Environment and Natural Resources Trust Fund (ENRTF)
2010 Work Program

Date of Report: January 6, 2010
Date of Next Progress Report:
Date of Work Program Approval:
Project Completion Date: June 30, 2013

I. PROJECT TITLE: Ecosystem Services in Agricultural Watersheds

Project Manager:	Kylene Olson	Terry VanDerPol
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Location: *The Project will take place in the Chippewa River Watershed in western Minnesota. Various consultants will do part of their work in offices outside the watershed. Please see attached map.*

Total ENRTF Project Budget:	**ENRTF Appropriation**	**$ 247,000**
	Minus Amount Spent:	**$**
	Equal Balance:	**$ 247,000**

Legal Citation: M.L. 2010, Chp. 362, Sec. 2, Subd. 3i

Appropriation Language:
$247,000 is from the trust fund to the commissioner of natural resources for an agreement with the Chippewa River Watershed Project to develop local food and perennial biofuels markets coupled with conservation incentives to encourage farmers to diversify land cover in the Chippewa River Watershed supporting improvement to water quality and habitat. This appropriation is available until June 30, 2013, by which time the project must be completed and final products delivered.

II. PROJECT SUMMARY AND RESULTS:

The Chippewa River watershed faces many serious environmental problems such as water quality degradation, threats to biodiversity, and increased flooding. Agricultural practices have contributed to these problems and agriculture can contribute to solutions. Project partners will implement an innovative approach to target changes in row crop production practices on sensitive fields in the Chippewa River watershed that will improve ecosystem integrity in the basin.

This project will take a market driven approach to reward farmers who diversify environmentally sensitive fields. Building on previous work of the partner organizations in the basin we will,

- Identify land operators and or landowners with sensitive fields that contribute to erosion and other water quality and quantity problems,
- Engage and recruit landowners, conservation groups, institutional purchasers of local foods and biomass and other interested individuals with information about markets for local foods and biomass that could be produced on diversified landscapes in ways that modeling results show could meet water quality and wildlife habitat goals,
- Disseminate information on benefits available through the conservation title of the farm bill as well as state conservation programs that can assist farmers who diversify their sensitive lands.
- Engage in initial monitoring to see if results predicted from modeling are being met as farmers implement land-use changes.

This project will provide information to farmers, institutional leaders, watershed managers and policy makers about working directly with farmers and coupling community-based markets with conservation incentives to successfully achieve the level of landscape change needed to meet water quality goals and other environmental objectives for the Chippewa River watershed.

III. PROGRESS SUMMARY AS OF :

IV. OUTLINE OF PROJECT RESULTS*:*

RESULT/ACTIVITY 1: Target agricultural land-use changes to achieve watershed goals.

Description: Included in this result is the completion of the targeting of sensitive fields within the watershed to convert from row crops to perennial cover. With funding from USDA National Institute of Food and Agriculture the project will target sensitive fields, predict ecological benefits and involve watershed farmer leaders in the development of estimates of economic value of those changed practices on sensitive fields for landowners, operators and potential lessees. As part of the project, we will identify landowners or operators who have sensitive fields identified through the research phase. This project will also collaborate with an LCCMR project called “Statewide Ecological Ranking for CRP and other Critical Lands” to share GIS information and processes, directed by Board of Soil and Water Resources (BWSR). We will seek to develop compatible approaches that show how to utilize that information while adding finer geographic specificity. This result includes two deliverables.

1. *Identify land operators and/or landowners* who manage or own the sensitive fields. We will use plat books and other locally available information to determine who owns and or operates the fields. This may be an ongoing process, depending on the difficulty and changes in operator status over the project.

2 *Determine how to build linkages to the BSWR project by* linking our GIS analysis and modeling results as more geographically focused layers to those developed by the BWSR analysis.

Summary Budget Information for Result/Activity 1: **ENRTF Budget: $ 31,858**
Amount Spent: $
Balance: $ 31,858

Deliverable/Outcome	Completion Date	Budget
1. Identify land operators and/or landowners who manage and/or own sensitive row crop fields as targeted with other funding	12/2012	$21,858
2. Determine how to add our GIS analysis and modeling results as additional layers to the BWSR CRP GIS project.	12/2011	$12,000

Result Completion Date: *12/31/2012*

Result Status as of 06/30/2011:

Result Status as of 6/30/2012:

Result Status as of 12/31/2012:

Final Report Summary:

RESULT/ACTIVITY 2: Engage farmers, institutions that have relevant markets for farmers and agencies with appropriate incentives to facilitate needed land-use changes.

Description: Included in this result are expanding the outreach to farmers, engaging institutions that have potential markets for farm products, developing value chains and engaging agencies with conservation incentives to act in the watershed. Additional community incentives may need to be created if they are identified as being needed in Result 1. This result includes several deliverables.

1. *Build value chains to meet purchasing goals for locally-raised food at University of Minnesota, Morris (UMM) and other institutions.* The goals of this deliverable are to encourage the institutions to set purchasing goals at prices that will help leverage the number of acres needed for conversion in the watershed. We also intend to develop value chains that will aggregate the product for those markets from individual farms. Activities will include engaging farmer leaders already involved in the project and those growing perennials and diversified crops in the watershed, along with other interested landowners/lessees, in conversations with institutions to talk about product needs, quality, timing of deliveries, packaging and other post-harvest issues that will have to be met. We will identify

transportation and processing options that could be adapted for community-based markets for grass-fed and pastured livestock products, diversified crops, tree crops, etc., at nearby institutions such as UMM and healthcare institutions in Willmar and Benson. The project will engage economic development institutions to help entrepreneurs find funding to develop new businesses that may be needed.

2. *Build value chains to meet purchasing goals for perennial biomass at UMM.* The goals of this deliverable are to encourage the institution to set purchasing goals for biomass from perennials at prices that will help leverage the number of acres needed for conversion in the watershed and develop value chains that will aggregate the product for those markets from individual farms. Activities will include facilitating arrangements with farmers and UMM to get product from farms to the UMM plant. We will engage farmer leaders already involved in the project and those growing perennials, along with other interested landowners/lessees, in conversations with UMM to talk about product needs, quality, timing of deliveries, and other post-harvest issues that have to be met. We will identify transportation options for community-based markets for biomass from perennial crops to be used in the UMM gasifier. The project will engage economic development institutions to help entrepreneurs find funding to develop new businesses that may be needed.
3. *Recruit farmers and landowners to adopt practices.* The goal of this deliverable is to engage enough landowners with targeted fields to adopt perennials on row crop fields to meet water quality and wildlife habitat goals as well as market opportunities. Activities will include developing fact sheets and hosting three public meetings or field days to bring together landowners, beginning farmers, other farmers willing to contract for long-term leases on those fields, market managers and agencies with incentives or technical assistance. We will also conduct one-on-one outreach to farmers identified in Result 1. This deliverable includes involvement of the Agricultural Research Service's North Central Soil Conservation Research Lab, using modeling tools (Agricultural Production Systems Simulator and/or Decision Support System for Agrotechnology Transfer) adapted for the Chippewa River Watershed, to help individual farmers understand the potential contributions to water quality if they converted fields on their farms. Similarly, it will include contracting with a University of Minnesota graduate student (co-supervised by John Westra and potentially a faculty member at the University of Minnesota) to use the economic decision tool developed with federal funding. This analysis will help individual landowners and potential lessees understand how the economics of growing perennials in previously row-cropped fields could work for their own particular operation. If landowners don't wish to manage it themselves and they are willing, we will work with landowners and potential lessees to adapt long-term leases for rotational grazing, tree crops, or other environmentally suitable diversified crops that enable contract operators to manage converted fields. In order to encourage the adoption of perennials and certain fields, the project will assist the parties to develop plans and apply for conservation programs and other market incentives needed to manage income and risk.

Summary Budget Information for Result/Activity 2: ***ENRTF B*udget: $159,694**
Amount Spent: $
Balance: $159,694

Deliverables/Outcomes	Completion Date	Budget
1. Engage farmers and institutional leaders to clarify product amounts and quality needs to meet purchasing goals for regionally-raised food at UMM and other area institutions, engage existing transportation and processing businesses and economic development officials to address value chain gaps.	03/2013	$40,600
2. Engage farmers and institutional leaders to clarify product amounts and quality needs to meet purchasing goals for perennial biomass at UMM, engage existing transportation and processing businesses and economic development officials to address value chain gaps.	03/2013	$14,200
3. Recruit farmers, landowners and potential lessees through three field days or public meetings, new materials and individual visits. We will conduct individual field modeling and economic analyses for cropping alternatives, assist with plans and applications for conservation incentives, and adapt leases to help people grow perennials on targeted fields.	03/2013	$ 104,894

Result Completion Date: *03/31/2013*

Result Status as of 12/31/2010:

Result Status as of 06/30/2011:

Result Status as of 12/31/2011:

Result Status as of 06/30/2012:

Result Status as of 12/31/2012:

Final Report Summary:

RESULT/ACTIVITY 3: Prepare reports, publications, initiate monitoring and plan for continued implementation and future monitoring.

Description: It will take longer than three years to achieve implementation across the landscape and to monitor to see if predicted results are achieve. As a result, goals are to begin monitoring for effects of early implementation, plan the next phase of implementation and long-term monitoring for ecosystem services and economic impacts, and prepare reports detailing the expanded market development, farmer outreach and conservation incentives needed to achieve the level of implementation necessary for change. This result includes several deliverables.

1. *Initiate monitoring of in-stream impacts near the mouth of the Chippewa River at Highway 40 station and two sub-watersheds, selected in the research phase, for sediment, phosphorous (P), nitrate (N) and fecal coliform*. We will compare initial results to predictions in relation to the degree of adoption of perennial cover in sensitive fields achieved by March 31, 2013.
2. *Determine number of landowners and markets and incentives still needed after the end of this project to achieve predicted landscape level results.* The goal of this deliverable is to determine what remains to be done to achieve the level of targeted landscape change identified in result one. Activities will include comparing level of recruitment of landowners achieved to predicted needs. Market development and conservation incentives will be analyzed for adequacy, and we will predict what will still need to be done to complete the enrollment and market development. Activities include a public meeting to gather input, and advisory and team meetings to analyze data and prepare plans.
3. *Identify monitoring strategies and reporting vehicles.* The goals of this deliverable are to develop monitoring plans to determine actual watershed level performance and compare to predicted levels of perennials and estimated benefits. We will develop monitoring plans for continued in-stream water quality monitoring as well as wildlife habitat, other ecological services, on-farm profitability, functioning of value-chains to meet purchasing goals, satisfaction of all parties and other potential community development impacts identified during the research phase. Activities include team calls to prepare plans.
4. *Complete reports identifying ongoing partner roles and future funding strategies.* The goal of this deliverable is to produce a final report to the LCCMR and publish reports and web-based publications for farmers, watershed managers and policy makers about the project.

Summary Budget Information for Result/Activity 1: **ENRTF Budget: $56,798**
Amount Spent: $
Balance: $56,798

Deliverable/Outcome	Completion Date	Budget
1. Implement preliminary monitoring to determine impacts of early implementation in mainstem and two sub-watersheds for sediment, N, P and fecal coliform	5/30/2013	$22,797
2. Determine number of landowners and markets and incentives still needed to achieve predicted landscape level results.	6/30/2013	$18,333
3. Identify monitoring strategies for continued water	06/30/2013	$10,631

quality, other ecosystem services, profitabitliy, value chain functioning and community impacts and plan for future reporting vehicles.		
4. Complete and publish three reports identifying ongoing next steps partner roles and future funding strategies for different audiences along with web-based materials.	06/30/2013	$ 5,037

Result Completion Date: *06/30/2013*

Result Status as of 12/31/2012:

Result Status as of 08/15/2013:

Final Report Summary:

V. TOTAL ENRTF PROJECT BUDGET: *$247,000*

This project is led by the Chippewa River Watershed Project, which has primary responsibilities for outreach to individual farmers, GIS analysis, Soil and Water Assessment Tool modeling, stream quality monitoring and project oversight. The project includes a subcontractor, the Prairie Country RC and D that acts as a fiscal agent by managing payroll services and accounts payable functions for the Chippewa River Watershed Project. The project also includes a major sub-contractor, the Land Stewardship Project. Because of its financial infrastructure and experience, LSP is managing other subcontracts for scientific partners for applied analyses on individual farms using the tools developed in a research phase also managed by LSP with other funding. LSP has significant experience in community development activities focused on market and value-chain development and will conduct those activities. The summary below and the attached budgets are identified as (A) Chippewa River Watershed Project and (B) Land Stewardship Project sub-contract.

A. Chippewa River Watershed Project

Personnel: 80,257
Kylene Olson for project oversight
Paul Wymar for GIS, SWAT modeling and monitoring
Jenn Hoffman for individual outreach to farmers

Contracts:

- Prairie Country RC&D to manage finances for the CRWP 12,360
- LSP subcontract (see below for details) 147,000

Travel: To be Paid from Other Funds

Monitoring (analysis of water samples) 4,320

Farmer stipends for advisors and presenters 1,350

Printing (for biennial reports)	400
Supplies (Plat books and sampling supplies)	1,313

TOTAL ENRTF PROJECT BUDGET: $ 247,000

B. Land Stewardship Project sub-contract (details for total provided above)

Personnel: 77,750
Terry VanDerPol for community development and oversight
Thomas Taylor for market development
To Be Hired for meeting outreach, community development and one-on-one farmer assistance to adopt changes

Sub-Contracts: 47,900
-ARS Morris lab for predicting impacts of changing individual fields
-University of Minnesota graduate student on contract to conduct economic analyses using decision tool developed earlier
-Louisiana State University AgCenter economist John Westra to supervise grad student
(travel to co-supervise)
-West Central Research and Outreach Center's Dennis Johnson for travel and assistance on grazing planning

In-State Travel:	4,600
Publications	11,650

-Outreach publications for farmers
-Monitoring reports
-Web content and pod casts
-Final reports for farmers, watershed managers, and policy-makers

Meeting Expenses (room rental and field day expenses)	2,000
GIS Maps	2,400
Conference calls	700

Explanation of Capital Expenditures Greater Than $3,500:
There are none.

VI. PROJECT STRATEGY:

A. Project Partners:

Kylene Olson, Executive Director of the Chippewa River Watershed Project, will work closely with Terry VanDerPol, director of Community-Based Food Systems and Economic Development Program at the Land Stewardship Project (LSP), to assure the project operates smoothly to produce the intended results. Kylene will make sure that the project develops in a way that benefits the goals of the Chippewa River Watershed

Project, materials are suitable for the watershed, and will oversee one-on-one outreach to watershed farmers as well and monitoring. Terry, working with George Boody, will oversee the use of analysis tools, such as APSIM and DSSAT models, economic decision tool and LINK adapted for the watershed with other funding, during this implementation phase to provide specific information on individual farms. Terry will oversee institutional market development and coordination with farmers who want to participate. LSP will take the lead in developing and publishing reports and other project publications and coordinating public meetings.

Other partners include the Agricultural Research Service North Central Soil Conservation Research Lab (USDA) lab in Morris led by Station Director Dr, Abdullah Jaradat. He will oversee a scientist working on this project. Dennis Johnson, grazing scientist at West Central Research and Outreach Center University of Minnesota, will provide direct assistance to landowners and lessees on planning for grazing activities. Dr. John Westra, an agricultural economist at Louisiana State University Ag Center who has worked closely with LSP in two previous studies on the economic and biophysical modeling, will co-supervise a University of Minnesota graduate student on contract with LSP. The University of Minnesota, Morris is also a partner in the project by cooperating on market development for food and biomass products grown on converted fields.

Other institutions will be asked to provide information to the project such as case studies.

B. Project Impact and Long-term Strategy:

This project uses an interdisciplinary team approach to targeting, recruiting and market development which will help us make practical connections between land-use change at the field level and watershed goals for multiple ecosystem services. It is innovative because we will employ local food and perennial plant-based energy markets along with conservation incentives to assure the economic viability of farmers. This is expected to create links between farmers and nearby communities that will benefit from enhanced ecosystem services. The design of the project with the team structure, expertise and access to archived data and documented results will ensure the rationality and success of the proposed work. It will also make it easier for other groups create a replicable approach for MN River Basin watersheds needing more perennials, which we are calling a Strategic Resource Management Framework. This is a comprehensive community development strategy based on wildlife and water quality friendly regional food and energy from conversion to perennials in targeted areas. This framework will have been developed with other funding. However, this project will add valuable information from the implementation phase. We will seek continued funding after this project, as necessary, to complete implementation and monitor for long-term changes.

C. Other Funds Proposed to be Spent during the Project Period:

Walton Family Foundation secured – approximately $80,000 during the project period out of a $200,000 total grant

USDA National Institute of Food and Agriculture about $400,000 used during the project period out of a $458,000 total grant.

Other sources To Be Determined will be sought.

D. Spending HIstory:

The National Fish and Wildlife Foundation contributed $100,000 in a previously funded grant that helped lay the groundwork for this project. In addition, secured funding from the Walton Family Foundation of approximately $120,000 will be spent in the 8 months prior to this project that will help conduct outreach and prepare for the research aspects of the project to be funded by National Institute of Food and Agriculture. Results of those efforts will be used to achieve the results described above.

VII. DISSEMINATION:
A reports and materials prepared for this project will be disseminated on Chippewa River Watershed Project, Land Stewardship Project and other partner web sites. Fact sheets and scientific papers will also be available on these and other partner's web sites. A new LSP web page will provide links to all datasets and reports. We will present information at one basin-level conference as well as regional conferences. Information will be made available to state agencies overseeing watershed and natural resource management as well as watershed management organizations throughout the Minnesota River Basin.

VIII. REPORTING REQUIREMENTS: Periodic work program progress reports will be submitted not later than 12/31/2010, 06/30/2011, 12/31/2011, 06/30//2012, 12/31/2012.

A final work program report and associated products will be submitted between by 08/15/2013 as requested by the LCCMR.

IX. RESEARCH PROJECTS:

Attachment A: Budget Detail for 2010 Projects - Summary and a Budget page for CRWP

Project Title: Making Ecosystem Services Pay in Agricultural Watersheds Project ID 215-G

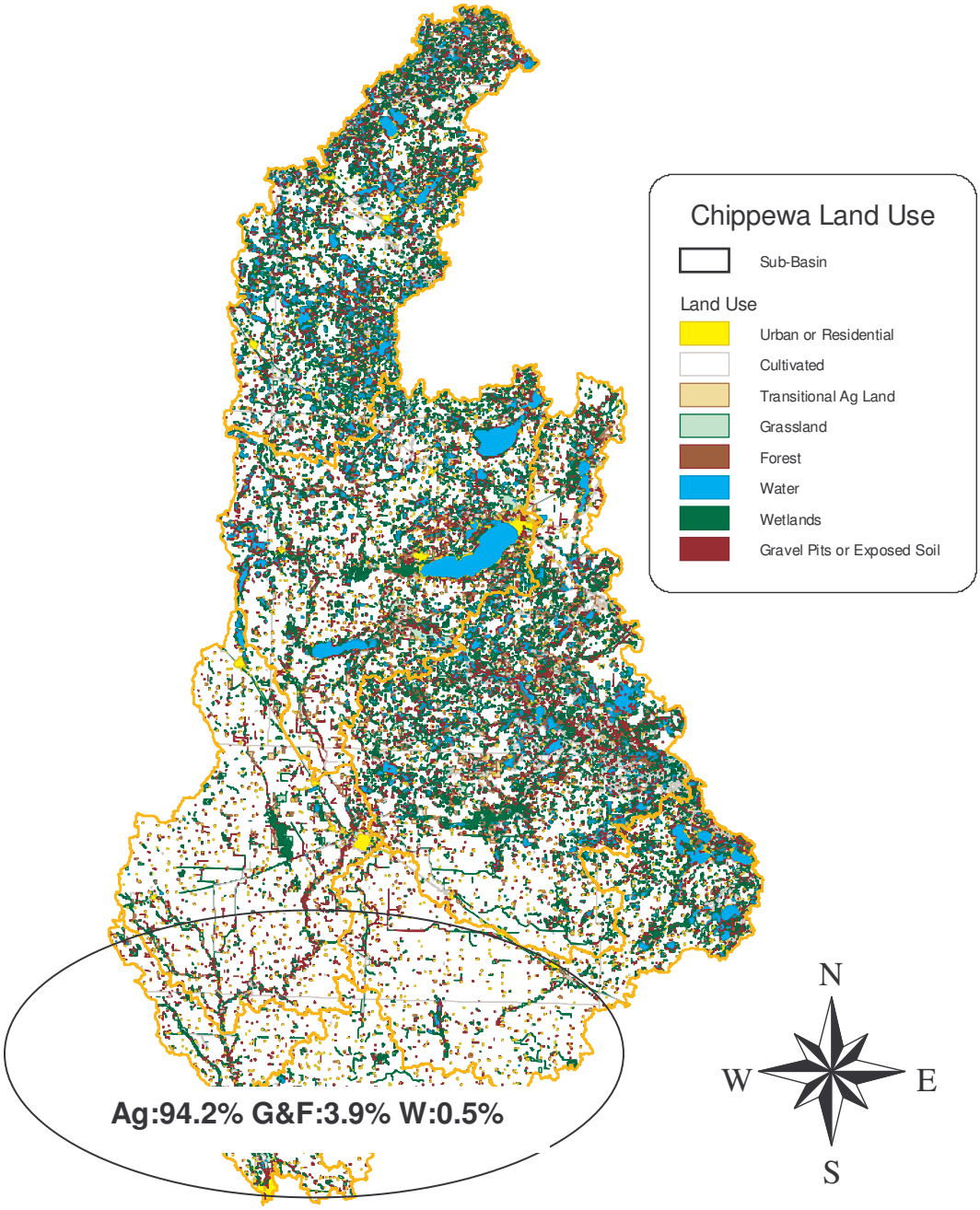
Project Manager Name: Kylene Olson Chippewa River Watershed Project (and Terry VanDerPol, Land Stewardship Project)

Trust Fund Appropriation: $ *$247,000*

1) See list of non-eligible expenses, do not include any of these items in your budget sheet

2) Remove any budget item lines not applicable

2010 Trust Fund Budget	**Result 1 Budget:**	**Amount Spent** *(date)*	**Balance** *(date)*	**Result 2 Budget:**	**Amount Spent** *(date)*	**Balance** *(date)*	**Result 3 Budget:**	**Amount Spent** *(date)*	**Balance** *(date)*	**TOTAL BUDGET**	**TOTAL BALANCE**
	Targeting ag land-use changes			*Engage farmers, institutional markets and agencies in implementation*			*Monitor, design the next phase of implementation and prepare reports, publications*				
BUDGET ITEM											
PERSONNEL: wages and benefits Kylene Olson Project Manager % FTE - 76% salaries and 23% benefits	9,934			6,812			9,412			26,158	
Paul Wymar, Project Scientist 25% FTE - 76% salaries and 23% benefits (Working on GIS analysis and SWAT modeling, monitoring)	5,680			5,964			15,702			27,346	
Jenn Hoffman, Watershed Specialist 14% FTE - 76% salaries and 23% benefits (Outreach to individual farmers)	8,463			14,882			3,408			26,753	
										0	
Contracts										0	
Prairie RC& D 9% FTE	2,393			4,886			5,081			12,360	
Farmer stipends				900			450			1,350	
LSP subcontract (see separate page for details)	3,000			126,250			17,750			147,000	
Monitoring Expenses, Lab analysis @ $72/sample set for 60 sample sets	0			0			4,320			4,320	
Printing (for biennial reports)	200						200			400	
Supplies										0	
E-Plat books @ about $100/county	838									838	
Sampling supplies							475			475	
Travel expenses in Minnesota										0	
COLUMN TOTAL	**$30,508**	**$0**	**$30,508**	**$159,694**	**$0**	**$159,694**	**$56,798**	**$0**	**$56,798**	**$247,000**	**$0**



Scale: 1" = 15 miles

Project Approach

Phase I (During Proposed LCCMR Project):

Model ecosystem services and economics for land-use changes such as perennial crops, grazing, buffers, and diversified systems needed to achieve ecosystem goals in Chippewa River watershed

⇓

Involve area institutions to purchase food and biomass energy products from diversified fields

Identify appropriate incentives

Recruit farmer participation

⇓

Phase II (After Proposed LCCMR Project)

Continue institutional and farmer recruitment

⇓

Monitor results in Chippewa River watershed