbs. PLS/Acre)**
Native Grasses	**Minimum 5 Pounds Grass PLS /Acre Required**
Big Bluestem	Minimum & Maximum 0.5 lb
Eastern Gama Grass	3
Indian Grass	Minimum & Maximum 0.5 lb
Little Bluestem	Minimum 0.5 lb
Switchgrass	Minimum 0.5 lb. to 1.0 lb. Maximum
Side Oats Grama	Minimum 0.5 lb
Riverbank/Virginia Wild Rye	Minimum 0.5 lb
Purpletop* (*Not widely available)	Minimum 0.5 lb. to 1.0 lb. Maximum
Composite Dropseed*	Minimum 0.5 lb
Splitbeard Bluestem*	Minimum 0.5 lb
Native Forbs	(see attached forb mixes)

Table 3: Native grass and forb seeding rates for CP-4B and CP-4D. Native grass mixtures must include 5 pounds of grass PLS per acre. This minimum seeding rate may be increased by 25% when site conditions warrant.

Species	**Single Grass Species Seeding Rate (Minimum Pounds/Acre)**	**Multiple Grass Species Seeding Rate (Minimum Pounds/Acre)**
Native Grasses		**5 Pounds Grass PLS /Acre Required**
Big Bluestem	5	Minimum & Maximum 0.5 lb
E. Gama Grass	5	3
Indiangrass	5	Minimum & Maximum 0.5 lb
Little Bluestem	5	Minimum 0.5 lb
Side Oats Grama	NA	Minimum 0.5 lb
Switchgrass	5	Minimum 0.5 lb. to 1.0 lb. Maximum
Riverbank/Virginia Wild Rye	NA	Minimum 0.5 lb
Purpletop	NA	Minimum 0.5 lb. to 1.0 lb. Maximum
Composite Dropseed	NA	Minimum 0.5 lb
Splitbeard Bluestem	NA	Minimum 0.5 lb
Native Forbs	(see attached forb mixtures)	

Table 4. Native grass and forb seeding rates for CP-29 & CP-25. Native grass mixtures must include at least 3 species of 3 pounds grass PLS per acre when the mixture includes Big Bluestem, Indiangrass, or Switchgrass. If these species aren't used in the mixture, then 5lbs of grass will be required. CP-29 requires 2lbs of 4 forbs & CP-25 requires 2lbs of 7 species.

Species	**Multiple Grass Species Seeding Rate (Minimum Pounds/Acre)**
Native Grasses	**3 Pounds Grass PLS /Acre Required**
Big Bluestem	Minimum & Maximum 0.5 lb
E. Gama Grass	3
Indiangrass	Minimum & Maximum 0.5 lb
Little Bluestem	Minimum 0.5 lb
Side Oats Grama	Minimum 0.5 lb
Switchgrass	Minimum 0.5 lb. to 1.0 lb. Maximum
Riverbank/Virginia Wild Rye	Minimum 0.5 lb
Purpletop	Minimum 0.5 lb. to 1.0 lb. Maximum
Composite Dropseed	Minimum 0.5 lb
Splitbeard Bluestem	Minimum 0.5 lb
Native Forbs	(see attached forb mixtures)

Table 5. Seeding requirements for CP-21 and CP-15A. Filter strips must be established with at least one grass species. When filter strips are established with native grasses, a legume or forb must be included in the planting mix. Introduced grass mixtures must include 10-15 pounds grass PLS per acre. Native grass mixtures must include 5-8 pounds of grass PLS per acre. These minimum seeding rates may be increased by 25% if site conditions warrant. Native grasses should be encouraged. Lighter rates should be used when wildlife habitat is the primary resource concern.

Species	**Single Grass Species Seeding Rate (Minimum Pounds/Acre)**	**Multiple Grass Species Seeding Rate (Minimum Pounds/Acre)**
Introduced Grasses		**At Least 10 Pounds Grass PLS /Acre**
Orchardgrass	10-15	10
Red Top	N/A	1
Timothy	10	5
Native Grasses		**At Least 5 Pounds Grass PLS /Acre**
Big Bluestem	5-8	Minimum & Maximum 0.5 lb
E. Gama Grass	5-8	3
Indiangrass	NA	Minimum & Maximum 0.5 lb
Little Bluestem	NA	Minimum 0.5 lb
Side Oats Grama	NA	Minimum 0.5 lb
Switchgrass	5-8	Minimum 0.5 lb to 1.0 lb Maximum
Riverbank/Virginia Wild Rye	NA	Minimum 0.5 lb
Purpletop	NA	Minimum 0.5 lb to 1.0 lb Maximum
Composite Dropseed	NA	Minimum 0.5 lb
Splitbeard Bluestem	NA	Minimum 0.5 lb
Legumes	**Single Legume**	**Multiple Legumes**
Alsike Clover	2	1
Ladino Clover	1	0.5
Red Clover	3	2.5
White Clover	1	0.5
Kobe Lespedeza	3	1.5
Korean Lespedeza	3	1.5
Native Forbs	(see attached forb mixtures)	

Table 6: Tree and shrub species suitable for planting in CP-3A, CP-4B, CP-4A, or CP-22. Species selection should be based on site characteristics and planting objectives. Tree plantings for the CREP shall include at least three hard mast species that compose ≥80% of the stand. CP-4B and CP-4D may include all shrub species that are not hard mast.

Species (Common/Scientific)	Red Or White Oak	Wildlife Merit	Mature Height (feet)	Growth Rate	Wetland Indicator Status
Alder, Common *Alnus serrulata*[1/]	-	M	30	Rapid	OBL
Ash, Blue *Fraxinus quadrangulata*[1/]	-	M	90	Moderate	FACU
Ash, Green *Fraxinus pennsylvanica*	-	M	60	Rapid	FACW
Ash, White *Fraxinus americana*	-	M	90	Moderate	FACU
Baldcypress *Taxodium distichum*	-	M	130	Rapid	OBL
Beach, American *Fagus grandifolia**[1/]	-	H	95	Slow	FACU
Birch, River *Betula nigra* [1/]	-	M	80	Rapid	FACW
Buckeye *Aesculus glabra**[/]	-	L	70	Rapid	FACU
Buckthorn, Carolina *Rhamnus*	-	H	25	Moderate	FAC
Buttonbush *Cephalanthus occidentalis* [1/]	-	L	20	Moderate	OBL
Chestnut, Chinese *Castanea mollissima**	-	M	70	Rapid	FACU
Chokeberry, Black *Aronia melanocarpa*[1/]	-	M	3	Moderate	FAC
Chokeberry, Red *Aronia arbutifolia*[1/]	-	M	5	Moderate	FACW
Cottonwood *Populus deltoides*	-	H	130	Rapid	FAC
Dogwood, Flowering *Cornus florida*	-	H	30	Moderate	FACU
Dogwood, Red-osier *Cornus sericea* [1/]	-	H	5	Moderate	FACW
Dogwood, Rough Leaf *Cornus*	-	H	48	Rapid	FAC
Dogwood, Silky *Cornus amomum*	-	H	7	Moderate	FACW
Elderberry *Sambucus canadensis*[1/]	-	H	7	Rapid	FACW
Hazelnut *Corylus americana*[1/]	-	H	10	Moderate	FACU
Hickory, Shellbark *Carya laciniosa** [1/]	-	H	130	Moderate	FAC
Hickory, Shagbark *Carya ovata**[1/]	-	H	90	Rapid	FACU
Holly, Deciduous *Ilex decidua* [1/]	-	M	33	Moderate	FACW
Ironwood *Ostrya virginiana*[1/]	-	M	45	Slow	FACU
Locust, Black *Robina pseudoacacia*	-	L	80	Rapid	FACU
Mulberry (native) *Morus rubra*[1/]	-	H	70	Moderate	FACU
Oak, Black *Quercus velutina* *	Red	H	90	Moderate	FACU
Oak, Blackjack *Quercus marilandica**[1/]	Red	H	25	Slow	UPL
Oak, Bur *Quercus macrocarpa**	White	H	100	Slow	FACU
Oak, Cherrybark *Quercus pagodafolia**	Red	H	110	Moderate	FACW
Oak, Chestnut *Quercus montana**[1/]	White	H	80	Slow	UPL
Oak, Chinkapin *Quercus muehlenbergii**	White	H	80	Moderate	FAC
Oak, Northern Red *Quercus rubra**	Red	H	100	Moderate	FACU
Oak, Nuttall *Quercus nattallii** [1/]	Red	H	120	Moderate	FACW
Oak, Overcup *Quercus lyrata** [1/]	White	H	80	Moderate	OBL
Oak, Pin *Quercus palustris**	Red	H	100	Rapid	FACW
Oak, Post *Quercus stellata**[1/]	White	H	80	Slow	FACU
Oak, Scarlet *Quercus coccinea**	Red	H	90	Rapid	FACU
Oak, Shumard *Quercus shumardii**	Red	H	110	Moderate	FAC
Oak, Southern Red *Quercus falcata**	Red	H	100	Slow	FACU
Oak, Swamp Chestnut *Quercus*	White	H	100	Moderate	FACW
Oak, Swamp White *Quercus bicolor** [1/]	White	H	100	Rapid	FACW
Oak, Water *Quercus nigra** [1/]	Red	H	90	Rapid	FAC

Oak, White *Quercus alba* *	White	H	100	Slow	FACU
Oak, Willow *Quercus phellos** [1/]	Red	H	100	Rapid	FAC
Pawpaw *Asimina triloba*	-	H	35	Slow	FACU
Pecan *Carya illinoensis**	-	H	140	Slow	FACU
Persimmon *Diospyros virginiana*	-	H	50	Moderate	FAC
Trees/Shrubs (continued)					
Plum, Wild *Prunus sp.*	-	H	24	Moderate	FACU
Privet, Swamp *Forestiera acuminata* [1/]	-	L	33	Moderate	OBL
Redbud, Eastern *Cercis canadensis*	-	M	16	Slow	FACU
Serviceberry *Amelanchier arborea*	-	M	50	Moderate	FAC
Sourwood *Oxydendrum arboreum*[1/]	-	M	35	Slow	FACU
Spicebush *Lindera bensoin* [1/]	-	M	12	Slow	FACW
Sugarberry *Celtis laevigata* [1/]	-	M	80	Rapid	FACW
Sumac (native) *Rhus sp.*[1/]	-	M	30	Rapid	FACU
Sycamore *Platanus occidentalis*	-	H	100	Rapid	FACW
Viburnum, Arrowwood *Viburnum*	-	H	6	Slow	FACW
Viburnum, Kentucky *Viburnum molle*[1/]	-	H	6	Slow	FAC
Walnut, Black *Juglans nigra**	-	H	90	Rapid	FACU
Walnut, White *Juglans cinerea**	-	H	80	Rapid	FACU
Yellow Poplar *Liriodendron tulipifera*	-	M	120	Rapid	FACU

*** -** Hard Mast Species; H = high; M = medium; L = low

[1/] Seedlings may not be readily available.

Indicator categories:

OBL	Obligate Wetland	Occurs almost always (estimated probability 99%) under natural conditions in wetlands.
FACW	Facultative Wetland	Usually occurs in wetlands (estimated probability 67%-99%), but occasionally found in non wetlands.
FAC	Facultative	Equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%).
FACU	Facultative Upland	Usually occurs in non-wetlands (estimated probability 67%-99%), but occasionally found on wetlands (estimated probability 1%-33%).
UPL	Obligate Upland	Occurs almost always (estimated probability 99%) under natural conditions in non-wetlands
NI		No indicator -Insufficient information was available to determine an indicator status.

See the NRCS Tree and Shrub Establishment (612) standard for more information on Wetland Indicator Status.

Forb Mixes for CP-2, CP-4B, CP-4D, CP-21 & CP-22: 4 Species at 1lb/acre Total.

Mix 1	Partridge Pea	*Cassia fasciculate*	6.0 ounces/acre
	Illinois Bundleflower	*Desmanthus*	2.0 ounces/acre
	False Sunflower	*Heliopsis*	4.0 ounces/acre
	Purple Coneflower	*Echinacea purpurea*	4.0 ounces/acre
Mix 2	Partridge Pea	*Cassia fasciculate*	7.0 ounces/acre
	Illinois Bundleflower	*Desmanthus*	3.5 ounces/acre
	Blackeyed Susan	*Rudbeckia hirta*	0.5 ounces/acre
	Purple Coneflower	*Echinacea purpurea*	5.0 ounces/acre
Mix 3	Partridge Pea	*Cassia fasciculate*	6.0 ounces/acre
	Illinois Bundleflower	*Desmanthus*	2.5 ounces /acre
	Roundhead	*Lespedeza capitata*	3.0 ounces/acre
	False Sunflower	*Heliopsis*	4.5 ounces/acre
Mix 4	Partridge Pea	*Cassia fasciculate*	8.0 ounces/acre
	Blackeyed Susan	*Rudbeckia hirta*	0.5 ounces/acre
	Roundhead	*Lespedeza capitata*	3.0 ounces/acre
	False Sunflower	*Heliopsis*	4.5 ounces/acre
Mix 5	Partridge Pea	*Cassia fasciculate*	8.0 ounces/acre
	Greyhead	*Ratibida pinnata*	1.5 ounces/acre
	Blackeyed Susan	*Rudbeckia hirta*	0.5 ounces/acre
	Purple Coneflower	*Echinacea purpurea*	6.0 ounces/acre
Mix 6	Spiked Blazing Star	*Liatris spicata*	5.0 ounce/acre
	Blackeyed Susan	*Rudbeckia hirta*	0.5 ounces/acre
	Greyheaded	*Ratibida pinnata*	2.0 ounces/acre
	Purple Coneflower	*Echinacea purpurea*	8.5 ounces/acre
Mix 7*	New England Aster	*Aster novae-angliae*	0.5 ounces/acre
	Illinois Bundleflower	*Desmanthus*	3.5 ounces/acre
	Spiked Blazing Star	*Liatris spicata*	4.0 ounces/acre
	Swamp Milkweed	*Asclepias incarnata*	8.0 ounces/acre
Mix 8*	Partridge Pea	*Cassia fasciculate*	7.0 ounces/acre
	Illinois Bundleflower	*Desmanthus*	3.0 ounces/acre
	Blackeyed Susan	*Rudbeckia hirta*	0.5 ounces/acre
	False Sunflower	*Heliopsis*	5.5 ounces/acre
Mix 9*	Partridge Pea	*Cassia fasciculate*	6.0 ounces/acre
	Illinois Bundleflower	*Desmanthus*	2.5 ounces/acre
	False Sunflower	*Heliopsis*	4.0 ounces/acre
	Devil's Beggartick	*Bidens frondosa*	3.5 ounces/acre

(*Mesic to Wet Sites)

Forb Mixes For CP-25 Based on 7 Species at a 2 Pounds/acre Total

Mix 1	Partridge Pea	*Cassia fasciculate*	8.0 ounces/acre
	Illinois Bundleflower	*Desmanthus*	4.0 ounces/acre
	Blackeyed Susan	*Rudbeckia hirta*	1.0 ounces/acre
	Greyheaded	*Ratibida pinnata*	2.0 ounces/acre
	Roundheaded	*Lespedeza capitata*	4.0 ounces/acre
	False Sunflower	*Heliopsis*	6.0 ounces/acre
	Purple Coneflower	*Echinacea purpurea*	7.0 ounces/acre
Mix 2	Partridge Pea	*Cassia fasciculate*	9.0 ounces/acre
	Illinois Bundleflower	*Desmanthus*	4.0 ounces/acre
	Blackeyed Susan	*Rudbeckia hirta*	1.0 ounces/acre
	Greyheaded	*Ratibida pinnata*	2.0 ounces/acre
	False Sunflower	*Heliopsis*	6.0 ounces/acre
	Spiked Blazing Star	*Liatris spicata*	4.0 ounces/acre
	Purple Coneflower	*Echinacea purpurea*	6.0 ounces/acre
Mix 3	Partridge Pea	*Cassia fasciculate*	8.0 ounces/acre
	Illinois Bundleflower	*Desmanthus*	4.0 ounces /acre
	Blackeyed Susan	*Rudbeckia hirta*	1.0 ounces/acre
	Greyheaded	*Ratibida pinnata*	2.0 ounces/acre
	False Sunflower	*Heliopsis*	8.0 ounces/acre
	Bergamot	*Monarda fistulosa*	1.0 ounces/acre
	Purple Coneflower	*Echinacea purpurea*	8.0 ounces/acre
Mix 4	Partridge Pea	*Cassia fasciculate*	10.0 ounces/acre
	Illinois Bundleflower	*Desmanthus*	4.0 ounces /acre
	Blackeyed Susan	*Rudbeckia hirta*	1.0 ounces/acre
	Greyheaded	*Ratibida pinnata*	2.0 ounces/acre
	Roundhead	*Lespedeza capitata*	6.0 ounces/acre
	Purple Coneflower	*Echinacea purpurea*	8.0 ounces/acre
	Rigid Goldenrod	*Solidago rigida*	1.0 ounces/acre
Mix 5	Partridge Pea	*Cassia fasciculate*	10.0 ounces/acre
	Illinois Bundleflower	*Desmanthus*	4.0 ounces /acre
	Greyhead Coneflower	*Ratibida pinnata*	2.0 ounces/acre
	Blackeyed Susan	*Rudbeckia hirta*	1.0 ounces/acre
	Purple Coneflower	*Echinacea purpurea*	8.0 ounces/acre
	Spiked Blazing Star	*Liatris spicata*	6.0 ounce/acre
	Rigid Goldenrod	*Solidago rigida*	1.0 ounces/acre
Mix 6	Partridge Pea	*Cassia fasciculate*	8.0 ounces/acre
	Blackeyed Susan	*Rudbeckia hirta*	1.0 ounces/acre
	Greyheaded	*Ratibida pinnata*	2.0 ounces/acre
	False Sunflower	*Heliopsis*	6.0 ounces/acre
	Spiked Blazing Star	*Liatris spicata*	3.0 ounce/acre
	Purple Coneflower	*Echinacea purpurea*	8.0 ounces/acre
	Tall Coreopsis	*Coreopsis tripteris*	4.0 ounces/acre

Forb Mixes For CP-29 Based on 4 Species at a 2 Pounds/acre Total (* Mesic to Wet Sites)

Mix 1	Partridge Pea	*Cassia fasciculate*	12.0 ounces/acre
	Illinois Bundleflower	*Desmanthus*	4.0 ounces/acre
	False Sunflower	*Heliopsis*	8.0 ounces/acre
	Purple Coneflower	*Echinacea purpurea*	8.0 ounces/acre
Mix 2	Partridge Pea	*Cassia fasciculate*	14.0 ounces/acre
	Illinois Bundleflower	*Desmanthus*	7.0 ounces/acre
	Blackeyed Susan	*Rudbeckia hirta*	1.0 ounces/acre
	Purple Coneflower	*Echinacea purpurea*	10.0 ounces/acre
Mix 3	Partridge Pea	*Cassia fasciculate*	12.0 ounces/acre
	Illinois Bundleflower	*Desmanthus*	5.0 ounces /acre
	Roundhead	*Lespedeza capitata*	6.0 ounces/acre
	False Sunflower	*Heliopsis*	9.0 ounces/acre
Mix 4	Partridge Pea	*Cassia fasciculate*	16.0 ounces/acre
	Blackeyed Susan	*Rudbeckia hirta*	1.0 ounces/acre
	Roundhead	*Lespedeza capitata*	6.0 ounces/acre
	False Sunflower	*Heliopsis*	9.0 ounces/acre
Mix 5	Partridge Pea	*Cassia fasciculate*	16.0 ounces/acre
	Greyhead	*Ratibida pinnata*	3.0 ounces/acre
	Blackeyed Susan	*Rudbeckia hirta*	1.0 ounces/acre
	Purple Coneflower	*Echinacea purpurea*	12.0 ounces/acre
Mix 6	Spiked Blazing Star	*Liatris spicata*	10.0 ounce/acre
	Blackeyed Susan	*Rudbeckia hirta*	1.0 ounces/acre
	Greyheaded	*Ratibida pinnata*	4.0 ounces/acre
	Purple Coneflower	*Echinacea purpurea*	17.0 ounces/acre
Mix 7*	New England Aster	*Aster novae-angliae*	1.0 ounces/acre
	Illinois Bundleflower	*Desmanthus*	7.0 ounces/acre
	Spiked Blazing Star	*Liatris spicata*	8.0 ounces/acre
	Swamp Milkweed	*Asclepias incarnata*	16.0 ounces/acre
Mix 8*	Partridge Pea	*Cassia fasciculate*	14.0 ounces/acre
	Illinois Bundleflower	*Desmanthus*	6.0 ounces/acre
	Blackeyed Susan	*Rudbeckia hirta*	1.0 ounces/acre
	False Sunflower	*Heliopsis*	11.0 ounces/acre
Mix 9*	Partridge Pea	*Cassia fasciculate*	12.0 ounces/acre
	Illinois Bundleflower	*Desmanthus*	5.0 ounces/acre
	False Sunflower	*Heliopsis*	8.0 ounces/acre
	Devil’s Beggartick	*Bidens frondosa*	7.0 ounces/acre