

# Thinking Like a Watershed

## Black Earth Creek Watershed Association

Fall 2019  
FALL 2017

### Historic Flooding in the Black Earth Creek Watershed

*Greg Hyer - BECWA Board President*

A little over a year ago, the Black Earth Creek Watershed experienced an historic and unprecedented rainfall – 11 to 15 inches of rain in about 24 hours. According to Dane County Land & Water Resources Department, “Large amounts of rainfall occurred over a short period of time, which overloaded the capacity of stormwater drainage infrastructure, resulting in rapid or flash flooding. The flash flooding damaged roads/bridges (e.g. Highway 14 in the Village of Black Earth), residential and commercial property, and recreation trails (e.g. Middleton)” including the Mazomanie trails. Every unit of government (City of Middleton, Villages of Cross Plains, Black Earth and Mazomanie, Towns of Berry, Cross Plains, Black Earth and Mazomanie, Middleton and Vermont) and a majority of residents in the Watershed were affected. As of today, farmers in the Watershed are still unable to crop acres of farmland; communities are still rebuilding infrastructure; and some Mazomanie residents are still unable to use their homes and awaiting FEMA decisions on buyouts and relocations. Folks living along Brewery Creek and Black Earth Creek in Cross Plains and Mazomanie were especially hard hit.

The historic flooding dramatically highlighted our interconnectedness and the limits of our current planning and regulations on mitigating the impacts of development on living, working and recreating in the Watershed. Clearly what happens at one end of the Watershed in Cross Plains and Middleton affects those at the downstream end of the Watershed in Black Earth and Mazomanie.

The Town of Cross Plains, where I live and am Chair of the Town Board, thankfully had relatively minimal damage. However, two damaged areas in the Town of Cross Plains and Middleton highlight our common struggles all along the Watershed. Two valleys in Oak Valley Estates, a housing development in the Town of Cross Plains just east of the Village of Cross Plains along Highway 14, saw dramatic erosion, tree loss, residential property damage, road and culvert damage. The area was developed around 1980 and there are no homeowner agreements on maintenance of common drainage areas. Culverts draining the area were undersized for any “normal” rainfall events. Some affected residents thought the problem was the farming practices above them on the top of hill and wanted “them to fix it”. Others thought we should install new culverts to deal with future rainfalls like August 2018 and wanted some level of government to fund and fix the privately owned drainage areas and the new culverts. A localized watershed study of those ravines by MSA, a local engineering firm and funded jointly by the neighborhood association and the Town, demonstrated that water runoff from the acreage farmed, acreage in residential lawns and acreage in “natural wooded areas” all equally contributed to the problem. They also concluded that sizing infrastructure for a 2018-scale rainfall event was neither practical nor affordable.

Another example of the debate about what should be done and who should fund efforts to offset increasingly intense and repeated rainfall events that result from climate change is ongoing in the Town of Middleton. A wetlands area along Hwy 14 is still dramatically larger from the August 2018 event and to this day prevents acres of farming on adjacent land. The farmland owners want to restore a drainage district, drain the area and have the area subdivisions pay for it.

In reality, our readiness for the next flood is not “their” but “our” problem to fix.

Please join us at our Fall BECWA meeting and together we will explore what we can do. See details on page 2.



**Black Earth Creek  
Watershed  
Association**

**BECWA.ORG**

*For the wise management of the land and water resources in the Black Earth Creek Watershed.*

**BECWA Goals**

- To protect, conserve, support and advocate for the wise, long term management of the physical, biological, environmental, cultural and historical resources that constitute the heritage and future of the watershed.
- To foster and encourage citizen and locally-based stewardship among the many members of the Watershed community.
- To provide a forum for civilized discussion of issues and problems in the Watershed.

**Board of Directors**

- Greg Hyer, *President*
- Bobbi Peckarsky, *Vice-President*
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- Deb Nemeth - *Newsletter Design*
- Bobbi Peckarsky - *Newsletter Editor*

**FALL BECWA MEETING**

**Flooding Impacts On Farming, Communities and Trout In The Black Earth Creek Watershed**

**What Can We Do To Create A Healthy Watershed During Climate Change?**

**Tuesday, October 22, 2019**

**7 to 9 PM**

Cross Plains Fire Station - Bourbon Road, Cross Plains, WI

Sponsors:

- Black Earth Creek Watershed Association
- Southern Wisconsin Trout Unlimited (SWTU.org)
- Gateway to The Driftless (www.gatewaytothedriftless.com)
- Groundswell Conservancy (groundswellwisconsin.org)

We will have refreshments and two short panel presentations along with a question and answer session: 1) A local farmer and DNR fisheries biologist will highlight the impacts of climate change and flooding on farming viability and native trout fish populations and habitat. 2) Two experienced authorities from the Village of Cross Plains and Capital Area Planning Commission will discuss how the flood of 2018 is influencing their thinking about land use planning. We will discuss options to mitigate the flooding effects of climate change and what we can all do together to ensure a healthy watershed.

**Please join us!**

**Changes in the BECWA Board Membership**

We would like to thank retiring member Dan Buckland for his years of service and contributions to BECWA. We also welcome two new members to the BECWA Board of Directors.

**Johnny Armstrong**

“I grew up in the Bay View neighborhood on the southside of Milwaukee. For the first part of my career I worked for the specialty coffee roasting industry and then received a Bachelors’ Degree in Environmental Sustainability with an emphasis in Business at DePaul University in Chicago. I currently work at the Department of Natural Resources as a Grant Accountant and enjoy volunteering my time with conservation organizations to help improve and maintain habitat. I recently moved to the Mazomanie area and enjoy fishing Black Earth Creek, among other creeks in the Driftless region. Before moving to Mazo, I lived in Madison in the Lake Wingra watershed and served on the board of Directors for the Friends of Lake Wingra (Treasurer).”



↑ Johnny Armstrong



Andy Morton →

# Town of Vermont Energy Planning

*Barbara Borns - BECWA Board Member*

A small committee of Town of Vermont residents has undertaken an effort to raise awareness in the town about energy options. These past three years have been marked with strong resistance among many town residents to the proposed ATC/ITC/Dairyland Coop high voltage transmission line. While the “preferred route” is outside of the town’s borders, the “alternate route” would go right through the Town of Vermont affecting a large portion of woodlands, wetlands and private properties.

Led by David Stanfield and including Warren Gaskill, Peter Antonie and Barbara Borns, the Energy Planning Committee presented an “Energy Plan” to the Town of Vermont Board, which was approved on July 8, 2019. In the months ahead there will be activities to inform town residents about alternate energy options. *The goal of the committee is to support current and future Town of Vermont residents to adjust to the rapidly changing economy and environment, and to transition away from fossil-based fuels to more renewable energy sources.*

Within the Town of Vermont, there are 3 different suppliers of electric power: the northern section is mostly serviced by Black Earth Electric in Black Earth; a small section in mid-town area receives power from Alliant Energy; and the southern section is serviced by Mount Horeb Electric. One of the impacts of this division in services is the complexity of getting more renewably sourced energy from three and not just from one utility. If our utilities cannot find ways to provide more renewably generated electricity, then Town residents are forced to make the investments themselves individually or through group purchases. One such example is the solar installation completed in May 2017 on the Borns’ property (see photo).



*Barbara Borns & Fred Townsend*

Technological advances are showing that local solar plus battery installations, either utility or customer provided, are cheaper than the fossil fuel based electricity produced by distant generating plants and transmitted through disruptive high voltage transmission lines. Our Town residents who have made investments in solar power also receive unequal and in some cases unfair reimbursements from the three utilities as a result of installing alternate technologies. The committee has been exploring with a variety of solar/wind suppliers what options might be available for individual and for group purchases of renewable energy generation capacities.

## **Andy Morton**

“I am very excited to join the board of the Black Earth Creek Watershed Association and hope to contribute to BECWA’s long history of support of sustainable and wise watershed management. It is especially meaningful for me to join the BECWA Board because I remember well the first meeting literally decades ago when people with an interest in the watershed came together to create the organization. Growing up in East Tennessee, after receiving my BS in Wildlife and Fisheries Science in 1976 and working at Tennessee Valley Authority (Aquatic Entomology, Fisheries and Land Analysis), I headed north to Wisconsin to attend graduate school at the UW Institute for Environmental Studies (now the Nelson Institute). After obtaining my MS in 1981 I was hired by WDNR in 1982 as the data base manager for the Acid Rain Program. That is when I discovered Black Earth Creek. Wow...a fantastic trout stream on the doorstep of my home! I was quickly struck by the uniqueness of its groundwater fed ecosystem at the edge of the glaciers, the unique histories of the farming community and the villages, and the fact that many trout management techniques were pioneered on this stream. I came to love the stream, the communities and the valley. I was fortunate to become the Nonpoint Source Coordinator for the Southern District WDNR in the late 1980s, and along with the landowners, farmers, anglers, cooperating agencies and organizations (e.g., BECWA, Trout Unlimited, Villages, Dane County, USGS and NRCS), we accomplished a great deal in terms of watershed restoration and protection. Later in my career with WDNR, I became a regional supervisor in the water program where I had responsibilities for managing several programs including groundwater, wastewater, watershed, water quality, fisheries, dams, nonpoint, animal waste and stormwater. I retired from WDNR in September 2018 after 36 years with the agency. I look forward to working everyone in BECWA and an honored to be a part of this organization.”

# Update on the status of New Zealand Mud Snails in the Black Earth Creek Watershed

*Bobbi Peckarsky, BECWA Board Member*

Results of a fall 2017 survey of four sites on Black Earth Creek (BEC) in the Village of Cross Plains revealed that all sites had populations of the invasive New Zealand Mud Snails (NZMS), and three of the four had severe outbreaks (details in the Fall 2018 newsletter). The three sites with severe NZMS outbreaks had 3 - 11 times higher densities of NZMS than all the other species of native invertebrates combined. In contrast, the site with only a small number of NZMS had 11 times higher densities of native invertebrates than invasive snails. While it is tempting to conclude that NZMS are displacing native stream invertebrates in BEC, a rigorous test requires comparing the stream invertebrate communities at affected sites before and after snail invasions to reference sites with no invasions and otherwise similar conditions.

Readers of this newsletter will be happy to hear that the state has now allocated resources to the Wisconsin DNR to track snail outbreaks and their consequences in BEC. WDNR biologists (Jim Amrhein, Mike Sorge and Mike Shupryt) are now quantifying NZMS at 12 stations on four streams including BEC. Based on 2018 samples, the WDNR considers BEC and Badger Mill Creek high infestation areas, whereas Rowan and Mt. Vernon Creeks are emerging populations. The “bug lab” at UW Stevens Point is processing the samples to determine the densities of NZMS and native invertebrates. In addition, WDNR biologists have deployed artificial habitat samplers in all locations for one year to see how quickly they are colonized by invasive snails. They are also using environmental DNA analysis (eDNA), which is not reliable for quantification, but is effective for early detection of the snails. They will repeat those surveys in 2019, year 2 of a minimum 5-year plan. Comparisons to annual macroinvertebrate and fish assemblage data from ~4-7 years pre-invasion will enable detection of changes as NZMS populations grow, possibly plateau, or even decline through time.

To supplement the quantitative data that will eventually be available from the UWSP “bug lab” (processing of samples is very time consuming and costly), in May 2019 I completed a qualitative survey of 20 sites on BEC and tributaries (see Map) to help the River Alliance-sponsored “Wader Wash Team” prioritize installation of boot cleaning stations along BEC and Brewery Creek. Also, just after the August 2018 flood I observed hundreds of snails on the lawn (floodplain) at

Zander Park in the Village of Cross Plains (see photograph in Fall 2018 BECWA newsletter). That astounding observation made me wonder whether the flooding had a positive (via dispersal downstream) or negative (via scouring) effect on the populations of NZMS in BEC.

## **What we learned from the qualitative survey (more questions than answers)**

The colors of the large dots on the map show that most of the hot spots are located upstream in the Village of Cross Plains; and there are sites between the “hot spots” with few or no NZMS. While we know snails were washed onto the flood plain in the August 2018 flood and likely travelled downstream, this observed distribution of snails shows they were not able to colonize and explode everywhere. So the good news is that post-flood the snails are not everywhere and I found no outbreaks downstream of the Village of Black Earth. Those are interesting observations, but we don’t know why. The other interesting observation is that the oldest population at South Valley Road (invasion probably in 2011) was less dense than in previous times I have sampled there. And I saw dozens of dead NZMS, whereas I rarely saw any dead snails elsewhere. So it is possible that population is beginning to crash on its own, as has been observed in some of the outbreaks in western US streams. But, again, we don’t know why.

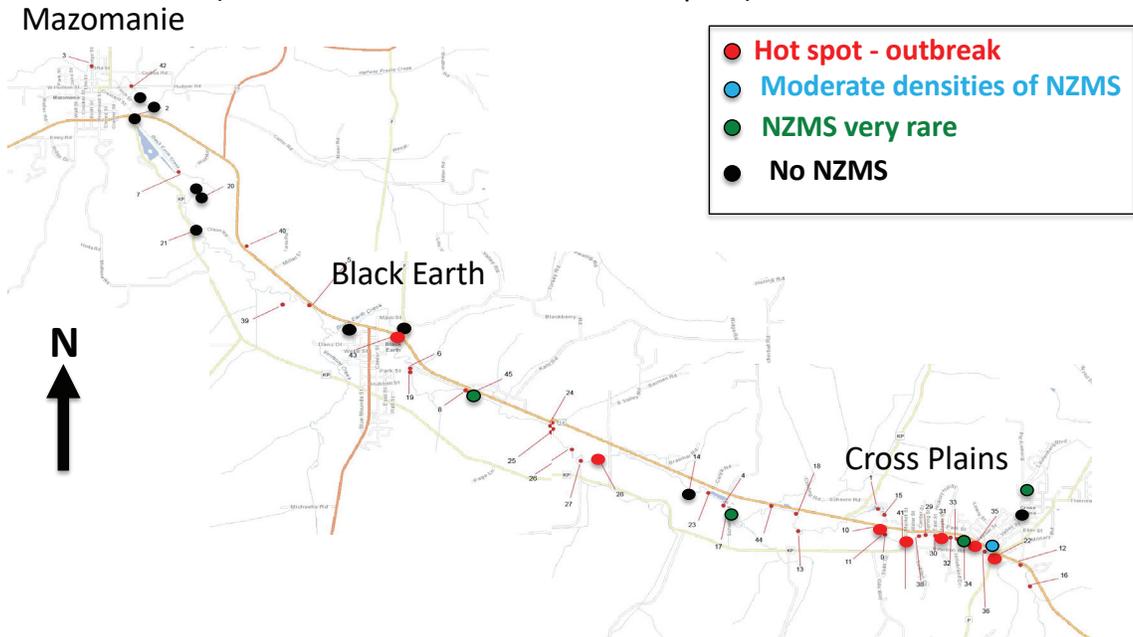
Hopefully those questions will be answered by collaboration between the WDNR biologists and Daniel Preston, a new faculty member in Forest and Wildlife Ecology at UW, who has submitted an Aquatic Invasive Species (AIS) grant to evaluate the effects of NZMS on stream communities and trout fisheries. The objectives of Dan’s proposal are to: 1) quantify energy flow through stream food webs with and without NZMS, which would tell us whether trout energy intake changes due to NZMS invasion; and 2) test effects of NZMS on benthic invertebrate communities using artificial stream channels. Therefore, these comprehensive efforts to monitor the extent of the snail invasions in BEC and their consequences to the native invertebrates and fish are in good hands.



Image of mature New Zealand mudsnail (*Potamopyrgus antipodarum*).

Map of Black Earth Creek and tributaries (Halfway Prairie Creek and Brewery Creek) with color coded site locations indicating “Hot spots” (Red symbols- severe NZMS outbreaks), sites with moderate numbers of NZMS (blue symbols), sites where NZMS were rare (green symbols) and sites where I found no NZMS (black symbols). Flow runs from east to west.

**Map of New Zealand Mudsnail Densities in Black Earth Creek May 2019**  
(Sites with small red dots not sampled)



## At Mazomanie, Lake Marion is Back and Wolf Run Trail Sees New Bridge Ahead

*Christopher Long - BECWA board member*

Through ups and downs in water levels, appreciation of the lower Black Earth Creek corridor at Mazomanie as a local and regional multi-use recreation destination continues to grow.

Lake Marion is, at last, a lake again. The Village of Mazomanie’s restoration of the 17-acre former mill pond, drained for renovation in 2014, is nearly complete with restocking of fish planned to begin this fall. Across the railroad tracks, Wolf Run Trail, twice closed by flood damage since last August’s historic rainfall, may soon see a long-term solution to a chronic wash-out area by the creek.

The Lake Marion project is one of three local outdoor recreational projects that resulted from the Wisconsin Department of Natural Resource’s 2012 decommissioning of the old dam on lower Black Earth Creek at Mazomanie that diverted water to fill the mill pond. Related projects were the re-meandering and restoration of the local part of the nationally renowned trout stream and construction of the Wolf Run Trail along the creek from downtown Mazomanie to Wisconsin Heights High School for year-around multi-recreational use.

In 2014 the Village of Mazomanie constructed a new high-capacity groundwater well adjacent to Lake Marion to replace Black Earth Creek as the lake’s new permanent water supply. Last year village contractors installed a new \$650,000 lakebed liner to fix a chronic problem of leakage from the manmade impoundment. Refilling the lake with 50 million gallons of well water to a maximum depth of 10 feet began in November 2018.

*Continued on page 7*

# Update on the State of the Fisheries in Black Earth Creek

*Dan Oele – Fisheries Biologist Wisconsin Department of Natural Resources*

August 2018 floods brought concerns about the status of the trout fishery in BEC. Robustly assessing pre/post trends while attributing detectable differences to an event like this is complicated and difficult. However, data from western Driftless brown trout streams indicates there was no measurable difference in catch rates in years pre or post flood; trout of all sizes and ages were able to ride out the storm. Closer to home in BEC, in 2019 the WDNR coincidentally focused on this watershed for trout assessments. (2018 was Sawmill/ Erickson in Green County; 2020 will be the Sugar River). This work just concluded with electrofishing surveys of 24 sites across the watershed. We also monitor the trout populations at 3 index stations that we survey every year and have long-term data to identify any trends. Although those data have not been thoroughly analyzed, here I share some preliminary assessments of interest to readers of this newsletter. After I analyze the data, this work will be detailed in a Comprehensive WDNR Fishery Report and posted on the WDNR website that you can download in early 2020.



**Recruitment effects:** The flooding last fall scoured many new gravel areas clean where trout prefer to make redds for spawning. However, my eyeball test suggests trout young-of-year production did not get a big bump this year. Therefore, I suspect that last year's flood did not dramatically improve trout recruitment this year. It is possible that there will be a lag effect of exposing gravel and rock beds that trout use for spawning several years down the road.

**Upstream – downstream trends over time:** Historically trout populations in BEC have been able to weather past flood waters. Areas where trout have maintained robust numbers still had

solid trout populations, but overall, the watershed has fewer trout in fewer locations compared to historical highs. In the most upstream areas on Low Road and Twin Valley Road we observed zero trout and more warm-water species like suckers, sunfish, and sticklebacks. Those areas are slow-moving, silty and sediment laden, lack cold-water spring complexes rendering the areas too warm for trout to persist. Further downstream at the Stagecoach Road crossing we observed mottled sculpins and modest numbers of brown trout ranging from 6-13" (16 trout in a 135-meter sample). The long-time brown trout stronghold in BEC begins around the WDNR fishery area near the Kwik Trip in Cross Plains, continues downstream through Zander Park and to HWY KP just west of Cross Plains. This area had baby trout 3" to adults 20" and everything in between. In Zander Park we handled 90 fish in 150 meters, nearly a trout every step. However, this was about half the catch rate from the 2018 survey and 300 fewer fish than the peak density observed in 2013. Downstream at Scherbel Road we caught 55 total brown trout (ranging from 3-20"), 26 sculpins, and 124 white suckers. Further west (downstream) the trout catch rate was lower, but those individuals approached trophy status (16-20"). Warm-water fish like white suckers, shorthead redhorse, creek chubs, northern pike, smallmouth bass were all observed downstream of South Valley Road. In general, areas closer to springs in Cross Plains have trout nursery areas and strong populations with many different sizes of fish present; whereas the downstream areas closer to Black Earth and Mazomanie have experienced more declines.

**WDNR management strategies:** WDNR is actively trying to boost trout numbers in those lower reaches showing the largest declines. We attribute declining catch rates in the lower reaches to: 1) Aging and degradation of historical investments in trout habitat (stream bank health, fish habitat structures lunkers/ root wads, overhead cover like trees and brush) resulting in a monotonous channel lacking depth, cover, and velocity features that trout need. The river at some stretches (e.g., near Park Street and South Valley Road) resembles a 'lazy river' with clean banks, or open sunny river with heavy aquatic vegetation and little diversity in depth. 2) The fish community is telling us that the lower reaches are not thermally suitable for trout, perhaps only supporting a few trout of above average size. Warm-water tolerant species like white suckers, smallmouth bass, redhorses, and even pike are routinely observed in these areas vs the cold-water critters and simpler fish community of trout and sculpins found upstream. If funding allows, I will

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be deploying temperature loggers to precisely determine the thermal qualities of the river from headwaters, tributaries, and lower stretches. My hope is we can improve the physical habitat, increase riparian buffers, add shade and woody cover, to steadily increase the trout abundances in BEC. We also recently changed the fishing regulation from a 12" max, 2 bag to an 18" min 1 bag from South Valley Road to HWY 14 in Mazomanie.

In addition to the habitat deficiencies, some of the declines in the last 5-10 years may be attributed to reducing stocking of BEC in recognition of the naturally reproducing population. Since it was classified as Class I trout water with naturally reproducing populations (vs Class II with limited reproduction and some stocking), WDNR has reduced the brown trout stocking rates. For example, in the late 1970's WDNR stocked ~ 5,000 brown trout annually; most recently (2016) we stocked 2,250 surplus brown trout in lower BEC that were extra hatchery products. There are no formal stocking plans in the future, although we have stocked surplus rainbows and some brood stock for

additional angling opportunities.

Tributaries: Improving the health of the tributaries (Brewery Creek, Garfoot Creek and Vermont Creek) will also improve the trout populations in the mainstem of BEC. Overall, I was disappointed in the status of the fishery and associated habitat in the tributaries. Brewery Creek held a fishable population of above average sized brown trout but lacked any young fish or spawning substrate. The majority of Garfoot Creek has been straightened, has become too wide and shallow, and lacks trout or the types of habitat they need (e.g. we observed yellow bullhead in one survey). Vermont Creek is in similar condition with a modest brown trout fishery throughout. Each of these tributaries suffer from some combination of sedimentation, eroding banks, channelization, lack of habitat for fish, lack of cover for fish, urbanization, and lack of riparian buffers. I plan to continue to invest Trout Stamp funds in habitat improvement projects along our WDNR owned lands and easements to improve the health of those systems.

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## Lake Marion - continued

"It's had the nickname 'Lake Murphy', after Murphy's Law, so we held off on high fives until it was clear the liner was doing its job. Then, with all the rain this spring and summer, we had to lower the lake level a foot to protect the shoreline," said Village Administrator Peter Huebner.

The village park at the lake is again open to the public for picnicking, walking the 1.3-mile shoreline, and wildlife viewing. Paddle and sail craft are allowed, from a public launch site at the south end of the lake adjacent to the pump house. Swimming and wading are not permitted because of possible damage to the lake liner.

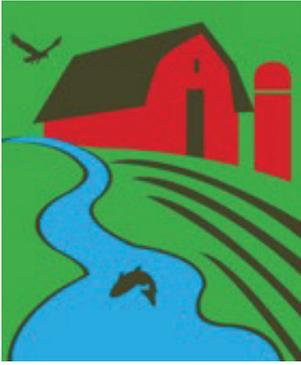
Replanting of aquatic vegetation is underway in preparation for adding bluegill, crappie, and bass beginning later this year. A handicapped fishing pier is maintained by the Wisconsin River Sportsmen's Club.

Wolf Run Association is working with Dane County Parks, Wisconsin Department of Natural Resources, and Groundswell Conservancy to replace a metal culvert on the trail frequently overrun by cropland runoff with a wooden bridge and rock-armored swale that will also protect the adjacent stream bank from erosion. WRA is seeking funds from WDNR and Dane County for the repairs. Strand Associates is the project engineer. Gateway to The Driftless is the project coordinator.



### Lake Marion is back again!

Christopher Long is also the Executive Director of *Gateway to The Driftless* ([www.gatewaytothedriftless.com](http://www.gatewaytothedriftless.com))



## Black Earth Creek Watershed Association

c/o Greg Hyer  
4296 County P  
Cross Plains, WI 53528

**To become a BECWA member or  
renew your membership**

Send your check to:

David Lucey  
7952 County Highway K  
Cross Plains, WI 53528

Lifetime Member - \$100 Business - \$50  
Watershed Patron - \$35  
Household - \$25 Basic - \$15

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## Update on the Cardinal-Hickory Transmission Line

*David Lucey – BECWA Board Member*



The Cardinal-Hickory Creek power transmission line, proposed by the American Transmission Company (ATC) to extend from Middleton to south of Dubuque, will pass through the Black Earth Creek Watershed, and either turn south at Hwy P toward Mount Horeb (“preferred alternative”), or north through the towns of Cross Plains and Vermont through Iowa County (the more environmentally harmful alternative according to Dane County’s assessment). Either way, the line will traverse over 100 miles of the Driftless Area with over 600 170-ft. towers, costing \$500 million, with Wisconsin’s share ~\$70 million. The ATC’s power to take over land along the route will affect almost 900 landowners.

A broad coalition of organizations has opposed the line (including BECWA, Dane and Iowa Counties, the Citizens Utility Board, the Ice Age Trail Alliance, the Driftless Area Land Conservancy (DALC), and the Wisconsin Wildlife Federation (WWF), Attorneys General of Michigan and Illinois), based primarily on its impact to the environment, questionable need and high cost.

Despite overwhelming public opposition also expressed by citizens at recent hearings held by the Public Service Commission (PSC), on August 20th all three commissioners announced their support of the project. A final decision by the PSC will be made in September. The project still needs to be approved by the US Fish and Wildlife Service and other entities having regulatory power. A legal team from the Environmental Law and Policy Center has been authorized to file appeals at appropriate times on behalf of their clients (DALC and WWF). Stay tuned for further developments on this important issue affecting the Black Earth Creek Watershed.

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