Southwest Michigan Land Conservancy

Black River Watershed Project

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Overview/Scope of Work

In 2006, the Southwest Michigan Land Conservancy (SWMLC) was contracted by the Van Buren County Conservation District (VBCD) under the authority of the Michigan Department of Environmental Quality (MDEQ) to initiate educational outreach for landowners within the Black River Watershed in pursuit of private land conservation objectives. SWMLC assembled a land protection subcommittee and started developing criteria for a geographic information systems (GIS) model that would identify priority areas for land protection in the Black River Watershed (BRW). Properties that exhibited high conservation values, based on the existence of natural resources that sustain the functionality of the BRW, were then targeted for the educational outreach program. SWMLC held two educational workshops in 2008 and drew approximately 30 interested landowners. Many interested landowners that received our mailing but could not attend one of the workshops contacted SWMLC for more information about land conservation. SWMLC also presented at many other workshops throughout the BRW about land conservation. Using the model as a guide, SWMLC will continue outreach efforts and will pursue leads with the goal of protecting valuable lands within the watershed in perpetuity.

Background

The BRW encompasses 287 square miles (183,490 acres) across two counties and 13 townships. The Watershed contains 530 miles of rivers, streams, and drains, 43 large named lakes (the largest is Hutchins Lake), and over 500 small lakes and ponds. The high quality waters support 70 species of fish, 130 species of birds, and 471 species of plants as of recorded in 2004. More then half of the land in the watershed is agriculture planted in unique crops such as blueberries. The MDEQ recognized that this watershed is an important area for conservation and environmental education and awareness to protect these significant resources. SWMLC focused its conservation efforts on the identification of land parcels containing ecologically significant property that should be conserved to maintain the high water quality of the Black River. These properties contain high ground water recharge, riparian habitat, forested wetlands, emergent wetlands and a variety of habitats that provide valuable habitat and ensure the continuation of a viable watershed ecosystem.

Land Protection Subcommittee

A group of citizen volunteers, government officials, and regional experts was asked to assist SWMLC in formulating a list of criteria, based on property attributes, to use in the development of a GIS model. Over the course of the last three years, eight meetings were held with the Land Protection Subcommittee to coordinate the model, ground truth the model, develop and distribute outreach materials, and engage citizens in the pursuit of BRW objectives during educational workshops. The subcommittee played a major role in the identification of sites within the watershed in need of priority consideration and the development of detailed criteria that would enable the model to be a success. Participants on the subcommittee included:

Name & Years Participated	Affiliation	E-mail
Baerren, Al 2006-2008	Silver Lake Association	albert.baerren@nmcco.com
Boutin, Carl 2006-2008	Van Buren County Resident	cbouton@btc-bci.com
Clemons, Tina 2006-2007	Allegan County Conservation District	tina.clemons@mi.nacdnet.net
Debruyn, Jay 2006-2007	Realtor, Developer in South Haven	jay@shoresofsouthhaven.com
Fuller, Erin 2006-2008	Black River Watershed Coordinator	erin.fuller@mi.nacdnet.net
Haas, Greg 2006-2007	Casco Township Parks Committee	haas310@hotmail.com
Kirkwood, Julia 2006-2008	Department of Environmental Quality	kirkwooj@michigan.gov

Lerg, John 2006-2008	Michigan Department of Natural Resources	lergj@michigan.gov
Lockhart, Amy 2006-2008	Van Buren County Conservation District	amy.lockhart@mi.nacdnet.net
Mead, Eileen 2006-2008	Casco Township Parks Committee	dennyeileen@aol.com
Micklin, Phil 2006-2008	Southwest Michigan Land Conservancy	micklin@wmich.edu
Nielson, Larry 2006-2007	Bangor City Manager	bangormi@btc-bci.com
Parman, Joe 2006-2008	Van Buren County Drain Commissioner	parmanj@vbco.org
Sass, George 2006-2008	South Haven Resident	sassgsass@lodisnet.com
Soltysiak, Dawn 2006-2007	Artist, Fennville Resident	gangesdawn@ispwest.com
Matthews, Peter 2007-2008	Van Buren County Resident	canoenut@bciwildblue.com
Thomas, Art 2006-2007	Farmer, Van Buren County	blueone234@hotmail.com
Venner, Rob 2006-2007	DeGraaf Nature Center	r.venner@cityofholland.com
Wilke, Emily 2006-2008	Southwest Michigan Land Conservancy	ewilke@SWMLC.org

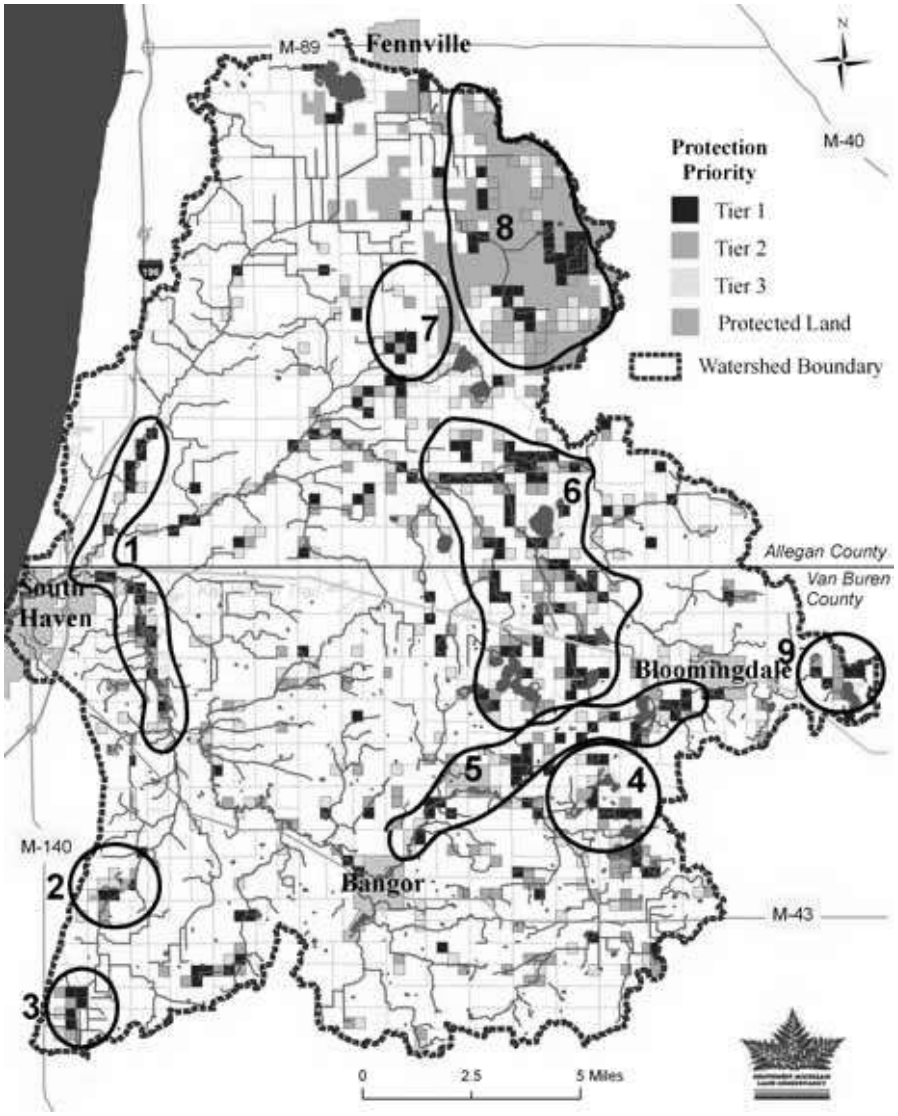
Natural Resources Based GIS Model

The model itself contains four "priority" tiers based on conservation value. In total, 233 quarter-quarter sections (Q-Q's) were identified as highest priority. The model was constructed by adding numerical ratings for a number of different conservation criteria to each Q-Q section in the BRW. Combining the values for each criterion allowed for the ranking of the Q-Q sections on the basis of conservation priority. The procedure for creating the model comprised the following steps:

- Creation of a quarter-quarter section base layer dataset.
- Creation and classification of a dataset for each conservation criterion decided by the Sub-Committee.
- Addition of data for each criterion as attributes to the base layer dataset.
- Classification (if necessary) of each criterion attribute in the model's database file (DBF) table.
- Weighting of each criterion class for each Q-Q section.
- Computation of the conservation value of each quarter-quarter section.
- Testing of outcomes against DOQ (aerial imagery), parcel data and other digital resources.
- Ground truthing the results by driving around the watershed.
- Classification and symbolization of the outcome for display in a map.

To date, the model has been accurate where highest-priority areas have been ground-truthed for verification. The attached map shows the final priority layer or "dataset" composed of priority Q-Q's and identifies the resulting nine SWMLC target areas which are circled. The following section summarizes the conservation attributes of each of the circled priority conservation areas as determined by the GIS model.

Priority Conservation Areas



1. **Forested River Corridor**. 1,480 acres of forested river corridor and adjacent forested wetlands. This relatively unfragmented forested river corridor is a buffer from the development along the lakeshore and sprawl from the city of South Haven. The forested river corridor is important breeding habitat for many bird species. Loss of this habitat type would have a major impact on the bird species that depend on river corridors for food and nesting. Riparian forests also play a critical role in water quality by preventing erosion and pollutants from entering the streams and providing shade for benthic macroinvertebrates, which are food for fish.

2. **Expanding Preserves**. 400 acres of high-priority natural land adjacent to 45 acres already conserved by SWMLC (Wintergreen Woods and Winterberry Woods preserves). This area is notable for its extensive wetlands of various types including forested, scrub-shrub, and emergent. Northern species, including eastern hemlock and magnolia warblers, are found in this area because the wetlands and back ridges stay very cool. Eastern hemlocks grow in the wetlands on the north facing side of the dunes and spotted salamanders cool off in the pools of water below the trees. This area has high groundwater recharge where currently high quality water is moving directly into the aquifer. Historically this area consisted of hemlock- white pine forest along the river and adjacent beech-sugar maple forest.

3. **Forested Wetlands**. 400 acres of forested wetlands near the Lake Michigan coast provides many benefits to wildlife. These forested wetlands contain the state-threatened swamp cottonwood and spotted turtle. This is a threatened ecosystem type along the highly developed coastline. The pre-European settlement land cover map shows that this area was historically a mixed conifer swamp with a section of black ash swamp.

4. **Upper and Lower Jeptha Lakes**. 720 acres of high-quality wetlands, marl flats, lakes with little development, and SWMLC's 50-acre Jeptha Lake Fen preserve. The Jeptha lakes are along a flight route for migratory birds and a haven for waterfowl. Other species of interest found in this area include the state-threatened Blanchard's cricket frog, Eastern Massasauga rattlesnake, state-threatened spotted turtle, and a beautiful display of marsh blazing star which thrives in the shallow grassy wet areas.

5. **River Corridor from Bangor to Gobles**. 1,800 acres along the lower river corridor. In the 1800s before European settlement more then 50% of the watershed was beech maple forest. This is a large area where some of the beech-maple forest still remains intact. A great blue heron rookery that at one time held over 200 nesting birds is located just south of Breedsville and is protected by the Michigan Nature Association. There is a large area of contiguous wetlands surrounding the rookery that is also home to species of concern such as the state-threatened spotted turtle and blandings turtle.

6. **Fisheries Protection**. 4,800 acres, encompassing many lakes with little development, including Lake 11, Lake 14, Little Bear Lake, Spring Brook Lake, and others that comprise the headwaters of the middle branch. There is also little development along the long stretches of shaded river corridor, which are a prime coldwater trout fishery. This area is also comprised of a large area of wetlands and an extensive amount of forested land including the forested area along the Kal-Haven Trail. This area also has high ground water recharge.

7. **Pullman Wetlands.** 360 acres of large contiguous wetlands near the town of Pullman. This is the largest area of intact privately owned wetlands in the watershed. Mostly emergent wetlands but also forested and scrub-shrub wetlands are very important duck breeding habitat. These wetlands are almost contiguous to the expansive protected land of the Allegan State Game Area providing even more wildlife habitat. These wetlands also serve as the headwaters of both the upper and middle branches of the Black River.

8. **Allegan State Game Area**. 2,920 acres, is a portion of the Allegan State Game Area (SGA) which is one of the two largest protected areas in Southwest Michigan. The in-holdings and unprotected land directly adjacent to the Allegan SGA are high priority for conservation for both the Michigan Department of Natural Resources and SWMLC. The Allegan SGA is comprised of forests, remnant oak-pine barrens, and wetlands including coastal plain marsh and bog. We would like to work to expand this already protected area. Headwaters of the upper branch of the Black River. Historically this area was majority white pine-white oak forest.

9. **Headwaters Area**. 440 acres, comprising the headwaters of the lower branch of the river, including Munn and Mill Lakes. Species of interest found in this area include the Blanchard's cricket frog, black rat snake, and Eastern Massasauga which are all indicative of the important wetlands, lakes, and surrounding undeveloped upland ridges. This area was historically the convergence of a white pine- mixed hardwood forest and a mixed conifer swamp.

Agricultural Model

OVERVIEW

University Outreach (UO) at the University of Michigan-Flint, on behalf of the Southwest Michigan Land Conservancy (SWMLC), developed an Agricultural Lands Inventory for the Black River Watershed in southwest Michigan. This inventory uses a multi-criteria scoring approach to identify agricultural lands throughout the Black River Watershed that are highest priority for perpetual conservation.

Currently, the nine counties of Southwest Michigan produce the highest cumulative agricultural receipts in the state (highest total market value of agricultural production). Farms within the Black River Watershed account for the vast majority of fruit/berry/nut production within Southwest Michigan, which ranks #1 in the state for fruit production. Van Buren County is ranked #1 in the nation for blueberry and cucumber production and second in the state for grape production. Allegan County also ranks among the top 5 counties in the state for fruit production and also provides significant agricultural acreage toward greenhouse and nursery operations. Southwest Michigan ranks highest in the state for acres of greenhouse and nursery operations.

Approximately 55% of land use in the Black River Watershed is agricultural in nature. Conversion pressures are an especially grave concern to the state of agriculture in the Black River Watershed, as Allegan and Van Buren Counties rank 2nd and 3rd respectively as the most agriculturally vulnerable counties between now and 2020 in the state (*MSU Land Transformation Analysis*.) Farmland loss and conversion threaten to erode the agricultural base in the watershed and ultimately devastate Michigan's #1 economic industry. Considering growth projections, lack of funding for purchase of development rights efforts, and inadequate zoning and subdivision regulations in the areas

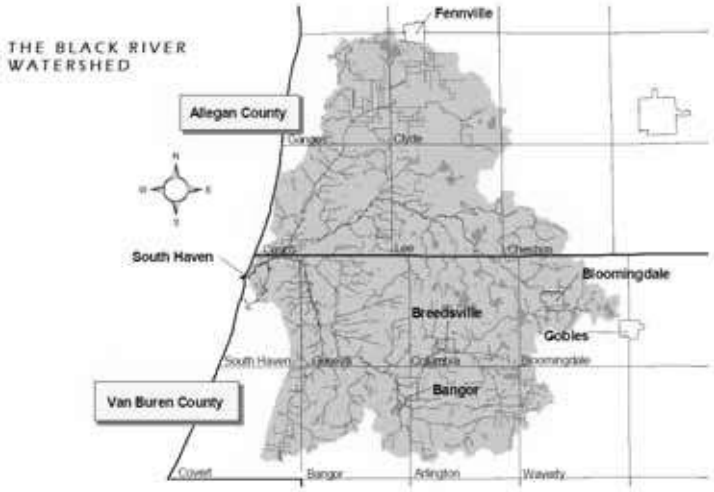
comprising the Black River Watershed, direct agricultural preservation through conservation easements and PA 116 enrollment is critical to this regions agricultural prosperity. The availability of significant federal and state income and property tax incentives will serve as a catalyst for voluntary land protection, and outreach and educational initiatives to promote these incentives will be prioritized and directed with this agricultural land inventory.

Southwest Michigan Land Conservancy staff has invested significant time over the past two years compiling information to assist with the creation of this analysis, and spent considerable time ground-truthing available crop data layers. The Conservancy found that existing crop data information from the National Agricultural Statistics Service's crop data layer was inaccurate with regard to the identification of certain specialty crops such as blueberries, though the accuracy of the layer in identifying common row crops was inconclusive. The Conservancy's initial efforts to mimic County level PDR program criteria and the scoring thereof through data layer creation, digitization and model criteria ranking proved difficult. Specifically, efforts to supplement spatial information with non-spatial criterion such as MAEAP and conservation reserve program enrollment were unsuccessful based on unavailable information or inaccurate data. Thus, the Conservancy and University Outreach have created new datasets based on a vast array of spatial and non-spatial information from state and local sources and developed an expanded analysis that both prioritizes existing farms for preservation and identifies land most suitable for agricultural use.

The objectives of this inventory are multiple and include 1) ensuring the long-term sustainability of the region's agricultural base and production stability by protecting established farms that meet these critical needs, 2) identifying potential areas for agricultural conservation practices that would increase water quality, 3) recognizing land that is best-suited to agricultural and classifying the most appropriate crop use accordingly based on various factors such as soil utility and texture, drainage, slope, irrigation needs, etc. and 4) determining where lands enrolled in temporary conservation programs exist, and how we can build off existing blocks of conserved farmland and balance farmland protection with growth needs.

This inventory utilizes a multi-criteria decision model for the Southwest Michigan Land Conservancy to support on-the-ground conservation activities such as the justification of acquisitions, proactive conservation, evaluation of opportunistic acquisitions, and the development of public relations.

The Agricultural Lands Inventory provides the Conservancy, as well as other conservation and agricultural organizations, with a mechanism to help direct and prioritize funds available for preservation efforts; to enhance collaboration on projects and planning across organizational boundaries; to allow for the prioritization of agricultural preservation activities; and to ensure the long-term sustainability of the Black River Watershed's agricultural resources.



METHODS

Data Development

Two data layers important to the analysis for prioritizing agricultural lands for protection that were not previously available are PA 116 lands and detailed agricultural land types. The Michigan Department of Agriculture administers the PA 116 program which restricts non-agricultural uses of a given parcel on a contract basis in return for income tax incentives and relief from certain local special assessments.

As part of this inventory, University Outreach has digitized all of the PA 116 lands within the Black River Watershed as currently identified by the Michigan Department of Agriculture as of Spring 2009. University Outreach has also developed a detailed agricultural inventory within the Black River Watershed. The detailed agricultural inventory was developed with existing crop data from SWMLC and aerial photos.

Criteria

The following criteria have been assessed and ranked at a parcel level for the Black River Watershed. These criteria can then be evaluated and prioritized for voluntary protection of farmland from development and conversion, and can also be used in the development of outreach and educational activities.

1. Size
2. Greater than 50% AG
   a. Emphasis on specialty crops
3. Soil Productivity
   a. Prime Farmland
   b. Farmland of Local Importance
   c. Prime Farmland if Drained
4. Fruit Site Rating
   a. Soil Factors
      i. Texture
      ii. Drainage
   b. Physiographic Factors
      i. Slope
5. Fruit Site Presence/Absence (is flagged)
6. Ag Zoning (note: not all townships are zoned and not all zoning data is available- this criteria subject to availability)
7. Presence/Absence of Riparian Features
8. Length of River or Stream
9. Proximity to Existing Protected Land
10. Landscape Compatibility – Percentage of Agricultural land within 1 mile
11. Enrollment in PA 116

Results and Conclusions

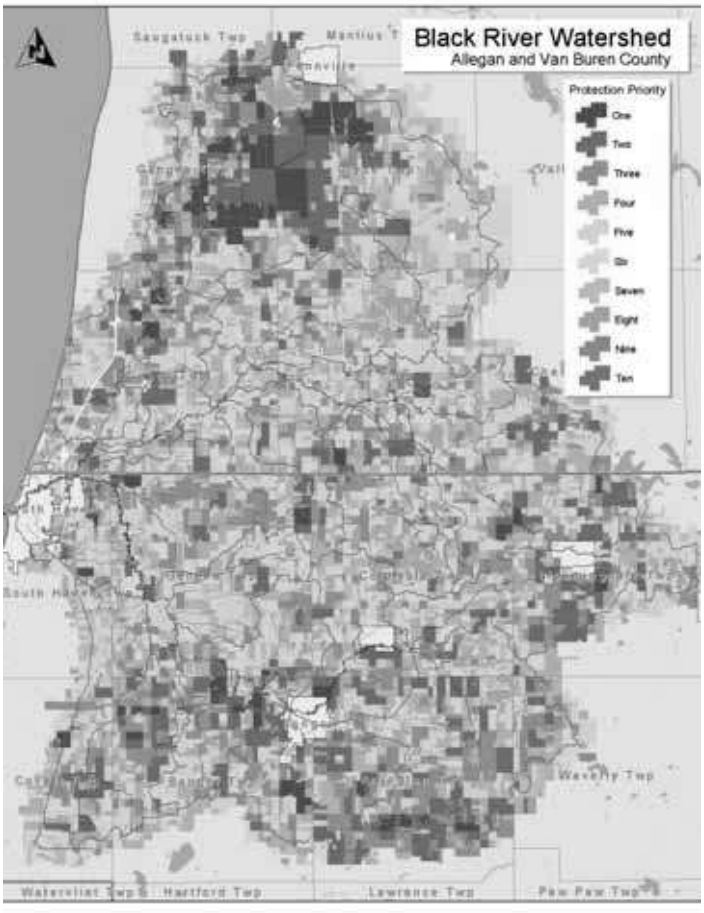
Just over 1,200 parcels have been promoted to the initial parcel subset for land protection. The major criteria used to highlight this initial data subset include parcel size (over 20 acres) and the specification that each parcel's dominant land use is agricultural (over 51%). All parcels in the watershed have been scored based on the criteria listed above regardless of size and use. This will enable SWMLC to consider the role of smaller agricultural properties, especially with regard to fruit production. It will also enable SWMLC and other entities to re-visit and

re-rank all parcels in the watershed as new information becomes available or as new factors become relevant. This data subset was further scored based on the spatial and non-spatial factors listed above.

The Black River Watershed is comprised of approximately 23,666 parcels of land, which are equal to approximately 183,490 acres. When scored using the criteria described above, the range of total score runs from 5 to 59 with a mean score of 25.

When ranked and broken into ten categories using natural breaks in the data, there are 1,233 parcels that fall into the top three categories with a sum total acreage of 59,146.99. The top three categories are as follows:

Priority One= 54 parcels with a score greater than 54
Priority Two= 450 parcels with a score greater than 43
Priority Three= 1233 parcels scoring greater than 39.

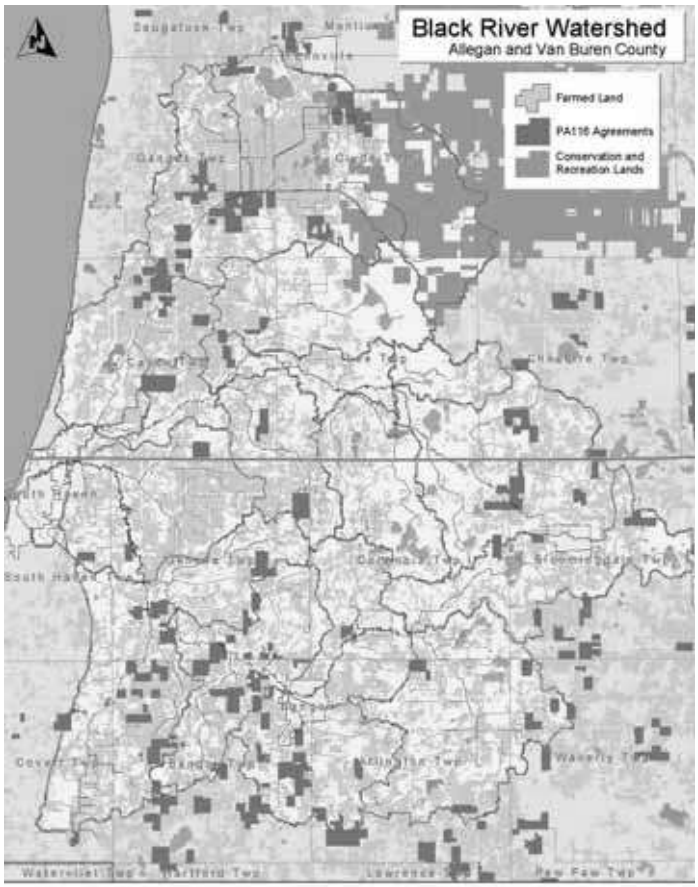


Parcels around the Allegan State Game Area scored very highly based on the large size of the parcels there, high PA 116 enrollment, and proximity to existing protected lands. Other common criteria that scored well here include the presence of factors that support very high potential for productive farmland (slopes, prime soils, soil texture, etc.), fruit site ratings, landscape compatibility and the presence and density of water resources. SWMLC will have the opportunity to protect compatible uses surrounding the Allegan State Game Area and negotiate best management practices through the conservation easement to protect water resources while expanding habitats conducive to wildlife and protecting the agricultural land base.

The lands comprising and surrounding the headwaters of the Black River Watershed also scored very highly based on soil types, drainage, and the presence and density of riparian features. These results underscore the utility of this model in recognizing the agricultural potential across the land base (Objective 3 above) and expand our conservation approach to avoid excluding non- agricultural property.

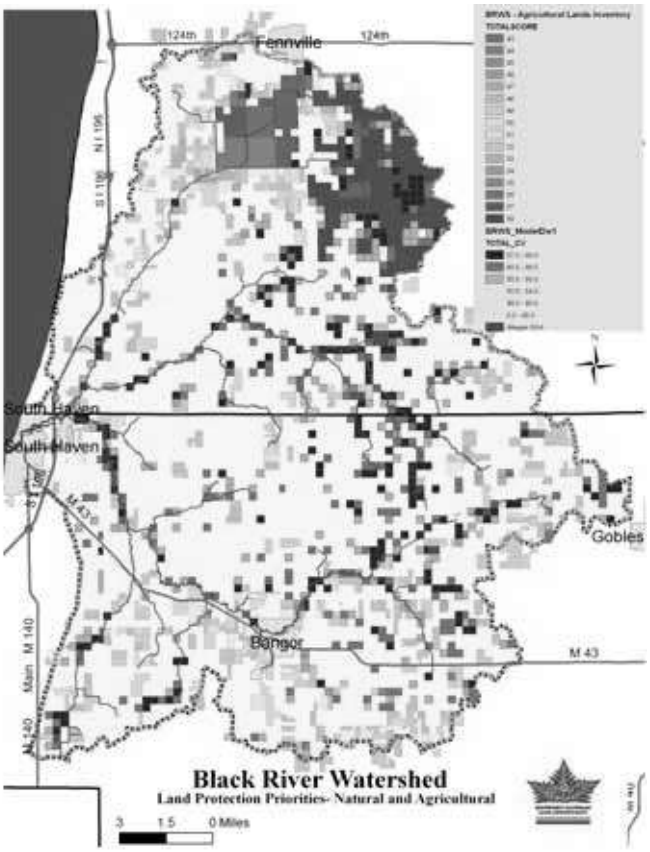
A third noticeable trend is that lands enrolled in PA 116 fared well overall across the watershed areas despite fairly even weights across the multiple criterion. This is a positive statistic in that some of the highest priority lands are at least temporarily protected.

PA 116 enrollment was derived from Michigan Department of Agricultural database queries and created from legal descriptions for the areas enrolled. Thus, these enrollment areas are not always parcel specific, as all or part of a particular parcel may be included or several parcels under the same ownership may be included under one enrollment. This results in a data layer that essentially ignores parcel boundaries. The advantages of this are many, but primarily, this will enable this layer to be updated annually as new parcel information becomes available without affecting the underlying PA 116 information. In addition, it is the intent of the County farmland protection programs to accept the perpetual maintenance of this layer for use into the future.



Several conclusions can be drawn from the PA 116 layer. First of all, the PA 116 program has good representation across the Black River Watershed. However, there is no evidence of a major core cluster or clusters of PA 116 land from which to center a permanent agricultural preservation effort. Thus, these farms may not be supporting each other. While micro-clusters of PA 116 enrolled lands are evident, they are not significant enough to create an urban growth boundary. Regardless, this layer has unique applicability to the model, as there is a direct correlation to these parcels and high developability factors based on their characteristics. PA 116 participation will be a major factor for directing education and outreach initiatives to protect existing farms, but enrollment alone has only a moderate positive correlation to how the parcel scored based on crop potential (scored by soils, drainage, and other physiographic criteria) across the board.

When we examine how the BRWS natural lands model interacts with the agricultural inventory it becomes apparent that though there is very minimal direct overlap (as would be expected), there are areas where ensuring compatible land uses adjacent to significant natural lands will achieve multiple goals including the protection of groundwater recharge through infiltration, habitat relationships that promote wildlife movement and low



disruption of energy flow (wind, water, etc.) vital to the functionality of natural areas for wildlife.

SWMLC plans to further study the relationships between the highest priority areas for protection and mechanisms for balancing multiple conservation goals across the landscape while protecting critical agricultural resources in the Watershed. The role that agricultural lands have in ensuring water quality and quantity protection is very significant, and through conservation measures we can help ensure that agricultural productivity is balanced with resource protection measures.

Outreach

A landowner workshop is planned for the landowners of high priority agricultural properties in the watershed sometime in the next six months. During the grant cycle, two landowner workshops were held -- in January 2008 and August 2008. SMWLC presented and participated in many other workshops and events focused on protecting the water quality of the Black River Watershed. The most recent event that we participated in as part of this grant included a walk, paddle, and roll event in August 2009 where more then

30 people paddled down the Black River. Landowners with more then 20 acres in our high priority Q-Q sections were invited to the landowner workshops and the walk, paddle, and roll event. The Black River Watershed land conservation project is highlighted in our summer 2009 issue of *Landscapes*.

Landowner Contacts

Following is a list of landowners that we have had multiple communications with about land protection options for their property within the timeframe of this grant funded project.

	Landowner contact in the Black River Watershed 2006-2009		
	Name	**Phone #**	**Address**
1	Karl and Ruth Hewitt	269-253-4318	332 63rd St., S. Haven, MI 49090
2	Jack Spangler (daughter Jodie)	269-434-8619	35760 CR 687, Bangor, MI 49013
3	Don Sappanos Sr	269-906-0172	433 Blue Star, South Haven, MI 49090
4	Brent Sheridan	616-550-5231	
5	Dan Garvey	918-261-4355	
6	Carol Voytech	941-488-876	
7	Karen Hoad	843-406-0363	1101 Wayfarer Ln., Charleston, SC 29412
8	Nancy Kort		6 Brighton Ln., Oak Brook, IL 60523
9	Hilligan Family Farm		49th Street
10	Maynard Kaufman	269-656.1758	P.O. Box 361, Bangor, MI
11	Nelson Hodgman	269-434-6616	PO Box 215, Grand Junction, MI
12	HK Ellis		10940 CR 215, Grand Junction, MI
13	Dick Curtis	269-434-6662	
14	Jason Buero	269-838-2778	59119 16th Ave, Grand Junction, MI
15	Mike Wallace	296-227-3472	1113 68th Street, South Haven, MI 49090
16	Gloria Garner		211 Michigan Ave. #3, South Haven, MI 49090
17	Matt Sharl		212 W. Washington St Suite 1911, Chicago, IL 60606
18	Sam Ewbank	269-561-2505	On behalf of Bangor
19	Wendy Elsey	269-816-2837	54761 Lawerence Rd, Marcellus, MI 49067

In addition to these leads, SWMLC staff visited several additional sites of interest over the past few years. In total, 12 landowner contacts were made and discussions regarding conservation options were pursued and over four hundred of landowners were educated about BRW objectives, resource management, and conservation options.

Summary

In summary, SWMLC plans to continue to rely on the results of the natural resources based and agricultural models as we focus our conservation efforts within the Black River Watershed. The models have been a true success in targeting high priority properties as we and the many other project collaborators work to improve water quality within the BRW and ensure its sustainability in perpetuity. We will use the results of this planning/implementation process and the Paw Paw River Watershed planning/implementation process to work toward purchasing development rights of the high priority parcels with additional grant funding for these two watersheds through the MDEQ 319 program which spans over the next three years. We plan to keep the volunteers that have helped us with this planning process and the landowners that we have been in contact with abreast of the current conservation activities and opportunities available.