BOARD OF SUPERVISORS

Brown County

305 E. WALNUT STREET
P. O. BOX 23600
GREEN BAY, WISCONSIN 54305-3600
PHONE (920) 448-4015 FAX (920) 448-6221

LAND CONSERVATION SUBCOMMITTEE
Norb Dantinne, Chair
Dave Kaster, Vice Chair
Bernie Erickson, Mike Fleck, Dan Haefs, Norbert Vande Hei(FSA)

LAND CONSERVATION SUBCOMMITTEE
Monday, March 22, 2010
5:30 p.m. (PD&T to Follow)
Room 161, UW-Extension
1150 Bellevue Street

PLEASE NOTE TIME CHANGE

I. Call Meeting to Order.
II. Approve/Modify Agenda.
III. Approve/Modify Minutes of Land Conservation Subcommittee of December 28, 2009.

1. Variance Request from Quiet Crest Farms to Build a Barnyard within 100 feet of a Neighbor Property Line. (See attachment.)

2. Report on March 10, 2010 Meeting with Todd Parczick – Cow Manure -2- Energy.

3. Review of Brown County Subsidies to Agriculture. (Materials will be handed out at meeting.)

4. Review of Animal Waste Management Ordinance Provisions Regarding New Technology.

5. Review and Approve 2009 Land and Water Conservation Department Annual Report and 2010 Annual Work Plan.

6. Update on Grant Applications for Great Lakes Restoration Initiative:
   a. Baird Creek Riparian Protection Project RFP - **$377,354**.
   b. Improving Water Quality with FGD Gypsum in Green Bay's Lower Fox River - **$597,218**.
   c. Improving Water Quality in Lower Fox River – Green Bay TMDL by Reduction of Soil Phosphorus Levels by Relocation of Animal Waste from High Phosphorus Fields to Low Phosphorus Fields. - **$537,389.**
   d. West Shore Green Bay Northern Pike Habitat Project - **$395,815** - Jim Jolly

7. Land and Water Conservation Department Monthly Budget Update. (Copy will be provided at meeting.)

8. Wildlife Damage Control Program – Jon Bechle.
   a. Wisconsin Deer Donation (Hunt for the Hungry).
   b. Damage Claims.
   c. Green Bay Authorized Bow Hunt.

9. Ozaukee County Resolution.

10. Wisconsin Land and Water Conservation Association Request for $800 Special Assessment.

11. Budget Adjustment Request (#10-09): Increase in expenses with offsetting increase in revenue.

12. Budget Adjustment Request (#10-31): Increase in expenses with offsetting increase in revenue.

13. Director's Report.

14. Such Other Matters as Authorized by Law.

Norb Dantinne, Chair

Notice is hereby given that action by the Committee may be taken on any of the items which are described or listed in this agenda.
Please take notice that it is possible additional members of the Board of Supervisors may attend this meeting, resulting in a majority or quorum of the Board of Supervisors. This may constitute a meeting of the Board of Supervisors for purposes of discussion and information gathering relative to this agenda.

PROCEEDINGS OF THE BROWN COUNTY
LAND CONSERVATION SUBCOMMITTEE

Pursuant to Section 18.94 Wis. Stats., a regular meeting of the **Brown County Land Conservation Subcommittee** was held on Monday, December 28, 2009 in Room 161, UW-Extension -1150 Bellevue Street, Green Bay, Wisconsin

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Present: Norb Dantinne, Bernie Erickson, Mike Fleck, Dan Haefs, Dave Kaster
Norb VandeHei
Also Present: Bill Hafs, Jon Bechle, Jim Jolly
Tom Hinz, Jayme Sellen, Aaron Schuette

I. **Call Meeting to Order:**
The meeting was called to order by Chairman Norb Dantinne at 6:00 p.m.

II. **Approve/Modify Agenda:**

Motion made by Supervisor Erickson and seconded by Supervisor Fleck to approve the agenda. MOTION APPROVED UNANIMOUSLY

III. **Approve/Modify Minutes of Land Conservation Subcommittee of October 26, 2009:**

Motion made by Supervisor Fleck and seconded by Supervisor Kaster to approve the minutes. MOTION APPROVED UNANIMOUSLY

1. **Update on Animal Waste Storage Permit for N.E.W. Organc Digestion, LLC, 6601 County Road R, Denmark, Wisconsin (Attachment: Letter from Conestoga-Rovers and Associations NEW Organics):**

Bill Hafs referred to a letter in packet material from Conestoga-Rovers updating the Land Conservation Department in regard to the installation of the anaerobic digester (AD) and storage tank at N.E.W. Organic Digestion, LLC. The facility has changed their plans and will no longer be accepting animal waste into the AD facility. Based on this, the facility no longer is required to complete a 590 Nutrient Management Plan under Chapter 26 of the Brown County Cody of Ordinances, however, will complete a plan for land application of industrial waste products under NR213. A completed waste management plan will be submitted for review and approval by Tom Tewes, DNR Industrial Wastewater Specialist, prior to any land application of industrial waste from the N.E.W. Organic Digestion Facility.

Motion made by Supervisor Erickson and seconded by Supervisor Fleck to receive and place on file. MOTION APPROVED UNANIMOUSLY

2. **Land & Water Conservation Department Monthly Budget Update (11/30/09) To be distributed at meeting):**

Hafs reported that the department budget is on track (report attached).

Motion made by Supervisor Erickson and seconded by Supervisor Kaster to approve the minutes. MOTION APPROVED UNANIMOUSLY

3. **Wisconsin Working Lands Initiative – Power Point Presentation by Aaron Schuette, Conservation Compliance Requirements by Jim Jolly:**

Because five of the six members on the committee had already seen this presentation, Mr. Schuette did not show it again, however, distributed a copy of the power point (attached), along with a Program Summary of the Wisconsin Working Lands Initiative, and a document from the Wisconsin Department of Agriculture, Trade & Consumer Protection relative to "Understanding Agricultural Enterprise Areas and the Petition Process". Both documents are also attached.

Motion made by Supervisor Fleck and seconded by Supervisor Erickson to receive and place on file. MOTION APPROVED UNANIMOUSLY

4. **Grant Application Review (#09-47): Review and approval of Great Lakes Restoration Imitative Grants Application – Pre Proposal for Total Maximum Daily Load Project for Brown, Outagamie, and Calumet Counties. (Attachment 2009 Pre Proposal Ag BMPS TMDL: LFox Luse Watershed Boundaries; LFox SWAT Sub Watershed Yields):**

An RFP for Great Lakes Restoration Initiative Projects was distributed and is attached. Mr. Hafs explained that activities proposed under this grant include agricultural Best Management Practice implementation in the lower Fox River relative to high sediment and phosphorus delivery. The total grant for Brown, Outagamie and Calumet Counties is $10,787,700 per year, with Brown County's portion at $5,349,000 per year, including $594,000 for 8.25 FTE, $120,000 for staff support, and $4,635,000 cost share for landowners. The balance is to be distributed to Outagamie and Calumet County Land & Water Conservation Departments.

The term of the grant is for 2010 and 2011. New positions would be 100% funded by the grant, however, Brown County will point to current funding from State and County for enhancement. Hafs stated that existing staff would monitor and inspect Best Management Practices consistent with current County Ordinance.

Motion made by Supervisor Haefs and seconded by Supervisor Erickson to approve grant application. MOTION APPROVED UNANIMOUSLY

5. **Grant Application Review (#09-48): Review and Approval of Great Lakes Restoration Imitative Grants Application – Pre Proposal for Baird Creek Riparian Projection Project:**

This grant would be used to protect stream corridors, create riparian corridor habitat and establish buffer strips on the Baird Creek Watershed in the Town of Humboldt, estimated to be 6 miles and 35' wide on both sides of the stream. Financial incentives would be offered up to $2,500 per acre for landowners to

install buffer strips out to 150' on both sides of a stream by permanent contract attached to landowners deed. Of the total, $133,700 will be provided in cost share to landowners, $211,656 in staffing cost to the Brown County Land & Water Conservation Department and Baird Creek Parkway preservation Foundation, and $32,000 O&M.

The grant would fund one Project Technician for 2 years and 500 hrs for management of the project. While matching resources are not required, the grant will point to current efforts by Brown County to maintain and comply with the present Buffer Strip Ordinance

Motion made by Supervisor Haefs and seconded by Supervisor Erickson to approve grant application. MOTION APPROVED UNANIMOUSLY

6. **Grant Application Review (#09-48): Review and Approval of Great Lakes Restoration Imitative Grants Application – Pre Proposal for West Shore Pike Habitat Restoration Project – Jim Jolly:**

Mr. Hafs explained this grant would be used to create, enhance, or restore high quality spawning and rearing habitat for Northern Pike in the western rim of Green Bay on private lands. It would establish 16 miles of buffers, establish and restore 73 acres of wetlands, reposition 20 culverts to open access to additional 40 miles of stream for migrating fish, and encourage local governments to enact an ordinance to protect vegetative buffers. The total grant amount is $1,794,888, with a yearly allotment of $448,716 during the years of 2010 to 2014. Hafs stated that Brown County would identify match to help the grant with staff time to monitor contracts for compliance with landowners.

Motion made by Supervisor Haefs and seconded by Supervisor Erickson to approve grant application. MOTION APPROVED UNANIMOUSLY

7. **Director's Report:**
Bill Hafs addressed the following: (information attached):
- Baird Creek Watershed in the Towns of Humboldt & Eaton
- Wisconsin Nutrient Management Update
- Glacierland Resource Conservation & Development Newsletter

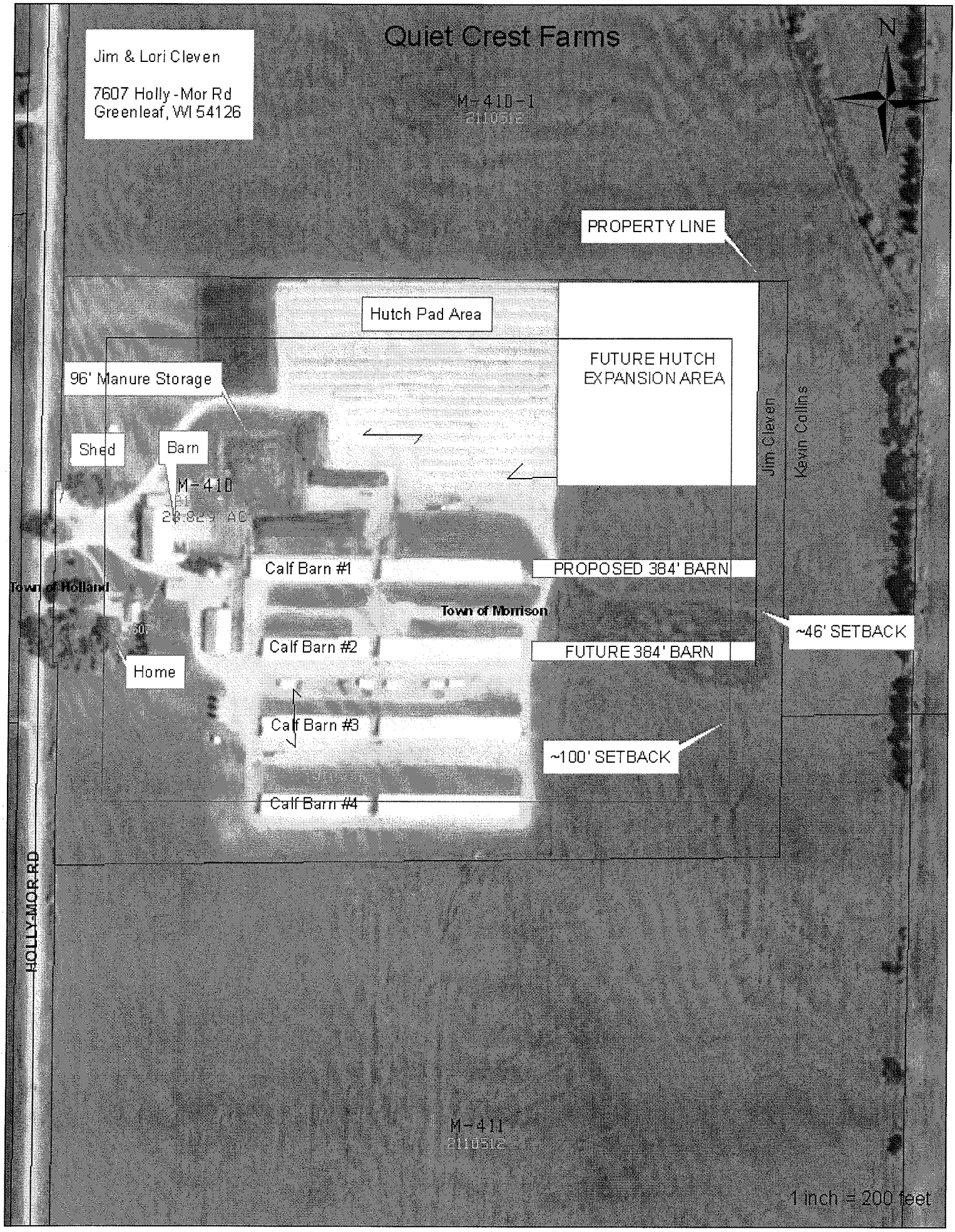
Motion made by Supervisor Kaster and seconded by Supervisor Haefs to receive and place on file. MOTION APPROVED UNANIMOUSLY

8. **Such Other Matters as Authorized by Law:** None

Motion made by Supervisor Erickson and seconded by Supervisor Kaster to adjourn at 6:35 p.m. MOTION APPROVED UNANIMOUSLY

Respectfully submitted,

Rae G. Knippel
Recording Secretary


Quiet Crest Farms
Jim & Lori Cleven
7607 Holly-Mor Rd
Greenleaf, WI 54126
N
M-410-1
PROPERTY LINE
Hutch Pad Area
FUTURE HUTCH
EXPANSION AREA
96' Manure Storage
Shed
Barn
M-410
Jim Cleven
Kevin Collins
Calf Barn #1
PROPOSED 384' BARN
Town of Holland
Town of Morrison
~46' SETBACK
Calf Barn #2
FUTURE 384' BARN
Home
Calf Barn #3
~100' SETBACK
Calf Barn #4
HOLLY-MOR RD
M-411
1 inch = 200 feet

BROWN COUNTY
LAND and WATER CONSERVATION DEPARTMENT

2009 Annual Report
and
2010 Work Plan

Culverts and buffers installed on West Shore Pike Habitat Restoration Project

Land Conservation Committee

The Land Conservation Committee is a standing committee of the Brown County Board. County governments are authorized to create a committee that broadly represents local interests for the conservation of soil, water, and related natural resources in each county.

Section 92.06 of the Wisconsin State Statutes require that "each county board shall create a Land Conservation Committee" comprised of "at least two persons who are members of the Committee on Agriculture and Extension Education" of the County Board of Supervisors, the Chairperson "of the County Farm Services Agency Committee or another member of that committee as designated by its chairperson". Any number of persons "who are also members of the County Board", may also serve on the LCC.

Land Conservation Committee Members

Norbert Dantinne Jr., Chairperson
5250 Finger Rd
Green Bay, WI 54311
(920)863-6362

Bernie Erickson
868 Dousman St.
Green Bay, WI 54303
(920)497-9006

Mike Fleck
1402 Charles St.
De Pere, WI 54115
(920)336-3776

Dave Kaster, Vice Chairperson
3008 Monroe Rd.
De Pere, WI 54115
(920)336-0221

Daniel Haefs
1917 Smith Street
Green Bay, WI 54302
(920) 432-0069

Norbert Vande Hei Farm Service Agency (FSA)
5681 Glenmore Rd.
De Pere, WI 54115
(920)863-2869

2009 Land Conservation Department Staff

William Hafs, County Conservationist
Jim Jolly, Program Manager
Jon Bechle, Program Manager
Dave Wetenkamp, Technician-Engineering
Chris Flicek, Technician-Engineering
Paul Lemke, Technician-Agronomist
Brent Peterson, Technician-Agronomist
Brad Holtz, Technician-Agronomist

Rama Zenz, Technician
Larry Kriese, LTE-Northern Pike Habitat Project
Kyle Buresh- Summer intern Pike project

ADOPTED RESOLUTIONS

- Brown County Land Conservation Committee formed (May 19, 1982).
- Specified powers and responsibilities of Land Conservation Committee enumerated in Section 92.07 of Wisconsin State Statutes (May 18, 1983).
- Designated the Land Conservation Department county agency to participate in NR243 Animal Waste Management Program (March 21, 1984).
- Farmland Preservation Plan for Brown County (June 20, 1985).
- Brown County Animal Waste Storage Facility Ordinance (April 16, 1986).
- Brown County Manure Management Water Pollution Control Plan (June 20, 1986).
- Wildlife Damage Abatement and Wildlife Damage Claim Program (September 17, 1987).
- Brown County Erosion Control Plan (March 18, 1988).
- East River Priority Watershed Plan (May 15, 1991).
- Streambank Protection Ordinance (October 18, 1991).
- Approved membership and participation in the Great Lakes Nonpoint Abatement Coalition (GLNAC) Wisconsin Chapter (July 26, 1993).
- Red River/Sturgeon Bay Priority Watershed Plan (September 20, 1996).
- Branch River Priority Watershed Plan (January 30, 1996).
- Duck, Apple/Ashwaubenon Creeks Priority Watershed Plan (May 21, 1997).
- Brown County Agricultural Shoreland Management Ordinance (June 12, 1998).
- Revised the Animal Waste Facility Ordinance (April 1986) to create Chapter 26 Animal Waste Management of the Brown County Code (January 20, 1999).
- Land and Water Resource Management Plan for Brown County (March 17, 1999).
- Approval of Conservation Reserve Enhancement Program (December 19, 2001).
- 2004 – 2008 Land and Water Resource Management Plan (January 21, 2004).
- Creation of Special Revenue fund of $40,000 for groundwater contamination of wells through 2009 (October 18, 2006).
- Revised the Animal Waste Management Ordinance to include groundwater protection provisions including winter spreading plan requirements and unconfined manure pile definitions (November 13, 2006).
- Revised the Brown County Animal Waste Ordinance to clarify nutrient management plan requirements and add NRCS 313 language (June 27, 2007).
- Approval of 2009-2013 Brown County Land and Water Resource Management Plan (November 10, 2008)

2009 ACCOMPLISHMENTS and 2010 GOALS

LAND & WATER CONSERVATION DEPARTMENT

(From 2013 State and County Approved Land and Water Resources Management Plan)

Priorities -Implementation schedule/ Work Plan Goal and Objective description	A. Total est. needs B. Yearly Rate C. 2009-2013 Goals	2009	2010	2011	2012	2013
Goal 1 - Identify priority farms						
1. Identify Ag operations with WPDES permit, ordinance permit, AGMZ, NR243	WPDES 15 Ord. permits 18	**33**				
2. Rank farms, high sediment fields, no 590 plan, other waste not on 590 plan, no winter spreading plan, no buffers	3 other waste 4 buffers NOV 6 no WSP	**13**				
3. Track implementation/ compliance	WPDES & Ord.	**33**				
4. Notify Priority farms/ needed actions. All landowners will be notified of state requirements and county ordinance requirements.	#1 + #2 3,805 landowners contacted by fee notice	**46**				
Goal 2- Implement Best Management Practices (BMP's) on Priority Farms						
1. Implement BMP's in Ag Groundwater Mgmt Zones						
Required activities:						
a. Require Buffers	A. 20 miles B. 2 mile/ yr C. 10 miles	**0**				
b. Prohibit unconfined manure piles 1000 feet of delivery systems	A. 5 B. 1/yr C. 5	**8**				
c. Prohibit winter spreading without winter spreading plan	A.10 B. 10/yr C. 50	**20**				
d. Yearly inspection of Animal Waste Storage Facilities (in AGMZ) see map page	A.15 B.15/yr C. 75	**0**				
Recommended activities:						
a. No discharge of untreated waste from feedlots or milk house	A. 5 B. 1/yr C. 5	**0**				
b. No diversion of surface runoff into sinkholes or bedrock openings	TBD	**0**				
c. No drain tile outlets to sinkholes or bedrock openings	TBD	**3**				
d. No row crops or chemicals within 100 feet of delivery systems	TBD	**0**				
e. Spill response plan for waste storage, transportation of waste	TBD	**12**				
f. Immediate incorporation land applied waste	TBD	**300 ac**				
g. Maximum application rates 3,000 gallons or 6,000 gallons per year	TBD	**6,000 ac**				
h. No animal waste or feed storage built within 400 feet of conduits to groundwater	TBD	**0**				

Priorities -Implementation schedule/ Work Plan Goal and Objective description	A. Total est. needs B. Yearly Rate C. 2009-2013 Goals	2009	2010	2011	2012	2013
2. Animal Waste Mgmt Ordinance Chapter 26 admin.						
a. Install nutrient management plans new acres (total Ag acres 164,237. 140,000 acres estimated to be achievable, 90,000 installed end of 2008)	A. 50,000 B. 5,000 ac/yr C. 25,000 ac	**5,000 ac**				
b. Annually Review and certify existing 590 plans. 95,000 - 115,000 ac	A.140,000 B.105,000 ac/yr C.105,000 ac/yr	**109,000 ac**				
c. Annually review and approve 75 winter spreading plans	A. 75 B. 75/yr C. 375	**100**				
d. Install 5 State Manure Management Prohibitions per year	A. TBD B. 5/yr C. 25	**4**				
e. Annually inspect manure storage facilities 500au, over flows, liner failure	A. 38 B. 38/yr C. 190	**31**				
f. Upgrade non conforming animal waste storage facilities	A. 50 B. 1/yr C. 5	**2**				
g. Permitting and engineering for animal waste management ordinance	A.TBD B.15/yr C. 75	**30**				
h. Notice of violations	A. TBD B. 3/yr C. 15	**0**				
i. Animal Waste complaint inspections	A.TBD B. 20/yr C. 100	**57**				
J. Incorporate other waste into 590 plans (total 29,368.9 acres- DNR 2007)	A. 29,368 acres B. 2500 ac/yr C. 12,500 acres	**3,000 ac**				
3. Buffer installation Chapter 22.10, administration						
a. Install 5 miles of buffer strips per year (out side of AGMZ)	A. 350 miles B. 5 miles/yr C. 25 miles	**6.35 mi**				
4. Waste Transformation Project admin. (see appendix)						
a. Funding and grants administration	TBD	delayed				
b. Secure waste streams from industry and agriculture	TBD	delayed				
c. Coordinate animal waste delivery and nutrient management plan	TBD	delayed				
d. Administration and coordination of project	TBD	delayed				

Priorities -Implementation schedule/ Work Plan Goal and Objective description	A. Total est. needs B. Yearly Rate C. 2009-2013 Goals	2009	2010	2011	2012	2013
5. Groundwater Protection administration						
a. Town meetings	A. 11 Morrison WSP B. 3/yr C. 15	**5**				
b. Well Testing	A. TBD B. 200/yr UWGB 40 C.1000	**45**				
c. Old well abandonment cost share and contracts	A. 980 B. 10/yr C. 50	**8**				
d. Field verification of karst features and add to AGMZ map	A. TBD B. 20 sites/yr C. 100	**4 sites** (Morrison)				
e. Proposed County Well abandonment ordinance (est. 980) abandonment	A. 980 B. 30/yr C. 150	delayed				
6. West Shore Pike Habitat Restoration Project admin. (contingent on funding)						
a. Buffer strip installation (included in objective 2)	A. 10 miles B. 2 miles/yr C. 10 miles	**3**				
b. Wetland restorations- acres of spawning marshes corrected	A. 100 acres B. 5ac/yr C. 25 acres	**3.6**				
c. Culvert corrections - replace perched culverts	A. 50 B. 2/yr C. 10	**2**				
d. Cost share administration - contracts per year	A.100 contracts B. 5/yr C. 25 contracts	**7**				
e. Grants reporting to granting agencies		**5**				
7. Total Maximum Daily Load (TMDL) admin. (contingent on funding)						
a. Planning meetings	TBD	**15**				
b. Contacts with landowners	TBD	**0**				
c. Implementation of work elements	TBD	delayed				
d. Administration and coordination of project	TBD	delayed				

Priorities -Implementation schedule/ Work Plan Goal and Objective description	A. Total est. needs B. Yearly Rate C. 2009-2013 Goals	2009	2010	2011	2012	2013
8. Windmill siting administration						
a. Site reviews for Towns	A. 100 B. 20/yr C. 100	delayed				
b. Drainage patterns, culvert sizing. Karst, bedrock protection.	TBD	delayed				
c. Access road layout	TBD	delayed				
Goal 3 LWCD and State programs						
1. LWCD Department Administration						
a. Budget development and monitoring	Monitoring 10/week	**520**				
b. LCC meetings		**10**				
c. Office support, phone calls, customer service, equipment mgmt	(100 per day ave.)	**20,000**				
d. Tree Program	A. TBD B.10,000 sold/yr C. 50,000	**19,550**				
e. Annual Report, Annual work plan	state , county	**2**				
h. 50 cent per Ag acre fee notification	A. 3500 B. 3500 /yr C.17,500	**3,805**				
i. Non Metallic Mining program technical assistance	A. 10 B. 2/yr C. 10	**4**				
2. Wildlife Damage Program Administration						
a. Technical support to landowners	A. TBD B. 15/ yr C. 75	**20**				
b. Cost share for abatement $10,000 per year 2- 3 landowners / year	A. TBD B. 2/yr C. 10	**2**				
c. Claims $40,000 per year - 8-10 landowners per year	A. TBD ($35,000) B. 8/yr C. 40	**9**				
d. Hunt for hungry coordination	(56 deer processed)	**56**				
e. Administration, grants, reimbursements		**13**				
3. Install soil conservation practices						
a. Install conservation tillage through cost share on 136 acres per year	A. TBD B. 136 acres/yr C. 680 acres	**0** **no cost share**				
4. Farmland Preservation Program Administration						
a. Notification of 450 landowners per year	A. 450 B. 450/yr C. 2,250	**767**				
b. Monitoring of 450 landowners per year	A. 450 B.450/yr (cert.) C. 2,250	**528**				

Priorities -Implementation schedule/ Work Plan Goal and Objective description	A. Total est. needs B. Yearly Rate C. 2009-2013 Goals	2009	2010	2011	2012	2013
c. Compliance with State Standards (complaint based)	A. 450 B. 5/yr C. 25	**4**				
d. Notice of non compliance to state	A. 450 B. 10/yr C. 50	**0**				
5. Priority Watershed Program Administration						
a. Contract monitoring	A. 500 B. 500/yr C. 2500	**51**				
b. Operation and Maintenance compliance checks	A. 500 B. 10/yr C. 50	**33**				
Budget performance measures						
Winter spreading plans (per year)	**A. 75**	**100**				
Animal Waste						
• **Complaints**	**A. 20**	**57**				
• **Ordinance permits**	**A. 25**	**30**				
• **Storage inspections**	**A. 35**	**31**				
Miles of Buffer strips installed	**A. 7**	**6.35**				
Old wells properly abandoned	**A. 10**	**8**				

2009 ANNUAL REPORT SUMMARY

Administered West Shore Pike Habitat Restoration Project. Installed 3 miles of Buffer strips and 3.6 acres of wetland restoration projects

Coordinated with UWGB well sampling testing program in the Town of Morrison 10 wellls were tested 4 times in one year for total of 40 wells tested.

6.35 miles of buffer strips installed.

5000 acres of new 590 plans (nutrient management).

Reviewed 109,000 acres of nutrient management plans (590).

8 unused wells were abandoned.

Developed 100 winter spreading plans.

Issued 30 animal waste permits. (8 abandonment's, 17 new or alterations, 5 feedlots)

Reviewed 9 Wildlife Damage claim requests totaling approximately $35,000 from State funding. Issued 6 shooting permits. 56 deer were processed for Hunt for the Hungry.

Investigated 57 complaints of which 30 were violations to the Brown County Animal Waste Ordinance, 0 resulted in Notice of Violations in 2009.

Sold 19,550 hardwood and evergreens through the annual tree sale.

4 non-metallic mining reclamation plans and site reviews.

Land and Water Plan cost-share administration.

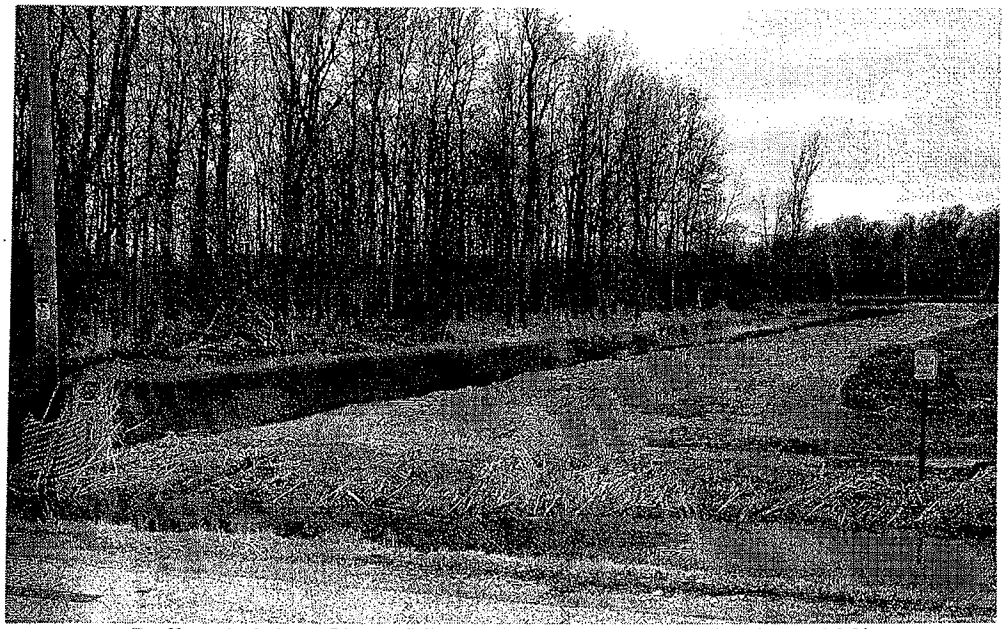
Targeted Resource Manageemnt program expended $300,000 in cost share in 2009.

Monitor and annually review cost-share agreements, contracts, and conservation practices installed in priority watersheds including the East River (208), Branch River (190), Red River (52), and Duck, Apple/Ashwaubenon Creeks (200).

Brown County Waste Transformation committee received commitments for $245,000 in funding for waste streams testing. Waste stream testing completed and showed that waste transformation products could successfully be used as a fertilizer for crops; business model completed.

Inspected 31 animal waste storage facilities with livestock greater than 500 animal units. Sent letters to all landowners informing them of state and county nutrient management planning (590) requirements and animal waste storage requirements per state statute and county ordinance.

West Shore Pike Habitat Project 2009 photos

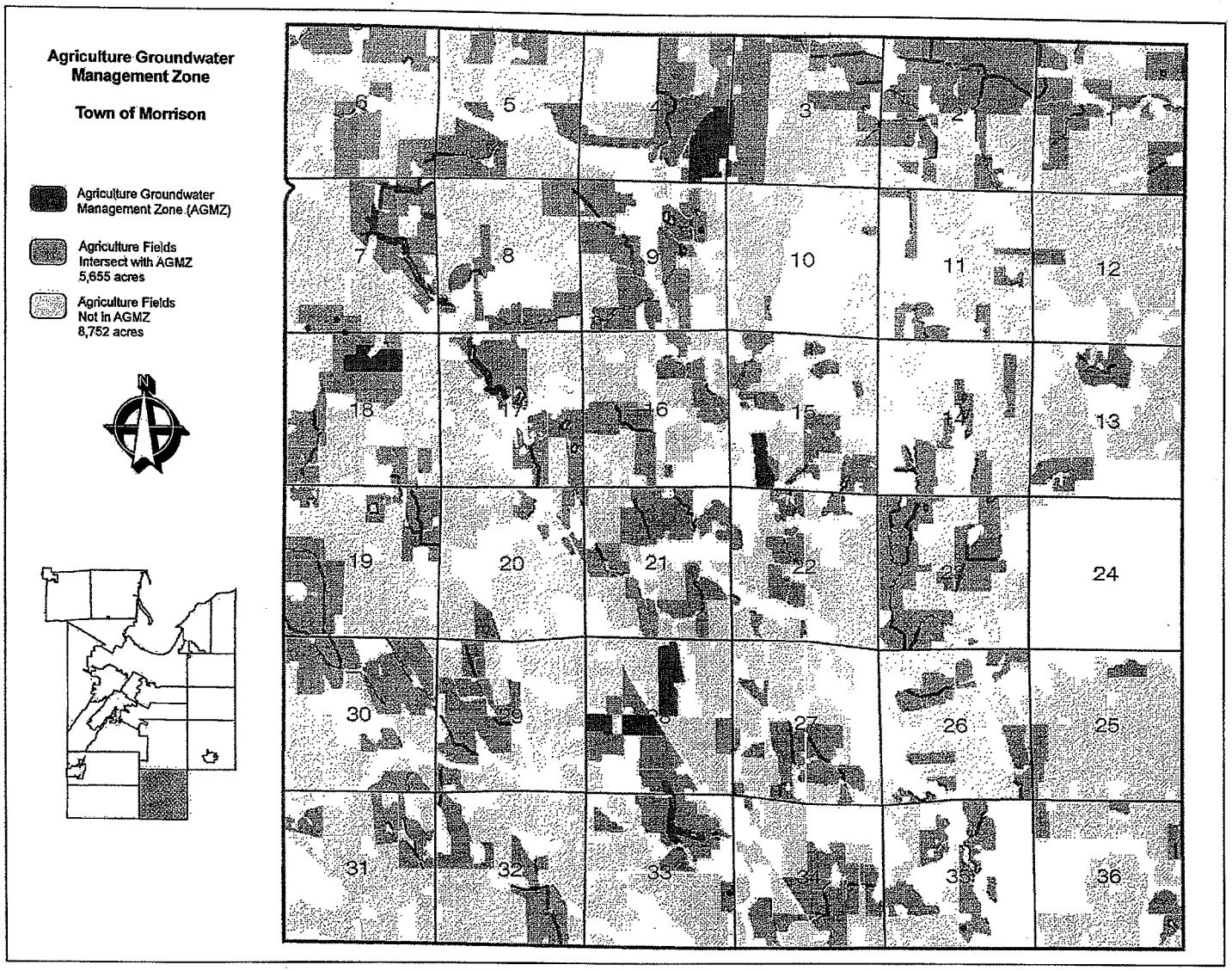


Buffers in West Shore Pike Habitat Restoration (spring 2009)

FUNDING HISTORY

Brown County Program History 1983-2009	Total Grant $ 1983-2008	Grant $ 2009	Total Grant$ 1983 - 2009
Kewaunee River Priority Watershed	$135,103	Project complete	$135,103
Farmland Preservation	$15,392,979	$402,800	$15,795,779
Wildlife Damage Abatement Program	$604,904	$68,000	$672,904
East River Priority Watershed	$2,729,332	Project complete	$2,729,332
Red River Priority Watershed	$228,838	Project complete	$228,838
Branch River Priority Watershed	$3,016,516	Project complete	$3,016,516
Duck, Apple/Ashwaubenon Creeks Priority Watershed	$1,445,515	Project complete	$1,445,515
Agriculture Shoreland Management Program	$630,476	Project complete	$630,476
Town Agriculture Shoreland Management	$159,825	Project complete	$159,825
Land and Water Resource Management	$865,361	$79,195	$944,556
Conservation Reserve Enhancement Program (CREP)	$870,988	Project complete	$870,988
Technical Assistance Staff	$11,089,833	$167,691	$11,257,524
Plum Creek (Federal Grant 2002-04)	$24,998	Project complete	$24,998
Baird Creek grants (EPA Grant 1999, DNR, 2002-3 buffer grant)	$125,100	Project complete	$125,100
TRM Targeted Resource Management Grant DNR	0	$300,000	$300,000
National Fish and Wildlife Foundation	$60,500	Project complete	$60,500
West Shore Pike Restoration Project NRDA	$149,459	$85,130	$234,589
MALWEG (Mul Agency L&W Ed Grant)	$9871	Project complete	$9,871
TOTAL GRANTS	**$37,539,598**	**$1,102,816**	**$38,642,414**
BROWN COUNTY LEVY FOR LWCD	$5,593,936	$551,099	$6,145,035

Agriculture Groundwater Management Zones



Baird Creek Riparian Protection Project
Submitted by: Brown County (WI) Land and Water Conservation Department

Funding Opportunity Number, Focus Area and Program.
RFP number EPA-R5-GL2010-1.
Focus area: "Nearshore Health and Non Point Source Pollution.
Program: I.C.8. Watersheds Best Management Practices, Planning and Implementation.

Name of Proposal: Baird Creek Riparian Protection Project.

Points of contact:
Bill Hafs, Director,
Brown County Land and Water Conservation Department
1150 Bellevue Street, Green Bay, Wisconsin, 54302
Phone: 1-920-391-4633; fax: 1-920-391-4617; email address: hafs_bc@co.brown.wi.us;
DUNS number: County of Brown - #068320811.

Maureen Meinhardt, Executive Director
Baird Creek Preservation Foundation
PO Box 824, 1270 Main Street, Suite 236, Green Bay, Wisconsin, 54305
Phone 1-920-328-3505; email address: execdirector@bairdcreek.org; website: www.bairdcreek.org.
DUNS number: Baird Creek Preservation Foundation- DUNS # 623137986.

Type of Organization: Wisconsin municipality, civil subdivision of State of Wisconsin and Baird Creek Preservation Foundation non-profit private organization.

Proposed Funding Request: $377,354

Brief Project Description:
This project will focus on Buffer Strip installation in key sections of Baird Creek watershed to reduce agriculture nutrient, sediment and pesticide loading to Baird Creek and ultimately the Lower Fox River and Bay of Green Bay. The project will enhance and protect critical wetland habitat in an area of Northeast Wisconsin that contains one of the highest remaining blocks of wetlands. Brown County will partner with the Baird Creek Preservation Foundation to improve local and state water quality goals, educate local officials and citizens regarding the simplicity and effectiveness of buffer strips and develop a adopt a stream monitoring by private citizens of the Baird Creek Preservation Foundation.

Project location:
HUC code: 04030204
Latitude and longitude: 44degrees29'40.38"N, 87degrees53' 12.04"W
Brown County, Wisconsin, zip code 54302.

Full Project Description:
During 2004, the Lake Michigan Forum, a committee of the public stakeholders providing input to US. EPA on the Lake Michigan Lakewide Management Plan (LaMP), conducted an assessment of environmental stewardship in the Baird Creek watershed (*Baird Creek Watershed Stewardship Assessment November 2004, Lake Michigan Forum, Delta Institute*). The stewardship assessment was aimed at identifying opportunities for increasing environmental stewardship among decision makers and the general public in the watershed community. Working closely with many local partners in the Baird Creek watershed, the Lake Michigan Forum conducted a literature review, gathered existing environmental information and interviewed dozens of individuals living and working in the Baird Creek

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watershed. The Forum then sponsored a watershed workshop and asked participants to refine and prioritize a set of the most pressing environmental issues.

This project will work to accomplish recommendations identified in the Baird Creek Watershed Stewardship Assessment (2004):

- Create partnerships between agencies, universities, local government, landowners and watershed organizations to protect critical wetlands in the upper reaches of the Baird Creek headwaters.
- Increase regional education and assistance programs to promote best management practices and buffer installation among landowners in the Baird Creek headwaters.
- Promote and duplicate demonstration projects such as those created by the Brown County Land and Water Conservation Department, which through previous grants from the Great Lakes Protection Fund, created 27 acres of buffers along 3.5 miles of stream in the Baird Cree watershed.
- Conduct monitoring to demonstrate buffer effectiveness at demonstration sites in the Baird Creek watershed and publicize the results through partnerships with the Baird Creek Preservation Foundation, UWGB and DNR.

Work Products for 2010-12:

This project will protect stream corridors and create riparian corridor habitat in the Baird Creek watershed of the Lower Fox River and Green Bay. The project will also strive to enhance and protect critical wetland habitat in an area of Northeast Wisconsin that contains one of the highest remaining blocks of wetlands. Much of this work will reduce agriculture nutrient, sediment and pesticide loading to Baird Creek and ultimately the Bay of Green Bay through buffer filtering. Water chemistry data collected by a DNR study (Pesticide sampling study East River 2002 James Reyburn WDNR) concluded the Baird Creek watershed is severely impacted by agricultural nonpoint nutrient loading. Wetland restoration work will strive to reconnect wetlands that have been isolated from the drainage system because of agriculture activities which will promote increased waterfowl, fisheries and amphibian numbers. We will cooperate and partner with the Baird Creek Parkway Preservation Foundation to promote the importance of the project on both, local, and state water quality goals. We will continue to work to educate local government officials and citizens regarding the simplicity and effectiveness of vegetative buffers in protecting streams and will encourage adopt a stream and stream monitoring by private citizens of the Baird Creek Parkway Preservation Foundation.

Specific work elements:

- Establish vegetated riparian buffers on intermittent and perennial streams throughout the entire watershed area which have been highly degraded by Agricultural activities which results in sediment and nutrient related problems downstream in the Baird Creek Park way and the Lower Fox River and Green Bay Area of Concern.
- Establish/restore/protect buffer strips on all streams located in sections 5, 4, and 8 of the town of Humboldt estimated to be 6 miles at 35 feet wide on both sides of the stream. This would continue buffer installation success began in 2009 when buffer agreements were secured on all streams in section 6 of Humboldt to be installed in the spring/ summer of 2010. It would also connect buffer installation accomplished in previous years in sections 8 and 9.
- Buffer strips would be required per Brown County Ordinance at 35 feet per side of stream free of row crops. This project would offer $2500 per acre to landowners to install buffers from 35 feet from the stream out to distances of 150 feet on a permanent contract attached to the landowner's deed. These wider buffers will improve sediment, phosphorus and chemical trapping efficiency of the buffer strip and provide increased wildlife habitat.

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- The project would have a goal of increased public awareness of the high importance of using buffer strips to protect streambank and wetlands and the impact this project has on the overall water quality of the Bay.
- The project would reestablish stream corridor connectivity to critical habitats to promote overall health of the Bay.
- The project would activate stream monitoring by volunteers (adopt a stream program) with Baird Creek Parkway Preservation Foundation members and Brown County Land and Water Conservation Department Staff for regular scheduled monitoring and compliance.
- Permanent buffer signs and adopt a stream signs will be used to identify agriculture setbacks also increasing public awareness of the need to reestablish stream buffers, wetland protection and stream connectivity to critical habitats.
- Mowing is required initially to control invasive species and improving stand density.
- All buffers permanently recorded on GIS data base with Tuff book.

Project Steps and Schedule:

Brown County Land and Water Conservation Department Staff will conduct one - on- one contact with landowners in the rural agriculture portion of the Baird Creek Watershed to inform landowners of project goals, schedules for ordinance implementation, advertise project goals of wider buffer installation, stream monitoring and encourage program participation.

July- August 2010 - 2012	Contact landowners, install 35 foot buffer strips, contract with landowners in sections 5, 4, and 8 of the town of Humboldt and attach contract to deed. Contract with landowners for permanent buffer strips from 35 -150 feet wide. Mark all buffers with metal posts and buffer signs. Install wetland restoration acre levels identified in grant.
September – March 2010 – 2012	Contact landowners with one on one contacts , letters, maps and brochures to provide information about Baird Creek Project to enlist their participation. Project planning , survey and design of buffers and wetland restoration projects to be installed during spring and summer of subsequent years.
July – September 2010	Develop adopt a stream signs, gain permission of site installation, install
March – May 2010 – 2012	Install buffer strip posts and signs.
May 2010 – November 2012	Monitor buffer strips monthly by Baird Creek Preservation Foundation volunteers and report findings to Brown County Land and Water Conservation Department for compliance with ordinance and contract requirements.
November 2012	Report final products to EPA that resulted from Grant in the form of Project report.

Project relevance to Great Lakes related to improvement of the Health of Great Lakes Ecosystems

The health of Lake Michigan depends on the stewardship of its individual watershed ecosystems. Implementation activities related to education, remediation, restoration, and pollution prevention are essential in the Baird Creek Watershed. The Baird Creek Watershed is part of the Lower Fox River Basin, which has been identified as an Area of Concern (AOC). Two of the top five high priorities for the Lower Fox River and Green Bay Remedial action plan are to reduce suspended sediments and phosphorus loading. Water chemistry data collected by a DNR study (Pesticide sampling study East River 2002 James Reyburn WDNR) concluded the Baird Creek watershed is severely impacted by agricultural nonpoint nutrient loading. Baird Creek's proximity to the Lower Fox River and Bay of Green Bay results in significant sediment and phosphorus loading to the Fox River and Bay of Green Bay. Buffer strip

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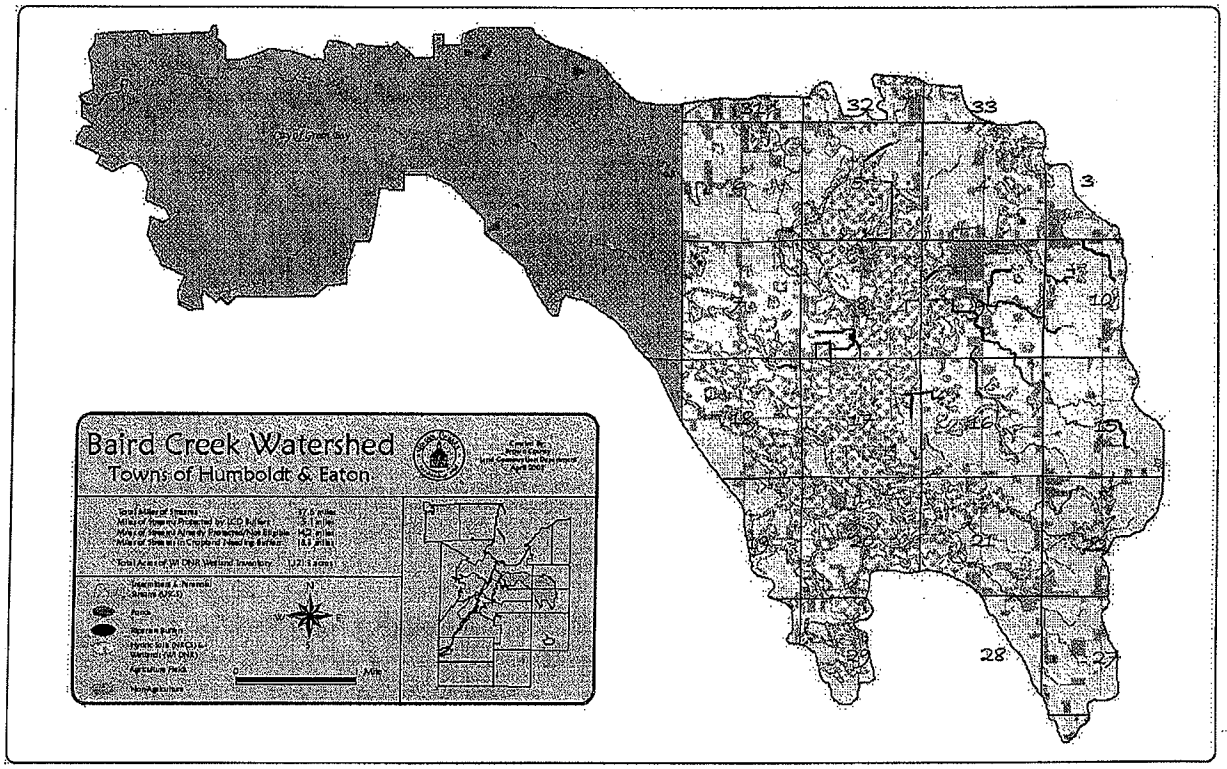
installation and wetland protection in the rural agriculture headwaters would not only reduce loading to the AOC but would also help protect the threatened ecosystem health of the Baird Creek Greenway located in the City of Green Bay.

Suspended sediments and phosphorus loading to the Fox River and Lower Green Bay
The Fox River is the second largest contributor of suspended sediment to Lake Michigan (17%) and largest contributor of phosphorus (21%) (U.S.G.S. Water Resources). Studies by UWGB indicate that main source of suspended solids loading (63%) and phosphorus (44%) are from Agriculture sources.

Map of Baird Creek, network of streams and buffers installed to date in red.



The Lower Green Bay and Lower Fox Tributary Modeling Report: Source allocation of suspended sediment and phosphorus loads to Green Bay from the Lower Fox River Sub Basin using the Soil and Water Assessment Tool (SWAT) calculated the following sources of phosphorus and sediment delivery.

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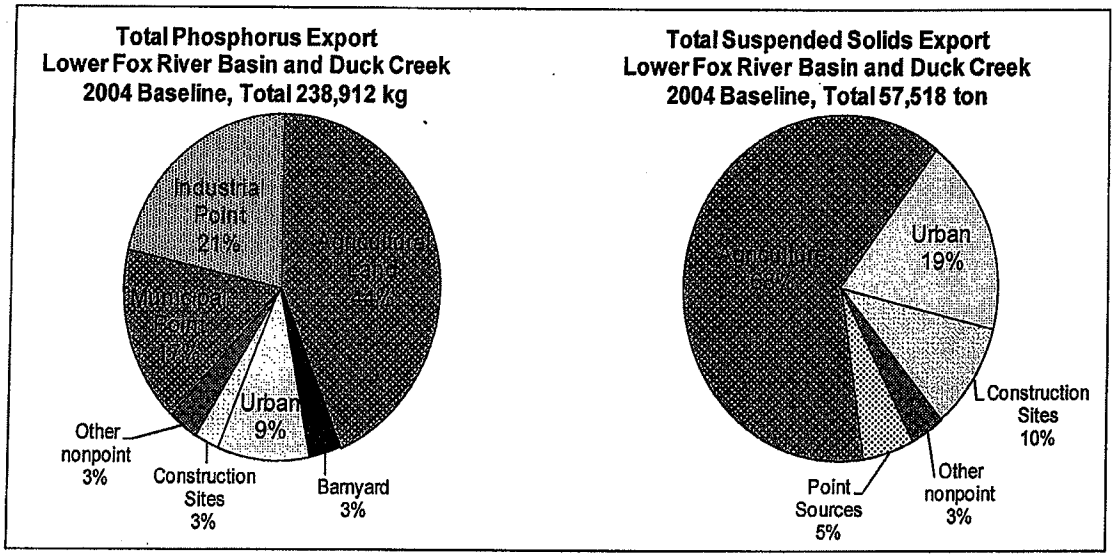

Simulated Phosphorus Loading to Lower Green Bay from the Lower Fox River Basin. 2004 Baseline conditions (Paul Baumgart UWGB). Excludes loading from Lake Winnebago.

Source	Total Phosphorus (kg)	(%)
Agricultural Land	**104,094**	**43.6%**
Barnyard	7,487	3.1%
Urban	22,450	9.4%
Construction Sites	6,484	2.7%
Other Nonpoint Sources	7,378	3.1%
Municipal Point Sources	39,573	16.6%
Industrial Point Sources	51,446	21.5%
Total	238,912	100%

Simulated Suspended Solids Loading to Lower Green Bay from the Lower Fox River Basin. 2004 Baseline conditions.

Source	Suspended Solids (metric ton)	(%)
Agricultural Land	**36,105**	**62.8%**
Urban	10,664	18.5%
Construction Sites	5,735	10.0%
Other Nonpoint Sources	2,014	3.5%
Point Sources	3,000	5.2%
Total	57,518	100%

(Data Sources: Integrated Watershed Approach Demonstration Project: A Pollutant Reduction Optimization Analysis for the Lower Fox River Basin and the Green Bay Area of Concern. August 2007; prepared by the Cadmus Group for the U.S. EPA, with contributions from the University of Wisconsin-Green Bay, 26 pp. Solids data from P. Baumgart, UW-Green Bay, 2008.)

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Cost Effectiveness

The project will target buffer strip installation located in sections 5, 4, and 8 of the town of Humboldt. Buffer strips in section 6 will be installed in the spring of 2010 per agreements established with landowners in 2009. The project goals are to start at the boundary of the city of Green Bay and move upstream to install buffer strips on all stream segments in sections 5, 4, and 8 in the Town of Humboldt and connect buffers to previous buffer strip work done. All buffers installed from 0-35 feet are required by Brown County ordinance. The buffers installed from 35 feet to 150 feet will be a permanent contract attached to the landowner's deed in the Brown County Register of Deeds office. This deed attachment prevents future conversion of land buffered to other land uses such as cropland or development and is much more cost effective that purchasing the land or easements. Wetlands that are contiguous to Baird Creek will be offered cost share to protect from agriculture or development and will also be subject to permanent contract attached to landowner deed.

Education and Outreach Plan

The project will develop an "Adopt a Stream" monitoring program coordinated by members of the Baird Creek Parkway Preservation Foundation and Brown County Land and Water Conservation Department. Adopt a Stream signs will be developed and placed on road crossings over Baird Creek. Members of Baird Creek Parkway Preservation Foundation and Brown County Land and Water Conservation Department will visit buffer strips installed from June to December to monitor compliance of the buffer strip related to tillage setback requirements and land application of wastes. Monitoring progress will be tracked on GIS and available for Baird Creek annual banquet and media.

Outcomes, Outputs and Expected results

The following are the projected outcomes, outputs and expected results of this project:

- 7 miles of buffers @ 35 feet wide/side (estimated 59 acres).
- 1 mile of buffer at average of 100 feet wide/side (24 acres).
- 29 acres Critical Area Planting (@ $1300/acre)
- 5 acres Wetland restoration/enhancement.

The project will focus on installing buffer strips and wetland protection in an attempt to accomplish several of the recommendations of the assessment of environmental stewardship in the Baird Creek watershed (*Baird Creek Watershed Stewardship Assessment November 2004, Lake Michigan Forum, Delta Institute*).

Outcomes will include:

- Reducing impacts from Agriculture and Development of Wetland Protection and installation of Riparian Buffer Strips.
- Monitoring of the Watershed Community by citizen members of the Baird Creek Parkway Preservation Foundation.
- Increased protection of the Baird Creek Greenway located downstream from the rural agriculture portion of the watershed.
- Expanded Community Participation in Baird Creek Watershed activities by both Agriculture community and members of the Baird Creek Parkway Preservation Foundation.
- Reduced impacts from Agriculture sediment, nutrients and chemicals to the Lower Fox River and Lower Green Bay AOC.

Collaboration, Partnerships, and Overarching plans

This project has been reviewed and approved by the leadership of the Baird Creek Parkway Preservation Foundation and its executive director Maureen Meinhardt. Members of the Baird Creek Parkway Preservation Foundation under the supervision of their executive director will develop and administer the "adopt a stream" portion of this project. Executive Director of the Baird Creek Parkway Preservation

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Foundation will be paid for 500 hrs over the 2 year project time frame for administration of "adopt a stream" portion of the project. This project is consistent with Goals of Baird Creek Parkway Preservation Foundation to purchase key properties in the headwaters of Baird Creek for preservation to protect the environmental integrity of the Baird Creek Watershed and to maintain base flow of the stream.

The project is consistent with the following plans for protection and restoration of Baird Creek, Lower Fox River and Green Bay AOC:

- *Lower Green Bay Remedial Action Plan Update for the Lower Green Bay and Fox River Area of Concern (AOC);* Developed by the Wisconsin Department of Natural Resources in conjunction with the Green Bay Remedial Action Plan Public Advisory Committee; March 1993.
- *Nonpoint Source Control Plan for the East River Priority Watershed Project;* Prepared by the WDNR, WDATCP, Brown and Calumet County Land and Water Conservation Departments, Bay Lake Regional Planning Commission, and the East River Watershed Committee, March 1993; publicaton # WR-274-93
- *Baird Creek Watershed Stewardship Assessment;* Developed by the Lake Michigan Forum, Delta Institute November 2004. http://www.co.brown.wi.us/departments/forms_and_documents/?department=097c0e79486a&subdepartment=7c17181709a3
- *The Effects of Urbanization on Baird Creek*, Green Bay, Wisconsin. MS Thesis. Fink, Jessie C. 2005 Green Bay, WI: University of Wisconsin - Green Bay. http://www.uwgb.edu/watershed/fink/Fink_Abstract.pdf http://74.125.113.132/search?q=cache:ezj5U38cAncJ:www.uwgb.edu/watershed/fink/Fink_Thesis.pdf+/search%3Fhl%3Den%26q%3D%2Bsite:www.uwgb.edu%2BFink%2BBaird%2BCreek&cd=2&hl=en&ct=clnk&gl=us
- *Baird Creek Watershed Modeling Project using L-THIA NPS project report January 2006 Bay Lake Regional Planning Commission.*
- *Brown County Land and Water Resource Management Plan* 2009–*2013*; Developed by Brown County land and water resource management advisory committee July 2008. http://www.co.brown.wi.us/departments/forms_and_documents/?department=097c0e79486a&subdepartment=7c17181709a3
- *Brown County Land and Water Conservation Department 2010 Annual Work Plan and 2009 annual report.* http://www.co.brown.wi.us/departments/forms_and_documents/?department=097c0e79486a&subdepartment=7c17181709a3

Cost match

This project will provide office space, office supplies, staff time from a summer intern, utilities and related expenses as a match to this grant. This project match will equal $31,000 per year for Brown County Land and Water Conservation Department. The time spent by Baird Creek Parkway Preservation Foundation citizen members on monitoring the "adopt a stream" portion of this project will also be considered a match to the project.

Programmatic Capability and Past Performance

The Brown County Land and Water Conservation Department has a proven record regarding implementation of grant funded projects including 5 priority watershed projects funded by the Wisconsin DNR in the 1980's, 90's and into 2000's. All were successful in regards to implementation and administrative requirements of both WDNR and Brown County.

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Within the past three years Brown County Land and Water Conservation Department has worked on a project called the West Shore Pike Habitat Restoration Project that is similar in size, scope and relevance as the Baird Creek Riparian Protection Project. The West Shore Pike Habitat Restoration Project is focused on installing buffer strips and restoring wetlands to increase Northern Pike spawning habitat. Since 2007 through funding from National Fish and Wildlife foundation and Natural Resources Damage Assessment the West Shore Pike Habitat Restoration Project has installed over 18 acres of wetland spawning marshes, 12.6 acres of vegetated riparian buffers, 9 miles of stream were made accessible for migrating fish by replacing perched culverts, the project includes 14 contracts with 13 private landowners. Contracts are attached to the landowner's deed making the projects perpetual. The project has expended $287,589 dollars to date. The Village of Suamico as a result of this work is in process of adopting a buffer strip ordinance to protect riparian areas in the Village.

Organzational experience and plan for timely and successful achieving proposed projects.

Brown County Land and Water Conservation Department has been working on Buffer strip installation through a variety of State and Federal Cost share programs since the mid 1980's. The plan for timely completion of this project will be to focus contacts with landowners in sections 5, 4, and 8 of the town of Humboldt (see attached map of Baird Creek).

- Buffer strips in section 6 will be installed in the spring of 2010 per agreements established with landowners in 2009.
- The project goals are to start at the boundary of the city of Green Bay and move upstream to obtain buffer strip contracts in the spring of 2010 and install those contracted buffers in the spring of 2010.
- Further contacts will result in contract development throughout the remainder of 2010 that will result in buffer strip installation in spring of 2011 and 2012.

The goal is to install buffer strips on all stream segments in sections 5, 4, and 8 in the Town of Humboldt and connect buffers to previous buffer strip work done. All buffers installed from 0-35 feet are required by Brown County ordinance. The buffers installed from 35 feet to 150 feet will be a permanent contract attached to the landowner's deed in the Brown County Register of Deeds office.

Cost Share Incentive package:

• Riparian Buffers 35-150 ft	$2500/acre
• Critical Area Planting	$1300/acre
• Wetland Restoration/Enhancement	$1500/acre
• Construction costs	70% cost share

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Project Budget (Brown County Land and Water Conservation/ Baird Creek Parkway Foundation 2 years)

Baird Creek Riparian Protection Project Budget July 2010 - November 2012	Grant Request	Applicant Match	Total Cost
Personnel/Salaries (project coordination 1000 hrs, technician 4,160 hrs)	$145,576	$2,000	$147,576
Fringe Benefits	$66,078		$66,078
Travel (fuel maintenance for LWCD vehicle $5000)	$5,000		$5000
Equipment (1 tuff book computer $5000, 1 used vehicle $15000)	$20,000		$20,000
Supplies (outreach & educational expenses, signs, posts, brochures)	$7,000		$7,000
Contract Costs			
Other Costs (office space, office supplies, utilities)		$60,000	$60,000
Total Direct Charges			
Indirect Charges (Cost share to landowners for BMP's)	$133,700		$133,700
Total Cost	$377,354	$62,000	**$439,354**

Cost Sharing to Landowners detail:

- 7 miles of buffers @ 35 feet wide/side (estimated 59 acres) $0
- 1 mile of buffer at average of 100 feet wide/side (24 acres) $60,000
- 29 acres Critical Area Planting (@ $1300/acre) $37,700
- 5 acres Wetland restoration/enhancement $6000
- Construction costs $30,000

Total Cost share Budget: **$133,700**

ACORN Statement

This proposal is not subject to this prohibition.

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Improving Water Quality with FGD Gypsum in Green Bay's Lower Fox River

Funding Opportunity Number, Focus Area and Program.
RFP number EPA-R5-GL2010-1.
Focus area: "Nearshore Health and Non Point Source Pollution.'
Program: I.C.8. Watersheds Best Management Practices, Planning and Implementation

Name of Proposal:
Improving Water Quality with FGD Gypsum in Green Bay's Lower Fox River

Points of contact:
Bill Hafs, Director,
Brown County Land and Water Conservation Department
1150 Bellevue Street, Green Bay, Wisconsin 54302; phone 920-391-4633; fax 920-391-4617;
Email: hafs_bc@co.brown.wi.us;
DUNS number: County of Brown #055236355

Dr. Meghan Buckley,
University of Wisconsin - Stevens Point, Soil and Waste Resources,
100 Reserve St., Stevens Point, WI 54481; phone 716-346-4180; fax 715-346-4554;
Email: mbuckley@uwsp.edu;

Dr. Richard Wolkowski, University of Wisconsin – Madison, Dept. of Soil Science,
1525 Observatory Dr., Madison, WI 53706; phone 608-263-3913; fax 608-265-2595;
Email: rpwolkow@wisc.edu.

Dr. Darrell Norton, Purdue University Departments of Agronomy and Agricultural and Biological Engineering; Research Soil Scientist for the USDA-ARS National Soil Erosion Research Laboratory located on the campus of Purdue University, West Lafayette, IN
Email: Darrell.Norton@ARS.USDA.GOV; Norton@purdue.edu

Type of Organization: Wisconsin municipality, civil subdivision of the State of Wisconsin and State Agency's, University of Wisconsin Madison, University of Wisconsin Stevens Point, Purdue University and USDA – ARS National Soil Research Laboratory.

Proposed Funding Request: **$597,218**

Brief Project Description:
This project will focus on field testing of gypsum application to agricultural crop fields as a soil amendment in key high P testing fields of the Lower Fox River watershed to reduce agriculture nutrient and sediment loading to the Lower Fox River and Bay of Green Bay. Brown County Land and Water Conservation Department will conduct field scale tracking of soil test P values with the use of GIS technology following application of FGD Gypsum. The University of Wisconsin will design and conduct field trials on smaller plots in a subset of the farms used by the Land and Water Conservation Department to asses changes in soil physical properties (UW – Stevens Point) and changes in nutrient availability and uptake (UW – Madison) following FGD Gypsum application. Brown County Land and Water Conservation Department will find farmers to cooperate with the field trials. Beneficial Reuse Management/ Gypsoil will educate and coordinate gypsum use with farm cooperators, including material supply, use recommendations, product acquisition, logistics, application as well as follow-up field monitoring, and they will assist the science team in design and implementation of the studies.

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ISO International Greenleaf Advisors, LLC will coordinate the above project participants from agribusiness, science, the farm community and outreach, including connecting this project with a parallel one in Ohio led by Ohio State University (Improving Water Quality with FGD Gypsum in the Maumee Basin).

Project location:
HUC code: 04030204 (Lower Fox River); Latitude and longitude: 44 degrees 32'19.65"N, 88 degrees 00' 18.25" W; Brown County, Wisconsin, zip code 54302.

Full Project description
Overview:
Greater than 50% of the electricity produced in the USA is generated from burning coal. The 1990 Clean Air Act Amendment has required many coal burning power plants to install flue gas scrubbers to reduce sulfur emissions. Use of a wet scrubber results in the byproduct flue gas desulfurized (FGD) gypsum. Currently, FGD gypsum represents one of the largest non-mined supplies in the US. The US-EPA estimated that 12 million tons were produced in 2006, with about 9 million tons beneficially reused. It is estimated that 80% of the reused material was for the production of wallboard. Production of FGD gypsum may double over the next ten years with no increase in demand for current uses. WE Energies in Wisconsin are expected to produce over 600,000 tons of FGD gypsum annually. This gypsum source is more reasonably priced and more readily available than natural gypsum in Wisconsin. The EPA and USDA are encouraging farmers to consider use of this gypsum source for land application. However, not all soil and agronomic benefits are fully understood or quantified. Any FGD gypsum that is not reused is sent to landfills at great expense to society and the environment.

There has been inadequate research on the agronomic benefit of gypsum use on Wisconsin soils resulting in slow adoption of this material by producers. The ability to study gypsum use and its benefits, as well as disseminate information to producers, will result in increased reuse of this coal-burning byproduct helping to make energy production a greener process and decreasing the amount of FGD gypsum ending up in landfills. Additionally, land application of gypsum has potential to be beneficial to Wisconsin landowners through S fertilization, improved soil aggregation, decreased runoff, and reduction of P loss to surface water.

Historically, soil organic matter reserves and atmospheric deposition have been adequate to supply S. Soils in western and northern Wisconsin have been more responsive to S fertilization as they have received less S from precipitation. Rand et al. (1969) reported the results of eight on-farm trials in this region and found significant responses at six with similar responses from a variety of S sources including gypsum. Recently, many of the soil test S values have been reported in the low category. This observation is due to many reasons, including lower S emissions from the burning of fossil fuels, decreased storage in soil organic matter, and reduced land application of manure. This suggests that in the future, more attention will need to be paid to S fertility management, especially for high demand crops such as alfalfa.

Researchers have examined the use of surface applications of gypsum to reduce soil and soluble P loss in runoff. Reductions are a result of multiple mechanisms including improved aggregate stability, reduced surface crusting, and reactions forming less soluble Ca/P compounds. The bulk of this research has been conducted in the laboratory using simulated rainfall and disturbed soil samples. Few studies have been conducted under field conditions. Favaretto et al. (2006) showed that surface applied gypsum reduced runoff losses of both soluble P and total P. This study was conducted over a range of soil Ca levels with no effect suggesting that the gypsum effect is independent of a Ca effect. Additionally, soils treated with FGD gypsum, compared to untreated soils, have less surface crusting and compaction, greater water

infiltration and holding capacity, greater aggregate stability and less water runoff and erosion (Norton and Zhang, 1998; Korcak, 1998).

This project will field test land application of gypsum created as a byproduct of flue gas desulfurization (FGD) at coal burning power plants in Wisconsin. The application of FGD Gypsum to agricultural crop fields in high P testing fields of the Lower Fox River watershed has potential to reduce agriculture nutrient and sediment loading to the Lower Fox River and Bay of Green Bay. The Lower Fox River Watershed has been shown to have elevated P runoff levels leading to degradation of Green Bay and Lake Michigan. The Fox River is the second largest contributor of suspended sediment to Lake Michigan (17%) and largest contributor of phosphorus (21%) (U.S.G.S. Water Resources). Studies by the University of Wisconsin at Green Bay indicate that the main source of suspended solids (63%) and phosphorus (44%) is agriculture land (Baumgart, 2004).

The health of Lake Michigan depends on the stewardship of its individual watershed ecosystems. Implementation activities related to education, remediation, restoration, and pollution prevention are essential in the Lower Fox River Watershed. The Lower Fox River Basin has been identified as an Area of Concern (AOC). Two of the top five high priorities for the Lower Fox River and Green Bay Remedial action plan are to reduce suspended sediments and phosphorus loading. Reduced agriculture nutrient runoff in headwaters would not only reduce loading to the AOC but would also help protect the sustainability and profitability of agriculture producers located in Lower Fox River Basin.

Project Plan:
A quantitative assessment will be made to determine whether FGD Gypsum will improve crop yield and quality, the potential for reducing dissolved reactive P in soils and its movement to surface water, and the ability to improve soil physical conditions. The evaluation of FGD Gypsum will be conducted at two scales. Brown County Land and Water Conservation Department in association with ARS scientists from the National Soil Erosion Research Laboratory will conduct large plot field scale tracking of soil test P values with the use of GIS technology following application of FGD Gypsum while the University of Wisconsin will design and conduct field trials on smaller plots in a subset of the farms used by the Land and Water Conservation Department to asses changes in soil physical properties and nutrient availability and uptake.

Brown County will identify 3 fields approximately 50 acres in size each with current soil phosphorus levels greater than 100ppm and 3 fields that have soil phosphorus levels between 50 and 100 ppm. Yield tests will be taken using a GIS supported combine monitor properly calibrated prior to harvesting plots. Soil tests will be taken by Soil Type and Management Zone and analyzed for Organic Matter, P1, P2, Buffer pH, CEC, % Base Saturation of Ca, Mg, K, and H, quantities (in PPM or #/ac) of Ca, Mg, and K. Additional testing will be planned to measure biological activity. These fields will have application of gypsum for 5 years in addition to current fertilizer (both chemical and animal waste) applications. The soil phosphorus levels will be tracked through soil testing done as part of annual nutrient management plan requirements and tracked on GIS to show results of Gypsum application. Each small scale field trial location will have 6 treatments with 4 replicates in standard small plots (4 rows wide x 30 ft.), all receiving proper NPK fertilization, as follows. All large plot field scale tests (50 acre scale) will have five of the 'treatments' as noted below (excluding the Chemical S fertilizer):

Control
Chemical S fertilizer
1 ton/acre FGD gypsum (once)
2 ton/acre FGD gypsum (once)
4 ton/acre FGD gypsum (once)
2 ton/acre FGD gypsum (per year)

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The field trial study by UW personnel on small plots involves conducting research on on-farm sites that drain into Lake Michigan via the Lower Fox River. Approximately 6 sites with ideal tillage and crop rotation will be identified after project approval with assistance from Brown County Land and Water Conservation Department personnel. Three sites will be chosen with high soil test values (~100 ppm) with another three sites in the medium soil test range (~50 ppm). Standard small plot research methods will be used to improve the precision of measurements. Sites will be selected prior to the 2010 growing season and materials will be applied prior to planting. Measurements including crop yield, nutrient uptake, soil test, soil bulk density, aggregate stability, infiltration, and penetration resistance will be taken from selected treatments at appropriate times during the growing season. Collected data will be analyzed and a final report prepared by March 2014.

Education/outreach plan to disseminate results:
Progress and results of the study will be communicated within the region through outreach efforts coordinated between the County Extension and Land Conservation Offices and the NEW North. The NEW North (www.thenewnorth.com) is an 18 county economic development organization that brought all the regional stakeholders together to create a shared vision of a sustainable future. The NEW North Sustainability Committee (NNSC) is specifically charged to educate and advocate for sustainable practices. Paul Linzmeyer, President of ISO International LLC is one of the founders of the NEW North and is Chair of the NEW North Sustainability Committee. The Rural Landscape and Agriculture Committee of the NNSC is made of farmers, the Dairy Business Association, Discovery Farms, the DNR, the UW-Extension and UW system, Brown and Outagamie County planners, the lower Fox River Watershed Alliance (and specifically the TMDL sub-committee), the Department of Agriculture, Green Bay Metropolitan Sewage District, and other interested parties. The goal of this sub-committee is to promote sustainable practices in small medium and large agriculture operations by promoting sustainable best practices in soil and water management, economic models, herd management, etc. This unique collaboration has a marketing and communication strategy to demonstrate to the NEW North community its sustainable practices in a multi-media format. Over time, this research will be a critical part of that sustainable education process and will be a part of getting grassroots understanding of the problem and solutions about non-point source pollution and its effect on near shore waters.

ISO International LLC. will facilitate press releases to farmers and agricultural professionals, as well as the general public; radio or TV interviews to be broadcast in the region, and written project updates for newsletters. Furthermore, a field day or other educational meetings will be held to educate farmer and agricultural professionals about the study results and the land application program. Results will be published in a fact sheet outlining the best management practices for the land application of FGD gypsum.

Potential for transferability:
Results from this work should be transferable to similar soils throughout the Great Lakes Region.

Outcomes, outputs, and expected results

- A significant reduction in soil erosion and the loading of sediments, nutrients, and pollutants into waterways of the Lower Fox River Watershed can be achieved through greater implementation of land application of FGD Gypsum in agricultural areas.
    - Improved soil physical properties that increase infiltration and aggregate stability to reduce runoff and erosion.
    - Reduced soluble reactive phosphorus.
- The phosphorus mapping done in this study will contribute to the soil test P level studies in this nonpoint source TMDL watershed.

- Development of Best Management Recommendations for gypsum use on crop fields.
    - Establish rate standards for fields of various soil test P levels
    - Show economic benefit to use of FGD gypsum
    - Show environmental benefit to FGD gypsum use

Collaboration, partnerships and overarching plans

A team consisting of Federal, State University, County, and private interests will collaborate on the study. Frequent communication will be necessary between all team members particularly between Brown County and participants located hours away from the region.

This work has been designed in concert with efforts from the Maumee Bay in Ohio with shared private interests. The Wisconsin and Ohio researchers will share findings as part of a growing body of research on land application of FGD gypsum.

This work will also enhance efforts in the area of nutrient management planning in a region that has large livestock numbers and soil test P values in the excessively high category. This research will complement other regional efforts that are evaluating methods of reducing nutrient input into the Great Lakes, including the Brown County Waste Transformation Initiative and the UW Extension Discovery Farms Program.

Ron Chamberlain from Gypsoil/Beneficial Reuse Management will coordinate FGD gypsum usage by the farmers including material supply, use recommendations, product acquisition, logistics, application as well as follow-up field monitoring, and he will assist Brown County staff and the science team in design and implementation of the studies. Paul Linzemeyer of ISO International Greenleaf Advisors, LLC will assist with coordination services to bring together the above mentioned project participants from agribusiness, science, the farm community and outreach.

Programmatic Capability and Past Performance

List of projects similar in size, scope, and relevance performed in last 3 yr

Brown County

- Lower Green Bay Remedial Action Plan Update for the Lower Green Bay and Fox River Area of Concern (Wis. Department of Natural Resources / Green Bay Remedial Action Plan Public Advisory Committee
- Nonpoint Source Control Plan for the East River Priority Watershed Project (WDNR, WDATCP, Brown and Calumet County Land and Water Conservation Departments, Bay Lake Regional Planning Commission, and the East River Watershed Committee),

Dr. Richard Wolkowski

- Nutrient Availability from a Pelletized Waste Material (Wis. Solid Waste Research Council)
- Land Application of High Rates of De-inking Sludge (Private Funding)
- Field Evaluation of a Dredged Organic Material (Wis. Solid Waste Research Council)
- Artificial Soil Prepared with a Mix of Foundry Sand and Paper mill Residuals (Private Funding)
- Development of a Class A Biosolids for Turf and horticultural Use (Madison Metropolitan Sewerage District)

Organizational Plan: Bill Hafs, of the Brown County Land and Water Conservation Department, will oversee the entire project. Brown County personnel will take lead roles in locating farm fields on which

the studies shall be conducted. Brown County and ARS personnel (led by Darrell Norton) will conduct the field scale research while UW System personnel will conduct the plot scale research. Brown County will assist UW in sample collection in transport. Meghan Buckley, UW – Stevens Point, will handle analysis of soil physical properties while Richard Wolkowski, UW – Madison, will handle analysis of plant and soil nutrient status. Annual reports will keep collaborators updated. Each group will handle publication of their findings.

Project Budget Project Period: The project will run from FY11 to FY13 (7/1/10 - 6/30/13).

	UW Madison			
	Year 1	**Year 2**	**Year 3**	**Total**
Personnel Student Hourly (200 hr/yr)	2000	2,040	2,081	6,121
Fringe Student Hourly (3.5%)	70	71	73	214
Sub total	2,070	2,111	2,154	6,335
Travel	3,000	4,500	4,500	12,000
Equipment	0	0	0	0
Supplies (Soil bags, flags, fertilizer)	1,000	1,000	1,000	3,000
Other Direct Costs	0	0	0	
Publication Costs	0	0	2,000	2,000
Analytical Fees (Soil pH, P forms) (6 sites, 6 treat, 4 rep= 144 samples)	5760	5,760	6,912	18,432
Sub total	9,760	11,260	14,412	35,432
Total Direct Costs	11,830	13,371	16,566	41,767
Indirect Costs @ 48.5%	5,738	6,485	8,034	20,257
TOTAL COSTS	**17,568**	**19,857**	**24,600**	**62,024**

	UW Stevens Point			
	Year 1	**Year 2**	**Year 3**	**Total**
Personnel Graduate Assistant (half time)	14,600	14,892	15,190	44,682
Fringe Grad Assistant (34%)	4964	5063	5165	15,192
Subtotal	19,564	19,955	20,354	59,874
Travel	3,000	4,500	4,500	12,000
Equipment (Aggregate Stability System)	2,000	0	0	2,000
Supplies (Soil sampling bags, flags, fertilizer)	1,000	1,000	1,000	3,000
Other Direct Costs	0	0	0	
Publication Costs	0	0	2,000	2,000
Analytical Fees (Soil OM and Nutrients, Plant Tissue) (6 sites, 6 treat, 4 rep = 144 samples)	8640	8,640	10,080	27,360
Subtotal	14,640	14,140	17,580	46,360

Total Direct Costs	34,204	34,095	37,934	106,234
Indirect Costs @ 46.5%	15,905	15,854	17,639	49,399
TOTAL COSTS	**50,109**	**49,950**	**55,574**	**155,632**

	USDA-NSERL			
	Year 1	**Year 2**	**Year 3**	Total
Personnel				
Scientific (5% Effort)	8,000	8,500	9,000	25,500
Technical (20% Effort)	10,000	12,000	14,000	36,000
Subtotal				61,500
Travel	8,000	6,000	6,000	20,000
Equipment	4,000	3,000	3,000	10,000
Supplies	4,000	5,000	4,000	13,000
Subtotal				43,000
Total Direct Costs	34,000	34,500	36,000	104,500
Indirect Costs @ 10%	3,400	3,450	3,600	10,450
Contract Costs	10,000	12,000	12,000	34,000
TOTAL COSTS	**47,400**	**49,950**	**51,600**	**148,950**

	Brown County			
	Year 1	**Year 2**	**Year 3**	Total
Personnel				
Approx 50 hrs/ yr	2,100	2,100		4,200
Other Direct Costs				
Gypsum Application	2,054	2,054	2,054	6,162
TOTAL COSTS	**4,154**	**4,154**	**2,054**	**10,362**

	Beneficial Reuse Management (ISO International and Greenleaf Advisors)			
	Year 1	**Year 2**	**Year 3**	Total
Personnel	70,000	50,000	40,000	160,000
Other Direct Costs				
GLI Cost Share - Gypsum Application	6,750	6,750	6,750	20,250
BRM Overhead (25%)	17,500	12,500	10,000	40,000
TOTAL COSTS	94,250	**69,250**	**56,750**	**220,250**

Total budget request

- UW Madison $ 62,024
- UW Stevens Point $155,632

• USDA-NSERL	$148,950
• Brown County Land and Water Conservation Department	$ 10,362
• Beneficial Reuse Management and subcontractors	$220,250
Total	**$597,218**

ACORN Statement
This proposal is not subject to this prohibition.

Attachments (overarching plan, resumes, curriculum vitae, letters of support, scientific peer review, maps, or charts)
Literature Cited:

Baumgart, P. 2004.

Favaretto, N., L.D. Norton, B.C. Joern, and S.M. Brouder. 2006. Gypsum amendment and exchangeable calcium and magnesium affecting phosphorus and nitrogen in runoff. Soil Sci. Soc. Am. J. 70:1788-1796.

Korcak, R.F. 1998. In: Wright et al. (Eds.) Agricultural uses of municipal, animal, and industrial byproducts. Conservation research report no. 44. US Department of Agriculture, Agricultural Research Service, Beltsville, MD.

Lepore, B.J., A.M. Thompson, and A. Peterson. 2009. Impact of polyacrylamide delivery method with lime or gypsum for soil and nutrient stabilization. J. Soil Water Conserv. 64:223-231.

Norton, L.D. and Zhang, X.C. 1998. In: Wallace, A. and Terry, R.E. (eds.) Handbook of soil conditioners. Substances that enhance the physical properties of soil. Marcel Dekker, New York

Rand, R.E, D.R. Keeney, and L.M. Walsh. 1969. Availability of and crop response to sulfur fertilization in Wisconsin. Research Rep. no. 52. College of Agricultural and Life Sciences. Univ. of Wisconsin-Madison.

6b

William C. Hafs
Brown County Land and Water Conservation Department
1150 Bellevue Street
Green Bay, Wisconsin 54302
Phone: 920-391-4633
Email: hafs_bc@co.brown.wi.us
Web site: www.co.brown.wi.us/Land_Conservation/index.html

Education:
UW- Stevens Point 1978 graduate
Bachelor of Science - Resource Management with an emphasis Urban and Regional Planning
Minor: Soil Science.

Career:
1979 – 1983 County Conservationist, Taylor County Land Conservation Department
1983- Present: Director/County Conservationist
Brown County Land and Water Conservation Department
1150 Bellevue Street
Green Bay, Wisconsin 54302
Phone: 920-391-4633
1998- 2002 - Member of Wisconsin Buffer Council
1997- Present - Member of Lake Michigan Forum
2004 – 2005 President Fox - Wolf Watershed Alliance
2005- Member of Wisconsin Buffer Initiative
2007- Member of Northeast Wisconsin Karst Task Force

Programs/Projects:

- 1983 Kewaunee River Watershed Priority Project; adopted & approved by Brown County Board.
- 1984 Animal Waste Management Rules; adopted & approved by Brown County Board.
- 1985 Brown County Farmland Preservation Plan; adopted & approved by Brown County Board.
- 1986 Animal Waste Storage Facility Ordinance (chapter 26 Brown County Code); adopted & approved by Brown County Board.
- 1986 Manure Management Water Pollution Control Plan; adopted & approved by Brown County Board.
- 1987 Wildlife Damage Control Program; adopted & approved by Brown County Board.
- 1988 Erosion Control Plan for Brown County; adopted & approved by Brown County Board.
- 1989 East River Priority Watershed Project; adopted & approved by Brown County Board.
- 1991 Streambank Buffer Ordinance (chapter 22 Brown County Code); adopted & approved by Brown County Board.
- 1995 Red River Watershed Priority Project; adopted & approved by Brown County Board.
- 1996 Branch River Watershed Priority Project; adopted & approved by Brown County Board.
- 1997 Duck Creek-Apple/Ashwaubenon Priority Project adopted & approved by Brown County Board.
- 1998 Agriculture Shoreland Management Ordinance (chapter 10 Brown County Code); adopted & approved by Brown County Board.
- 1998 Agriculture Shoreland Management Ordinances – developed for Towns of Hobart, Humboldt, & Pittsfield. Adopted & approved by Brown County Board.
- 1999 Brown County Land and Water Resource Management Plan (1999-2003); adopted & approved by Brown County Board.

- 2000 Animal Waste Management Ordinance Revised from Animal Waste Storage Facility Ordinance (chapter 26 Brown County Code). Adopted & approved by Brown County Board.
- 2001 Conservation Reserve Enhancement Program; adopted and approved by Brown County Board.
- 2003 Baird Creek Buffer Project; adopted & approved by Brown County Board.
- 2003 Brown County Land and Water Resource Management Plan (2004 – 2008); adopted & approved by Brown County Board.
- 2005 Pike Buffer project – Suamico River $200,000 cost share from Natural Resources Damage Assessment for landowners to install buffers.
- 2006 Groundwater protection fund $40,000 created to assist with groundwater protection in Morrison and Brown County.
- 2008 Land and Water Resource Management Plan 2009 -2013 (adopted and approved by Brown County Board).

Presentations/ Papers:

- Ecosystem Approach to Non Point Pollution Control – Green Bay Example. IAGLR Special Symposium on Operationalizing the Ecosystem Approach, St. Norbert College, De Pere Wisconsin; August 1993;
- Best Management Practices (BMP's) for Reducing Diffuse Pollution from Agriculture. National Rivers Authority, Mark Browning, Dr. Bob Huggins, RPS Clouston, Steventon, UK conducted in Green Bay; November 1995.
- Vegetated Riparian Buffer Strips. Lake Michigan Area Land and Water Conservation Association Tour; July1996.
- Buffer Strip Effectiveness in Brown County Wisconsin. Minnesota Riparian Buffer Session, Mankato Minn.; Presented to Soil and Water Conservation Districts and State of Minnesota staff; April 1997.
- Riparian Buffer Zones, County Ordinances for Buffer Strips – Here's One That Works; National Association of Conservation Districts Annual Meeting, Nashville, TN. February 1998.
- Impacts of Agriculture on Water Quality in Green Bay Ecosystem and Proactive Agriculture Approaches to Protecting Water Quality; American Society of Civil Engineers (ASCE), 1998 National Conference on Environmental Engineering; Chicago, Illinois, June 1998.
- How to Get Agricultural Buffers on the Ground. Riparian Buffer Conference, North Carolina State University, Raleigh, NC; May 2000.
- How to Get Agricultural Buffers on the Ground, History of Brown County, Wisconsin's Buffer Program. Bill Hafs, Brown County Conservationist. May 2000.
- Watershed Management in Brown County Wisconsin; International Seminar on Watershed Management, Green Bay; June 2003.
- Buffer Strips: Past, Present, and Future. The Value of Buffers in the Lower Fox and West Shore of Green Bay Conference conducted by Glacerland RC&D; May 2004.
- Groundwater and Karst impacts in Brown County Presentation to Fond du Lac Groundwater Quality Advisory Council; Thursday May 15, 2008
- Animal Waste and "Other Wastes"; Storage and Land Application to Wisconsin Association of Land Conservation Employees (WALCE) October 2008.
- Presentation on Karst, Land Application and Storage of Animal Waste and "Other Wastes" at Dairy Business Associates 2008 Annual Conference - December 2008.
- Livestock, Land Application of Wastes, Groundwater and Sustainability 12/1/09 to University of Wisconsin Stevens Point. Ecology of Foods class Dr. Jasia Steinmetz, RD, CD; Associate Professor; Director of the Didactic Program in Dietetics; 202 CPS; School of Health Promotion

and Human Development; University of WI-Stevens Point; Stevens Point, WI 54481;715-346-4087

Awards:

- 1985 Appreciation Award from Wisconsin Governor Tommy Thompson for Assistance Provided to Farmers in Farmland Preservation Program to Conserve Soil and Water Resources of Wisconsin.
- 1986 Achievement Award from Wisconsin Nonpoint Source Water Quality Program (DNR) for landowner participation in Kewaunee Watershed.
- 1989 Leadership Award- leadership in demonstrating that conservation practices benefit both farming and wildlife from Brown County Conservation Alliance.
- 1990 Recognition Award for Protecting and improving Wisconsin Lakes, Streams, and Groundwater in Lower Manitowoc River Priority Watershed Program from DNR Secretary C.D. Besadny.
- 1991 Recognition Award for Innovative County Efforts to Promote Resource Management from Wisconsin Association of Land Conservation Employees
- 1991 Recognition Award for Work with Green Bay Remedial Action Plan from DNR Secretary C.D. Besadny, Wisconsin Department of Natural Resources.
- 1994 Recognition Award from Brown County Conservation Alliance for Streambank Erosion Control.
- 1996 Recognition Award in Acknowledgement of Noteworthy Efforts to Restore Beneficial Uses to Waters of Fox River/Green Bay from Lower Green Bay Remedial Action Plan Citizen Advisory Committee
- 1999 Recognition Award for Efforts to Protect and Enhance Wisconsin's Land and Water Resources from Wisconsin Department of Trade and Consumer Protection,
- 2000 Achievement Award for 50 miles of Buffers installed in 1999 and 2000 from National Buffer Council - National Association of Conservation Districts.
- 2002 Community Open Space Partnership Green Ribbon Award. From Urban Open Space Foundation.
- 2002 River Champion Award – Public Sector from River Alliance of Wisconsin.
- 2005 Outstanding Conservation Employee Award from Wisconsin Association of Land Conservation Employees (WALCE)
- 2006 Outstanding Government Employee Award from the Brown County Conservation Alliance.

Accomplishments:

- Adoption of 1st Streambank Buffer Ordinance by a County in State of Wisconsin on October 16, 1991.
- Installation of over 400 miles of Buffer Strips on Streams in Brown County since 1991.
- Convinced Wisconsin Department of Agriculture Trade and Consumer Protection to develop State Model Ordinance for Streambank Protection resulting in Wisconsin Agriculture Shoreland Protection Program, May 1992.
- Member of Wisconsin Standards Oversight Committee that developed first Interim Riparian Vegetated Buffer Standard (393 NRCS) for State of Wisconsin, July 1997.
- Provided over 37 million dollars in Conservation Program Dollars to Brown County Landowners since 1983.

Meghan E. Buckley
Assistant Professor
College of Natural Resources: Soil and Waste Discipline
University of Wisconsin at Stevens Point
(715) 346-4180
mbuckley@uwsp.edu

Employment

University of Wisconsin at Stevens Point. Soil and Waste Discipline. Stevens Point, WI.
Assistant Professor, 100% Teaching. 2008 to date.
Course Responsibilities: Introduction to Soil and Water Resources, Soil Management for Resource Sustainability, Soil Physics, Agronomy: Agriculture and the Environment
Research Areas: Soil Management to Improve Soil Physical Properties, Wetland Remediation and Carbon Sequestration, Agronomic and Environmental Benefits of Erosion Control Measures

Kansas State University. Dept. of Agronomy. Manhattan, KS. 0.3 GTA/ 0.2 GRA. 2002 to 2008.

USDA-ARS National Soil Tilth Laboratory. Ames, IA. Biological Lab Aid. 2000 to 2002.

Education

Ph.D. Soil Science, August 2008, Kansas State University
Thesis Title: Effect of tillage on the hydrology of a claypan soil in Kansas.
M.S. Agronomy, May 2004, Kansas State University
Thesis Title: Integrated agricultural management: Reducing sediment, nutrients, and herbicides in runoff.
B.S. Agronomy: Environmental Soil Science option, May 2002, Iowa State University
B.S. International Agriculture, May 2002, Iowa State University

Publications and Presentations

Peer-Reviewed Journal Articles

Buckley, M.E., G.J. Kluitenberg, D.W. Sweeney, K.W. Kelley, and L.R. Stone. *In Review*. Effect of Tillage on the Hydrology of a Claypan Soil in Kansas.

Thien, S.J., M.E. Buckley, and W.W. McFee. 2008. A Century of Agronomic Education. Agronomy Journal. 100:S89-S102.

Buckley-Zeimen, M., K. A. Janssen, D. W. Sweeney, G. M. Pierzynski, K. R. Mankin, D. L. Devlin, D. L. Regehr, M. R. Langemeier, K. A. McVay. 2006. Combining Management Practices to Reduce Sediment, Nutrients, and Herbicides in Runoff. Journal of Soil and Water Conservation. 61(5):258-267.

Published Abstracts

Schoeneberger, P., G.J. Kluitenberg, A.J. Heitman, and M.E. Buckley. 2008. A comparison of estimated and in-situ saturated hydraulic conductivity in Midwestern soils. *In* Program and Abstracts. First International Conference on Hydropedology, University Park, PA.

Buckley-Zeimen, M., G.J. Kluitenberg, K.W. Kelley, D.W. Sweeney. 2007. Effect of Tillage on the Hydrology of Claypan Soils in Kansas. *In* Annual meetings Abstracts [CD-ROM]. ASA, CSSA, and SSSA, Madison, WI.

Buckley-Zeimen, M., and S.J. Thien. 2007. A Century of Agronomic Education. *In* Annual meetings Abstracts [CD-ROM]. ASA, CSSA, and SSSA, Madison, WI.

Heitman, A.J., M. Buckley-Zeimen, G.J. Kluitenberg, and P.J. Schoeneberger. 2007. Assessment of methods to estimate soil saturated hydraulic conductivity. *In* Annual meetings Abstracts [CD-ROM]. ASA, CSSA, and SSSA, Madison, WI.

Buckley-Zeimen, M., G. Kluitenberg, P. Schoeneberger. 2006. Evaluation of a Pedotransfer Function Approach for Estimation of Saturated Hydraulic Conductivity. *In* Annual meetings Abstracts [CD-ROM]. ASA, CSSA, and SSSA, Madison, WI.

Buckley, M., G. Pierzynski, K. Janssen, D. Sweeney, J. Miller, D. Regehr. 2003. Integrated Agricultural Management: Reducing Sediment, Nutrients, and Herbicides in Runoff. *In* Annual meetings Abstracts [CD-ROM]. ASA, CSSA, and SSSA, Madison, WI.

Current Grant Proposals
Title: Success of Wetland Mitigation for Carbon Sequestration
Source: UWSP University Personnel Development Grant
Funding Received: $679
Collaborators: NA
Project Year: 2009

Pending Grant Proposals
Title: Fertilizer Technologies as a Means to Achieve a Reduction in Groundwater Nitrate Concentrations
Source: State of Wisconsin Groundwater Research and Monitoring Program / University of Wisconsin Water Resources Institute
Funding Requested: $32,146
Collaborators: Matthew Ruark, Birl Lowery
Project Year: 2010

Title: Evaluation of FGD Gypsum as a Soil Amendment
Source: University of Wisconsin Consortium for Extension and Research in Agriculture and Natural Resources
Funding Requested: $41,610
Collaborators: Richard Wolkowski
Project Year: 2010-2012

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CURRICULUM VITAE
RICHARD PAUL WOLKOWSKI

Current Title: Outreach Program Manager II, Senior Scientist

Education:

Degree	Date	University	Major
Ph.D.	1989	Univ. of Wisconsin	Soil Science (Botany Minor)
M.S.	1978	Univ. of Wisconsin	Soil Science
M.S.	1978	Univ. of Wisconsin	Forestry
B.S.	1976	Univ. of Wisconsin	Soil Science

Professional Experience:

2002 - present: Outreach Program Manager II, 50%, Senior Scientist, 50%, Department of Soil Science, University of Wisconsin (Structured at 60% Extension, 30 % Research, 10% Teaching).

1996-2002: Outreach Program Manager II, 50%, Associate Scientist, 50%, Department of Soil Science, University of Wisconsin (Structured at 60% Extension, 30 % Research, 10% Teaching).

1990-1996: Outreach Program Manager, 50%, Assistant Scientist, 50%, Department of Soil Science, University of Wisconsin (Structured at 40% Extension, 50 % Research, 10% Teaching).

1979-1990: Research Program Manager, Department of Soil Science, University of Wisconsin.

1978-1979: Assistant Zoning Administrator, Sauk Co., Wisconsin, Baraboo, Wis.

Awards and Honors:

2008 Second Mile Award: Wisconsin County Agents Association

2004 Research Award: College of Agriculture and Life Sciences, Ag. Research Stations

1999 Education Award: Wisconsin Fertilizer and Chemical Association

1996 Researcher of the Year: Fluid Fertilizer Foundation

1994 J. S. Donald Teaching Award: UW College of Agricultural and Natural Sciences

Organized Courses Taught: (UW-Madison, CALS Short Course)

1989-Present: Introductory Soils

1997-2000: Precision Agriculture

1999-Present: Soil and Water Management

Research Interests: Soil and water management issues including tillage and crop residue management effects on production and water quality; soil compaction management; management of spatial variability in agriculture; land application of municipal and industrial wastes.

Recent Publications:

Refereed:

Wolkowski, R. P. 2000. Row-placed fertilizer for maize grown with an in-row crop residue management system in southern Wisconsin. Soil Till. Res. 54:55-62.

Wolkowski, R. P. 2000. Land application of crushed gypsum wallboard waste for alfalfa. Comm. Soil Sci. and Plant Anal. 31:187-199.

Wolkowski, R. P. 2003. Nitrogen management considerations for landspreading municipal solid waste compost. J. Env. Qual. 32:1844-1850.

Myers, S. W., C. Gratton, R. P. Wolkowski, D. B. Hogg, and J. L. Wedberg. 2005. Effect of soil potassium availability on soybean aphid (Hemiptera: Aphididae) population dynamics and soybean yield. J. Econ. Entomol. 98:113-120.

Copas, M., A. J. Bussan, and R. P. Wolkowski. 2008. Potato (Solanum tuberosum) yield and quality response to subsoil tillage and compaction. Agron. J. Accepted.

Proceedings:

Wolkowski, R. P. 2005. Impact of tillage on soil properties. Proc. of the Wis. Fertilizer, Aglime, and Pest Management Conf., Univ. of Wis., Madison, Wis. 44:15-24.

Wolkowski, R. P. 2005. Effect of tillage and potassium fertilization on soybean yield. Proc. of the Wis. Fertilizer, Aglime, and Pest Management Conf., Univ. of Wis., Madison, Wis. 44:142-149.

Bussan, A. J., M. Copus, M. Drilias, R. Sabba, A. Charkowski, and R. P. Wolkowski. 2005. Influence of tillage on potato rooting, water use, and storability. Proc. of Wis. Ann. Potato Meeting. 18:243-248.

Wolkowski. 2005. Tillage and cover crop effects on N fertility. Proc. of Wis. Ann. Potato Meeting. 18:143-152.

Wolkowski, R. P. 2006. Tillage management for the corn/soybean rotation on erodible soils. Proc. of the Wis. Fertilizer, Aglime, and Pest Management Conf., Univ. of Wis., Madison, Wis. 45:267-275.

Wolkowski, R. P. 2007. Effect of implementing a rotational tillage system in a corn/soybean system. Proceedings of the International Soil Tillage Org. 17th Triennial Conf. Kiel, Germany. Pp 1350-1355.

Wolkowski, R. P. 2007. Is fall deep banded fertilizer placement superior? Proc. of the Wis. Fertilizer, Aglime, and Pest Management Conf., Univ. of Wis., Madison, Wis. 46:133-139.

Wolkowski, R. P. 2007. Adjusting tillage practices in a corn-soybean rotation. Proc. of the Wis. Fertilizer, Aglime, and Pest Management Conf., Univ. of Wis., Madison, Wis. 46:182-188.

Wolkowski, R.P. 2008. Soil management for continuous corn. Proc. of the Wis. Fertilizer, Aglime, and Pest Management Conf., Univ. of Wis., Madison, Wis. 47:169-174.

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Darrell L. Norton

Dr. L. Darrell Norton is a Research Soil Scientist for the USDA-ARS National Soil Erosion Research Laboratory located on the campus of Purdue University, West Lafayette, IN where he also is a Professor in the Departments of Agronomy and Agricultural and Biological Engineering. He has been with the Laboratory since 1982 conducting research on various aspects of soil erosion related to physio-chemical interactions between soil and rainwater. The last 19 years he has been leading research in the Laboratory to evaluate various industrial byproduct materials for use in controlling erosion and managing water in agricultural production systems. Much of his research has focused on relatively clean high Ca and S containing materials from air purification systems from coal-fired power plants. Dr. Norton's research team conducted an award winning project that created an environmental friendly synthetic soil from composts of fly-ash, bottom-ash and bio-solids from a pharmaceutical plant for use in reclamation and re-vegetation of strip mined lands. Dr. Norton and co-authors including many of his PhD students have published more than 250 articles and technical reports and has been widely invited to present results of his research at Scientific Congresses all over the World. He has conducted projects and cooperative research with many Agencies in the USA and many International Research Institutions such as CSIRO, Australia, EMBRAPA, Brazil, UN-FAO, India, CAS, China, US-AID, Africa, BARD, Israel, and many University and Institutes in the USA and Europe. He holds a BSc. '75 and MSc. '76 from Purdue University and a PhD '81 from The Ohio State University.

Ron Chamberlain

Ron Chamberlain is the Managing Director of Gypsoil, LLC, the FGD Gypsum marketing Division of Beneficial Reuse Management. In 2006, Ron founded earthANEW, a company specifically focused on marketing byproduct Gypsum for agricultural use. Beneficial Reuse Management acquired earthANEW in 2009 and Ron joined the BRM team. His 38 years experience in the Agriculture Industry includes management positions at Ag Spectrum Company, United Agricultural Products, Super Crost Seeds, BASF USA and BASF Europe. Ron has a BS in Agricultural Mechanization from Purdue University.

John Andersen

John Andersen is President and founder of Greenleaf Advisors, LLC, an advisory firm that 'bridges enterprises to build a healthy and sustainable world'. The company has a particular focus on the intersection between the environment and human health. John's thirty years of experience serving businesses, nonprofits, governments and universities, has demonstrated that it takes effective engagement between these sectors to achieve sustainable results on complex issues. Prior to Greenleaf Advisors, John was the Great Lakes Director of The Nature Conservancy and an International Managing Director of Jones Lang LaSalle. He presently serves as a President's Council Member of Heartland Alliance for Human Needs and Human Rights, and is on the Environment and Energy Commission in his home town of Wilmette, IL. He holds a B.A. in economics from Brown University and an MBA from Harvard University. John is currently a faculty member at DePaul University, where he teaches Sustainable Value Creation in the business school.

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Paul Linzmeyer

A leader with proven business acumen who has years of executive level leadership, Paul brings a strong background as a 'business activist' with a deep and abiding belief that business can benefit from triple bottom line thinking. He is founder of ISO International LLC., a firm teaching sustainable principles and practices, and is well known in Wisconsin and around the world for his community leadership.

Prior to starting ISO, International, he was president of a Green Bay based company, Bay Towel, from 1994-2008. Before returning to his native state, Paul led companies in San Francisco, Chicago and Denver for over 20 years. He founded the Employers Workforce Development Network, a private sector led organization whose mission is to share resources and develop partnerships for creating world class workplaces. This public/private partnership was one of the partners in the initial development of a regional coalition to create an eighteen county Northeast Wisconsin economic community, now referred to as 'The New North'. He is past chair of the Green Bay Chamber of Commerce and the Wisconsin Council on Workforce Investment. He currently chairs the Bay Area Workforce Development Board the NEW North Sustainability Committee and the Greater Green Bay Sustainability Committee.

At Bay Towel, he worked to implement triple bottom line high performance strategies and saw considerable success from this process. By utilizing Environmental sustainability, diversity and inclusion, health and wellness, safety, and investing in people strategies, he led the firm to record financial results and stakeholder (customer, team member and community) loyalty. In April 2008, Paul represented the US Department of Commerce at the OECD policy meeting in Paris, in September, 2008 in New York, and in Italy in June of 2009.

Professional Associations

- OECD-US Delegate to the Sustainable Manufacturing and Eco-Innovation Committee
- Chair of the Industry Committee of the Wisconsin Global Warming Task Force
- Wisconsin Initiative on Climate Change Impacts http://wicci.wisc.edu
- Ecolution, Inc.- Co-founder and Board member www.greanbiz.com
- Bay Area Workforce Board- Chair www.bayareawdb.org
- The NEW North – Co- Founder and exec. Committee- www.thenewnorth.com
- NEW North Sustainability Committee- Founder and Chair- www.thenewnorth.com
- Sustainable Green Bay- Chair- http://www.ci.green-bay.wi.us/SGB/implementation.html
- Wisconsin Sustainable Business Council- http://www.bus.wisc.edu/sustainability/council/
- Employers Workforce Development Network – Founder and past-chair www.ewdn.org
- Wisconsin Council On Workforce Investment- Past Chair- www.wi.cwi.org
- Green Bay Chamber of Commerce- Past Chair – www.titletown.org
- Wisconsin Council on Children and Families – past board member www.wccf.org
- Green Bay Chamber of Commerce Diversity Committee- Founder and past Chair
- Chamber Coalition of the NEW North- Co-founder
- Governor's Economic Growth Council
- Brown County Diversity Council- First Chair

Peter T. Mulvaney – (available to contract work with Greenleaf Advisors, LLC)
Chicago Department of Water Management, Chicago, IL 2005 - 2010
Assistant Commissioner
Responsibilities:

- Drive institutional changes to protect and enhance Chicago's position as the "Greenest City".
- Lead strategic teams to address the City's critical social and environmental concerns: (1) adapting to climate change, (2) investing capital in sustainable infrastructure, (3) enhancing the urban habitat via green design, (4) improve efficiencies by modernizing asset management.
- Develop and deliver message and image regarding social and environmental presentations.

Results:

- Improved the environmental footprint of our water infrastructure by establishing new policy and modifying existing practices. The aggregate of such actions has resulted in: (1) a greener internal culture, (2) reduced energy and water footprint, (3) improved customer service, and (4) more effective resource management. These impacts are designed to be self-sustaining.
- Led consensus building of a multi-department, multi-discipline team to establish performance-based sustainability strategies. Drove integration of environmental responsibility into standard operating procedures, then established support of the City Council and other stakeholders to integrate into daily practice. This has laid groundwork that will ease the pathway for future green initiatives.
- Developed strategy and led negotiations to successfully avoid a Federal consent decree (potential of ~1 billion dollars in capital cost) by addressing key elements of green management such as green roof policy, LEED building requirements, rain garden programs, audit programs and public outreach.
- Created the Operations and Maintenance Manual for the Chicago sewer system which is now used as a model for other utilities such as the Metropolitan Water Reclamation District of Greater Chicago.
- Headed transition from traditional pen and paper mapping system to an automated computerized model. This project has led to improved capital planning, improved employee safety, more rapid communication, and has achieved national recognition from several industry groups for innovation.

MWH (Harza Engineering Co.), Chicago, I01-2005
Managing Consultant
Responsibilities:

- Assemble and lead teams that specialize in multi-discipline projects requiring the integration of business, environmental, engineering, and social concerns to progress large infrastructure projects.
- Lead internal environmental and social initiatives to align corporate image with client expectations.

Results:

- The World Bank - Bulgaria's Danube River Restoration & Guyana's Amaila Falls Hydropower Project. Achieved project consensus among a diverse group of engineers, ecologists, economists, and local special interest groups by establishing a clear and unifying vision of stakeholder benefits. Managed, designed and executed reconnaissance field-team and reports. The projects resulted in the establishment of Bulgaria's position for the negotiation of terms of an internationaltreaty and resulted in the World Bank decision to halt investment in Guyana's hydropower expansion.
- The City of Chicago Department of the Environment - Chicago Green Roof Test Plot & Beach Management Projects. Designed creative solutions to two vexing urban pollution issues: (1)

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performed the first municipal green roof test-plot studies to establish numerous green roof policies, and (2) performed field research to develop operational procedures that reduce beach closures.

- For the Chicago Department of Aviation - Environmental Integration and the O'Hare Expansion Planning Services Project. Negotiated with numerous agencies and surrounding city leaders to identify and mitigate the environmental impact of the ORD expansion. From resultant discussions and data, built a process which identified, monitored, and trained contractors on best management practices. This successfully bridged the gap between public opinion and operational integration.

Landrum and Brown Aviation Consulting, Chicago, IL 2000-2001
Environmental Analyst
Responsibilities:

- Conduct emissions inventories for international airports to reduce adverse operational impacts.
- Prepare documentation and analysis of environmental impact from converting undeveloped real estate for commercialization.

Results:

- Alternatives analysis of several international airports led to the rerouting of aircraft traffic patterns and concomitant reduction in emissions and improved airport operational performance.

National Institutes of Health, Bethesda, MD 1993-1997
Research Scientist
Responsibilities:

- Create experimental protocols to uncover and analyze the mechanisms of metastatic tumor motility.

Results:

- Six peer reviewed publications resulted from the data analysis, and communication of research results. This established my personal interest in environmental impacts on health and culture.

Museum of Southwest Biology, Albuquerque, NM 1992-1993
Aquatic Specialist
Responsibilities:

- Work autonomously in remote stations for 10-14 day periods. Create protocols to collect and analyze specimens for proper evaluation of the fluvial character of the river basin.

Results:

- Presentation of conclusions affected the operation of local agriculture diversions to balance ecological goals of restoring endangered species, with economic needs.

EDUCATION

Northwestern University - Kellogg School of Management: Evanston, IL December 2008
MBA, Executive Masters Program (EMP)

Pennsylvania State University: State College, PA December 1999
MS, Environmental Pollution Control, Department of Civil and Environmental Engineering

University of Colorado: Boulder, CO May 1991
BA, Psychology, College of Arts and Sciences

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Improving Water Quality in Lower Fox River – Green Bay TMDL by reduction of Soil Phosphorus levels by relocation of animal waste from high phosphorus fields to low phosphorus fields

Funding Opportunity Number, Focus Area and Program.
RFP number EPA-R5-GL2010-1.
Focus area: "Nearshore Health and Non Point Source Pollution."
Program: I.C.8. Watersheds Best Management Practices, Planning and Implementation

Name of Proposal:
Improving Water Quality in Lower Fox River – Green Bay TMDL by reduction of Soil Phosphorus levels by relocation of animal waste from high phosphorus fields to low phosphorus fields

Points of contact:
Bill Hafs, Director,
Brown County Land and Water Conservation Department
1150 Bellevue Street, Green Bay, Wisconsin 54302; phone 920-391-4633; fax 920-391-4617;
Email: hafs_bc@co.brown.wi.us;
DUNS number: County of Brown #055236355

Type of Organization: Wisconsin municipality, civil subdivision of the State of Wisconsin.

Proposed Funding Request: $537,389

Brief Project Description:
This project will focus on reduction of soil phosphorus levels in high phosphorus agriculture fields (>100 ppm Phosphorus) of the Lower Fox River watershed to reduce agriculture nutrient and sediment loading to the Lower Fox River and Bay of Green Bay Total Maximum Daily Load Project. Brown County Land and Water Conservation Department will conduct field scale tracking of soil test P values with the use of GIS technology. High phosphorus agriculture fields will be offered cost share at the rate of 1 cent per gallon (approximately 50% of actual cost) to transport animal waste to agriculture fields less than 25 ppm phosphorus. Contracts will require permanent maintenance of phosphorus levels less than 50 ppm on contracted fields. It is estimated that there are 2500 acres in the Brown County portion of the TMDL that are greater than 100 ppm Phosphorus. The goal of this project would be to contract with 1250 of those acres (50%).

Project location:
HUC code: 04030204 (Lower Fox River); Latitude and longitude: 44 degrees 32'19.65"N, 88 degrees 00' 18.25" W; Brown County, Wisconsin, zip code 54302.

Full Project description
Overview:
The Fox River is the largest contributor of phosphorus (21%) (U.S.G.S. Water Resources). Studies by the University of Wisconsin at Green Bay indicate that the main source of suspended solids (63%) and phosphorus (44%) is agriculture land (Baumgart, 2004). High phosphorus delivery sub - watersheds have been identified and correlated with areas in the Lower Fox River Watershed that have high dairy livestock numbers and diminishing cropland.

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Fox /Wolf Watershed Basin Dairy Cow Numbers (2006)			
County	**All Cattle**	**Cropland**	**Acres/Cow**
Brown	**103,000**	**172,000**	**1.67**
Outagamie	84,000	211,300	2.52
Winnebago	31,000	124,900	4.03
Calumet	54,000	127,200	2.36
Fond du Lac	97,500	265,700	2.73
Waupaca	56,500	151,200	2.68
Shawano	92,000	185,000	2.01

Brown County has the highest concentration of dairy livestock per acre of cropland in the State of Wisconsin.

Land Use; diminishing cropland

Brown County total land area is approximately 350,000 acres.

Year	Farms	Land in Farms
1954	2,672	300,900 acres
1955	1,920	274,800 acres
1956	1,730	263,400 acres
1957	1,480	241,500 acres
1958	?	**160,000 acres**

(Source: 1991 Brown County Farmland Preservation Plan)

Project Steps and Schedule:

Brown County Land and Water Conservation Department Staff will conduct one - on- one contact with landowners in the rural agriculture portion of the Baird Creek Watershed to inform landowners of project goals, encourage program participation. Specific project steps and schedule are identified in chart below.

March 2010 – July 2010	Using Nutrient management plan information on soil phosphorus levels Brown County Land and Water Conservation Department Staff will identify soil phosphorus levels on GIS mapping project funded by Wisconsin DNR TMDL project. Fields < 25 ppm phosphorus, 25 ppm -50 ppm phosphorus, 50 ppm – 100 ppm and greater than 100 ppm phosphorus will be identified.
August 2010 – August 2012	Landowners in high delivery phosphorus watersheds will be identified and contacted by one on one contacts , letters, maps and brochures to provide information about high phosphorus ag fields to enlist their participation. Cost share will be offered at a rate of 1cent per gallon to transfer animal waste to fields with phosphorus levels less than 25 ppm Phosphorus. Contract will require no additional animal waste on fields greater than 50 ppm phosphorus and require landowner to permanently maintain less than 50 ppm phosphorus. The contract will be perpetual and be attached to the landowners deed. Contracted landowners will also be required to maintain 590 plan on all their land operated and maintain at less than 50 ppm Phosphorus.
November 2012	GIS maps and Project report will be completed that shows the soil phosphorus levels on fields under contract prior to the contract, including 2 years of project. Brown County LWCD will continue to GIS track these fields.

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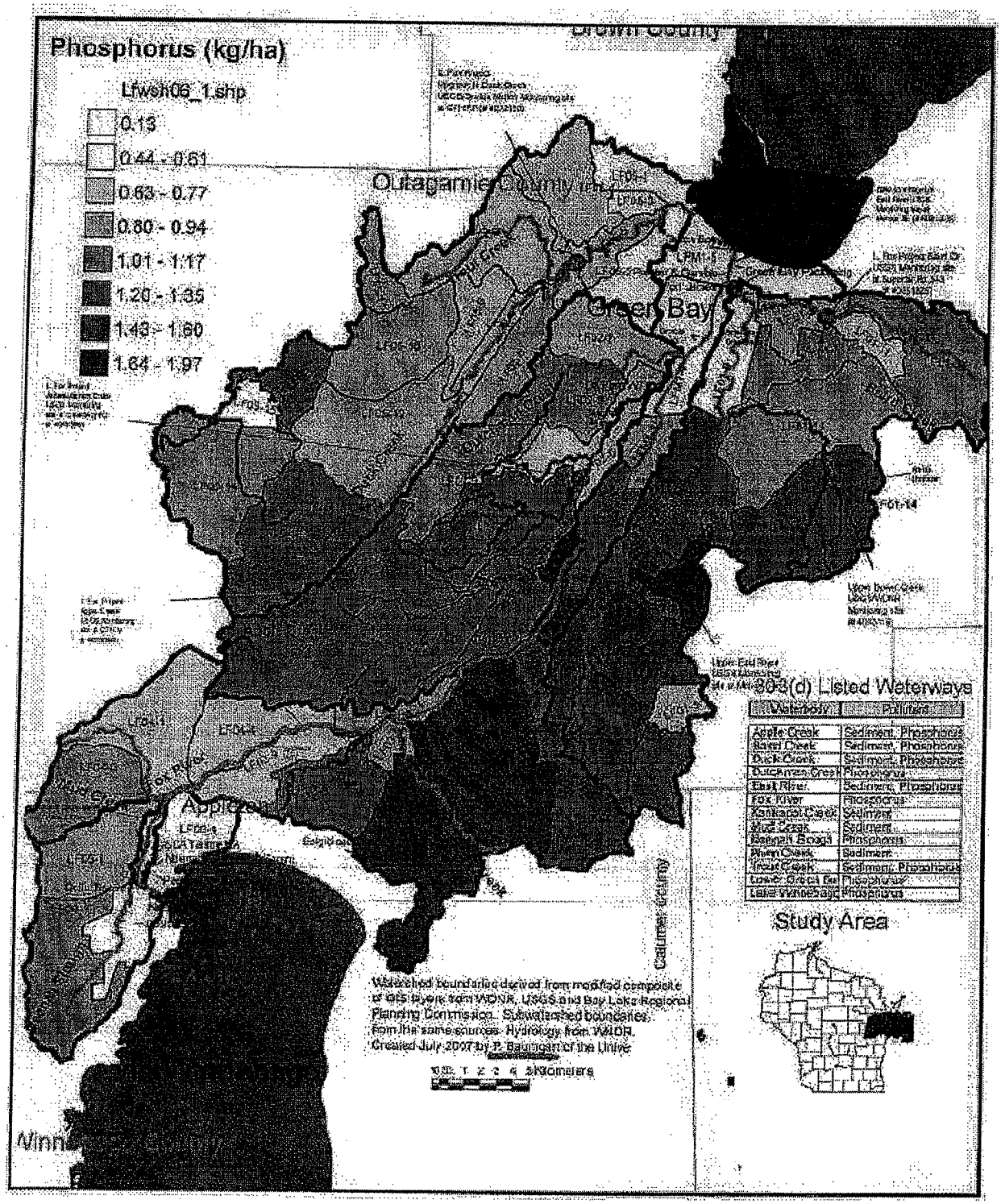
High Phosphorus level sub watersheds in Lower Fox TMDL.



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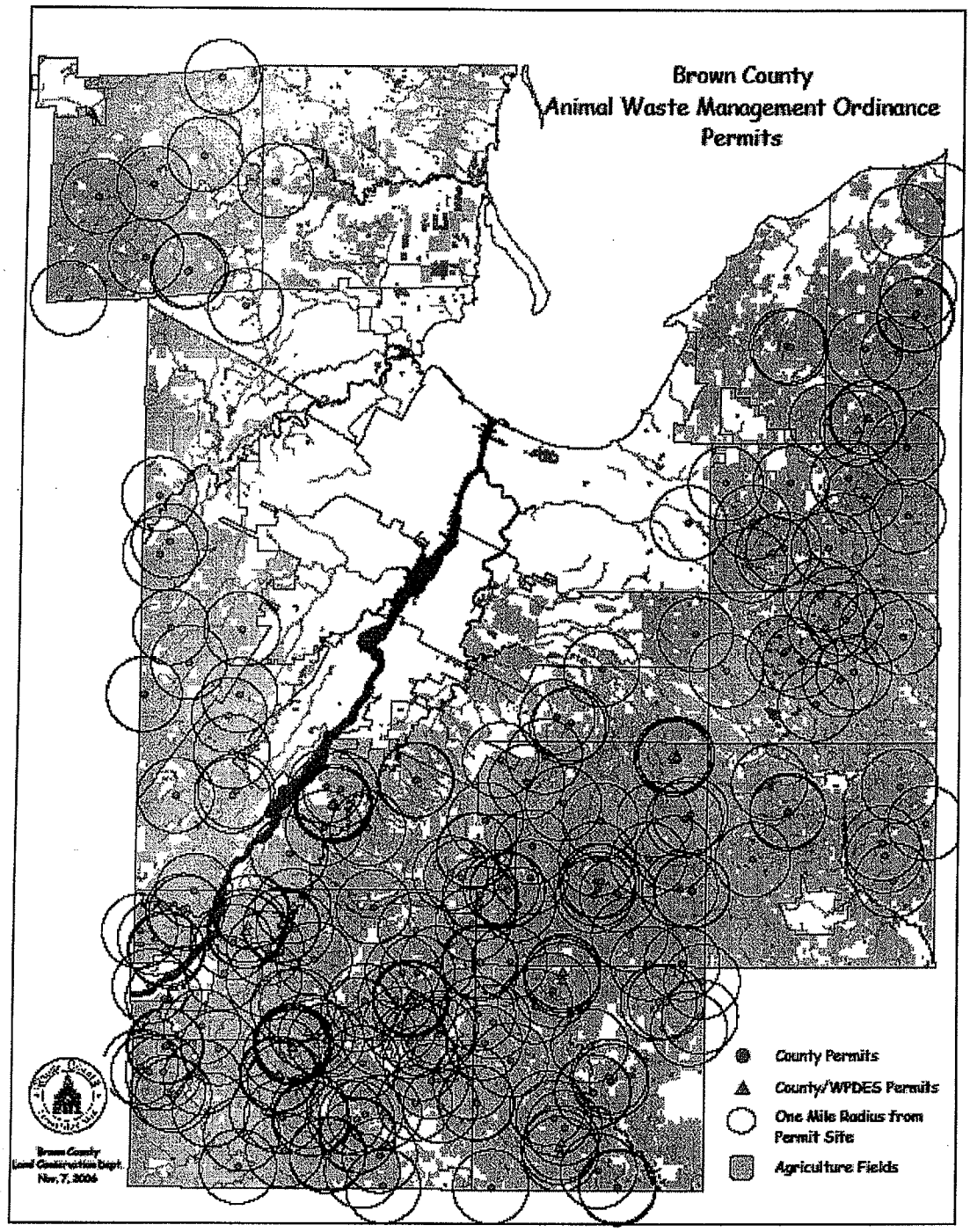
Distribution of livestock operations in Brown County corresponds with high phosphorus fields and sub watersheds in map on page 3.



Relocation of animal waste from high phosphorus level fields greater than 100ppm to agriculture fields less than 25 ppm phosphorus will reduce agriculture phosphorus and nutrient loading to the Lower Fox River and Bay of Green Bay.

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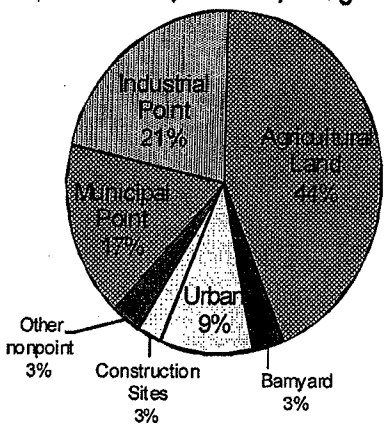
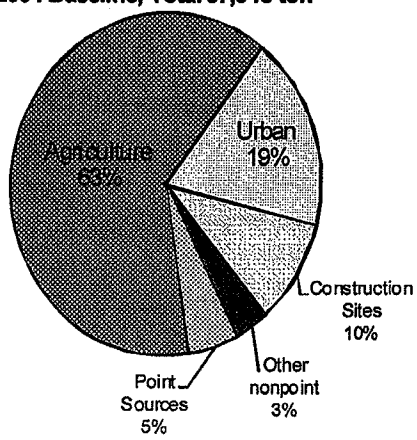
The Lower Green Bay and Lower Fox Tributary Modeling Report: Source allocation of suspended sediment and phosphorus loads to Green Bay from the Lower Fox River Sub Basin using the Soil and Water Assessment Tool (SWAT) calculated the following sources of phosphorus and sediment delivery.

Total Phosphorus Export
Lower Fox River Basin and Duck Creek
2004 Baseline, Total 238,912 kg



Total Suspended Solids Export
Lower Fox River Basin and Duck Creek
2004 Baseline, Total 57,518 ton



Simulated Phosphorus Loading to Lower Green Bay from the Lower Fox River Basin. 2004 Baseline conditions (Paul Baumgart UWGB). Excludes loading from Lake Winnebago.

Source	Total Phosphorus (kg)	(%)
Agricultural Land	**104,094**	**43.6%**
Barnyard	7,487	3.1%
Urban	22,450	9.4%
Construction Sites	6,484	2.7%
Other Nonpoint Sources	7,378	3.1%
Municipal Point Sources	39,573	16.6%
Industrial Point Sources	51,446	21.5%
Total	238,912	100%

Simulated Suspended Solids Loading to Lower Green Bay from the Lower Fox River Basin. 2004 Baseline conditions.

Source	Suspended Solids (metric ton)	(%)
Agricultural Land	**36,105**	**62.8%**
Urban	10,664	18.5%
Construction Sites	5,735	10.0%
Other Nonpoint Sources	2,014	3.5%
Point Sources	3,000	5.2%
Total	57,518	100%

(Data Sources: Integrated Watershed Approach Demonstration Project: A Pollutant Reduction Optimization Analysis for the Lower Fox River Basin and the Green Bay Area of Concern. August 2007; prepared by the Cadmus Group for the U.S. EPA, with contributions from the University of Wisconsin-Green Bay, 26 pp. Solids data from P. Baumgart, UW-Green Bay, 2008.)

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The health of Lake Michigan depends on the stewardship of its individual watershed ecosystems. Implementation activities related to education, remediation, restoration, and pollution prevention are essential in the Lower Fox River Watershed. The Lower Fox River Basin has been identified as an Area of Concern (AOC). Two of the top five high priorities for the Lower Fox River and Green Bay Remedial action plan are to reduce suspended sediments and **phosphorus loading**. Reduced agriculture nutrient runoff in high loading phosphorus sub watersheds would reduce loading to the AOC.

Education/outreach plan to disseminate results:
GIS maps and Project report will be completed that shows the soil phosphorus levels on fields under contract prior to the contract, including 2 years of project. Brown County LWCD will continue to GIS track these fields

Potential for transferability:
Results from this work should be transferable to similar soils throughout the Great Lakes Region.

Outcomes, outputs, and expected results
A significant reduction in the loading of nutrients, and pollutants into waterways of the Lower Fox River Watershed can be achieved through transportation and land application of animal waste onto fields with current levels of Phosphorus lower than 25 ppm. 1250 acres of estimated 2500 acres in Brown County with fields greater than 1000 ppm will be brought under compliance. Reduced soil phosphorus levels will reduce soluble phosphorus leaving the field and entering streams that lead to Lower Fox River and Bay of Green Bay.
The phosphorus mapping done in this study will contribute to the soil test P level studies and future application of fertilizers and animal waste in this nonpoint source TMDL watershed.

Collaboration, partnerships and overarching plans
A team consisting of Federal, State University, County, and private interests have worked on the Lower Fox River and Green Bay TMDL Project. Frequent communication will be necessary between all team members particularly between Brown County and participants located hours away from the region.

This work will also enhance efforts in the area of nutrient management planning in a region that has large livestock numbers and soil test P values in the excessively high category. This research will complement other regional efforts that are evaluating methods of reducing nutrient input into the Great Lakes, including the Brown County Waste Transformation Initiative.

Programmatic Capability and Past Performance
List of projects similar in size, scope, and relevance performed in last 3 yr

Brown County Nonpoint Source Control Plan for the Duck Creek Priority Watershed Project WDNR, WDATCP, Brown and Outagamie County Land and Water Conservation Departments.

Implementation of Brown County Land and Water Resource Management Plan.
http://www.co.brown.wi.us/departments/forms_and_documents/?department=097c0e79486a&subdepartment=7c17181709a3

Implementation of State Land and Water Resource Management Cost Share Funding
http://www.co.brown.wi.us/i_brown/d/land__water_conservation/2008_annual_report.pdf

The Brown County Land and Water Conservation Department, will oversee the entire project. Brown County personnel will take lead roles in locating farm fields that are exceeding 100 ppm and fields less than 25 ppm that the animal waste will be transported to. Annual reports will keep collaborators updated.

Brown County will handle publication of their findings.

Project Budget Project Period: The project will run from March 2010 to November 2012.

BUDGET		Year 1	Year 2	Total
Personnel LWCD Agronomist (2080 hr/yr)		47,111	48053	95,164
Fringe		15687	16338	32,025
Travel	5000 miles/yr @.42	2100	2100	4,200
Equipment	Vehicle(used) 15000; tuff book 5000	20,000		20,000
Supplies	5000 manure scales, testing equip 2000	7000		7,000
Publication Costs	4000 brochures	4000		4,000
Cost Share 37,500,000 gal @.01		187500	187500	375,000
TOTAL COSTS				**$537,389**

Total budget request
Brown County Land and Water Conservation Department **$537,389**

Crop fields will be mapped on GIS for phosphorus at following levels:
<25ppm Blue
25 – 50 ppm Green
50 – 100 ppm Yellow
> 100 ppm Red

It is estimated that in the Brown County portion of the Lower Fox TMDL there are 2500 acres of cropland over 100 ppm Phosphorus. The project goal would be to transport excess animal waste from 1250 acres (50%) of the cropland greater than 100 ppm Phosphorus to land that is currently less than 25 ppm Phosphorus. Current estimated costs of land application of waste are 2 cents per gallon by cost sharing with farmers at 1 cent per gallon to land apply animal waste on fields less than 25 ppm Phosphorus.

These rates would equal 15,000 gallons per acre x 1250 acres = 18,750,000 gallons per year x 2 years = 37,500,000 gallons total x .01 cents per gallon cost share = $375,000 cost share.

ACORN Statement
This proposal is not subject to this prohibition.

Attached (overarching plan, resumes, curriculum vitae, letters of support, scientific peer review, maps, or charts)
Literature Cited:

Lower Green Bay and Lower Fox Tributary Modeling Report Source allocation of suspended sediments and phosphorus loads to Green Bay from the Lower Fox River Sub basin using the Soil and Water Assessment Tool (SWAT); January 2005; prepared for the Oneida Tribe of Indians and Science and Technical Advisory Team of the Green Bay Remedial Action Plan (RAP); Paul Baumgart.
http://www.co.brown.wi.us/forms_and_documents/?i=2d93e535f906&department=097c0e79486a&subdepartment=7c17181709a3

Toward a TMDL for the Lower Fox River Basin; findings from facilitated stakeholders meetings and interview research; Report to DNR, March 2008; Denise Scheberle, Trisha Cooper.
http://www.co.brown.wi.us/forms_and_documents/?i=2d93e535f906&department=097c0e79486a&subdepartment=7c17181709a3

The Lower Fox River and Green Bay TMDL Project; Agriculture Management Practices Costs and Implementation Rates; 9-18-09Laura J. Blake; *Senior Associate;* The Cadmus Group, Inc.57 Water Street, Watertown, MA 02472Phone: (617) 673-7148Fax: (617) 673-7348Email: lblake@cadmusgroup.com
http://www.co.brown.wi.us/forms_and_documents/?i=2d93e535f906&department=097c0e79486a&subdepartment=7c17181709a3

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WEST SHORE GREEN BAY NORTHERN PIKE HABITAT PROJECT
Submitted by: Brown County (WI) Land & Water Conservation Department

Funding Opportunity Number, Focus Area and Program:
RFP number EPA-R5-GL2010-1.
Focus area: 1.D. Habitat and Wildlife Protection and Restoration
Program: I.D.2. Habitat Restoration in Great Lakes Area of Concern

Name of Proposal: West Shore Green Bay Northern Pike Habitat Project

Points of contact:
James Jolly, Program Manager
Brown County Land and Water Conservation Department
1150 Bellevue Street, Green Bay, Wisconsin, 54302
Phone: 920-391-4635; fax: 920-391-4617; e-mail: jolly_jr@co.brown.wi.us;

DUNS number: County of Brown - #068320811.

Type of Organization: Wisconsin municipality, civil subdivision of State of Wisconsin

Proposed Funding Request: $395,815

Brief Project Description:
The northern pike (*Esox lucius*) is Wisconsin's second largest predator fish and is an important part of the Green Bay ecosystem and fish community. Northern pike have become scarce in Green Bay due to wetland habitat losses of as high as 70 percent. In addition, fish encounter passage obstacles when leaving Green Bay to find spawning marshes or when fry migrate back to Green Bay. During 2007, 2008, and 2009, the Brown County LWCD has been successful in restoring northern pike habitat on private land in the Suamico and Little Suamico watersheds. To date, approximately 14 miles of stream corridor has benefited from this project: 5 miles enhanced and protected and another 9 miles made accessible for migrating fish through the removal of stream impediments. Other accomplishments include: 18 acres of wetland (spawning marshes installed, 13 acres of vegetative riparian buffers, and 21 acres of critical area plantings. This proposal seeks funding to continue this work in Brown County and to support the transference of this project success to other western Green Bay locales in both Brown and Oconto Counties.

Project Location:
HUC code: 04030103
Latitude and longitude: 44 degrees 38"N, 88 degrees 2' W
Brown County, Wisconsin; ZIP Code 54173.

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Full Project Description:

Located at the southern end of Green Bay, the Suamico/Little Suamico River watershed (173 square miles) and the Pensaukee River watershed (166 square miles) discharge into the coastal wetlands commonly called the "West Shore" of Green Bay. The West Shore has some of the most productive wetlands remaining in the Great Lakes system and encompasses greater than 50% of Lake Michigan's remaining wetlands. Small perennial and intermittent streams and connected wetland complexes, along or near the West Shore, provide high quality fish spawning and rearing habitat, especially for northern pike which reside in Green Bay as adults. Green Bay's ecosystem, however, has been severely disrupted by wetland loss and mismanaged stream networks from intense development pressure and agriculture production.

The northern pike (*Esox lucius*) is Wisconsin's second largest predator fish and is an important part of the Green Bay ecosystem and fish community. Northern pike have become scarce in Green Bay due to wetland habitat losses of as high as 70% (Bosley, 1978) due to a combination of human and non-human factors (Rost, 1996). In addition, fish encounter passage obstacles when leaving Green Bay to find spawning marshes or when fry migrate back to Green Bay. Small perennial and intermittent streams (including roadside and agricultural ditches) on the western shore of Green Bay provide high quality fish spawning and rearing habitat for northern pike (Rost 1992, 1993, 1994, 1995, 1996). These streams and pooled wetlands provide very productive habitat for other fish species as well as aquatic organisms. Reproduction in these wetlands is likely a principle source of recruitment for fish populations in Green Bay.

This project seeks to establish riparian buffers and restore/enhance wetland areas along intermittent and perennial streams along Green Bay's West Shore that have high potential for spawning and rearing areas for northern pike. These activities are consistent with the goals of the *Great Lakes Fish and Wildlife Restoration Act* and the Great Lakes regional *Collaboration's Strategy to Restore and Protect the Great Lakes*. The *Lower Green Bay Remedial Action Plan*, written for the Lower Green Bay and Fox River Area of Concern (AOC), sites the scarcity of predator fish species in Green Bay as a significant issue and contributes to the Bay's impaired uses for "degraded fish and wildlife populations". Although delisting targets have yet to be set for this AOC, the goals of this project are to continue restoration efforts in satisfying those targets once they are set. This project also meets the goals of the *Lake Michigan Integrated Fisheries Management Plan 2003-2013*.

In 1998-99, the Wisconsin Department of Natural Resources (WDNR) conducted a habitat assessment in the Suamico and Little Suamico Rivers watershed basins. Physical, chemical, and biological data were collected. Areas were identified for protection/restoration of northern pike spawning and rearing habitat. Study results revealed that the major impediments were excessive algae from eutrophication[1] along with stream flashiness (extremely rapid increases and then decreases in stream discharge following rain events). In another study on lower Green Bay, the scarcity of top predator species, such as northern pike, was recognized as a significant problem in the Green Bay ecosystem[2]. It is estimated that over 70% of the spawning habitat for northern

[1] Northern Pike Habitat Restoration and Protection in 1998 and 1999 on the Western Shore of Green Bay (WI DNR Rost and Schuette)

[2] Lower Green Bay Remedial Action Plan (WI DNR)

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pike has been lost. Since lost habitat also provided plankton to downstream communities, the Green Bay ecosystem continues to be out of balance.

Since both northern pike spawning areas and plankton producing areas require small ephemeral streams and associated wetlands, there is tremendous opportunity to significantly improve the Green Bay ecosystem by preserving and/or restoring the remaining intermittent and perennial stream/wetland networks in upstream watersheds. Stabilization and protection of these areas will reduce sedimentation and nutrient delivery, decrease mortality rates of fish species within the stream segment by reducing flashiness, enhance reproduction of northern pike by providing vegetation for egg-laying, reconnecting fragmented natural riparian areas, and increasing stream base flows. Our intent to protect and restore northern pike spawning and rearing habitat is based upon literature reviews and DNR survey efforts. The need to protect and restore habitat at sites located over a broad geographic area, including sites considerable distance inland from the shoreline of Green Bay, is based upon several factors including those detailed below.

a) Inland Spawning Habitat Supports the Green Bay Northern Pike Population. WDNR northern pike production data and pertinent literature indicate Green Bay northern pike travel inland to spawn. Green Bay proper is an inhospitable place for northern pike eggs and young. Green Bay's seiche effect causes rapid increases and decreases in water levels on the bay shoreline. Fluctuations can be as great as eighteen inches in a single day. Eggs laid on near-shore vegetation would be desiccated when water levels recede. Also in Green Bay proper, there is little shoreline vegetation that is suitable for spawning. Carp have rooted up shoreline vegetation and low water clarity decreases light penetration. Both of these factors serve to inhibit the growth of aquatic plants that northern pike need as spawning substrate and as cover. The length and breadth of Green Bay allows wind to build and creates very turbid conditions on the shoreline. There are many benefits associated with spawning in more protected inland areas.

b) Productive Habitat is Scattered. Northern pike spawning habitat is widely dispersed throughout the western shore coastal zone including the project area. Some habitat within the project area is capable of producing in excess of 20,000 young-of-the-year northern pike per acre. Protecting high-quality habitat within the project area was determined during recent DNR surveys as essential. The specific area used for spawning during any single year depends upon weather conditions during that specific year. Establishing suitable spawning habitat by use of buffer conservation practices in a single productive area can have a large impact on northern pike survivability; suitable habitat is scattered throughout the project area.

c) Impediments to Spawning Are Scattered:
Impediments to successful northern pike reproduction within the project area have also been as identified and are scattered throughout project area. DNR surveys indicate that -- although there are a large number of streams and wetlands within the project area that present suitable spawning and rearing substrate -- many of these sites are unusable due to impediments created by excessive nutrient enrichment, rapid increases and decreases in water levels, and poorly positioned culverts. Seventy-three percent of the impediments were due to nutrient enrichment or destruction of habitat by cattle or horse grazing within the stream corridor. Due to survey limitations, sites identified are likely only a portion of those where

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impediments occur. The majority of impediments identified were connected to nutrient enrichment.

Nutrient enrichment and associated algae blooms have a direct and immediate effect upon the success of northern pike reproductive efforts. Excessive nutrient enrichment can cause an overabundance of epiphytic and filamentous algae making impossible the attachment of eggs and fry to vegetation.

Supporting Rationale for Project Selection:
It has been scientifically documented that inland spawning habitat supports Green Bay's northern pike populations. Green Bay is usually considered to have a distinct and well-defined shoreline. But, in a biotic and hydrologic sense, the shoreline of Green Bay is much less well defined and each spring demonstrates itself as being very dynamic. As a result of spring snowmelt and rainfall, stream corridors and wetland basins flood and the shoreline of Green Bay, as it is commonly perceived, disappears. Also, many inland wetlands and streams are inundated and become connected with each other and Green Bay proper.

Northern pike are one of a sizable number of fish that travel many miles inland to use temporarily flooded streams and wetlands as spawning and rearing habitat. Sympatric relationships between these species have evolved to incorporate their utilization of the same and/or nearby habitat. For instance, young-of-the-year northern pike prey heavily upon the fry of common suckers that spawn in inland streams but reside in Green Bay as adults. Uncounted billions of young-of-the-year common suckers drift the many miles back to the bay in conjunction with the annual downstream migration of young-of-the-year northern pike that thrive upon this readily available food source. This annual influx of predator and prey species to Green Bay from upstream habitat has the same effect upon Green Bay proper fish population dynamics as reproduction that occurs within what are usually considered the Bays' shoreline.

During a 1996 study in the Pensaukee River watershed (Schuette and Rost, 1998), young-of-the-year northern pike were captured at points more than 33 miles inland from the mid-Summer shoreline of Green Bay. Since they were captured while drifting downstream they were obviously the result of spawning activities that took place farther upstream from the capture points. In a later Suamico/Little Suamico River watershed study (Rost and Schuette, 1999), young-of-the-year northern pike were captured approximately 24 river miles inland from the mid-Summer shoreline of Green Bay (Map 1 below).

Project Relevance:
This project seeks to establish riparian buffers and restore/enhance wetland areas along selected intermittent and perennial streams along Green Bay's West Shore that have high potential for spawning and rearing areas for northern pike. These activities are consistent with the goals of the *Great Lakes Fish and Wildlife Restoration Act* and the Great Lakes regional *Collaboration's Strategy to Restore and Protect the Great Lakes*. The *Lower Green Bay Remedial Action Plan,* written for the Lower Green Bay and Fox River Area of Concern (AOC), sites the scarcity of predator fish species in the Bay as a significant issue for Green Bay as part of the Bay's impaired uses for "degraded fish and wildlife populations". This project is also meets the goals of the *Lake Michigan Integrated Fisheries Management Plan 2003-2013.*

Project Intent & Strategy:

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Since 2006, staff of the Brown County Land & Water Conservation Department, working in cooperation with WDNR Fisheries and the U.S. Fish & Wildlife Service staff, has installed northern pike spawning and rearing habitat in and along streams/wetlands on Green Bay's West Shore in the Village of Suamico, Brown County. We have utilized the incentive package outlined below with great success to accomplish the installation of 13 acres of riparian buffers, 18 acres of wetland restoration/enhancements, and 21 acres critical area plantings. We have also replaced six culvert impediments opening 14 new miles of stream to spawning northern pike. Our intent in this project is to continue to create, enhance, and restore high-quality spawning and rearing habitat for northern pike in West Shore of Brown County and transfer tested technologies north of the past project locations into Oconto County.

The Oconto County project area is beyond the boundaries of the AOC. As a result, Oconto County (WI) will be submitting a separate application for funding. Brown County LWCD strongly supports Oconto County's grant application.

Implementation efforts for both the Brown County and Oconto County projects will target specific stream segments that northern pike are currently utilizing for spawning habitat in order to ensure a high likelihood of success. Although priority areas are scattered throughout the project area, priority ranking will be given to stream/wetland complexes that are within 5 miles of Green Bay as we continue with our strategy to move inland from the Bay. This strategy will maximize the likelihood of successful year classes.

Keys to Landowner Participation and Long-term Habitat Restoration:
To increase the likelihood of private landowner participation in this project, out-of-pocket costs to landowners will be kept at a minimum. To accomplish this, this proposal includes funding from a Natural Resource Damage Assessment (NRDA) grant that Brown County has already received so flat-rate payments and 70% cost-sharing can be offered to private landowners for the installation of conservation practices. The 30% landowner match will be provided through a grant to Brown County from the U.S. Fish and Wildlife Service. This proposal seeks funding for Brown County staff resources to accomplish project goals and objectives.

To ensure protection in perpetuity, landowners are required to sign agreements with their county Land Conservation Departments. Those agreements are recorded at the County Register of Deeds so that future owners are aware that the conservation practices run with the land and must be protected in perpetuity.

Project Steps and Schedule:
Brown County LWCD staff will conduct one-on-one contacts with watershed landowners to advertise project goals, discuss past successes, answer questions, and encourage program participation.

July-August 2010-2012	Begin wetland restoration/enhancements/creation, critical area plantings and vegetative riparian buffers.
September-December 2010-2012	Project planning, survey and design for projects in subsequent years.
January - March 2011-2012	Letters, maps, and brochures to potentially eligible landowners. Follow-up phone calls made approximately 1-2 weeks following the letters in order to secure a meeting with the landowner; initial site investigation.
	Begin DNR and ACOE permitting processes for current year projects. Sign

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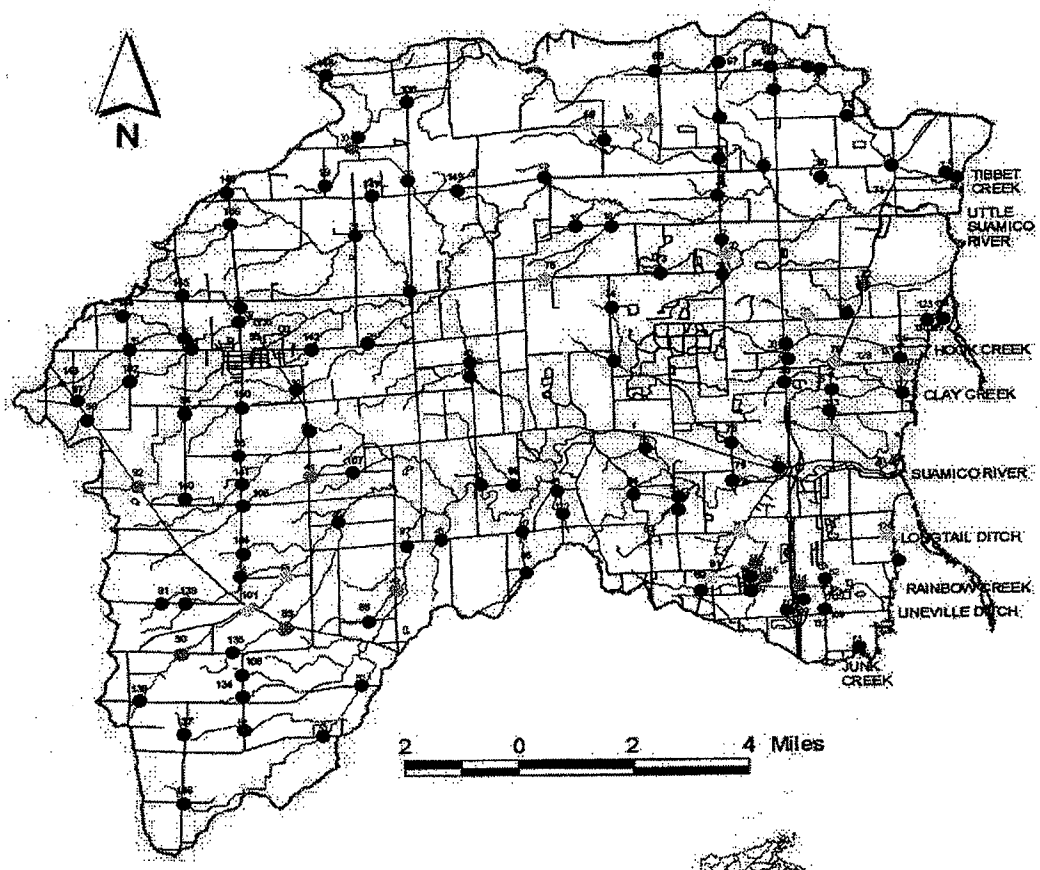
	contracts with participating landowners. Record agreements at Register of Deeds Office.
April-June 2010-2013	Coordinate with WDNR Fisheries staff to collect young-of-the-year northern pike; set box traps below previously installed project for passive capture of young northern pike as they drift downstream from installed wetland areas. Traps will be monitored every 1-2 days.

Map 1. *Locations where young-of-the-year northern pike were captured in the Suamico/Little Suamico River Watershed in 1998 and 1999.*



- Class I (Most Productive Habitat)
- Class II (Highly Productive)
- Class III (Moderately Productive)
- Class IV (Productive)
- Stream segment primarily used as transport
- Dry

Map 2. *DNR Habitat Classification sites in the Suamico/Little Suamico River watershed. Even though habitat is classified as highly productive it may be unusable due to nutrient enrichment or other problems.*

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West Shore Spawning Habitat can be Very Productive:
In 1995, a small waterway that runs along Brown County's Lineville Road produced nearly 40,000 young-of-the-year northern pike. Although production of northern pike varies on an annual basis due to ambient weather conditions, we have sound information that large numbers of northern pike can be and are produced in high-quality habitat under favorable weather/hydrologic conditions. Even though production can be high under certain habitat conditions, mortality rates are also extremely high. It's estimated that mortality is well over 70 percent. Northern pike fry require sustained water levels and adequate dissolved oxygen levels throughout their life cycle in order to survive. When fluctuations of these factors become critical, along with predation and other mortality factors, successful year classes are infrequent.

Cost Effectiveness:
The vast majority of conservation practices to be installed through this project will be on privately owned lands within the project area. The Brown County LWCD will reimburse landowners for 70% of installation costs for the following conservation practices: vegetative riparian buffers, wetland restoration/enhancement/creation, and critical area stabilization/ plantings. The LWCD will also make flat-rate payments to landowners as a result of their participation in this project. It is likely the landowners will use these flat-rate payments to cover the 30% of project costs that are the landowner's responsibility. The LWCD will require landowners to record each agreement at the County Register of Deeds office thereby requiring that the practices run with the land and are maintained in perpetuity. The combination of cost-sharing and flat-rate payments are well below what it would cost for the LWCD to purchase the acreage in question in fee . The LWCD staff will monitor the maintenance of all installed practices for a period of 10 years following practice installation.

The LWCD will enter into a written agreement with each landowner indicating:

- Name and amount of each practice to be installed
- Level of financial assistance to be provided (both cost-sharing and flat-rate payments)
- Practice installation deadlines
- Practice maintenance requirements
- LWCD monitoring efforts
- Any other information the LWCD deems appropriate

Education and Outreach:
The primary means of outreach will consist of one-on-one contacts with potential eligible landowners. Through past efforts, brochures have been developed which describes the overall goals of the program, eligible cost-share rates and flat-rate payments

We plan on showcasing this project by providing 2 tours per year. One tour will be given for the county and village boards, participating conservation partners, and involved and interested landowners.

The other tour will be for various agency staff including WDNR, US Fish and Wildlife Service (local and regional staff), NRDA Trustee Council members, Oneida Tribe of Indians, Brown County department heads/staff and various funding agencies.

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The project will also be showcased on the Brown County LWCD website and feature articles will continue to be submitted annually in the Green Bay Press Gazette.

Potential for Transferability:

The current project has had a three-year record of success. During 2007, 2008, and 2009, the Brown County LWCD has been successful in restoring northern pike habitat on private land in the Suamico and Little Suamico watersheds. Employing methods and technologies proven in the Suamico and Little Suamico watersheds, Brown County wishes to transfer its success to other Green Bay West Shore locales in both Brown and Oconto Counties. The Oconto County project area is beyond the boundaries of the AOC. As a result, Oconto County will be submitting a separate application for funding. The Brown County LWCD strongly supports the Oconto County project and application for funding.

The methodologies of the proposed project have the potential to be transferred to other Lake Michigan Wisconsin counties, Michigan counties, and Canadian province communities.

Outcomes, Outputs, and Expected Results

Project Goals:

A. Over 3 years, create, enhance, or restore high-quality spawning and rearing habitat for northern pike in Green Bay West Shore on private lands. Enhance and protect critical wetland habitat.

- Establish vegetated riparian buffers on intermittent and perennial streams scattered throughout the Suamico/Little Suamico River Watersheds which have been highly degraded by sediment and nutrients from agricultural runoff.
- Shape and seed critical areas to enhance northern pike spawning and rearing habitat.
- Establish/restore/protect wetlands that are contiguous with intermittent or perennial streams and will benefit northern pike during spawning. (Pooled wetland restoration is critical for pike spawning and rearing success.)
- Target specific stream segments in which northern pike currently spawn to ensure continued fish propagation. Priority areas are scattered throughout the project area, however, priority will be given to stream/wetland complexes that are within 5 miles of Green Bay as we continue with our strategy to move inland from Green Bay.
- Improve access to upstream spawning and rearing habitat sites for adult northern pike by removing/replacing major stream impediments, such as perched culverts.
- Increase public awareness of the balance that predator species will bring to fisheries and the Green Bay ecosystem. Increase public awareness of the effects of continued wetland loss on the overall water quality of Green Bay and the need to reestablish stream connectivity to critical habitats to promote overall health of Green Bay.

B. Seek project cooperation, volunteer labor, and possible funding from local and national conservation groups, including The Nature Conservancy and other conservation groups; local and national sportsman groups, including the Brown County Conservation Alliance, Great Lakes Sport Fisherman, Ducks Unlimited, and Trout Unlimited; and local governments in Brown County.

C. Educate local elected officials and citizens regarding the simplicity and effectiveness of vegetative buffers for protecting streams.

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D. Encourage local governments to enact ordinances for perpetual protection of stream corridors with vegetative buffers.

Incentive Package:

Culvert Removal/Replacement	100% cost sharing
Construction costs	70% cost sharing
Riparian Buffers (20-150 foot width)	flat rate of $2500/acre
Critical Area Planting	flat rate of $1300/acre
Wetland Restoration/Enhancement	flat rate of $1500/acre

Quantitative Estimates/Progress Tracking:

Conservation Practice	Quantities/Frequency
Vegetative riparian buffers	9 mile or 25 acres
Critical area shaping and seeding	32 acres
Wetland restoration/enhancement/creation	38 acres
Replace and/or repositioning of culverts to open access to additional stream miles for migrating fish.	6 culverts opening up 5 additional stream miles
Monitoring of northern pike fry utilizing DNR box traps to show immediate results of implementation	Annual

Environmental and Economic Outcomes:
Implementation of this project will provide a tremendous opportunity to significantly improve Green Bay ecosystem by preserving and/or restoring the remaining intermittent and perennial stream/wetland networks in upstream watersheds. Stabilization and protection of these areas will reduce sedimentation and nutrient delivery, decrease mortality rates of fish species within the stream segment by reducing stream flashiness, enhancing reproduction of northern pike by providing vegetation for egg-laying, reconnecting fragmented natural riparian areas, and increasing stream base flows.

The WDNR has estimated the economic value of a harvestable size northern pike. For game fish values, WDNR used the recreational angling (user) value as published in "Investigation and Evaluation of Fish Kills" (Southwick and Loftus, 1992, Investigation and Monetary Values of Fish and Freshwater Mussel Kills; American Fish Society (AFS) publication), and calculated some harvest characteristics for Wisconsin waters. Northern pike replacement values were estimated to range from $0.13 for a 1-inch fish to $1.60 for a 12-inch fish. Because AFS was advocating the use of consumer surplus values (the amount an angler would be willing to pay to fish over and above their actual expenses), the WDNR considered "harvestable" size fish only. To estimate harvestable-size fish, WDNR looked at all fish lost and incorporate a survival rate to harvestable size. The WDNR utilized statewide creel survey data to determine a harvest rate, multiplied that rate by the average trip length to determine the number of fish harvested per trip. Willingness-to-pay surveys revealed value for the money spent per trip ($/trip). The WDNR estimated the cost of a fish by dividing the $/trip by the average number of fish harvested in each angling trip.

The WDNR estimated that a harvestable northern pike was worth $143.40 to an angler. Through survival rate literature, it's estimated that roughly 10% of the number of fish survived to a harvestable size.

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Therefore, considering this information and the fact that research shows that high quality habitat can produce young-of-the-year northern pike fry in excess of 20,000 fry/acre, this project could have a significant economic impact to Green Bay and surrounding areas.

Collaboration, Partnerships, and Overarching Plans:
This project will continue the positive working relationships previously created by Brown County LWCD with our local/state/federal agency partners. The West Shore of Green Bay and its restoration/protection continue to be a focal point for a number of agencies including: Gathering Waters Conservancy, WDNR, Lake Michigan Stakeholders group (which is part of the Great Lakes Program), US Fish & Wildlife, The Nature Conservancy, UW-Green Bay, UW-Sea Grant Institute, UW-Extension and Ducks Unlimited. Each of these groups has dedicated time, staff, and educational efforts to the protection and restoration of the West Shore of Green Bay.

WDNR fisheries staff collaborates on the assessment and planning of project sites. U.S. Fish and Wildlife Service staff have assisted in the design and layout of some projects and have signed a cooperative agreement authorizing over $40,000 to be spent on conservation practice installation.

To date, the Fox River/Green Bay Natural Resources Damage Assessment Trustee Council has authorized $400,000 for the implementation of the northern pike habitat work thus far and with another $200,000 for this project. Another $20,000 has been allocated for in-stream monitoring to determine the efficacy of northern pike habitat restoration efforts.

Thus far, the largest impediment to project implementation has been limited Brown County LWCD staff. This grant request is for staffing assistance to implement this project.

There have been other ongoing efforts to protect and restore northern pike habitat in coastal counties along the West Shore of Green Bay. In 2004, the WDNR received a grant from the Coastal Zone Management Program to enhance small stream awareness in the Pensaukee River watershed of Oconto and Shawano counties. The focus of the project was protection of northern pike spawning and nursery habitat. In 2004-05, WDNR staff created and verified maps of these small streams for greater awareness of their importance as productive habitat. Results of this work are available as interactive web maps at http://atriweb.info/Maps/Pensaukee.

This project is consistent with the following plans for protection and restoration of Green Bay's West Shore, Lower Fox River and Green Bay AOC:

- *Lower Green Bay Remedial Action Plan Update for the Lower Green Bay and Fox River Area of Concern (AOC);* Developed by the WDNR in conjunction with the Green Bay Remedial Action Plan Public Advisory Committee; March 1993.
- *Brown County Land and Water Resource Management Plan* 2009–*2013*; Developed by Brown County land and water resource management advisory committee, July 2008. http://www.co.brown.wi.us/departments/forms_and_documents/?department=097c0e79486a&subdepartment=7c17181709a3
- *Brown County LWCD 2010 Annual Work Plan and 2009 Annual Report.* http://www.co.brown.wi.us/departments/forms_and_documents/?department=097c0e79486a&subdepartment=7c17181709a3

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Programmatic Capability and Past Performance:
The Brown County LWCD has a proven success record of working with private landowners for the improvement of water quality and natural resources. From 1985 through 2009, the Brown County LWCD implemented five Priority Watershed projects funded by the WDNR. A total of over 1500 conservation practices were installed by over 400 private landowners; $7,545,132 in WDNR cost-sharing was provided to these landowners. All five projects were successfully implemented and administered in compliance with WDNR and Brown County requirements.

Over the past three years, the Brown County LWCD implemented the West Shore Northern Pike Habitat Restoration Project in the Suamico/Little Suamico watershed. Since 2007, with staff funding from a National Fish and Wildlife Foundation grant and cost-sharing paid with Natural Resources Damage Assessment funds, the West Shore Northern Pike Habitat Restoration Project has installed over 18 acres of wetland spawning marshes, 13 acres of vegetated riparian buffers, 9 miles of stream were made accessible for migrating fish by replacing perched culverts. Thus far, the project includes 14 contracts with 13 private landowners. Contracts are recorded on the property deed making maintenance of the practices perpetual. The project has expended $287,589 dollars to date. The Village of Suamico, as a result of this work, is in process of adopting a buffer strip ordinance to protect riparian areas in the Village.

Project Staff Resources and Credentials:
Adequate staff funding for this project has expired and future program implementation has been hampered. Staff currently working on the project include: Larry Kreise, part-time Project Coordinator, and Jim Jolly, Project Manager.

- **Larry Kreise**

Between 1984-1995, Mr. Kreise served as a WDNR regional Law Enforcement Warden responsible for the enforcement programs and staff in the WDNR's Northeast Region. Mr. Kreise's duties included the enforcement of all state laws and regulations relating to the management and use of Wisconsin's natural resources as well as other civil and criminal laws relating to the activities of persons within Wisconsin. From 1995-2000, Mr. Kreise was WDNR Regional Enforcement Leader responsible for WDNR enforcement programs in the 14-county Northeast Region, including civil environmental enforcement staff as well as the natural resources law enforcement staff, and educational programs. Mr. Kreise was also responsible for the Environmental Analysis and Review staff who evaluate actions taken by all agencies, organizations, and individuals where Wisconsin's natural resources could be impacted. Mr. Kreise also served as a Senior Manager within the WDNR and was part of the statewide management team, retiring from WDNR in 2000. Mr. Kreise agreed to come out of retirement in 2007 to serve as part-time Project Coordinator for the West Shore Northern Pike Habitat project. His role is to identify potential sites for the creation, restoration, and preservation of critical northern pike habitat along the West Shore of Green Bay, solicit support from landowners, and enroll interested landowners in the project. He also assists with the layout of habitat restoration sites and determines funding availability for landowner.

- **Jim Jolly**

Between 1986 -1990, Jim Jolly served as Resource Conservationist in both the Pierce County, WI, and Brown County, WI, Land and Water Conservation Departments (LWCD). During that time, Mr. Jolly managed each county's participation in the WI Farmland Preservation Program and drafted soil erosion control plans. Mr. Jolly was also responsible for developing

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conservation plans with private landowners to satisfy state and federal conservation program requirements and assist with surveys, design, and installation of various conservation practices. Between 1990 and the present, Mr. Jolly served as Brown County LWCD Program Manager. In this capacity, he has handled all the administrative functions of the WI Farmland Preservation Program, the Brown County buffer ordinance, as well as the major technical and administrative duties associated with the implementation of five Priority Watershed Projects and other state cost-sharing programs. Mr. Jolly will be the primary contact for this program and will manage all revenue and grants, staff, budgets, expenditures, monitoring, and reporting requirements.

Project Budget:

A. Non–Federal Match

Funding Source	Description	Amount
Natural Resource Damage Assessment	Covers landowner 70% construction costs and flat-rate payments	$366,700
	In Stream Monitoring ($5000/yr/3yrs)	$ 15,000
Brown Co LWCD	Staff time/three years	$ 65,310
Donations	Equipment (ATV, trailer, planter, drag)	$20,000
	TOTAL:	$467,010

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B. Project Costs and Grant Request

	Title	No.	Hours	Year 01 Subtotal	Year 02 Subtotal	Year 03 Subtotal	Totals	Grant Request
PERSONNEL	Project Coordinator	1	1,500	37,305	37,305	37,305	111,915	111,915
	Technicians	1	2,080	75,000	75,000	75,000	225,000	225,000
	Project Manager	.25	520	21,340	21,767	22,203	65,310	0
SUPPLIES	Outreach & Educational			5,000	2,500	1,000	8,500	8,500
	Erosion Control			4,000	4,000	5,000	13,000	13,000
	Office supplies/ Admin. expense			3,000	3,000	3,000	9,000	9000
EQUIPMENT	Tuff Book Computer with GIS capability	1		5,000	0	0	5,000	5,000
	Vehicle (including gas & maintenance)	1		15,800	3,800	3,800	23,400	23,400
	Donated ATV, trailer, planter, drag	1		20,000	0	0	20,000	0
COST-SHARING	Buffers			13,000	13,000	37,500	63,500	0
	Critical area planting			10,000	15,600	15,600	41,200	0
	Wetland restoration/ enhancement			12,000	12,000	18,000	42,000	0
	Culvert removal/ replacements			10,000	10,000	10,000	30,000	0
	Construction Costs			50,000	60,000	80,000	190,000	0
MONITORING				5,000	5,000	5,000	15,000	0
	GRAND TOTALS:			$286,445	$262,972	$313,408	$862,825	$395,815

Acorn Statement:
Any grant dollars awarded under this proposal will not be used to award grants to ACORN or any of its affiliates, subsidiaries, or allied organizations.

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Ten Years of Wisconsin Deer Donation History: 2000 ~ 2009

		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	TO DATE
1	Adams	81	54	65	51	91	74	143	54	35	24	672
2	Ashland	76	79	34	158	253	72	81	74	42	16	885
3	Barron	223	96	174	135	198	200	303	288	164	103	1,884
4	Bayfield	0	0	0	0	0	0	0	0	0	0	0
5	Brown	93	121	314	302	398	164	337	251	146	56	2,182
6	Buffalo	146	99	274	236	352	307	909	797	653	258	4,031
7	Burnett	156	0	79	84	88	13	129	124	28	18	719
8	Calumet	108	0	0	29	35	11	18	3	9	3	216
9	Chippewa	191	96	126	116	161	188	201	198	117	79	1,473
10	Clark	64	23	0	15	23	14	40	42	29	14	264
11	Columbia	242	203	0	601	984	564	530	0	0	200	3,324
12	Crawford	33	0	0	0	0	0	39	55	61	47	235
13	Dane	513	314	0	0	0	0	387	0	0	483	1,697
14	Dodge	119	0	250	128	187	142	142	161	92	45	1,266
15	Door	102	57	124	139	278	162	195	255	253	70	1,635
16	Douglas	51	0	0	0	0	24	71	78	39	18	281
17	Dunn	160	86	136	138	148	133	268	203	154	78	1,504
18	Eau Claire	67	23	48	54	40	70	73	83	67	32	557
19	Florence	0	0	0	6	10	1	7	2	0	0	26
20	Fond du Lac	164	136	257	195	506	233	476	384	296	113	2,760
21	Forest	32	32	35	19	23	26	16	9	15	3	210
22	Grant	136	0	143	311	299	295	386	371	281	164	2,386
23	Green	80	0	0	225	331	207	211	0	0	111	1,165
24	Green Lake	118	62	0	73	50	40	0	0	0	0	343
25	Iowa	27	0	0	0	0	15	0	0	0	0	42
26	Iron	11	0	0	0	0	0	0	0	0	0	11
27	Jackson	59	0	0	120	179	186	359	243	214	81	1,441
28	Jefferson	136	0	0	147	329	267	54	0	0	29	962
29	Juneau	128	139	117	246	268	195	286	149	136	68	1,732
30	Kenosha	*	*	*	*	0	0	0	0	0	0	0
31	Kewaunee	72	50	0	0	0	20	60	70	31	12	315
32	La Crosse	128	71	148	173	301	134	249	220	214	82	1,720
33	Lafayette	*	*	*	*	219	195	95	0	0	172	681
34	Langlade	131	56	81	37	61	51	44	26	11	6	504
35	Lincoln	64	53	46	42	33	39	43	51	26	6	403
36	Manitowoc	47	0	78	58	52	70	77	91	42	5	520
37	Marathon	210	100	205	155	149	153	197	178	103	69	1,519
38	Marinette	149	112	251	204	323	134	226	128	117	81	1,725
39	Marquette	90	51	55	41	91	56	130	0	0	0	514
40	Menominee	*	*	*	*	0	0	0	0	0	0	0
41	Milwaukee	0	37	0	44	84	73	110	95	43	19	505
42	Monroe	150	86	0	51	150	102	149	115	141	38	982
43	Oconto	189	105	263	164	286	109	169	106	72	39	1,502
44	Oneida	235	117	113	115	71	54	117	116	43	12	993
45	Outagamie	175	132	359	232	437	225	411	343	211	78	2,603
46	Ozaukee	73	62	94	162	117	64	89	91	69	30	851
47	Pepin	0	0	0	0	0	0	0	0	0	0	0
48	Pierce	70	75	89	78	134	167	238	210	176	110	1,347
49	Polk	194	0	95	90	138	122	233	304	166	61	1,403
50	Portage	79	61	194	171	307	252	337	213	97	20	1,731
51	Price	103	55	128	72	127	46	42	0	0	0	573
52	Racine	63	21	0	0	0	0	0	14	12	0	110
53	Richland	80	0	42	0	0	0	0	0	0	15	137
54	Rock	0	0	0	60	0	37	0	0	0	24	121
55	Rusk	120	50	54	57	40	37	61	78	23	24	544
56	St. Croix	151	108	56	124	140	159	402	368	186	179	1,873
57	Sauk	466	297	0	0	0	0	0	0	0	28	791
58	Sawyer	69	43	77	96	191	68	109	126	97	48	924
59	Shawano	118	71	164	166	430	166	365	307	142	54	1,983
60	Sheboygan	52	0	89	62	61	89	104	83	53	27	620
61	Taylor	77	29	69	52	70	62	121	80	32	19	611
62	Trempealeau	210	98	305	339	640	362	813	693	466	157	4,083
63	Vernon	53	34	0	0	179	152	272	249	228	78	1,245
64	Vilas	148	85	0	70	15	19	43	26	14	4	424
65	Walworth	106	0	0	0	0	0	0	0	0	16	122
66	Washburn	2	0	75	0	0	0	0	0	0	0	77
67	Washington	103	58	203	74	143	111	126	129	79	40	1,066
68	Waukesha	86	26	0	0	0	0	0	0	0	36	148
69	Waupaca	108	96	0	149	534	228	426	430	252	87	2,310
70	Waushara	13	13	20	20	0	11	112	221	137	69	616
71	Winnebago	88	38	117	81	184	83	132	132	99	35	989
72	Wood	176	0	0	0	0	0	85	83	54	28	426
	Donated Deer	7,765	3,921	5,646	6,767	10,938	7,253	11,848	9,200	6,267	3,921	73,514
	Lbs. of Venison	350,000	176,000	250,000	305,000	492,000	326,000	533,000	414,000	282,000	176,445	3,308,130
	Counties	65	48	42	53	54	58	59	52	55	60	
	Processors	156	106	86	117	124	130	143	126	123	132	

REVISED

RESOLUTION 09-56

SUPPORTING THE ATTORNEY GENERAL AND GOVERNOR OF WISCONSIN TO PURSUE REMEDIES TO STOP ASIAN CARP SPECIES FROM ENTERING LAKE MICHIGAN AND PROTECT WISCONSIN INTERESTS

WHEREAS, the State of Illinois constructed the Chicago Sanitary and Ship Canal over 100 years ago, connecting the Great Lakes Basin to the Mississippi River Basin in order to move Chicago's sewage away from Lake Michigan; and

WHEREAS, the Chicago Sanitary and Ship Canal, in addition to diverting billions of gallons of water from Lake Michigan each day, also opens up a channel of communication between Lake Michigan and the Lower Mississippi River Basin; and

WHEREAS, Asian carp, an invasive, non-native species, have migrated northward through the Mississippi River Basin, documented as advancing as close as 20 miles from Lake Michigan in the Chicago Sanitary and Ship Canal; and

WHEREAS, an invasion of Asian carp into Lake Michigan would devastate the Lake Michigan ecology and cause incalculable economic loss and irreversible damage to recreational fishing on the Great Lakes and the resulting tourism industry; and

WHEREAS, Asian carp would infest Lake Michigan tributary streams for purposes of spawning and rearing; and

WHEREAS, the well documented threat of invading Asian carp has been known to the U.S. Army Corps of Engineers and state officials in Illinois for years; and

WHEREAS, the state of Illinois has constructed an inadequate and ineffective electric barrier to prevent Asian carp from migrating through the Chicago Sanitary and Ship canal; and

WHEREAS, the Chicago area navigational locks on the Chicago Sanitary and Ship Canal are the final barrier from which Asian carp can gain access to the Great Lakes Basin; and

WHEREAS, it is imperative that aggressive action be taken to safeguard the ecological and economical integrity of the Great Lakes; and

WHEREAS, Ozaukee County, entirely in the Lake Michigan Drainage Basin, has 94 miles of tributaries with a connection to Lake Michigan (Milwaukee River, Sauk Creek, Sucker Creek, Cedar Creek, Little Menomonee Creek, Ulao Creek), 2,280 acres of inland surface water, and 25 miles of coastal Lake Michigan shoreline; and

WHEREAS, Ozaukee County residents and tourists have a strong connection to Lake Michigan and cherish the natural resources the Lake has to offer in parks such as Harrington Beach, Lion's Den, Virmond, as well as the Port Washington Harbor; and

WHEREAS, Ozaukee County has a thriving Lake Michigan charter fishing economy based out of Port Washington bringing in approximately $750,000 of outside dollars to the local economy; and

WHEREAS, Ozaukee County has been awarded a $4.7 million grant funded through federal stimulus dollars entitled "Fish Passage for the Milwaukee River Watershed", and is very concerned Asian carp will capitalize on the county's efforts to provide passage for native fish species; and

WHEREAS, the United States Supreme Court denied the States of Michigan and Wisconsin's request for emergency relief aimed at preventing the invasion of Asian carp species into Lake Michigan;

NOW THEREFORE BE IT RESOLVED, that the Ozaukee County Board of Supervisors does support the Wisconsin Attorney General as he continues to pursue legal remedies to stop Asian carp species from entering Lake Michigan and protect Ozaukee County's interests.

BE IT FURTHER RESOLVED, that the Ozaukee County Board of Supervisors urges the Governor of Wisconsin to convince the President of the United States and the United States Congress to provide emergency relief by ordering to close the navigational locks in the Chicago Sanitary and Ship Canal, and support a study to investigate means of biologically separating the Chicago Sanitary and Ship Canal from Lake Michigan.

FURTHER RESOLVED, by the Ozaukee County Board of Supervisors that the County Clerk shall forward a copy of this resolution to the Governor of the State of Wisconsin, Ozaukee County's Legislative Representatives, the Wisconsin Counties Association and to Wisconsin Coastal Counties urging adoption of a similar resolution.

Dated at Port Washington, Wisconsin, this 3rd day of February, 2010.

ENVIRONMENT & LAND USE COMMITTEE

YES	NO	ABSTAIN	ABSENT	SUPERVISOR
X	☐	☐	☐	Donald Dohrwardt
X	☐	☐	☐	John A. Hazelwood
X	☐	☐	☐	William S. Niehaus
☐	☐	☐	X	Glenn F. Stumpf
X	☐	☐	☐	Timothy F. Kaul
X	☐	☐	☐	Carl Dobberfuhl (FSA Rep)

TO WHOM IT MAY CONCERN:

I, Julianne B. Winkelhorst, County Clerk for Ozaukee County, Wisconsin, hereby certify that the foregoing is a true and correct copy of a Resolution adopted by the Ozaukee County Board of Supervisors on February 3, 2010.

(S E A L)

Julianne B. Winkelhorst
County Clerk

Adopted Vote: Ayes – 28
Nays – 0
Absent – 3

Thursday Note

An Update on Wisconsin Land and Water Conservation Issues

Volume 13, Issue 1 Thursday, February 11, 2010

WLWCA Members Respond to the Call!

We are very pleased to report that our efforts to balance the WLWCA 2010 budget through the special assessment are going very well.

At the 2009 WLWCA Annual Conference, a grim 2010 budget was presented to membership that showed an estimated deficit of $45,000. Rather than face staff losses and uncertainty in the coming year, the members present proposed a special assessment of $800 per county.

As of this writing, 32 counties have provided funds for the special assessment and 4 area associations have made contributions totaling almost $30,000. We're not out of the woods yet, but we are closing in on our goal. If you have not yet supported the special assessment, please do it now so that we can get back to full effort for our important work.

It is very gratifying for us to receive this massive support from our membership. We will continue to work hard to justify your faith in our work and your investment in WLWCA. If you know of a county who is not a member of WLWCA, please talk to them about the work we do and the benefits we bring to county conservation. In the past few years we have enjoyed some major successes that have convinced nonmember counties to "get on the bus" and support our growing movement. This bus serves all counties; it's time that we all ride together.

~Julian Zelazny, Executive Director

The Karst Bill is Moving Forward; Policy Update

At long last, after much negotiation, the karst bill is being drafted. WLWCA has been working closely with our partners in the conservation community and northeast Wisconsin LCDs to convince Senator Hansen and Representative Zigmunt that drinking water in karst regions needs greater protection. They agree and have submitted a drafting memo to the legislative council. We expect a bill any day now. As soon as we have a bill we will begin to advocate for a hearing, so stay tuned. We will need you to contact your legislator in order to make progress.

The groundwater quantity bill is also making progress. This bill has a very different path through the legislature since the bill's prime authors are Senator Miller, the chair of the Senate Environment Committee, and Representative Spencer Black, the chair of the Assembly Natural Resources Committee. We will keep you informed of necessary action on this bill as well.

Many of our members have expressed an interest in the bill that would return an independent DNR secretary. Currently the DNR secretary is directly appointed by the governor. This system, originated under Governor Thompson, has left the secretary vulnerable to political manipulation and undermines the ability of the secretary to make long-term decisions based upon natural resource needs. The bill that passed the legislature would return the power to appoint the DNR secretary to the DNR Board. Unfortunately, Governor Doyle vetoed the bill. A movement to override the governor's veto has been organized and there is a very real possibility that the override will be successful. Stay tuned.

~Julian Zelazny, Executive Director

Conservation on the Land Internship Program Update

WLWCA is pleased to announce that we have received funding to help sponsor 37 interns in counties throughout Wisconsin this summer. We are now working with the hosting counties to help publicize the openings, as well as guiding students who inquire about internships. Thanks to Senator Herb Kohl and NRCS for their continued support of this very successful program.

~Chris Schlutt, Program Coordinator

2010 Wisconsin Envirothon: Protection of Groundwater through Urban, Agricultural and Environmental Planning

The 2010 Wisconsin Envirothon is scheduled for April 30 at the UW-Stevens Point Central Wisconsin Environmental Station in Amherst Junction. WLWCA is still soliciting volunteers and donations for the 2010 event. If you are interested in participating at the state level in one of North America's largest environmental education competitions, now's the time to sign up! Volunteer positions are still available for score stewards, group leaders, runners and registration. Contact Kirsten at the WLWCA office for more details at kirsten@wlwca.org.

The 2010 Envirothon current issue is "Protection of Groundwater through Urban, Agricultural and Environmental Planning." The oral scenario will focus specifically on the current issue and testing stations will also include questions pertaining to groundwater issues. We are pleased to announce the station captains and oral presentation judges, coming from a wide range of expertise:

- Aquatic Ecology Station: Brad Johnson, WDNR Wastewater Specialist
- Forestry Station: John DuPlissis, UW-Stevens Point Professor of Forestry
- Soils and Land Use Station: Phil Meyer, USDA-NRCS Soil Scientist
- Wildlife Station: Greg Cleereman, Marinette County Conservationist
- Oral Scenario: Chris Mechenich and Kevin Masarik, UW-Stevens Point Scientists for Watershed Science and Education; Lee Trotta, Wis. Ground Water Association past president; and Jennifer Giegerich, Wis. League of Conservation Voters Capital Liaison.

The winning team from the 2010 Wis. Envirothon will attend the Canon Envirothon August 1-7 at California State University-Fresno. We are pleased to announce that the generosity of our sponsors allows us to increase the travel assistance scholarship to attend the 2010 Canon Envirothon from $1000 to $1500! The 2010 Wis. Envirothon, so far, has been made possible by the Wis. Energy Foundation, Wis. Milk Marketing Board, Bradshaw-Knight Foundation, and many others. Please visit www.wlwca.org for a current list of 2010 Wis. Envirothon sponsors. We still need more support! If you have creative ideas for supporting Wis. Envirothon, we would love to hear from you.

The 2010 Wis. Envirothon team registration deadline is March 31. We look forward to seeing you in Amherst Junction!

~Kirsten Moore, Office Manager

Conservation Observance Day Scheduled

Peter and Suzie Arnold, the 2009 Conservation Farmers of the Year, are excited to announce that they will be hosting Conservation Observance Day on June 24 in Marathon County. The Arnolds are outstanding managers of their 166-cow grazing based dairy farm, where they earn all of their family income. Mark your calendars and plan to enjoy a day touring their farm along with conservationists from around the state.

~Chris Schlutt, Program Coordinator

...With 450 of My Best Friends

On January 26, 450 citizen activists visited almost every legislator in the state capitol, and with passion and resolve, they let them know how they felt about four priority issues.

By all accounts, Conservation Lobby Day, an annual event organized by the Wisconsin League of Conservation Voters and co-sponsored by many organizations including WLWCA, was a great success. A number of our members were in attendance and took the opportunity to speak with their state representatives and senators.

The four priority issues are:

1. Override of the governor's veto of the independent DNR Secretary
2. The Clean Energy Jobs Act
3. Preserve Groundwater
4. Protect Drinking Water (the "karst" issue)

The morning program included short presentations and current status of each of the priorities, an instructional skit depicting a typical legislator meeting, and a motivating speech by Representative Spencer Black. Participants then broke up into their legislative districts to plan their meetings and organize who would speak about which topics. A lunch was served and participants were sent forth to their first meetings.

Meetings with legislators continued throughout the afternoon. At the end of the day, participants were encouraged to

sit down with friends, legislators and staff and enjoy a dinner of wild game courtesy of the Wisconsin Wildlife Federation.

Conservation Lobby Day is an excellent event. It is certainly one of the most influential happenings in the legislature for conservation issues and plays a key role for setting the conservation legislative agenda for the remainder of the session. If you were unable to participate this year, please consider joining us for Conservation Lobby Day 2011.

~Julian Zelazny, Executive Director

Patagonia Supports WLWCA

We are very pleased to announce that Patagonia has awarded WLWCA a grant of $7500 for work on "groundwater protection in vulnerable landscapes", a.k.a. the karst issue. Patagonia is a retailer specializing in outdoor clothing and gear that prides itself on its commitment to environmental causes. Now that WLWCA has specific funding for the karst issue, more time and effort can be put toward organizing around it and increase our chances of success. WLWCA says "thank you" to Patagonia and we encourage members to purchase their products at leading retailers and their online shop. www.patagonia.com.

~Julian Zelazny, Executive Director

Summer Conservation Camps

Rusk and Marinette Counties are hosting conservation camps this summer. The 2010 WLWCA Conservation Camp in Rusk County is scheduled for the week of June 21-25 at Trails End Camp in Bruce. This camp provides students who have completed grades 8, 9 and 10 with the opportunity to better understand and appreciate nature. Registration cost is $100 per student. Scholarships for students to attend are available from your county land and water conservation department and other local conservation organizations. They are also looking for volunteers to be counselors. Contact Melody Barber (mbarber@ruskcountywi.us), Rusk County LCD, at 715-532-2162 for more information or to volunteer.

Sand Lake Conservation Camp is scheduled for June 24-26, 2010, at Camp Bird, Crivitz, in Marinette County. This camp is open to students that will enter grades 6-7 in fall 2010 and have an interest in the outdoors. The fee for camp is $50 per student, and four scholarships are available to students living or attending school in Marinette County. For more information contact Anne Warren (awarren@marinettecounty.com), Information & Education Specialist in Marinette County at 715-732-7784.

~Chris Schlutt, Program Coordinator

SOC Update

The Standards Oversight Council (SOC) work team that is revising the NRCS 634 Waste Transfer technical standard has moved a step closer to finalizing a number of significant changes to the standard. In the broad review phase of standard development, the work team received 16 sets of written comments via a public comment period that closed January 15. The work team has been carefully reviewing all comments received and is holding meetings to prepare responses and, accordingly, revise and improve the draft standard. The work team will continue to meet in February and March to finish preparing its responses and to finalize the revised standard.

The SOC work team that has been creating a new Infiltration Trench technical standard for the Dept. of Commerce intends to complete the Broad Review phase of standard development in February. The work team has been meeting to address the 11 sets of written comments received on the new draft technical standard. Once the work team finishes preparing responses to all comments and agrees upon final changes to the draft, the new technical standard will be delivered to the custodian agency for review and acceptance.

Finally, a multi-agency work team that is revising NRCS Construction Specification 4—Concrete received 13 sets of written comments via a public comment period that closed January 15. The work team, comprised of engineers and technicians from DATCP, NRCS and county LCDs, has been meeting since April 2009 to update the specification. Going forward, the work team will be reviewing all comments received and will hold additional meetings to evaluate each comment and continue to revise the draft specification.

~Kevin Hogan, SOC Coordinator

Wisconsin Land & Water Conservation Association, Inc.
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Madison, WI 53703-1533
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www.wlwca.org

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Calendar of Events

NR 151 Hearing, Wausau	Feb 11
WI Envirothon Current Issue Conf. Call	Feb 15
WC Area Meeting, Menomonie	Feb 18
Nutrient Management Conference, Mankato, MN	Feb 18
NR 151 Hearing, Platteville	Feb 25
WALCE PIC Conference, La Crosse	Mar 3-5
National Groundwater Awareness Week	Mar 7-13
WI Envirothon Station Captain's Mtg, Amherst Junction	Mar 10
WI SWCS Conference, Madison	Mar 11
WI Envirothon Team Registration Deadline	Mar 31
NACD Stewardship Week	Apr 25-May 2
WI Envirothon, Amherst Junction	Apr 30

For more information, visit www.wlwca.org and click on "What's Going On?"

WLWCA Board
Allen Carothers, President
Buffalo County
Thomas Rudolph, Vice President
Oneida County
David Hammer, Sec'y/Treasurer
Lafayette County
Jacob Van Dixhorn
Sheboygan County
Patrick Laughrin
Calumet County
Dorothy Burwell
Walworth County
Herbert Cornell
Vernon County
Kay McKenzie
Douglas County

WLWCA Staff
Julian Zelazny
Executive Director
Kirsten Moore
Office Manager
Kevin Hogan
Standards Oversight Council Coordinator
Chris Schlutt
Program Coordinator

Conserve by Subscribing to *Thursday Note* on line! Email kirsten@wlwca.org for details.

10-09

BUDGET ADJUSTMENT REQUEST

Adjustment	Description	Approval Level
☐ Category 1	Reallocation from one account to another within the major budget classifications.	Department Head
☐ Category 2		
☐ a.	Change in Outlay not requiring the reallocation of funds from another major budget classification.	County Executive
☐ b.	Change in any item within Outlay account which requires the reallocation of funds from any other major budget classification or the reallocation of Outlay funds to another major budget classification.	County Board
☐ Category 3		
☐ a.	Reallocation between budget classifications other than 2b or 3b adjustments.	County Executive
☐ b.	Reallocation of personnel services and fringe benefits to another major budget classification except contracted services, or reallocation to personnel services and fringe benefits from another major budget classification except contracted services.	County Board
☐ Category 4	Interdepartmental reallocation or adjustment (including reallocation from the County's General Fund)	County Board
X Category 5	Increase in expenses with offsetting increase in revenue	County Board

Increase	Decrease	Account #	Account Title	Amount
X	☐	110.048.301.4301	Federal Grant Revenue	$11,868
X	☐	110.048.301.5801	Landowner Payments	$11,868
☐	☐			
☐	☐			

Narrative Justification:

2010

The Land and Water Conservation Department received a grant from the US Fish and Wildlife Service to do work in the Village of Suamico through the Pike Habitat Project. The grant amount awarded was not fully spent or reimbursed in 2009 and is available to be used in the project area through 12/31/2011. It is anticipated that this money will be allocated to participating landowners and reimbursed to the county in 2010 for work done in the project area.

AUTHORIZATIONS

William C. Hoff
Signature of Department Head

Department: Land & Water Conservation

Date: 2/2/2010

Signature of Executive

Date: 2/8/10

2/8/10

Rev 10/09

11

10-31

BUDGET ADJUSTMENT REQUEST

Adjustment		Description	Approval Level
☐ Category 1		Reallocation from one account to another within the major budget classifications.	Department Head
☐ Category 2			
	☐ a.	Change in Outlay not requiring the reallocation of funds from another major budget classification.	County Executive
	☐ b.	Change in any item within Outlay account which requires the reallocation of funds from any other major budget classification or the reallocation of Outlay funds to another major budget classification.	County Board
☐ Category 3			
	☐ a.	Reallocation between budget classifications other than 2b or 3b adjustments.	County Executive
	☐ b.	Reallocation of personnel services and fringe benefits to another major budget classification except contracted services, or reallocation to personnel services and fringe benefits from another major budget classification except contracted services.	County Board
☐ Category 4		Interdepartmental reallocation or adjustment (including reallocation from the County's General Fund)	County Board
☒ Category 5		Increase in expenses with offsetting increase in revenue	County Board

Increase	Decrease	Account #	Account Title	Amount
☒	☐	110.048.301.4302	State Grant Revenue	$5000
☒	☐	110.048.301.5100	Regular Earnings	$3900
☒	☐	110.048.301.5110.100	Fringe Benefits FICA	$350
☒	☐	110.048.301.5340	Travel	$500
☒	☐	110.048.301.5300	Supplies	$250

Narrative Justification:

In late 2009, the Land and Water Conservation Department received an additional grant through the Natural Resources Damage Assessment to inventory pike spawning numbers in the Suamico River watershed as part of the Northern Pike Habitat Project. A limited term employee will be hired annually for 2 month (March-May) to do the inventory work. This grant totals $20,000 over 4 years. The remaining $15,000 will be included in the departments' 2011 budget.

AUTHORIZATIONS

Bill Hafs
Signature of Department Head

Department: Land and Water Conservation

Date: 3/9/2010

[signature]
Signature of Executive

Date: 3/11/10

DL
[signature] 3/10/10

Rev 10/09

GREAT LAKES NONPOINT ABATEMENT COALITION

James Costello, President
Fond du Lac County LCC
W 3516 Ledge Road
Malone WI 53049
53085
Home: (920) 921-2521

Marvin Fox, Vice-President
Outagamie County LCC
N2538 County Rd J
Kaukauna WI 54130
County Office: (920)832-5073
Home: (920) 766-3242

Greg Baneck , Secretary
Outagamie County
3365 W. Brewster St.
Appleton , WI 54914-1602
Office: (920) 832-4783

Pat Miles, Treasurer
Sheboygan County LCD
650 Forest Ave
Sheboygan Falls, WI
Office: (920) 467-5746
Fax: (920) 467-5748

Area Representatives

Green Bay
Tom Milheiser
(920) 834-5688

Fox-Wolf
Nancy Barker
(920) 725-1441

Lake Michigan
Stevan Keith

Lake Superior
Kathryn McKenzie
(715)394-4052

Counties

Adams
Ashland
Bayfield
Brown
Calumet
Columbia
Door
Douglas
Florence
Fond du Lac
Forest
Green Lake
Iron
Kenosha
Kewaunee
Langlade
Manitowoc
Marinette
Marquette
Menominee
Milwaukee
Oconto
Outagamie
Ozaukee
Portage
Racine
Shawano
Sheboygan
Walworth
Washington
Waukesha
Waupaca
Waushara
Winnebago

Date: February 3, 2010

Memo To: County Land Conservation Committee Members

From: Jim Costello, President

Subject: Great Lake Nonpoint Abatement Coalition (GLNAC) & February 15 Video Conference

GLNAC is an Association of County Land Conservation Committees in Wisconsin of the Lake Superior and Lake Michigan drainage basin. Our Mission is as follows:

Mission Statement

The mission of the Great Lakes Nonpoint Abatement Coalition is too develop, promote, and support nonpoint source pollution control programs for implementation at the local government level, which seek to protect the water quality of the Great Lakes.

Please plan to attend the first program of our compressed video conference at a site near you on Monday February 15, 2010, starting at 3:30 to 5:30 pm. The following is an overview of the program presentations.

Meeting the phosphorus index of 6; what does that mean to producers; conservationists and waterquality? What is a TMDL?

NR 151, the DNR's Runoff Management Standard that is out for public comment will require producers to meet a phosphorus index of 6 as a condition from the phosphorus strategy of a 590 nutrient management plan. Producers located in a TMDL watershed may need to meet and index of 4 to meet phosphorus goals.

Many people in attendance were unclear about the functions and purpose of a phosphorus index. Professor Chris Baxter from UW Platteville will present the research and background of the phosphorus index. How will producers meet this strategy and the impacts on water quality? He will share his findings from the UW Pioneer research farms on phosphorus runoff.

River Alliance's Denny Caneff will discuss his organizations concerns with phosphorus runoff and share examples of threats to our States waterquality from phosphorus sources. Denny will discuss policy issues and potential strategies that may be necessary to improve our waterquality. Denny will be sure to challenge our thinking.

This will also be an opportunity to network and discuss these issues with your fellow colleagues at each location.

"A Growing Voice for the Great Lakes"

DATE: JANUARY 14, 2010

MEMO TO: LAND CONSERVATION DEPARTMENTS AND COMMITTEE CHAIRS

FROM: GREAT LAKES NON-POINT ABATEMENT COALITION (GLNAC); PRESIDENT, JAMES COSTELLO

SUBJECT: COMPRESSED VIDEO CONFERENCE SERIES

GLNAC is proud to announce a 3 month series of video conferences for LCC Supervisor and Staff in the Great Lakes Basin. This conference series is sponsored by GLNAC in cooperation with UWEX and a grant from the Wisconsin Environmental Education Board.

The purpose of the project is to introduce electronic media communications to conservation policy makers and staff with the goal of increasing their knowledge base and professional skills regarding non-point pollution abatement and water quality protection, through the use of electronic media technology on UW-campuses.

Please place these dates on your calendar:

1. **Monday February 15, 2010. Starting at 3:30pm ending 5:30pm.** Hearings on changes to NR 151 Runoff Rule Standards began this month. Many questions and mis-understandings of the rule's proposal requiring cropland to meet a phosphorus index of 6 will be discussed by Professor Chris Baxter from UW Platteville as well as Phosphorus issues that are facing surface waters by Denny Caneff from River Alliance.

2. **Monday, March 15, 2010. Starting at 3:30pm ending 5:30pm.** This session will feature presentation on the DATCP Working Lands Initiative and how it will impact our local LCC Departments. Many Counties applied for grants from the Great Lake Initiative hopefully we will have insights as to the types of projects funded and future application periods.

3. **Monday, April 12, 2010. Starting at 3:30pm ending 5:30pm.** This session will focus on ground water issues in the Great Lakes Basin covering draw downs in our aquifer and non-point contamination. For our northern forested segments of the basin we would like to have a report on a study being conducted in the Superior drainage basin on Forest management impacts on waterquality of a watershed.

4. **Monday, May 17, 2010. Starting 5:00 pm ending 7:00pm.** This last session will feature local efforts to monitor water quality and explore some of those findings.

Participation by local County Policy makers at scheduled conservation events has been declining over the last decade for a number of reasons. County Boards have been downsizing and combining departments causing a reduced number of Supervisors to serve on multiple committees; mileage and travel restraints has further limited attendance to these educational functions by staff and Supervisors. **Attendance at workshops, organizational functions and training has dropped to less than 30 participants from a potential of over 200 Supervisors and staff.** Statutorily this leadership is responsible for policy direction at the County Board and at the Committee level, currently many Supervisors are functioning with a much reduced knowledge base of their respective committee functions.

To reduce travel and expenses GLNAC has set a series of four 2 hour compressed video conferences located at eight sites on campuses in Fond du Lac, Appleton, Green Bay, Ashland, Superior, Marinette, Stevens Point and Milwaukee to provide easy access and limited travel times and distances.

Compressed video technology allows the presenter to see and hear program attendees on a large projection screen and also allows the attendees to see and hear not only the presenter, but also attendees at other locations all at the same time.

Two-way audio communications will allow for a conferencing atmosphere familiar to this traditional audience. Each campus site will have a local host to encourage fellowship and networking of local Counties attending each location, to restore the benefit of traditional conferencing.

Locate the campus near you. Our goal is to have a site within 1 hour driving distance of our Great Lakes Basin Counties. **The Public is welcome and will be invited to the programs.**

Locations, see enclosed maps:

1. **WITC Ashland**, room 106, enter entrance N1 and park north lot.

2. **UW Steven's Point**, Communication Arts Center room CAC 211 at UWSP is building #3 on the map, on the south side of the student union (which is #40 on the map).

3. **WITC- Superior,** room 212C in the library at the top of the stairs.

4. **UW Fox Valley,** room # 1830 or building #24 on the map. Park towards the north side of the parking lot and enter through the Field House building #27.

5. **UW Marinette**, program in the Library L-105

6. **UW Fond Du lac** , Class Room Building C117, enter through the main entrance between Admin building and the Prairie theater go through the commons area down a long hallway to the Class Room building.

7. **UW Green Bay**, IS1034 is in the Instructional Services Building, which is #6 on the campus map. Folks should enter through the Main Entrance on Nicolet Drive (Highway A). This takes them to the drive-up Parking Office where they can get their parking pass.

8. **WITC Milwaukee,**

If you have any questions regarding the programs, directions or subject matter, contact Tom Ward at tomward@tm.net or call 920-588-0047.

Kick off meeting for the manure issues in Wisconsin

Location: UW-Ex 1150 Bellevue St, Green Bay
Time: 9:00 am
Date: March 10th Wednesday
The meeting will be held in Donovan Hall south of the Ag and Extension Service Center.
Agenda:
Ideas and information on bio systems to reduce manure quantities

Thanks

Todd Parczick
President / Structural Engineer
Alliance Construction and Design Inc
Cell: 920-660-3762
Fax: 920- 336-3401
Phone: 920-336-3400

-----Original Message-----
From: Hafs_BC [mailto:Hafs_BC@co.brown.wi.us]
Sent: Tuesday, December 08, 2009 4:33 PM
To: todd@alliancebuilds.com
Cc: BErickson6@new.rr.com
Subject:

Todd Parczick 336 -3400; 660-3762
Alliance Construction and Design

Todd-
Attached is map of livestock operations in Brown County with Animal Waste Management Ordinance permit.
The second slide shows the diminishing amount of cropland available to land apply animal waste.
The third slide shows the increase in dairy production in Brown County from 2007-2008.
I will call you to meet with my staff after the New Year to discuss mutual opportunities.

Land Use

Brown County total land area approximately 350,000 acres.

Year	Farms	Land in Farms
1954	2,672	300,900 acres
1972	1,920	274,800 acres
1978	1,730	263,400 acres
1983	1,480	241,500 acres
2009?		160,000 acres

[Source: 1981 Brown County Farmland Preservation Plan]

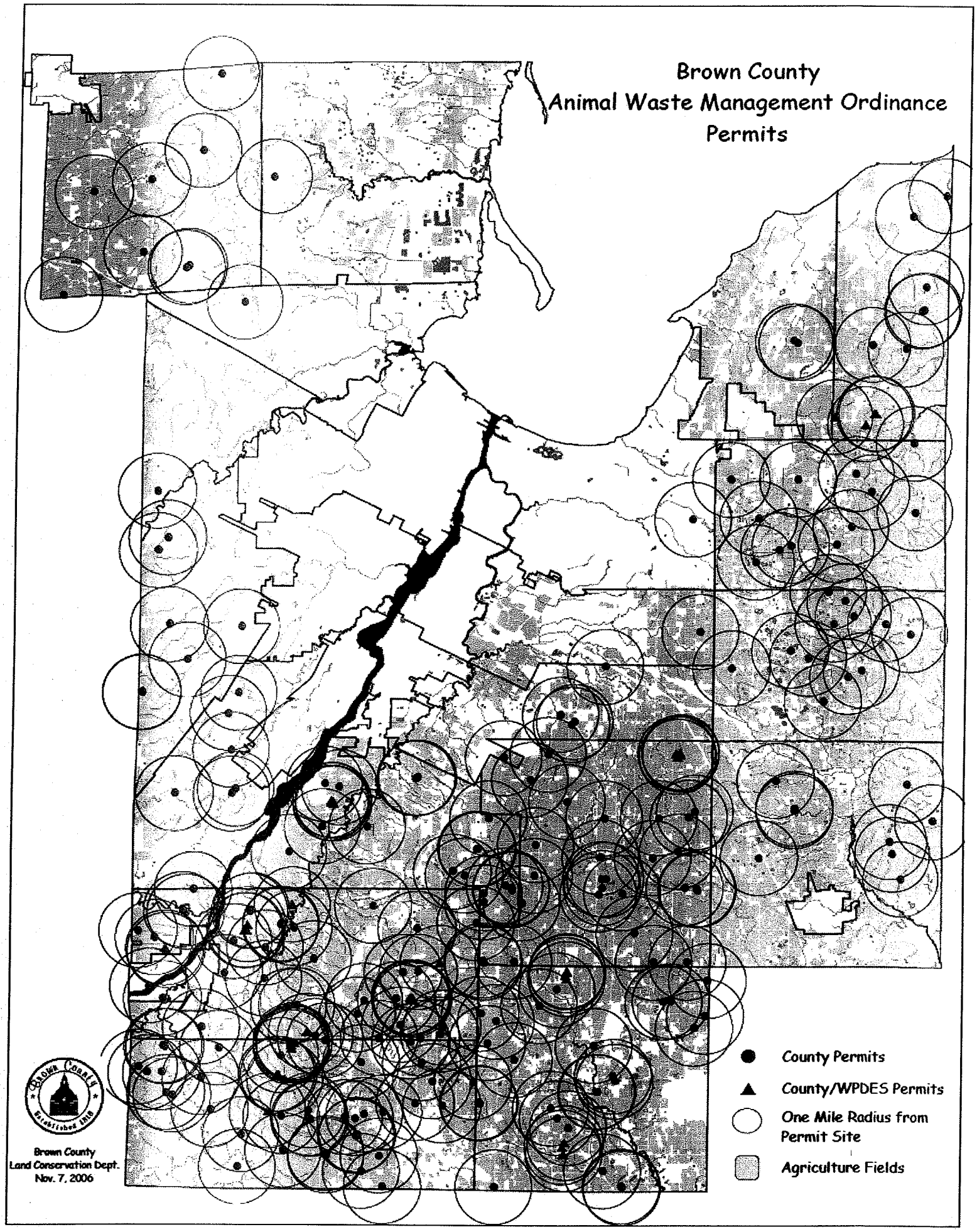
TRENDS

2008 US Dairy Statistics Midwest Region (12 states) milk production (Progressive Dairyman)

- State Ranking in Total Milk production Wisconsin is #2 nationwide.
- Wisconsin average herd size = 91
- Number dairy herds 13,730

TOP DAIRY COUNTIES IN MIDWEST
(12 states)

1. Dane Milk 2007-08 (81 million lbs) +15%
2. Clark Milk 2007-08 (75 million lbs) +38%
3. Manitowoc 2007-08 (75million lbs) +11%
4. Brown 2007-2008 (67 million lbs) +14%


Brown County
Animal Waste Management Ordinance
Permits
County Permits
County/WPDES Permits
One Mile Radius from Permit Site
Agriculture Fields
Brown County
Land Conservation Dept.
Nov. 7, 2006

Land and Water Conservation Department

Brown County

1150 Bellevue Street
GREEN BAY, WI 54302

BILL HAFS

PHONE (920) 391-4620 FAX (920) 391-4617 WEB: www.co.brown.wi.us

COUNTY CONSERVATIONIST

2/18/10

To:
Mike Murray
DATCP
P.O. Box 8911,
Madison WI 53708-8911
michael.murray@wisconsin.gov

Regarding:
Comments from Brown County Land and Water Conservation Department on Livestock Siting.

Dear Mike,

DATCP is holding listening sessions related to Livestock Siting. Please accept the following comments from Brown County Land and Water Conservation Department:

While Brown County cattle numbers have stayed at relatively constant levels during the last 25 years, the increase of our number of CAFO livestock operations has increased dramatically. We had very few or no CAFO's in 1983; in 2010 Brown County has one of the highest concentrations of CAFO's in the State of Wisconsin. We have 15 current CAFO's and another 15 livestock operations between 500 and 1000 AU.

During that same time period we have lost over 76,000 acres of cropland to non agriculture uses (1983 -241,000 acres cropland, 2009 -165,000 acres of cropland –source Brown County Farmland Preservation Plan). We now have approximately 1.83 acres of cropland per animal unit (165,000 acres/90,000 AU).

The distribution of CAFO'S as related to available cropland, other farms, natural resource features such as rivers, streams, wetlands, groundwater Karst features and rural residential homes is resulting in increased numbers of land use conflicts and surface and groundwater contamination problems. (Please review the attached map of livestock density in Brown County). **We are concerned that current livestock distribution and density trends are unsustainable.** With Agriculture a 3 billion dollar per year industry in Brown County we need to find solutions to reverse this unsustainable trend.

Please consider the following:

The only tool available currently to Brown County to assist us with sustainability is the ability to require a nutrient management plan before we grant a permit to build an animal waste storage facility or feedlot. Dairy operations can add livestock without adding additional cropland.

Turning Brown County Green

Expansions and density of livestock have led to extremely high rental values on cropland which negatively impacts agriculture profitability.

Density of livestock has led to over application of animal waste and further hauling distances which impacts groundwater and surface water quality and the economics of hauling waste.

There is point where the size of a livestock operation makes hauling animal waste impractical from an economic or logistical standpoint. 1000 cows produce the waste generated by an 18,000 human population city (DNR). According to Clemson University and UW Madison you need 1.8 – 3 acres of cropland to have adequate land to land apply the waste from dairy milk cows.

The land application needs of a 4,000 milk cow dairy: 4,000 cows = 72,000 human waste equivalents and needs approximately 8,000 – 12,000 acres of cropland to spread the animal waste. There are 23,040 acres of land in a township (36 square miles x 640 acres in square mile). Of that 23,040 acres of land, approximately 30 -50% of the land is not able to be land applied because of forested land, well setbacks, rural residences, Karst features, wetlands, roads, urban sprawl, rivers, streams, lakes. (In Brown County we have only approximately 165,000 acres of cropland that remains out of our total land area of approximately 350,000 acres. That means we only have 47% of our total land base remaining in cropland and significant amounts of that cropland cannot have land application of animal waste without limitations on how and when it is applied.) In southern Brown County where the available cropland is closer to 70% of the total land base, a 4,000 head dairy will need most of the cropland in an entire township (6 miles x 6 miles) because 23,040 acres x available cropland (70%) equals 16,100 acres. Brown County has townships with over 14,000 cows.

Hauling animal waste more than 6 miles becomes problematic from both an economic standpoint but also a logistical standpoint. The further the animal waste is hauled the more expensive it is and the greater the risk. These are 5,000 gallon tankers on the roads pulled by tractors or trucks and the price of fuel will impact hauling.

Recommendations:

The financial benefits of Dairy Agriculture are extremely important to local community's economies and the State of Wisconsin. The State needs to become more progressive in ways to protect both agriculture sustainability and the environment. It is my opinion that dairy agriculture and Environment can co-exist **if government acts now**.

Please consider the following options or combinations of options:

a.) Establish livestock density requirements. 20 years ago dairy farms were smaller and more evenly distributed. This distribution of dairy livestock resulted in smaller quantities of animal waste more evenly distributed to a larger cropland base. In Brown County, 20 years ago, we had less groundwater and surface water pollution and land use conflicts. The State needs to consider the creation of livestock density requirements. How many new CAFO's can find adequate space or cropland in today's Wisconsin landscape?

b.)Waste water treatment requirements. Density requirements might not be needed if Waste Water Treatment facilities are built for CAFO's. At some point in our not so distant past, society decided that as cities grew, the outhouse was no longer viable and Sewage districts were created to protect the public health. Society should be prepared to pay for these costs as it is the farmer who is providing the food for the growing population.

c.) Implementation of new technologies. There exist several new technologies that could help with Dairy farm sustainability including: Waste Transformation technologies, dewatering of

animal waste technologies, waste water treatment, gasification, digesters and many more. How long will the state wait to fund, require or promote these technologies??

Thank you for the opportunity to comment. The issue of siting is complicated and important to both our economy and environment. Please consider our recommendations as possible solutions.

Respectfully submitted.

Regards,

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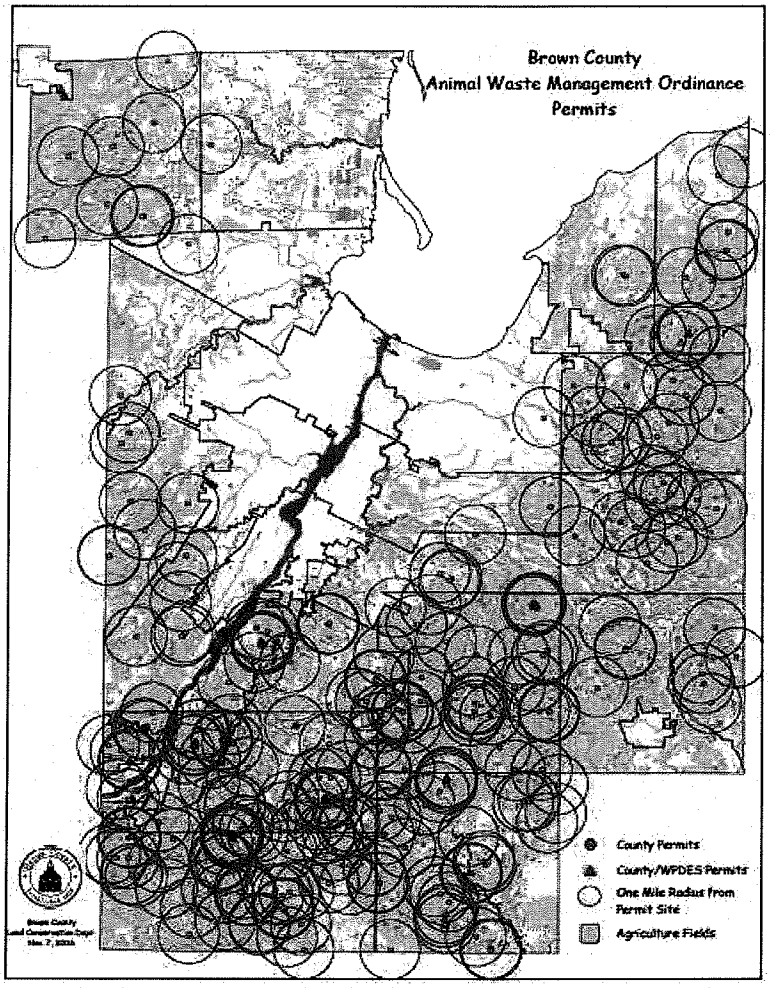
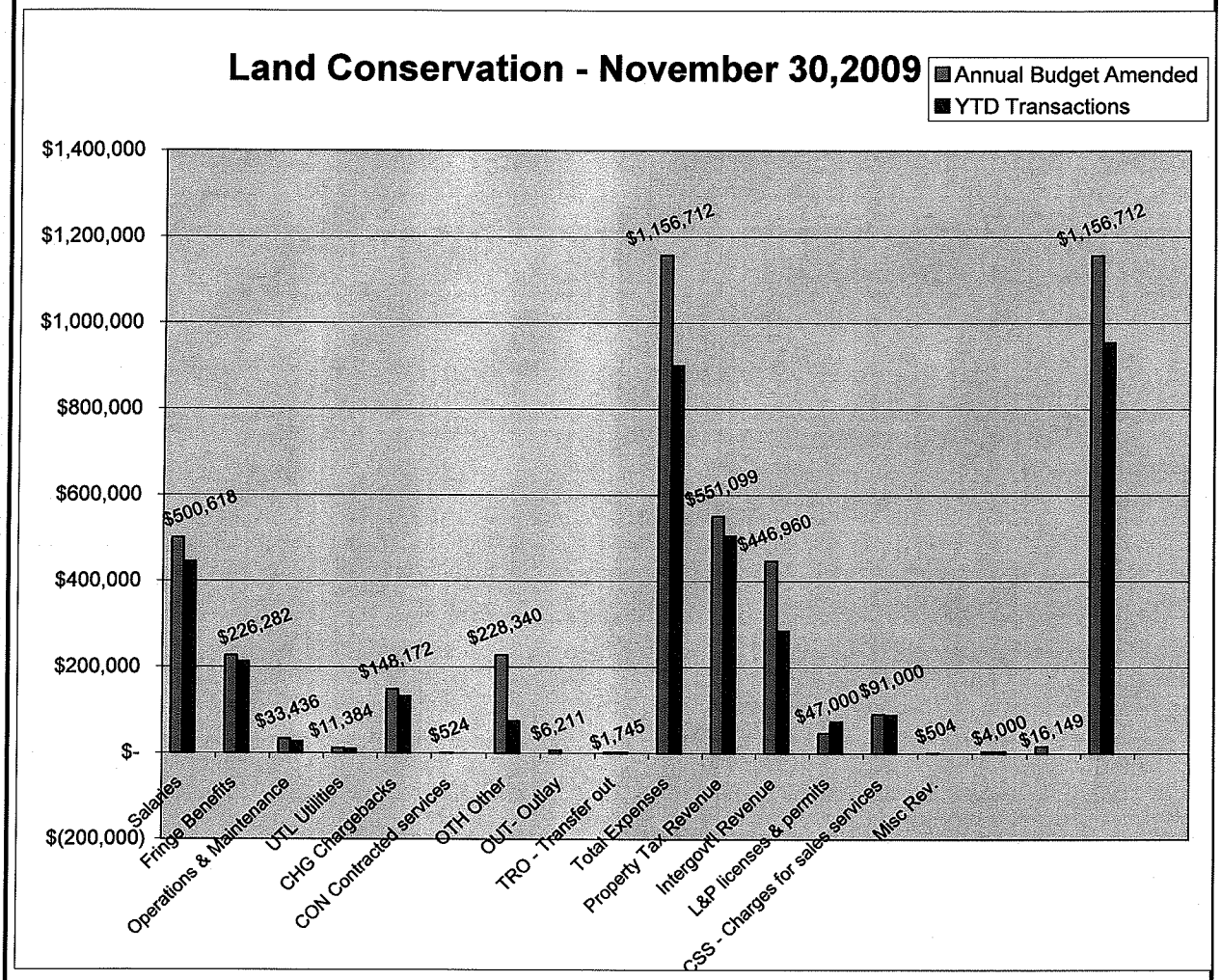


Brown County
Land Conservation
Budget Status Report (unaudited)

11/30/2009	Annual Budget Amended	YTD Transactions	
Salaries	$ 500,618	$ 444,949	
Fringe Benefits	$ 226,282	$ 212,118	
Operations & Maintenance	$ 33,436	$ 26,296	
UTL Utilities	$ 11,384	$ 9,332	
CHG Chargebacks	$ 148,172	$ 131,997	Indirect cost, I.S., Insurance
CON Contracted services	$ 524	$ -	
OTH Other	$ 228,340	$ 73,963	Grant exp., landowner payments WD, WS, L&W
OUT- Outlay	$ 6,211	$ (194)	
TRO - Transfer out	$ 1,745	$ 2,027	
Total Expenses	**$ 1,156,712**	**$ 900,489**	
Property Tax Revenue	**$ 551,099**	**$ 505,175**	Levy
Intergovt'l Revenue	$ 446,960	$ 284,146	State grants , Federal grants
L&P licenses & permits	$ 47,000	$ 73,504	Permits, inspections
CSS - Charges for sales services	$ 91,000	$ 88,154	Ag 50 cent fee, Tree sales
Misc Rev.	$ 504	$ 23	
CTB Contributions	$ 4,000	$ 4,000	WLWCA, sportmans clubs
TRI Transfer in	$ 16,149	$ -	Donations
Grand Total Revenues	**$ 1,156,712**	**$ 955,003**	$54514 +