

Carlyle Lake Watershed - At a Glance

Carlyle Lake Watershed Ecosystem Partnership

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Newsletter Requiem – Maybe – Again

By Tony Pals

If this article looks slightly familiar, you have a good memory. We ran a similar article in the fall of 2003 when a previous C2000 grant to publish this newsletter ran out. We, of course, got another C2000 grant to do two more years of “At a Glance”. That grant, like previous ones, was for two years, with three newsletters per year. This is number three of the second year. So, again, without another grant (or other source of funding) this will be the last watershed newsletter. We have enjoyed putting them together and getting them to you. We hope they were informative and interesting.

We tried to cover topics on recreation, wildlife, and agriculture, and, since agriculture is our domain, we depended on other folks to get us articles on the other two. I would like to thank everyone who submitted those articles for the newsletter, especially Norma Hall, with the ACOE, who always seemed to come through with

lots of information on activities around the lake and in the watershed. By the way, for everyone with internet access, Karen has put all of the newsletters from this grant (including this one) on the district’s website at www.fayettecountyswcd.com so if you want to read past issues, they’re there. Also she put most of the Carlyle Lake Watershed Plan on that site, if you would like to peruse it. That brings me to a final point. If you would like us to seek funds to keep this newsletter going, you can contact Karen or me through that website. And you can let us know if you didn’t like the newsletter, and why. I can take it.

I’ve got a wife and an ex-wife. I’ve survived the teen years of four children. I’ve got two cats, a dog, and a grandson. And the only ones out of that whole bunch that haven’t given me criticism are the dog and the grandson. So don’t worry about hurting my feelings. If we don’t hear from you, thank you for your interest in Carlyle Lake Watershed.



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Depending on Soil

Della Moen, Earth Team Volunteer, NRCS/Stephenson Soil and Water Conservation District

Traveling into the countryside of Illinois you can see patches of colorful trees and acres of crops or their residue left after harvesting. One remarkable thing is that much of the growth that you see has happened in the short space of the five months since April. Another remarkable fact is that all of that plant life is supported by soil.

We are likely to forget about soil when trees leaf out and flowers, gardens, and crops keep it out of sight. Yet, soil is essential to all plant life and plant life is essential to all life. Soil is simply made up of different sized mineral particles (sand, silt, and clay), organic matter (dead plant and animal matter), and numerous

species of living organisms. Soil may all seem alike to us. But soil varies in quality and many of its properties can be changed by what we do with it.



Soil quality is how well soil does what we want it to do. People have different ideas of what they expect soil to do for them. But soil has some functions upon which everyone depends. Healthy soil gives us clean air and water, bountiful crops and forests, productive rangeland, diverse wildlife, and beautiful landscapes. USDA’s Natural Resources Conservation Service says that soil does all this by performing five essential functions:

- Regulating water. Soil helps control where rain, snowmelt, and irrigation water goes. Influenced by soil quality,

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Streambank Erosion Inventory
Taken from the Carlyle Lake Watershed Plan

Streamflows, overbank flows, unstable soil material, obstructions, unstable channel bottoms, livestock trampling, heavy equipment use or any combination of these causes sloughing of the streambank. Streambank erosion is a major concern because 100% of the sediment eroded enters the river channel. Streambank erosion has been estimated from a review of aerial photos.

An average of 2,000 tons per mile of unprotected streambank has been used for estimating streambank erosion in this report.

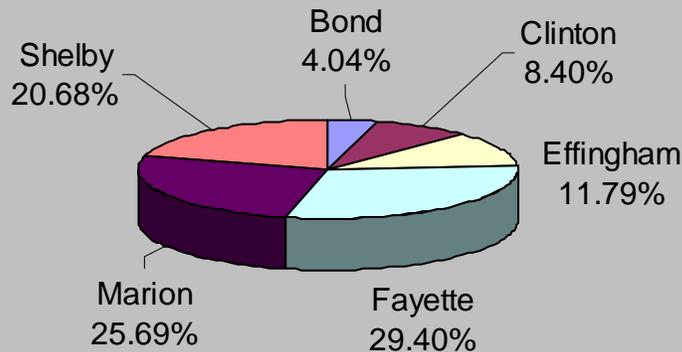
Some streambank erosion is expected in a natural river system. It is a normal component of the stream channel changing as it meanders across the flood plain. However, excessive streambank erosion leads to the degradation of adjoining bottomlands, the natural river environment and downstream water and lake facilities. Excessive erosion occurs when banks are unstable and too much water is delivered to the channel, either through a heavy watershed rainfall or through an upstream release from Lake Shelbyville.



Streambank Erosion

County	Streambank Erosion - 2000 tons/mile			
	Tons of Erosion	Percentage of Bank Erosion	Bare Channel (Miles)	Bank Erosion (Miles)
Bond	5,000	4.04%	3	2.5
Clinton	10,400	8.40%	2.1	5.2
Effingham	14,600	11.79%	3.1	7.3
Fayette	36,400	29.40%	79.4	18.2
Marion	31,800	25.69%	57	15.9
Shelby	25,600	20.68%	10	12.8
Totals	123,800	100.00%	154.6	61.9

Tons of Streambank Erosion by County



The estimated total unprotected stream miles in the Carlyle Lake Watershed is approximately 154.6 miles. This estimate is based on aerial photo review and local site review information. About 40%, 61.9 miles of the stream banks, need to have some stabilization, revegetation and protection.

Streambank erosion contributes 123,800 tons annually to the stream system.

SEDIMENTATION INVENTORY

Taken from the Carlyle Lake Watershed Plan

Stream channel dynamics affect how much sediment the river can carry at any specific point in the river basin. Sediment that reaches the stream channel from farmland, or is eroded from the streambank, moves down stream and creates problems in other segments of the Kaskaskia River and Carlyle Lake. A visible example of this problem can be seen in the upper reaches of the lake above the railroad berm.

A Sediment Delivery Rate (SDR) was applied to each type of erosion to calculate that portion that was “available for transport”. Only a portion of the sediment produced by soil erosion actually reaches a stream or transport system. Much of the sediment produced by sheet and rill erosion is deposited before entering the stream or drainage ditch system. Conversely, almost all of the sediment produced by streambank erosion enters a watercourse directly.

A Sediment Transport Factor accounts for the variation in the ability of streams and their tributaries to transport sediment. Generally, as a watershed becomes larger, the stream becomes more meandering. As the stream becomes more meandering, its gradient flattens and the ability to transport sediment is significantly reduced. However, in the Carlyle Lake Watershed, the water release from Lake Shelbyville impacts the volume and velocity of water available for sediment transport. In many cases the volume and velocity are both higher and last for longer periods of time than a natural uncontrolled stream, adding to the ability of the river to transport sediment to the lake. Also, East Fork Kaskaskia River and Hurricane Creek enter directly into Carlyle Lake. Their sediment transport factor and the sediment transport factor for streambank erosion are considered Chart 1.0 (chart below).

ANNUAL SEDIMENT DELIVERY TO CARLYLE LAKE

HU Name	Sediment Yield
Big Creek - 07140202020	72,599
Richland Creek - 07140201090	33,025
Robinson Creek - 07140201080	126,989
Kaskaskia River MS (Shelbyville Dam to Becks Creek) - 07140201100	45,860
Becks Creek - 07140201110	79,749
Kaskaskia River MS (Becks Creek to Carlyle Dam) - 07140202010	179,037
Ramsey Creek - 07140202030	25,643
Old Hickory Creek - 07140202040	23,655
Total:	586,557
Sediment Transport Factor:	0.4
	234,623
East Kaskaskia River - 07140202060	131,070
Hurricane Creek - 07140202050	56,976
Streambank Erosion	123,800
Tons in the LAKE	546,469

In the Carlyle Lake Watershed approximately 586,557 tons of sediment enters the stream system through the Kaskaskia River on an annual basis. Of this total 40%, or 234,623 tons, ends up as sediment that is available for transport downstream. Additionally, the East Fork Kaskaskia River contributes 131,070 tons of sediment to Carlyle Lake and Hurricane Creek contributes approximately 56,976 tons of sediment to Carlyle Lake annually. **Streambank erosion** contributes 123,800 tons annually, directly to the lake.

Summary

Erosion is a concern on every land use within the river basin, because of its interrelated impacts on soil productivity, water quality and aquatic habitat.

Gully erosion on cropland and other land is in need of treatment and contributes to the overall sediment problem. Forestland and pastureland contribute relatively little to the overall erosion, sedimentation and water quality protection problems in the river basin but would still benefit from improved management.

The sediment load carried by the stream is a major pollutant and contributes to the degradation of water quality, aquatic habitat and recreational aspects of the Carlyle Lake. Erosion contributes approximately 546,469 tons annually to the sediment problems in Carlyle Lake.

The stated mission of the Carlyle Lake Watershed Ecosystem Partnership is: **“To protect, enhance and restore the natural resources and habitat of the Carlyle Lake Watershed”**

Overwhelmed with Acronyms? Here’s some help...

SWCD – Soil and Water Conservation District

CLA – Carlyle Lake Association

NRCS – Natural Resources Conservation Service

ACOE – Army Corps of Engineers

IDNR – Illinois Department of Natural Resources

C-2000 – Conservation 2000 Grant Program

KWA - Kaskaskia Watershed Association

CLEP - Carlyle Lake Ecosystem Partnership

QU - Quail Unlimited

NWTF - National Wild Turkey Federation

WRDA - Water Resource Development Act

LKSI - Lower Kaskaskia Stakeholders, Inc.

Carlyle Lake
Watershed – At a Glance
C/o FAYETTE COUNTY SWCD
301 South Third Street
Vandalia, IL 62471
618-283-1095, Ext. 3
Fax: 618-283-4962

Non Profit Organization
Permit #53
Vandalia, IL

Label Box

To contact one of the Soil and Water Conservation Districts, please call:
Bond County SWCD
618-664-0555, ext. 3
Clinton County SWCD
618-526-7919, ext. 3
Effingham County SWCD
217-342-6855, ext. 3
Fayette County SWCD
618-283-1095, ext. 3
Marion County SWCD
618-548-1337, ext. 3
Shelby County SWCD
217-774-5564, ext. 3

Depending on Soil

Della Moen, Earth Team Volunteer, NRCS/Stephenson Soil and Water Conservation District

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- water with the substances it dissolves runs off over the land or into and through the soil.
- Sustaining plant and animal life. Soil determines the diversity and productivity of plants and animals.
- Filtering potential pollutants. The minerals and microbes in soil are responsible for filtering, buffering, degrading, immobilizing, and detoxifying organic and inorganic materials, including industrial and municipal by-products and atmospheric deposits.
- Cycling nutrients. Carbon, nitrogen, phosphorus, and many other nutrients are stored, transformed, and cycled through soil.



- Supporting structures. Buildings need stable soil for support.

Beyond their differing inherent natural abilities, all soils have properties that can be changed depending on how they are managed. You, as land manager, must determine what practices can be used to maintain the soil quality needed for sustaining the plants you enjoy and on which you depend. Research continues focused on understanding soil quality and management practices that improve soil quality. More information about managing for soil quality can be found at <http://soils.usda.gov/sqi/>. Your Soil and

Water Conservation District can put you in touch with the most recent research about soil.

Whether you raise lawns, trees, houseplants, row crops or forage, or flowers and garden vegetables, soil quality is yours to manage to get the most of what you want from your soil.

Soil & Water Conservation Districts do not discriminate against any person on the basis of race, color, national origin, religion, sexual orientation, gender, age, marital status, veteran status, or disability. This policy covers all programs, services, and procedures of the district, including employment.

