Wisconsin Watersheds

Bass Creek

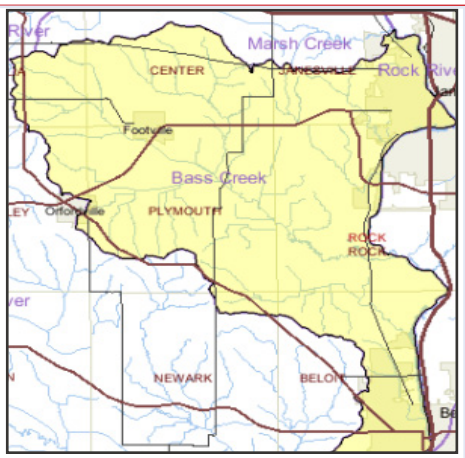
2010 Water Quality Management Plan Update

Lower Rock River Basin, Wisconsin

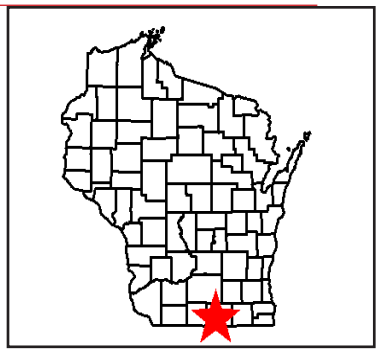
August 2010

The Bass Creek Watershed (109 Square miles) lies within Rock County, west of and adjacent to the Rock River and stretching from the state line at Beloit to just above Janesville (Map 1).

While predominately agricultural, there are significant urban areas at Janesville and Beloit. Water resources in the watershed consist of approximately 210 stream miles, 14 lakes for 91 lake acres, and 2,400 wetland acres in this watershed.



Map 1: Bass Creek Watershed



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Population and Land Use

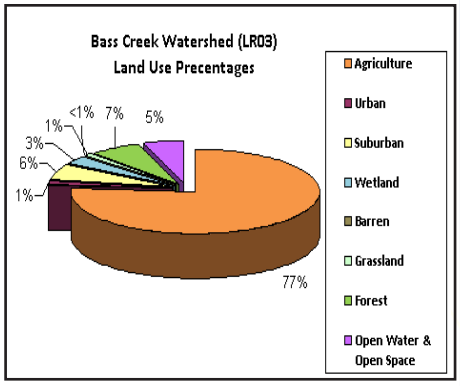


Figure 1: Land Use (2001)

Agriculture is the dominant land use in the watershed, encompassing 76% of the landscape (Figure 1). Other land uses and coverage in the watershed include urban/suburban (8%), forests (7%), open water/open space (5%), and wetlands (3%). The remaining 1% (approximately) is barren and grasslands. While predominately agricultural, there are significant urban areas at Janesville and Beloit. The western side of the city of Beloit is at the mouth of this watershed. In the past the city of Beloit has experienced flooding problems on its west side and has recently designed and installed a stormwater detention wetland system to abate this problem.

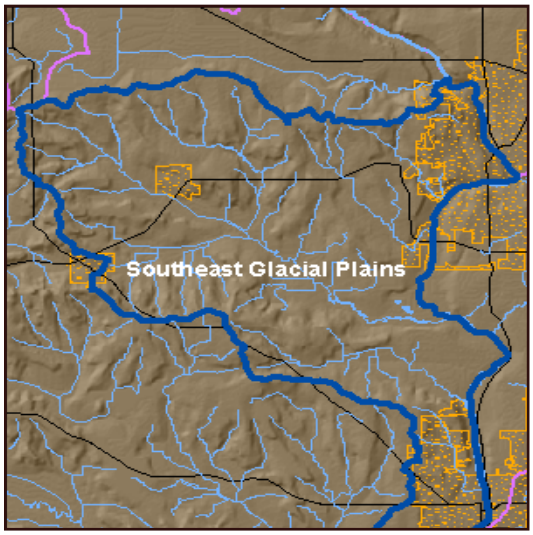
Cropland soil loss and barnyard runoff contribute to water quality issues. The Bass Creek watershed was designated a priority area for USDA-Environmental Quality Incentive Program (EQIP) and the state's Priority Watershed Program. Both programs have since closed. USDA provided funding to landowners interested in the implementation of water quality projects, such as barnyard and streambank improvements.

Hydrology

The Bass Creek Watershed is a small tributary dominant feature is Shawano Lake, which is interconnected to a series of inlet and outlet tributaries. Map 2 shows the results of stream model based natural communities in the watershed. The streams are differentiated by model results depicting flow and temperature, resulting in an estimate of 4.7 miles of cold-water streams, 1.8 miles of cool (cold transition) headwaters, 14.7 miles of cool (warm transition) headwaters, 2.48 miles of cool (warm transition) mainstem streams, 11.5 miles of macroinvertebrate streams, 4.2 miles of warm headwaters, 3 miles of Warm mainstem streams, and 30 miles where no classification is determined (likely due to the small size of the waters).

Ecological Landscapes

The Southeast Glacial Plains Ecological Landscape (Map 2) makes up the bulk of the non-coastal land area in southeast Wisconsin. This Ecological Landscape is made up of glacial till plains and moraines. Most of this Ecological Landscape is composed of glacial materials deposited during the Wisconsin Ice Age, but the southwest portion consists of older, pre-Wisconsin till with a more dissected topography. Soils are lime-rich tills overlain in most areas by a silt-loam loess cap. Agricultural and residential interests throughout the landscape have significantly altered the historical vegetation. Most of the rare natural communities that remain are associated with large moraines or in areas where the Niagara Escarpment occurs close to the surface.



Map 2: Ecological Landscapes

Historically, vegetation in the Southeast Glacial Plains consisted of a mix of prairie, oak forests and savanna, and maple-basswood forests. Wet-mesic prairies, southern sedge meadows, emergent marshes, and calcareous fens were found in lower portions of the Landscape. End moraines and drumlins supported savannas and forests. Agricultural and urban land use practices have drastically changed the land cover of the Southeast Glacial Plains since Euro-American settlement. The current vegetation is primarily agricultural cropland. Remaining forests occupy only about 10% of the land area and consist of maple-basswood, lowland hardwoods, and oak. No large mesic forests exist today except on the Kettle Interlobate Moraine which has topography too rugged for agriculture. Some existing forest patches that were formerly savannas have succeeded to hardwood forest due to fire suppression.

Historical Note

The Village of Footville is located in the Bass Creek watershed in Rock County. Ezra Foot, founder of Footville, came to the area as an agent for Eastern land speculators in 1845. A local farmer and school teacher, Julius Gilbert, helped Foot plat the village in 1854 in anticipation of the arrival of the Beloit-Madison Railroad. Because of financial difficulties, the line terminated for several years at Footville, making it the transportation link with area farmers for grain exports to Chicago and Milwaukee. The Madison stage brought travelers going south from Madison, Evansville and Magnolia to the depot, until the rail advanced to Madison in 1864.

Illustration provided by the Village of Footville at http://www.footvillewis.net

This transportation link provided the impetus for development of farm related enterprises in Footville, culminating in the growth of the dairy industry from small "cottage industries" in cheese and butter making to the building of the condensery in 1912. A market was created for 300,000 pounds of milk per day for the area farmers. In 1927, the Pet Milk Company purchased the condenser and enlarged the operation to over 100 employees. The plant closed in 1957 and in 1963 the Triangle Conduit & Cable Company purchased the building for truck and rail service.

The Footville Bank was constructed in 1909, and was the first bank in Footville. The bank was famous for giving out suckers to all 'good' kids. The first bank robbery occurred in 1965, but the robber was caught in a cornfield after a car chase that ran out of gas. The bank was closed in 1975 after 65 years at the same location and was relocated into a bigger building closer to Hwy 11. The Mid America Bank resides there now and still has a box of suckers for kids of all ages to help themselves. The Old Footville Bank building is now a historical site and is where the historical society is located.

Additional Information

WDNR's Heritage Resources Database indicates that the following water-dependent endangered, threatened or special concern species and/or communities have been sighted in this watershed within the last 20 years (Table 1 below).

Table 1. Endangered, Threatened, and Special Concern Species.

Species Common Name	Latin Name	Habitat
redfin shiner	*Lythrurus Umbratilis*	Bass Creek
blanding's turtle	*Emydoidea Blandingii*	Turtle Creek Wildlife Area
queen snake	*Regina Septemvittata*	Turtle Creek
ozark minnow	*Notropis Nubilus*	Little Turtle Creek, Ladd Creek, Darien Creek
slender madtom	*Noturus Exilis*	Darien Creek
Plant Community	Location	Indicator Speices
Wet-Mesic Prairie	Orfordville Railroad Prairie	prairie cord grass, bluejoint, big bluestem, blazing star, flowering spurge, Michigan lily, cowbane, etc.
Oak Opening, Oak Savanna	Orfordville Oaks	bur oak, black oak, red cedar, shagbark hickory
Wet-Mesic Prairie	Kessler Railroad Prairie	> 100 native plant species
Southern Sedge Meadow	Kessler Railroad Prairie	big and little bluestem, prairie dropseed, indian grass, cord grass, some fen species
Southern Dry Forest	Hanover Woods	black oak, burr oak, white oak, black cherry
Wet Prairie	Tracy Meadows	diverse vegetation, relatively undisturbed
Dry Prairie	Afton Railroad Prairie	silky aster, prairie coreopsis, Ohio spiderwort, leadplant, narrow-leaved puccoon
Southern Mesic Forest	Bill Hill Park	sugar maple, northern red oak, spring beauty, dutchman's breeches, yellow lady's slipper, white trout lily

Watershed Condition

Priority Issues

Priority issues for this watershed include the quantity and quality of agricultural runoff reaching surface waters and groundwater, and its impact on drinking water and surface water quality. Additional issues for this watershed include invasion by non-native invasive species, loss of wetlands and the need for riparian vegetation buffers, runoff from urban areas, and the lack of water quality and biological assessment data.

Water Quality Goals

The Rock County Land and Water Resource Management Plan outlines major goals and objectives that will be used to direct the delivery of soil and water conservation programming in Rock County. The goals and objectives that are closely tied to Education and Outreach are summarized, below.

1. Improve and Protect Groundwater Quality
   a. Increase public awareness of groundwater quality
   b. Increase the use of nutrient management planning through training programs for farmers
   c. Include well abandonment as part of a groundwater education program

2. Increase Conservation Easements for Farmland Preservation
   a. Increase the awareness of farmland preservation needs through educational programs, partnerships and the development and distribution of educational factsheets
   b. Promote current farmland preservation programs and develop a long-range plan to protect prime farmland

3. Improve and Protect Surface Water Quality
   a. Develop and foster partnerships to deliver surface-water related educational programs, including Agricultural and Household Clean Sweep Programs and promoting CREP.
   b. Implement a nutrient management training program for farmers.
   c. Develop and conduct educational programs aimed at reducing polluted runoff and sediment delivery to surface waters, including promoting implementation of NR 151 and understanding and using local policies and regulations

4. Improve and Protect Soil Quality
   a. Develop and conduct a soil quality and soil erosion public education program to increase the use of conservation tillage and grassed waterways, and incease implementation of NR 151 and other policies and regulations.
   b. Reduce soil erosion on construction sites through the development and implementation of a training program on proper installation of conservation practices for prospective homeowners, builders, contractors, and developers
   c. Promote programs and practices that control soil erosion on stream banks

5. Improve and Protect Habitat Quality
   a. Increase awareness of the importance of preservation and restoration of habitat areas, including use of wetlands
   b. Provide educational programs that promote tree and prairie planting and sustainable woodlands management
   c. Promote programs related to the restoration of in-stream habitat, stream corridor restoration and the use of buffers to improve wildlife habitat.
   d. Provide informational materials to the public on threatened and endangered species and promote programs for restoring and preserving habitat in critical areas
   e. Provide informational materials to the public on invasive species
   f. Provide informational materials to the public on native species of grasses, forbs, shrubs and trees and promote the restoration of native plant and grassland communities. Promote correct placement of communities on the landscape to improve habitat and travel corridors for wildlife.

Overall Condition

Habitat surveys of portions of the watershed were conducted in May 1996. Two reaches of Bass Creek were surveyed and two portions of Stevens Creek were evaluated. The surveys indicated fair to poor streambank habitat with moderate to severe erosion in some areas, possibly due to streambank pasturing and degradation of water quantity and quality in upstream reaches. This watershed ranked high for funding under the state's priority watershed program and is ranked as a second priority for soil loss in Rock County.

The Rock County Land Conservation Department staff estimate about 3.4 miles of streambank are eroding. In the watershed, more than 59% of the cropland exceeds an average soil loss of about 7.5-8 tons/acre/year. There are 37 barnyards ranked "high" and 74 barnyards ranked "medium" by the barnyard ranking criteria used in the Turtle Creek priority watershed. Most of the problematic barnyards are located along Bass Creek and tributary headwaters in the north and west portions of the watershed. This watershed has a high participation level in the Farmland Preservation Program with about 72% of eligible land enrolled in the program.

Fish Consumption Advice

Specific fish advice issued for the Rock River adjoining the Bass Creek Watershed has been removed. There are no specific fish consumption advisories for waters in this watershed at this time.

Point and Nonpoint Sources

There are no point source discharges to either Stevens Creek or Markham Creek. Sedimentation from stream bank erosion and runoff from agricultural practices within the watersheds are the suspected cause of habitat degradation in Stevens

Creek and Markham Creek. Fine sediments covering the stream substrate reduce suitable habitat for fish and other biological communities by filling in pools and reducing available cover for juvenile and adult fish. Sedimentation of riffle areas compromises reproductive success of fish communities by covering gravel substrate necessary for spawning conditions. The filling in of riffle areas also affects the fish communities' food source, macroinvertebrates, which have difficulty thriving in areas with predominantly sand substrate as opposed to a substrate composed of gravel, cobble/rubble, and sand mixture. In addition, sedimentation can increase turbidity in the water column, causing reduced light penetration necessary for photosynthesis in aquatic plants, and reduced feeding capacity of aquatic macroinvertebrates due to clogged gill surfaces. Sedimentation of the substrate can also cause an increase in other contaminant levels, which are attached to sediment particles and transported into the stream during runoff events.

River and Stream Condition

Bass Creek, Stevens Creek, Markham Creek, and Fisher Creek are the only named streams in this watershed.

Bass Creek is classified as a warm water sport fishery, consisting of forage fish and some smallmouth bass, particularly in its lower end. A fish survey of this creek identified northern pike; stoneroller; carp; bigmouth, common, spotfin, sand and redfin shiners; southern redbelly and blacknose dace; central, bluntnose, brassy, and fathead minnows; creek chub; white and northern hog suckers; brook stickleback; green sunfish; fantail, johnny, banded, and backside darters; and mottled sculpin. The creek flows through a predominantly agricultural area in its middle and upper portions. The lower reach flows through a wooded floodplain area. Much of the middle and upper portions have been ditched and straightened and there is a minimal buffer between cultivated fields and the streambank. Two small wastewater treatment plants discharge to Bass Creek. A dam at Afton obstructs fish migration up and down Bass Creek. The dam is in very poor condition. Local residents want to retain the dam and its impoundment, but the costs of dam repair, including the required fish migration structures, is beyond their means. From an environmental standpoint, the best thing for water quality and fisheries of Bass Creek would be the removal of the dam.

A 1996 habitat survey that included two stretches of this creek showed cropland on either side of the stream up to the stream banks, drain tiles on agricultural fields, feeding the stream and contributing to high flows, and barnyard runoff and cropland erosion degrading the stream. At the Old Highway 11 crossing, the stream's habitat was rated as "good to fair" and at the Dorner Road crossing, habitat was rated as "fair." There are springs and seeps in the area and as a result the water is usually clear. The Rock County Land Conservation Department believes best management practices would work well in this watershed because the acceptance of conservation practices in this area has been good in the past. About 3.4 miles of streambank have an erosion problem. Bass Creek has been designated an Exceptional Resource Water under the state's antidegradation program as it supports the redfin shiner, a fish on the state's threatened and endangered species list.

The mid and upper sections of Bass Creek are in a drainage district. Bass Creek watershed has a mid rating for phosphorus loading (0.398-0.617 lbs/acre/year) and a medium rating for sediment delivery (0.09 – 0.13 tons/acre/year).

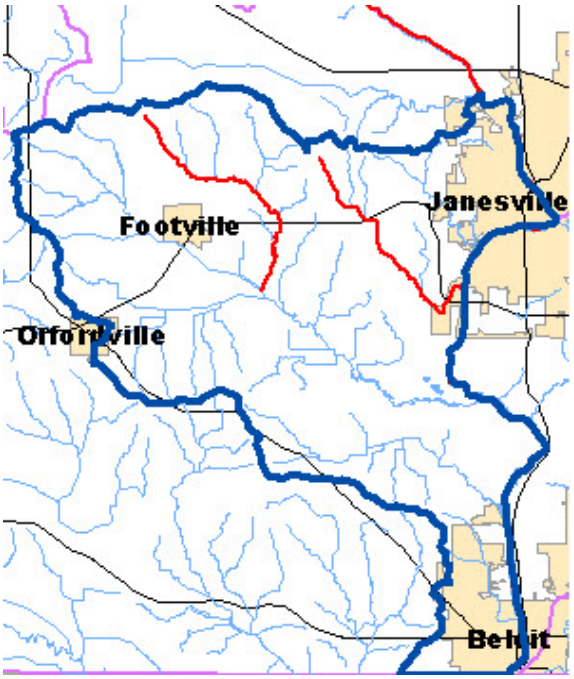
Stevens Creek is an eight-mile stream in west central Rock County that flows southeast before reaching Bass Creek near Hanover, Wisconsin. It has a gradient of 14.5 feet per mile and a drainage area of 16 square miles. Stevens Creek is listed as having the potential to support a cold-water fish community for its entire length, but is currently supporting a warm water forage fishery. Land use in the watershed is dominated by agriculture, particularly cash grain and pasturing.
The Lower Rock River Water Quality Management Plan of 2001 noted that the water quality of Stevens Creek is affected by cropland erosion, barnyard runoff, and streambank erosion. Habitat surveys dating back to 1996 have been conducted to better characterize substrate and in-stream habitat. A May 1996 habitat evaluation characterized the stream's habitat at Mineral Point Road as "poor". Twenty cattle were observed standing in the stream. At this time, the stream's habitat at the

Rock River, 2010. Photo by Jeff Margeneau.

Snyder Road crossing was "poor".

WDNR staff conducted habitat surveys in August of 2004 using the current habitat assessment tool for wadeable streams for two locations on Stevens Creek (Map 3). Both locations indicated "fair" substrate conditions. WDNR rapid habitat assessments (Joe Ball Habitat Assessments) at 4 locations in Steven's Creek indicated similar conditions; with 3 out of the 4 areas having "fair" conditions and one was considered "poor."

Additional biological data collected includes fish surveys and macroinvertebrate surveys conducted between 1996 and 2004. Water chemistry data were collected by WNDR between the years 2004 and 2005. Parameters measured include total suspended solids (TSS), total phosphorus, total dissolved phosphorus, total kjeldahl nitrogen, ammonia, temperature, dissolved oxygen, pH, and specific conductivity. Continuous daily stream flow was measured between 2004 and 2005 in cooperation with the United States Geological Survey (USGS).



Map 3. Impaired Waters in the Bass Creek Watershed.

Markham Creek is a five-mile stream located in west central Rock County that flows southeast before reaching the Lower Rock River near Janesville, Wisconsin. It has a moderate gradient of 15.3 feet per mile and drains an area of approximately eight square miles. Markham Creek is designated as having the potential to support a warm water sport fishery for its entire length, but is currently supporting a warm water forage fishery.

Land use in the watershed is dominated by two primary agricultural practices: row cropping and grass pasture. In many cases, these agricultural practices occur adjacent to the stream banks, causing immediate runoff to the stream. This is especially evident during high precipitation or snowmelt events. In upcoming years more residential land use is expected as recent development from the city of Janesville is expanding into the south east corner of the watershed.

WDNR staff conducted habitat surveys in August of 2004 using the current habitat assessment tool for wadeable streams for two locations on Markham Creek. At the Highway D location substrate was considered "fair." O'Leary Road stream habitat had extensive (>60%) fines in pools, riffles, and runs. This is considered "poor" according to WDNR habitat rating guidelines. WDNR rapid habitat assessments (Joe Ball Habitat Assessment) at 3 locations in Markham Creek indicated similar conditions, with 2 of the areas displaying "fair" conditions and one "poor."

Fish and macroinvertebrate data were collected between the years of 1992-2004. Water chemistry data was collected by WNDR during 2004 and 2005. Parameters measured include total suspended solids (TSS), total phosphorus, total dissolved phosphorus, total kjeldahl nitrogen, ammonia, temperature, dissolved oxygen, pH, and specific conductivity. Continuous daily stream flow was measured between 2004 and 2005 in cooperation with the United States Geological Survey (USGS).

Lake Health

There are 14 lakes (13 unnamed, 1 named) in the watershed, for a total of 91 lake acres. The named lake is Afton Gravel Pit, which supports a fishery of bass, pike, and pan fish (Table 2).

Afton Gravel Pit

Table 2 - Afton Gravel Pit

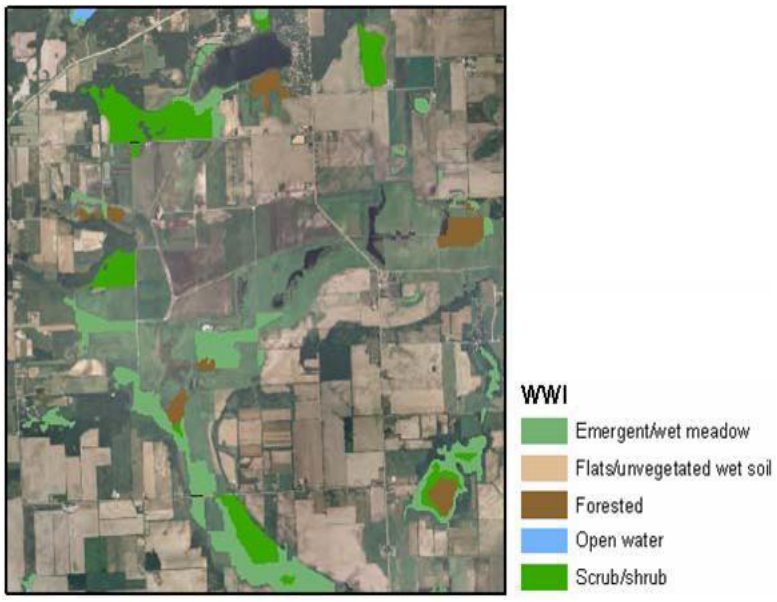
Stream Name	Acres	Issues	Fish
Afton Gravel Pits	22	Nonpoint Sources, Habitat, Access	Pike, bass panfish

Wetland Health

There is little to no data on Bass Creek's wetlands; however, wetland data does exist for the Rock River Basin (that which Bass Creek is part of). The following information comes from the *Rock River Basin: Mapping its Potentially Restorable Wetlands report (2008).*

Historically, the Rock River Basin had about 632,297 acres of wetlands in presettlement times (Map 4). Of those, 270,667 acres, or 42.8%, have been lost due to agricultural, residential and transportation development (Map 5). This coarse analysis shows that 87.6% of the lost wetland acres in the Rock River Basin have some potential to be restored. Potentially Restorable Wetlands (PRWs) emerge as areas that have favorable soil conditions, compatible land uses, and are not

Map 4. Original wetlands. Lost wetlands are defined as original but no longer remaining.

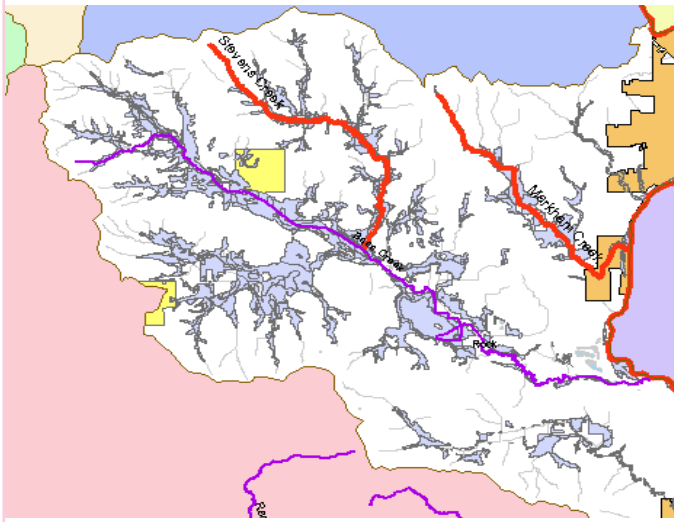


Map 5. The Wisconsin Wetland Inventory (WWI) layer displays the location of remaining wetlands.

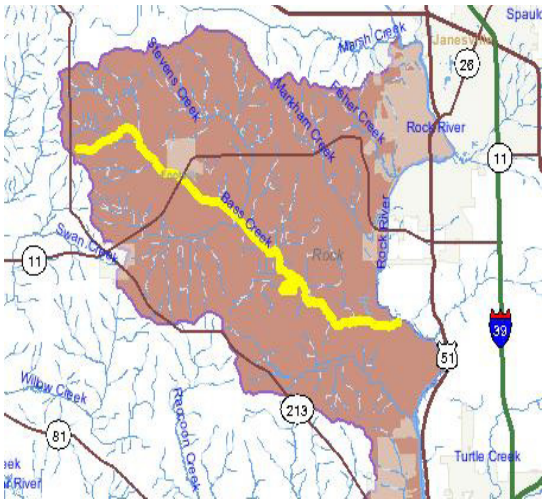
Map 6. Potentially restorable wetlands.

Potentially restorable wetlands in Bass Creek Watershed specifically are displayed below (Map 7).

Map 7. Potentially Restorable Wetlands in the Bass Creek Watershed.



Map 8. Bass Creek, Exceptional Resource Water



Waters of Note:

Trout Waters

There are no classified trout waters in this watershed.

Outstanding and Exceptional Resource Waters

Bass Creek is the only Exceptional Resource Water located in the Bass Creek Watershed (Table 3, Map 8).

Table 3 Exceptional Resource Waters in Bass Creek Watershed

Name	WBIC	ORW/ERW	Start Mile	End Mile	Code Reference	County
Bass Creek	795800	ERW	0	22	102.11(1)(d)28	Rock

Impaired Waters

The Wisconsin Department of Natural Resources (WDNR) placed the entire lengths of Stevens Creek and Markham Creek on the state of Wisconsin's 2004 303(d) impaired waters list due to degraded habitat caused by excessive sedimentation (Table 4).

Table 4. Impaired Waters

Local Waterbody Name	Start Mile	End Mile	Impaired Water Category	Pollutants	Impair-ments	Counties
Stevens Creek	0	8.35	NPS	Sediment/Total Suspended Solids	Degraded Habitat	Rock
Markham Creek	0	7.31	NPS	Sediment/Total Suspended Solids	Degraded Habitat	Rock

Stevens Creek and Markham Creek are not supporting their codified uses. The existing use for both Stevens and Markham Creeks is a warm water forage fish community (WWFF). Biotic integrity scores for fish and macroinvertebrate communities are expected to increase as measures are taken to reduce sedimentation and embeddedness of the substrate in Stevens Creek and Markham Creek.

The DNR conducted a preliminary TMDL survey and draft report on both watersheds in 2002-2004. The report is available online at: http://dnr.wi.gov/org/water/wm/wqs/303d/DraftTMDLs/StevensMarkhamTMDL7_25.pdf .

Both streams have been designated priority areas for Rock County Land and Water Resource Management Plan activities.

Watershed Actions

Projects and Grants
Grants

NPS Grant Urban Nonpoint-Stormwater Planning 01/01/2007 Complete

Town Of Beloit: Rock Co Towns Joint Planning: cost-share development of storm water plans for the Rock County towns of Beloit, Janesville, Harmony, Rock & Turtle.

River Grant River Planning Grant 07/01/2005 Complete

Rock River Coalition, Inc: Rain Garden In Every Community: worked primarily in areas where rain garden and storm water education had not yet occurred. Rain gardens were installed at schools or other community locations in eight basin communities and were highly visible. Students and community groups developed the rain gardens. The rain gardens were expected to increase public involvement in local community decision- making by raising awareness of environmental issues facing the Rock River Basin. A full description of the project goal and objectives are in the grant application, which is a part of the grant application.

River Grant River Planning Grant 07/01/2005 Complete

Rock River Coalition, Inc: River Friendly Cities: The project goal was to improve/protect water quality by promoting urban stormwater management through a program to recognize communities that conduct a stormwater management program that meets performance standards. The objectives were to: organize a partnership of stakeholders; explore what has been and is being done currently to promote urban stormwater management; assess interest and value for developing such a project; and, develop a project proposal and seek funding through grants to implement the program. A full description of the project goal and objectives are in the grant application, which was a part of the grant application.

NPS Grant Urban Nonpoint-Stormwater Planning 09/18/2003 Complete

City Of Beloit: Utility District Evaluation & Implementation: cost-share at 70% analysis, development & implementation of a stormwater management utility district.

River Grant River Planning Grant 07/01/2003 Complete

Rock River Coalition, Inc: Rock River Basin Shoreline Restoration Project: The Rock River Coalition provided assistance and direction to local municipalities in order to stabilize and restore 12 critical shoreline areas within the Rock River Basin. Project deliverables included: restoring a native shoreline to provide a natural habitat for wildlife, controlling erosion due to fluctuating water levels, creating a buffer strip along the parkland, education outreach, including local residents with hands on involvement for river protection, creating additional green space, minimizing soil loss, and controlling surface water runoff. A full description of project scope and deliverables is available in the grant application, which was part of this agreement. The DNR was provided with both a paper copy and an electronic copy of the final report. Information was disseminated to the public as described in the grant application.

River Grant River Planning Grant 07/01/2003 Complete

Rock River Coalition, Inc: Citizen Monitoring: Rock River Coalition continued the expansion and institutionalization of the Rock River Basin Citizen Monitoring Program so that the program could increase and train a number of individual monitors, schools and youth groups. Project deliverables included the annual 'Confluence 'conference, interenet database with the collect river data, and quality assurance and quality control techniques. A full description of project scope and deliverables is available in the grant application, which is part of this agreement. The DNR was provided with both a paper copy and an electronic copy of the final report. Information will was disseminated to the public as described in the grant application.

River Grant River Planning Grant 07/01/2001 Complete

Rock River Headwaters, Inc: Organization Development & Outreach Coordinator: Rock River Headwaters increased organizational development along with creating effective community-based regional watershed planning and management. Project deliverables included a fund raising strategy, a public information and education plan, and a public engagement plan. A full description of project scope and deliverables is available in the grant application, which was part of this agreement. The DNR was provided with both a paper copy and an electronic copy of the final report. Information was disseminated to the public as described in the grant application

River Grant River Planning Grant 04/01/2000 Complete

Rock River Coalition, Inc: Corporate Outreach: Forming New Partnerships In The Rock River Basin: The Rock River Colition, Inc. generated a strategy for developing business and corporate involvement with the Coalition to protect river quality and increase cooperation with businesses and industries. It included: development of promotional materials for this strategy, development of a business needs assessment survey and a business contact strategy, work with UWEX CNRED staff to implement this stategy on a pilot basis. A full description of the project scope and deliverables is available in the grant application, which was a part of this agreement. The DNR was provided with both a paper copy and an electronic copy of the final report. Information was disseminated to the public as described in the grant application.

River Grant River Planning Grant
10/18/2000 Complete

Rock River Coalition, Inc: Rock River Corporate Outreach: New Partnership Implementation: The Rock River Coalition implemented the business outreach strategic plan that was developed in phase one of this project. Specifically:

1) hire a project coordinator,

2) activate the business outreach plan,

3) develop a Power Point and/or other presentations for businesses and industries,

4) develop a menu of activities for business involvement and protocols for implementing them,

5) contact 20 businesses per month,

6) establish 5, on the ground environmental protection projects with at least one on an ERW or ORW,

Markham Creek, Bass Creek Watershed. WDNR Photo.

7) host roundtables or training workshops for basin businesses and business associations with potential broadcast over local cable channels,

8) increase corporate sponsorship of the Rock River Coalition by 70%. A full description of the project scope and deliverables is available in the grant application, which was part of this agreement.

Projects

- Watershed Program River Monitoring is being conducted to comply with the Clean Water Act implementation. Activities include monitoring for water quality standards, use designations, permit issuance and compliance, assessments and impaired water management.
- Fisheries projects include a wide variety of "baseline" monitoring and targeted fieldwork to gain specific knowledge related to Wisconsin's fish communities.
- In close cooperation with UW Extension and Wisconsin Sea Grant, education efforts focus on working with resource professionals and citizens statewide to teach boaters, anglers, and other water users how to prevent transporting aquatic invasive species when moving their boats. Additional initiatives include monitoring and control programs.
- Macroinvertebrate analyses is continually being conducted by the University of Wisconsin-Stevens Point for taxonomic analysis for specific projects.

Monitoring

The Citizen Lake Monitoring Network, the core of the Wisconsin Lakes Partnership, involves over 1000 citizen volunteers statewide. The goals are to collect high quality data, to educate and empower volunteers, and to share this data and knowledge. Volunteers measure water clarity, using the Secchi Disk method, as an indicator of water quality. This information is then used to determine the lakes trophic state. Volunteers may also collect chemistry, temperature, and dissolved oxygen data, as well as identify and map plants, watch for the first appearance of Eurasian Water Milfoil near boat landings, or or alert officials about zebra mussel invasions on Wisconsin lakes. Stream water quality monitoring, covering primarily biological, chemical, and habitat related monitoring, has been completed (2006) to determine ambient conditions at "pour point" locations for the south central region watersheds.

TMDL monitoring has been conducted and completed on Markham Creek and Stevens Creek. Monitoring on Markham Creek was completed in 2004; monitoring on Stevens Creek was completed in 2006.

The WDNR intends to monitor Stevens Creek and Markham Creek based on the rate of implementation of the TMDLs. Monitoring for Total Suspended Solids will continue until it is deemed that the streams have responded to the point where they are meeting their potential uses or until funding for these studies are discontinued. In addition, the streams will be monitored on a five-to six-year interval as part of a baseline monitoring strategy to assess temporary conditions and note trends in overall stream quality. The monitoring will consist of metrics contained in WDNR's baseline protocol for wadeable streams, such as the Index of Biotic Integrity (IBI), the Hilsenhoff Biotic Index (HBI), the current habitat assessment tool, and sampling of water quality parameters at a subset of sites.

Recommendations

- Future enforcement of non-point source performance standards and prohibitions will likely take place in Stevens Creek and Markham Creek watersheds. It is also anticipated that regulatory agricultural and non-agricultural performance standards called for in Wisconsin Statutes will be implemented in the watersheds of impaired waters. Currently, enforcement is based on the opportunity to provide cost-share dollars. If money is offered to landowners violating performance standards, they are obligated to comply. Administrative rules passed by the Natural Resources Board identify that watersheds with impaired waters will have the highest priority for enforcement.
- To reach the TMDLs in the Stevens Creek and Markham Creek watersheds best management practices such as riparian buffers and conservation tillage are encouraged in agricultural land use settings to reduce loading during high flow events. In addition to the implementation of enforceable non-point source performance standards, there are a number of voluntary programs that will assist in implementing these TMDLs.

- Farmers may enroll in the Conservation Reserve Enhancement Program (CREP) or similar programs to establish vegetated buffers on cropland and marginal pastures. Riparian buffers assist in making CREP a viable program for this impaired stream. A similar program available is the Conservation Reserve Program (CRP), which takes highly erodible land out of agricultural use. As of May 2005, 394 acres in the Markham Creek and Stevens Creek watersheds were enrolled in CRP and CREP. Of the 394 enrolled acres, 118 acres are within 20 feet of a stream or major drainage way. Of these, 82 acres are filter strips and the other 36 acres are enrolled as wetland restorations or scrape ponds for wildlife.

- The Environmental Quality Incentive Program (EQIP) is another option available to landowners. EQIP is a federal cost-share program administered by the Natural Resources Conservation Service (NRCS) that provides farmers with technical and financial assistance. Farmers may receive up to seventy five percent reimbursement for installing and implementing runoff management practices. Eligible projects can include: terraces, waterways, diversions, and contour strips to manage agricultural waste, promote stream buffers, and control erosion on agricultural lands.

- The Rock County LCD may also apply for a Targeted Runoff Management (TRM) grant through WDNR. TRM grants are competitive financial awards to support small-scale, short term projects (24 months) completed by governmental units to reduce runoff pollution. Both urban and agricultural projects can be funded through a TRM grant; however, the grants require a local contribution to the project. The state share is capped at $150,000.

* The following recommendations are from the Lower Rock River Water Quality Management Plan, 2001.

- Rock County should enact and enforce a construction site erosion control ordinanceto protect water quality in unincorporated portions of Rock County.

- The Lower Rock River Basin Team should conduct a formal stream classification of Stevens Creek including an assessment of major sources of polluted runoff that may be affecting water quality.

- The Lower Rock River Basin Team should conduct appraisal monitoring of the Bass Creek watershed, including Bass, Stevens, Markham and Fisher creeks, to determine the extent of water quality threats and problems due to sources of polluted runoff.

- The dam on Bass Creek at Afton should be removed if the owner and local residents are unable to fund necessary dam repairs; if repaired, adequate provision for fish migration up- and downstream must be made.

- Bass Creek Watershed should be considered a high priority for selection as a nonpoint source priority watershed project.

Bass Creek

Stevens Creek (Straightened Portion)

Bass Creek

These recommendations are a basis for work planning or other decisions, which must be approved by the appropriate DNR division administrator (the recommendations are a starting point for the work planning process.

These recommendations are advisory to the public, local governments, lake management organizations, and other groups or agencies. These recommendations are not binding. No statutory or codified requirements exist.

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Wisconsin DNR's mission involves preserving, protecting, and restoring natural resources. Watershed Planning provides a strategic review of water condition to enhance awareness, partnership outreach, and the quality of natural resource management.