

# SUGAR CREEK WATERSHED MANAGEMENT PLAN



6/30/09

Hancock, Henry, Madison, and Shelby Counties, Indiana

**PREPARED BY:**  
V3 COMPANIES



**PREPARED FOR:**  
HANCOCK COUNTY  
SOIL AND WATER CONSERVATION DISTRICT



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# Sugar Creek Watershed Plan

## EXECUTIVE SUMMARY

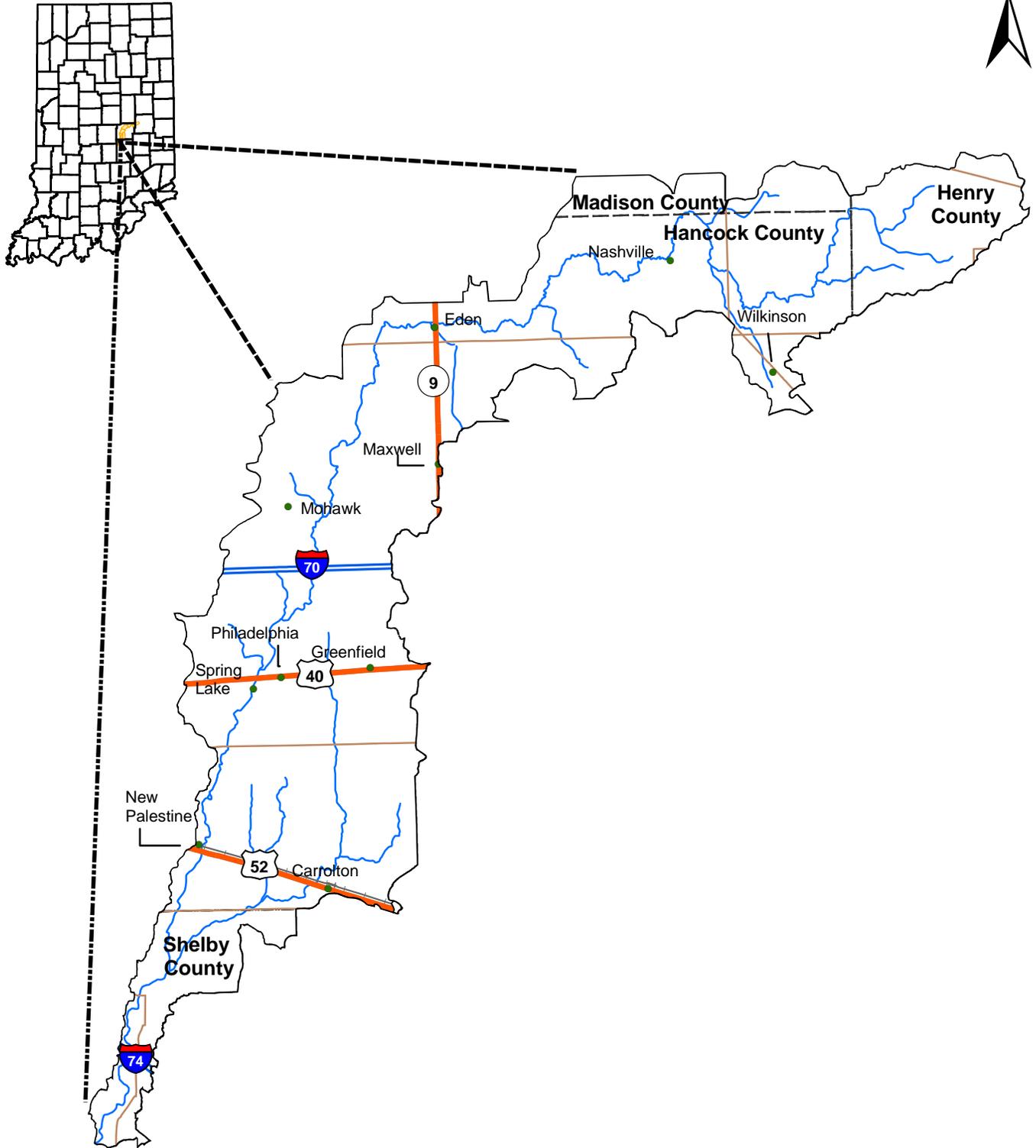
The Sugar Creek Watershed occupies portions of Hancock, Henry, Madison and Shelby Counties. Sugar Creek has its origins in west central Henry County and flows west into Madison and Hancock Counties. Sugar Creek then turns south and flows through Hancock County into Shelby County where it is joined by Buck Creek. Some of the cities and towns located in the Sugar Creek Watershed include: Greenfield, New Palestine, Eden, Philadelphia, Spring Lake, Carrolton, Wilkinson, Mohawk, Maxwell and Nashville. The general location map is shown on Exhibit 1.

The Watershed encompasses approximately 84,750 acres of mixed land use consisting mainly of row crop agriculture and pasture. Approximately 92 linear miles of cumulative waterways are contained in the Sugar Creek Watershed. The majority of the Watershed (79%) is located within Hancock County, which is the third fastest growing county in the State.

The Hancock County Soil and Water Conservation District (SWCD) is responsible for the conservation and development of soil, water and related natural resources throughout Hancock County. To help accomplish this goal, the SWCD applied for and received an Environmental Protection Agency (EPA) Section 319 watershed planning grant through the Indiana Department of Environmental Management (IDEM) to study the Sugar Creek Watershed and develop a management plan that would evaluate the present state of the resource, and provide guidance on how to improve and protect this fundamental aspect of their community. A Steering Committee of stakeholders within the watershed was organized to work with the Hancock County SWCD to develop and implement the Watershed Management Plan.

The Sugar Creek Watershed Management Plan is intended as a guide for the protection and enhancement of the environment and quality of the Sugar Creek Watershed while balancing the different uses and demands of the community on this natural resource. These goals address items such as:

- education and outreach
- increasing preservation, restoration and protection of this vital system
- increasing cooperation, coordination and collaboration among all stakeholders in the Watershed
- building and maintaining a solid organization to look to the welfare of this important natural resource



 <p>V3 Companies 7325 Janes Avenue Woodridge, IL 60517 630.724.9200 phone 630.724.9202 fax www.v3co.com</p>	<b>TITLE:</b> <b>Sugar Creek Watershed Location Map</b>		<b>PROJECT:</b> <b>Sugar Creek Watershed Project</b>		
	<b>BASE LAYER:</b> N/A		<b>PROJECT NO.</b> 07065	<b>EXHIBIT:</b> 1	<b>SHEET: 1 OF: 1</b>
	<b>CLIENT:</b> Hancock County SWCD 1101 West Main St., Ste. N Greenfield, IN 46140		<b>QUADRANGLE:</b> N/A	<b>DATE:</b> 4/9/08	<b>SCALE:</b> NTS

## PROBLEMS AND CAUSES IDENTIFIED IN THE WATERSHED

On December 12, 2007 and January 10, 2008, the Sugar Creek Watershed's Steering Committee discussed the water quality parameters of concern, and the general locations that the contributions from these pollutants were most prominent. The Steering Committee studied the original stakeholder concern list, the windshield survey data, historical data, and V3 field data to identify areas of concern within the Watershed. The Steering Committee identified pathogens (*E. coli*), sediment, nutrients and flooding as the most significant pollutant and condition in the Sugar Creek Watershed. The Steering Committee developed the following list of problems and causes identified in the Watershed:

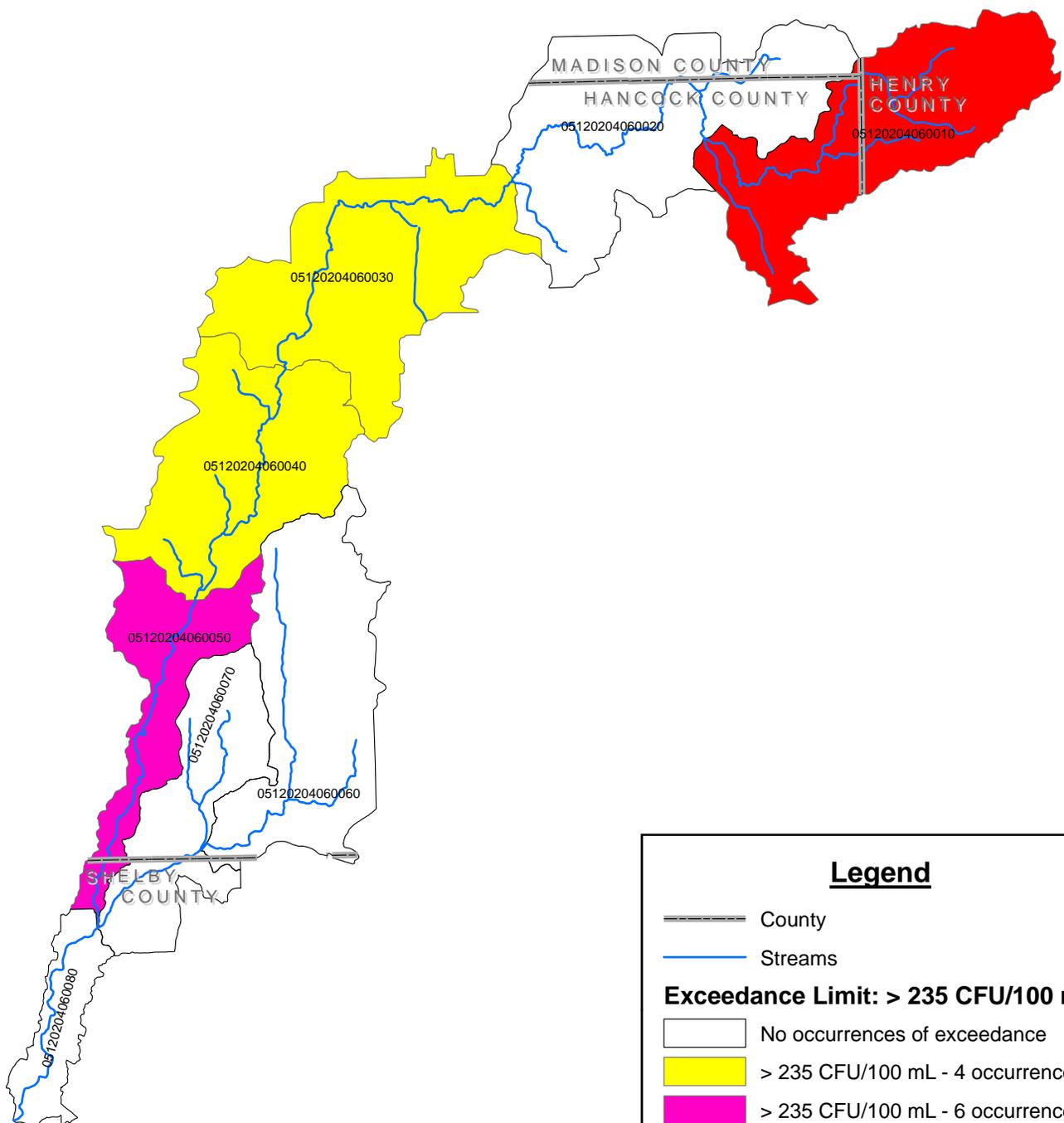
### **Problem Statement 1**

*E. coli*/pathogen levels in the Sugar Creek Watershed regularly exceed the state standard of 235 CFU/100ml, based on current and historical water quality data results, and often exceed safety standards for allowing Sugar Creek to be fishable and swimmable. The data collected for this WMP supports this conclusion are shown in Exhibit 30 and Exhibit 35.

Stressor: *E. coli* bacteria

Source: animal waste, human waste, failing septic systems, point sources, package plants, maintaining proper drainage from farmlands, flooding impacts, wildlife effects on water quality by contributing nutrient load through their waste, streambank erosion, cattle access to Sugar Creek and its tributaries, land use changes, stormwater management, lack of proper wildlife management

Areas Where Sources Have Been Observed: Livestock stream access throughout Sugar Creek Watershed, Pee Dee Ditch and urban areas surrounding Warrington, urban areas surrounding Nashville, urban areas surrounding Eden, urban areas surrounding Mohawk, Mohawk Campground, Conservation Club, and Leary Weber Ditch, Heartland Resort, S&H Campground, Philadelphia, Wildwood Subdivision, Spring Lake, and Arrowhead Mobile Park, and The Overlook Subdivision



**Legend**

County  
 Streams

**Exceedance Limit: > 235 CFU/100 mL**

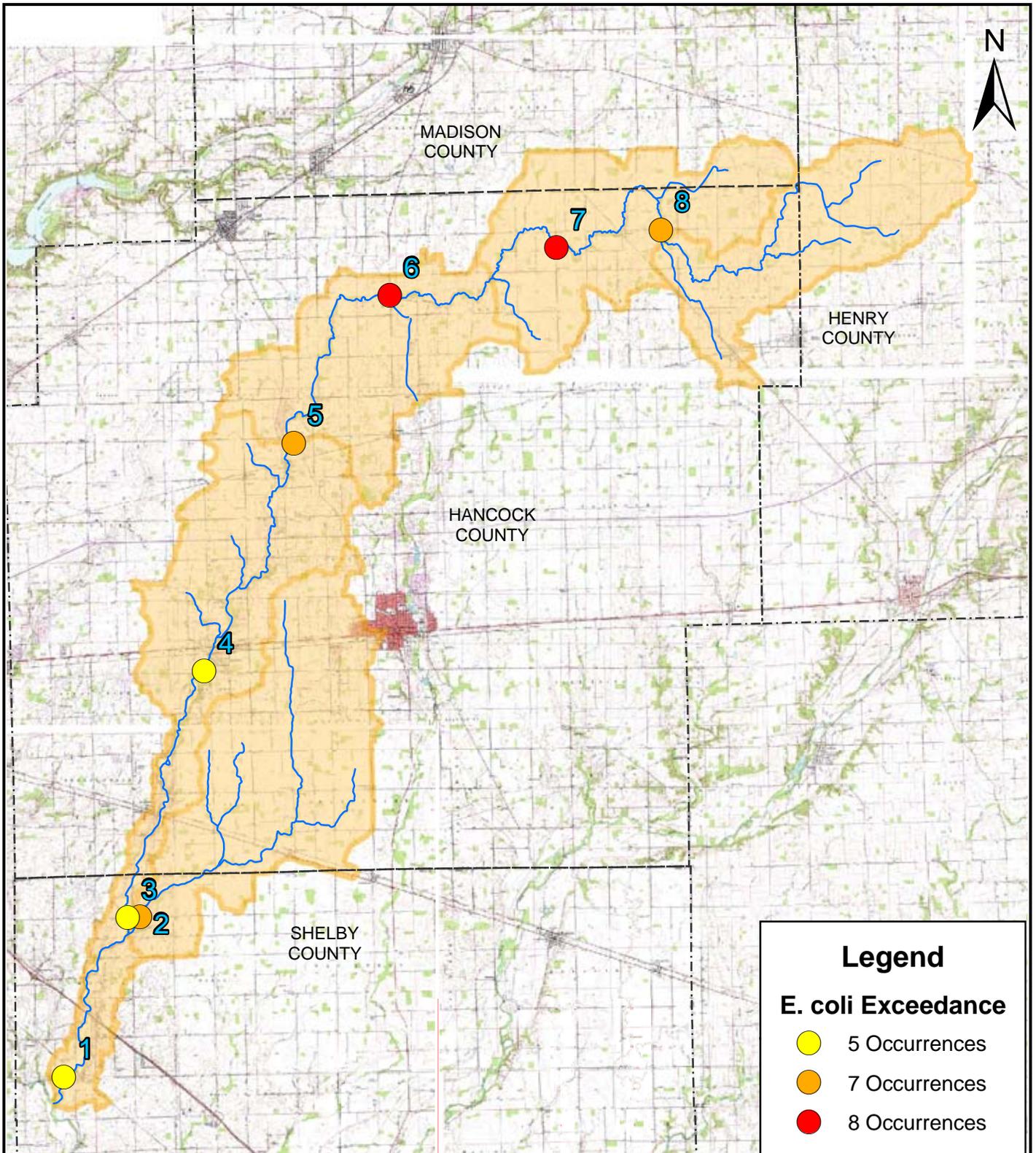
No occurrences of exceedance  
 > 235 CFU/100 mL - 4 occurrences  
 > 235 CFU/100 mL - 6 occurrences  
 > 235 CFU/100 mL - 10 occurrences

\*Sources include IDEM sampling, TMDL sampling, NPDES sampling, and volunteer monitoring.



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TITLE: <b>E. coli Exceedance</b>		PROJECT: <b>Sugar Creek Watershed Project</b>		
BASE LAYER:	N/A	PROJECT NO. 07065	EXHIBIT: 30	SHEET: 1 OF: 1
CLIENT:	Hancock County SWCD 1101 W. Main Street, Ste N Greenfield, IN 46140	QUADRANGLE: N/A	DATE: 12/11/07	SCALE: NTS



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TITLE: <b>E.coli Exceedances          at V3 Sampling Stations</b>		PROJECT: <b>Sugar Creek Watershed Project</b>		
BASE LAYER: USGS Topographic Map		PROJECT NO. 07065	EXHIBIT: 35	SHEET: 1 OF: 1
CLIENT: Hancock County SWCD 1101 West Main St., Ste. N Greenfield, IN 46140		QUADRANGLE: N/A	DATE: 4/29/08	SCALE: NTS

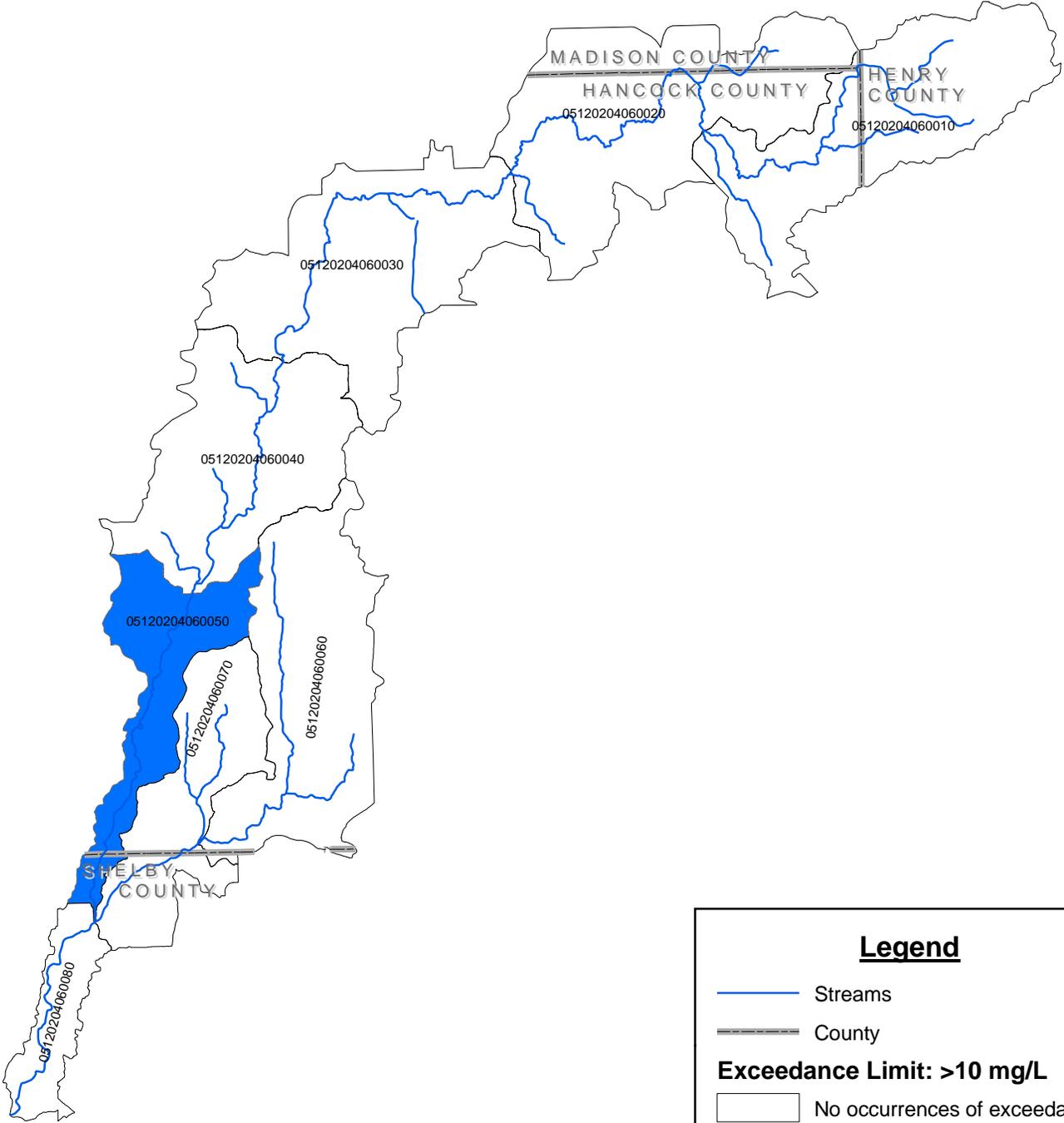
## **Problem Statement 2**

Excessive nutrient levels, documented in historic and recent water quality sampling, are negatively affecting the Sugar Creek Watershed. Nutrients that are stressors for the Sugar Creek watershed include Nitrate (NO<sub>3</sub>), Nitrite (NO<sub>2</sub>) and Phosphorus. The data collected for this WMP identifying Nitrate and Nitrite as a stressor are shown in Exhibit 28, Exhibit 33, and Exhibit 39. The data collected identifying Phosphorus as a stressor are shown in Exhibit 27, Exhibit 32, and Exhibit 40.

Stressor: Nutrients, including Nitrate (NO<sub>3</sub>), Nitrite (NO<sub>2</sub>) and Phosphorus.

Source: Flooding impacts, wildlife effects on water quality by contributing nutrient load through their waste, streambank erosion, cattle access to the stream, failing septic systems, land use changes, stormwater management

Areas Where Sources Have Been Observed: Livestock stream access throughout Sugar Creek Watershed, Pee Dee Ditch and urban areas surrounding Warrington, urban areas surrounding Nashville, urban areas surrounding Eden, urban areas surrounding Mohawk, Mohawk Campground, Conservation Club, and Leary Weber Ditch, and Heartland Resort



**Legend**

 Streams

 County

**Exceedance Limit: >10 mg/L**

 No occurrences of exceedance

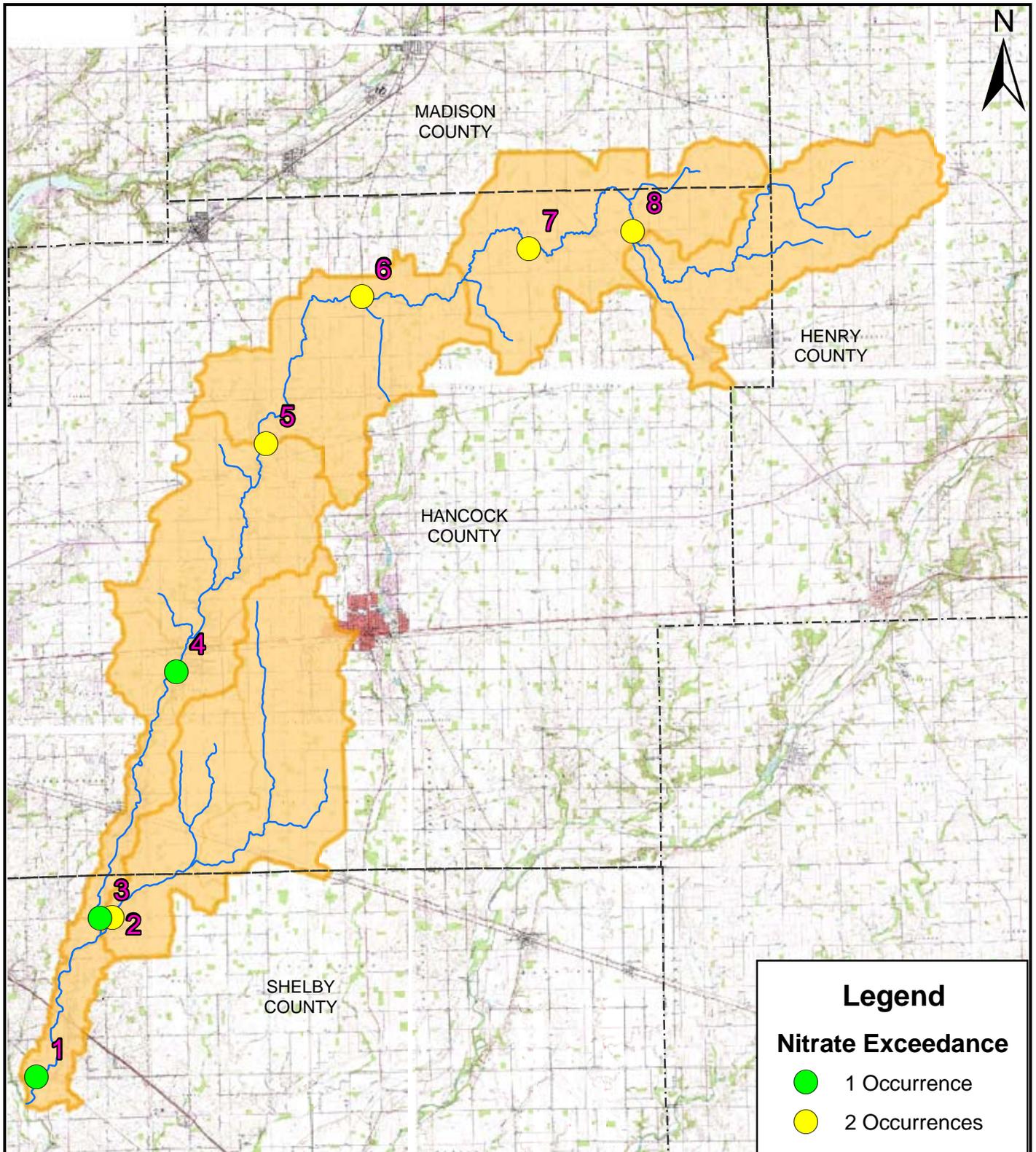
 >10 mg/L - 1 occurrence

\*Sources include IDEM sampling, TMDL sampling, NPDES sampling, and volunteer monitoring.



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TITLE: <b>Nitrate and Nitrite Exceedance</b>		PROJECT: <b>Sugar Creek Watershed Project</b>		
BASE LAYER:	N/A	PROJECT NO. 07065	EXHIBIT: 28	SHEET: 1 OF: 1
CLIENT:	Hancock County SWCD 1101 W. Main Street, Ste N Greenfield, IN 46140	QUADRANGLE: N/A	DATE: 12/11/07	SCALE: NTS



**Legend**

**Nitrate Exceedance**

- 1 Occurrence
- 2 Occurrences



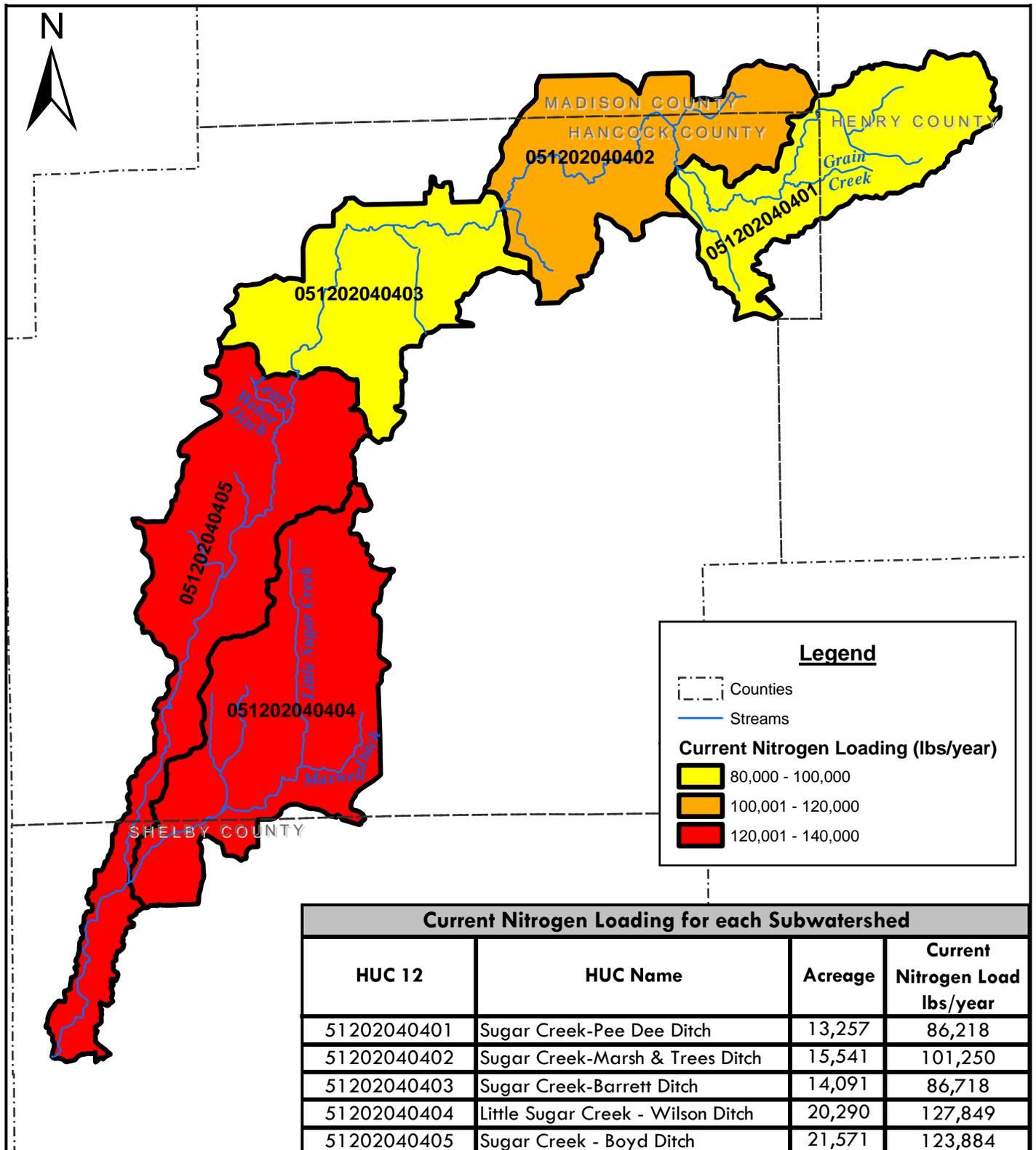
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TITLE: **Nitrate Exceedances at V3 Sampling Stations**

BASE LAYER: USGS Topographic Map

CLIENT: Hancock County SWCD  
 1101 West Main St., Ste. N  
 Greenfield, IN 46140

PROJECT: <b>Sugar Creek Watershed Project</b>		
PROJECT NO. 07065	EXHIBIT: 33	SHEET: 1 OF: 1
QUADRANGLE: N/A	DATE: 10/29/08	SCALE: NTS



Current Nitrogen Loading for each Subwatershed			
HUC 12	HUC Name	Acreage	Current Nitrogen Load lbs/year
51202040401	Sugar Creek-Pee Dee Ditch	13,257	86,218
51202040402	Sugar Creek-Marsh & Trees Ditch	15,541	101,250
51202040403	Sugar Creek-Barrett Ditch	14,091	86,718
51202040404	Little Sugar Creek - Wilson Ditch	20,290	127,849
51202040405	Sugar Creek - Boyd Ditch	21,571	123,884



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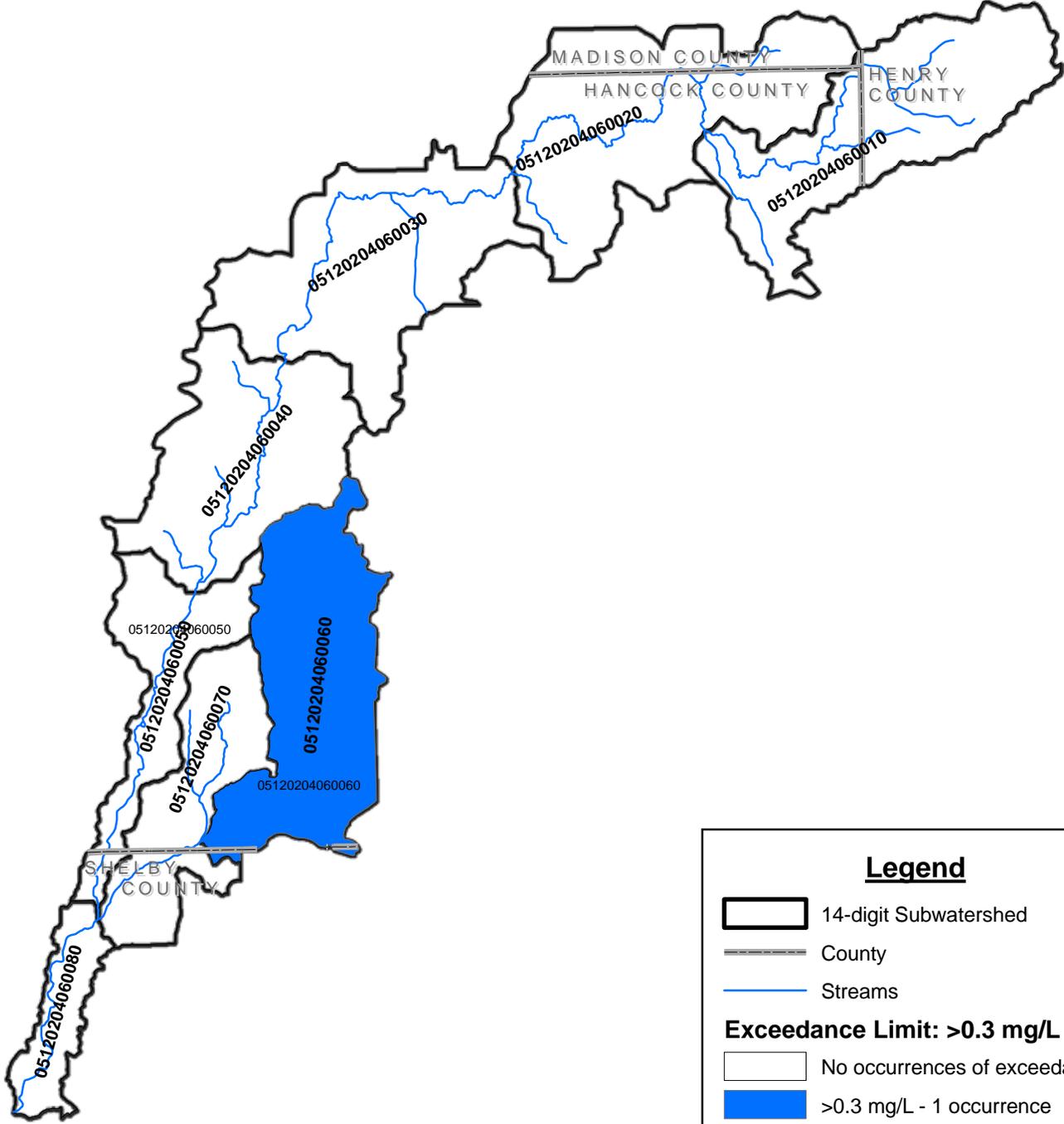
TITLE: **Estimated Nitrogen Loading**

BASE LAYER: N/A

CLIENT: Hancock County SWCD  
 1101 W. Main Street, Ste N  
 Greenfield, IN 46140

PROJECT: **Sugar Creek Watershed Project**

PROJECT NO. 07065	EXHIBIT: 39	SHEET: 1 OF: 1
QUADRANGLE: N/A	DATE: 3/1/09	SCALE: NTS



**Legend**

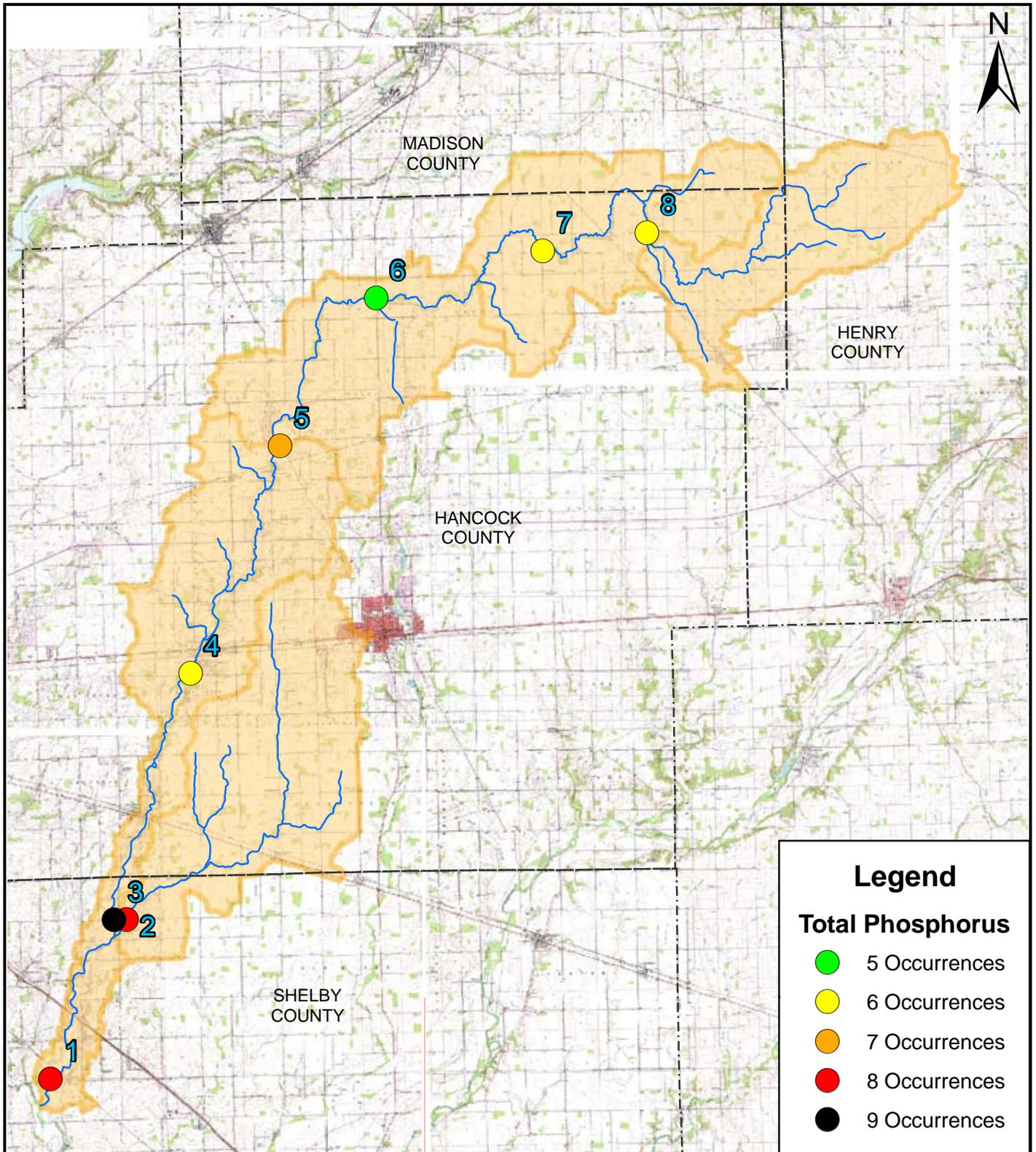
- 14-digit Subwatershed
- County
- Streams

**Exceedance Limit: >0.3 mg/L**

- No occurrences of exceedance
- >0.3 mg/L - 1 occurrence
- 14-digit Subwatershed

\*Sources include IDEM sampling, TMDL sampling, NPDES sampling, and volunteer monitoring.

 <p>V3 Companies 7325 Janes Avenue Woodridge, IL 60517 630.724.9200 phone 630.724.9202 fax www.v3co.com</p>	TITLE: <b>Phosphorus Exceedance</b>		PROJECT: <b>Sugar Creek Watershed Project</b>		
	BASE LAYER: N/A		PROJECT NO. 07065	EXHIBIT: 27	SHEET: 1 OF: 1
	CLIENT: Hancock County SWCD 1101 W. Main Street, Ste N Greenfield, IN 46140		QUADRANGLE: N/A	DATE: 12/11/07	SCALE: NTS



**Legend**

**Total Phosphorus**

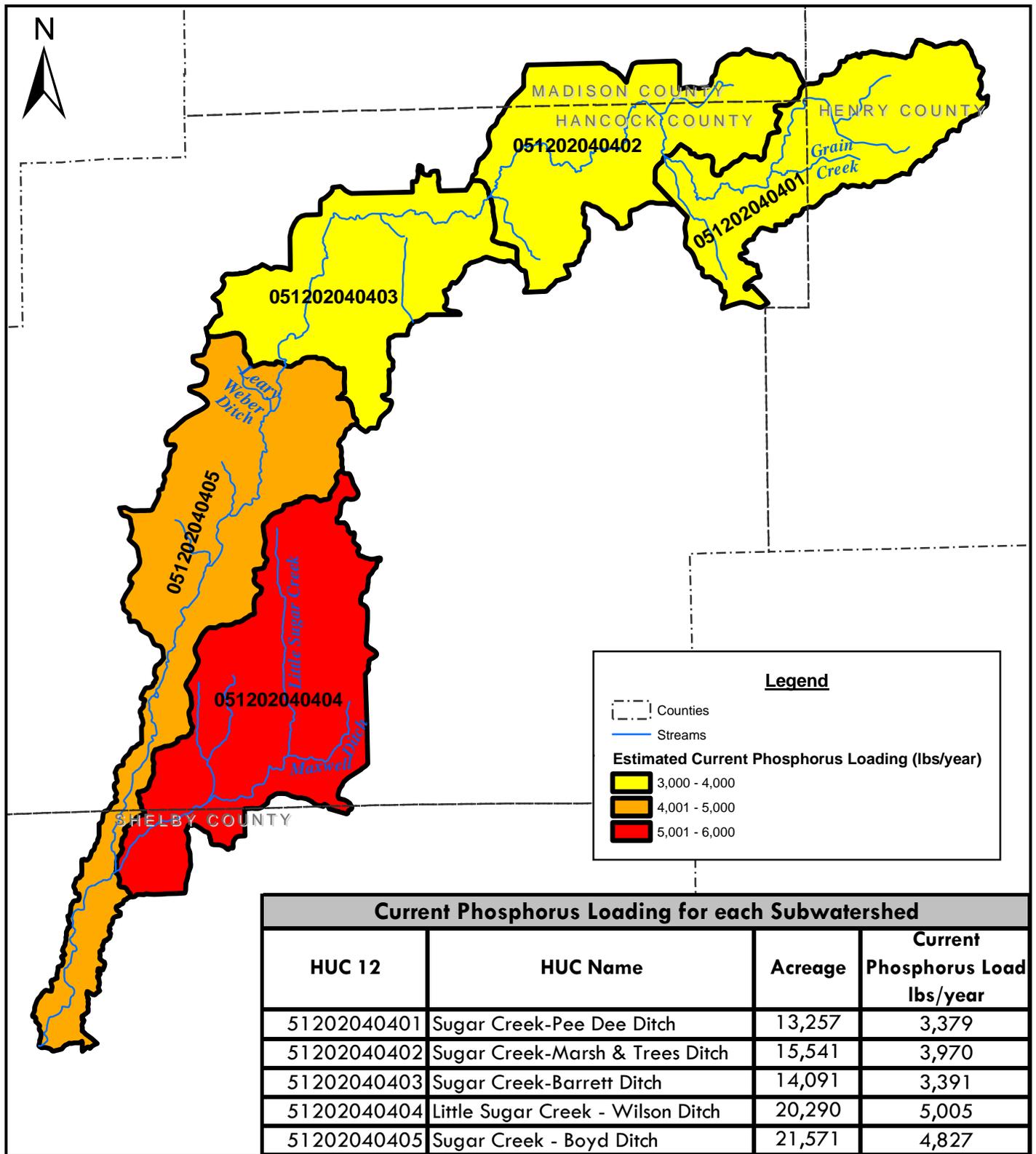
- 5 Occurrences
- 6 Occurrences
- 7 Occurrences
- 8 Occurrences
- 9 Occurrences



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TITLE: <b>Total Phosphorus Exceedances at V3 Sampling Stations</b>
BASE LAYER: USGS Topographic Map
CLIENT: Hancock County SWCD 1101 West Main St., Ste. N Greenfield, IN 46140

PROJECT: <b>Sugar Creek Watershed Project</b>		
PROJECT NO. 07065	EXHIBIT: 32	SHEET: 1 OF: 1
QUADRANGLE: N/A	DATE: 4/29/08	SCALE: NTS



Current Phosphorus Loading for each Subwatershed			
HUC 12	HUC Name	Acreage	Current Phosphorus Load lbs/year
51202040401	Sugar Creek-Pee Dee Ditch	13,257	3,379
51202040402	Sugar Creek-Marsh & Trees Ditch	15,541	3,970
51202040403	Sugar Creek-Barrett Ditch	14,091	3,391
51202040404	Little Sugar Creek - Wilson Ditch	20,290	5,005
51202040405	Sugar Creek - Boyd Ditch	21,571	4,827



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TITLE: Estimated Phosphorus Loading  
 BASE LAYER: N/A  
 CLIENT: Hancock County SWCD  
 1101 W. Main Street, Ste N  
 Greenfield, IN 46140

PROJECT: Sugar Creek Watershed Project  
 PROJECT NO. 07065  
 EXHIBIT: 40  
 SHEET: 1 OF 1  
 QUADRANGLE: N/A  
 DATE: 3/1/09  
 SCALE: NTS

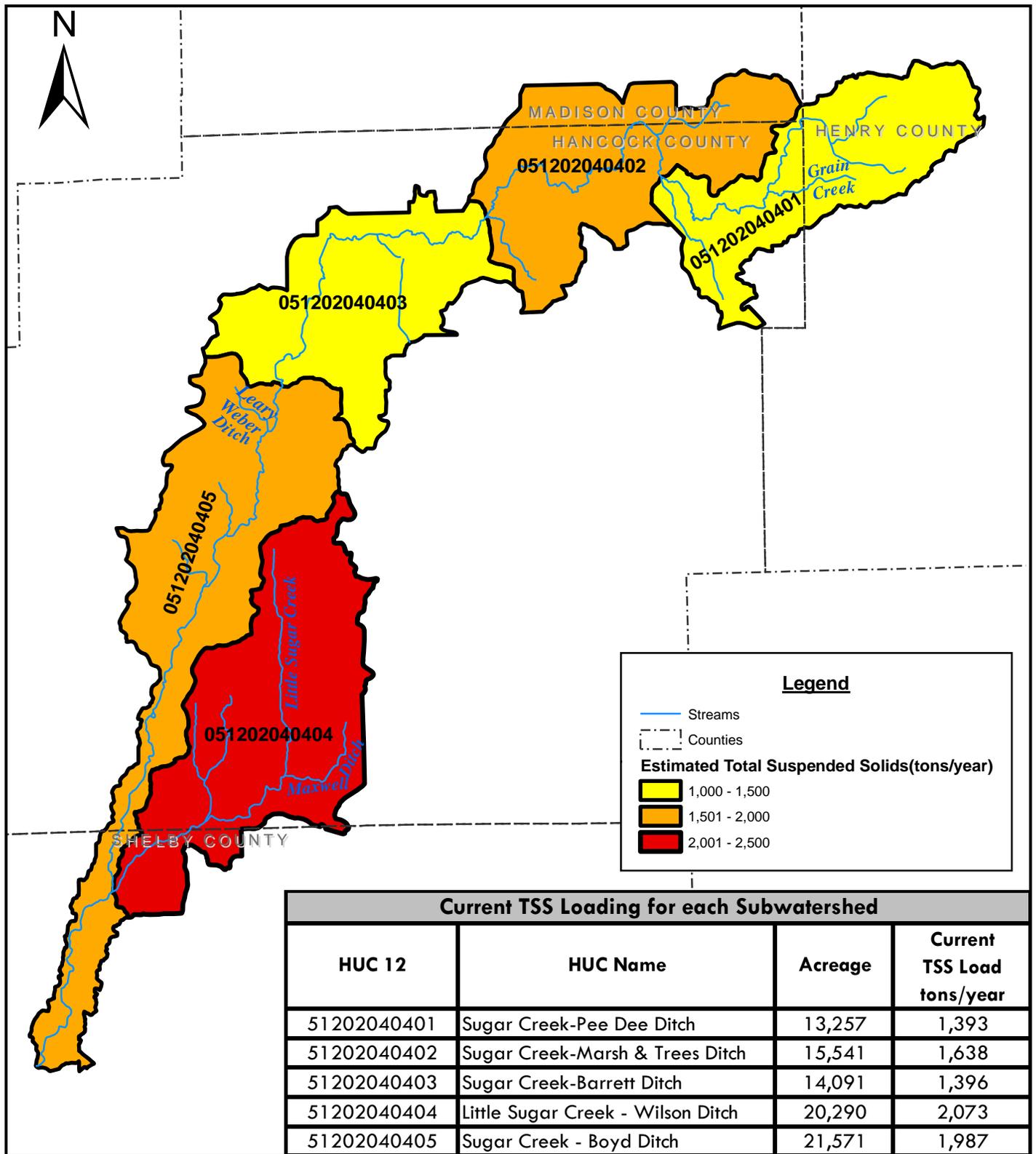
### **Problem Statement 3**

Excessive soil erosion and sedimentation associated with agricultural lands, urban lands, and development sites is degrading the Sugar Creek Watershed and limiting the aesthetics, recreational access, wildlife habitat, and drainage of Sugar Creek. For the purpose of this WMP sediment will be discussed in terms of total suspended solids (TSS). The data identifying sedimentation as a stressor is shown in Exhibit 41.

Stressor: Silt and sediment, nutrients that bind to sediment, pathogens that bind to sediment

Source: Flooding impacts, proper drainage from agricultural lands, streambank erosion, cattle access to the stream, land use changes, stormwater management, log jams, beaver, wildlife effects on water quality by contributing to nutrients through their waste, lack of proper wildlife management, presence of existing sandbars

Areas Where Sources Have Been Observed: Livestock stream access throughout Sugar Creek Watershed, Pee Dee Ditch and urban areas surrounding Warrington, urban areas surrounding Nashville, urban areas surrounding Eden, urban areas surrounding Mohawk, Mohawk Campground, Conservation Club, and Leary Weber Ditch, S&H Campground, Philadelphia, Wildwood Subdivision, Spring Lake, and Arrowhead Mobile Park, and The Overlook Subdivision



**Legend**

- Streams
- Counties

**Estimated Total Suspended Solids(tons/year)**

- 1,000 - 1,500
- 1,501 - 2,000
- 2,001 - 2,500

Current TSS Loading for each Subwatershed			
HUC 12	HUC Name	Acreage	Current TSS Load tons/year
51 202040401	Sugar Creek-Pee Dee Ditch	13,257	1,393
51 202040402	Sugar Creek-Marsh & Trees Ditch	15,541	1,638
51 202040403	Sugar Creek-Barrett Ditch	14,091	1,396
51 202040404	Little Sugar Creek - Wilson Ditch	20,290	2,073
51 202040405	Sugar Creek - Boyd Ditch	21,571	1,987

 <p>V3 Companies 7325 Janes Avenue Woodridge, IL 60517 630.724.9200 phone 630.724.9202 fax www.v3co.com</p>	<b>TITLE:</b> Estimated Total Suspended Solids		<b>PROJECT:</b> Sugar Creek Watershed Project		
	<b>BASE LAYER:</b> N/A		<b>PROJECT NO.:</b> 07065	<b>EXHIBIT:</b> 41	<b>SHEET:</b> 1 OF: 1
	<b>CLIENT:</b> Hancock County SWCD 1101 W. Main Street, Ste N Greenfield, IN 46140		<b>QUADRANGLE:</b> N/A	<b>DATE:</b> 7/8/08	<b>SCALE:</b> NTS

#### **Problem Statement 4**

Excessive flow rates and volumes of water during large precipitation events are causing crop damage and loss within the Sugar Creek Watershed.

Stressor: damaging flood levels

Source: Lack of proper drainage in the Watershed, log jams, beaver creating log jams, flooding impacts, streambank erosion, cattle access to the stream, land use changes, stormwater management, presence of existing sandbars

Areas Where Sources Have Been Observed: Urban areas surrounding Eden, S&H Campground, Philadelphia, Wildwood Subdivision, Spring Lake, Arrowhead Mobile Park, and the Sugar Creek Watershed along Sugar Creek between 200 S to 600 S

#### **Problem Statement 5**

There is a lack of open space/greenways along Sugar Creek and its tributaries. Pollutants are allowed to enter Sugar Creek and its tributaries without any filtration process.

Stressor: unfiltered stormwater run-off

Source: lack of filter strips and Best Management Practices, lack of native vegetation, lack of greenway corridor along Sugar Creek, Preservation areas that are not maintained

Areas Where Sources Have Been Observed: Areas void of open space and greenway along the Sugar Creek corridor

#### **Problem Statement 6**

Stakeholders in the Sugar Creek Watershed are not knowledgeable about their daily impact on the Sugar Creek Watershed and its water quality.

Stressor: Lack of education and outreach with regard to the Watershed health and condition

Source: Lack of sponsored workshops within the Watershed, lack of interest from the Stakeholders, lack of media coverage about the detrimental effects of humans and their daily activities on the Watershed

Target Audience: Stakeholders, local groups

## **Problem Statement 7**

Stakeholders in the Sugar Creek Watershed are not aware of the watershed planning process or the existence of the watershed group.

Stressor: Lack of education and interest with regard to the Watershed health and condition

Source: Lack of time and commitment

Target Audience: Neighborhood groups, stakeholders, schools, local newspapers, local radio, local television

## SUGAR CREEK WATERSHED CRITICAL AREAS

On May 13, 2008, the Sugar Creek Watershed's Steering Committee identified 9 critical areas. The Critical Area discussion continued to mature as the sources of the problems in the watershed were tied to specific critical locations. Subsequent discussions between V3, Hancock County SWCD, IDEM and the Steering Committee attempted to correlate BMP implementation project placement to solving the problems and causes of pollutant loading sources. The Steering Committee finalized five critical areas as significant areas for pathogens (*E. coli*), sediment, nutrients and flooding. The five critical areas are listed in Table 31 and depicted in Exhibit 43. The critical areas are represented by HUC-12 subwatersheds and account for approximately 64,460 total acres (livestock stream access did not contribute acreages), which is approximately 76% of the Watershed by area.

Table 31. Finalized Critical Area Locations within the Sugar Creek Watershed							
Critical Area #	Name	County(s)	<i>E. coli</i>	Sediment	Nutrients	Flooding	Critical Area Acreage
1	Pee Dee Ditch –Sugar Creek	Hancock and Henry Counties	X	X	X	X	13,257
2	Marsh and Trees Ditch – Sugar Creek	Hancock and Madison Counties	X	X	X	X	15,541
3	Barrett Ditch – Sugar Creek	Hancock County	X	X	X	X	14,091
4	Boyd and Leary Weber Ditch - Little Sugar Creek	Hancock and Shelby Counties	X	X	X	X	21,571
5	Livestock Stream Access	Hancock, Henry, Madison and Shelby Counties	X	X	X	X	-
		<b>Total:</b>	5	5	5	5	64,460

Critical Area #1, HUC-12 number 051202040401, includes Pee Dee Ditch, Grain Ditch and urban areas surrounding Warrington. This critical area is 13,257 acres and is located in both Hancock and Henry Counties. Pee Dee Ditch, Grain Ditch, and four other tributaries to Sugar Creek, along with Sugar Creek itself combine for a total of 18 miles of stream reach. This area has been identified as being a critical area because it is a significant contributor of nutrient loading (both nitrogen and phosphorus) within the watershed. Critical Area #1 possesses locations which have the following problems observed by the Steering Committee during the Fall 2007 and Spring 2008 Windshield Surveys:

- Areas of sedimentation
- Log jams
- Areas where bank protection and stabilization are needed
- Areas where excessive streambank erosion is occurring
- Areas where livestock have direct access to Sugar Creek or its tributaries
- Areas where water is stagnant
- Areas where excessive trash and debris are located
- Areas where field drain tiles discharge into Sugar Creek or its tributaries

Critical Area #2, HUC-12 number 051202040402, includes the urban area associated with Nashville and the problematic floodplain area between Nashville and Eden. The critical area is 15,541 acres and is located in both Hancock and Madison Counties. Marsh & Trees Ditch combine with all the other surface water drainageways for a total of 13 miles. This area has been identified as being a critical area because it similarly is a significant contributor of both nitrogen and phosphorus. Critical Area #2 possesses locations which have the following problems observed by the Steering Committee during the Fall 2007 and Spring 2008 Windshield Surveys:

- Areas of sedimentation
- Log jams
- Areas where bank protection and stabilization are needed
- Areas where excessive streambank erosion is occurring
- Areas where flooding occurs
- Areas where livestock have direct access to Sugar Creek or its tributaries
- Areas where water is stagnant
- Areas where excessive trash and debris are located
- Areas where septic system pipes discharge into Sugar Creek or its tributaries
- Areas where field drain tiles discharge into Sugar Creek or its tributaries

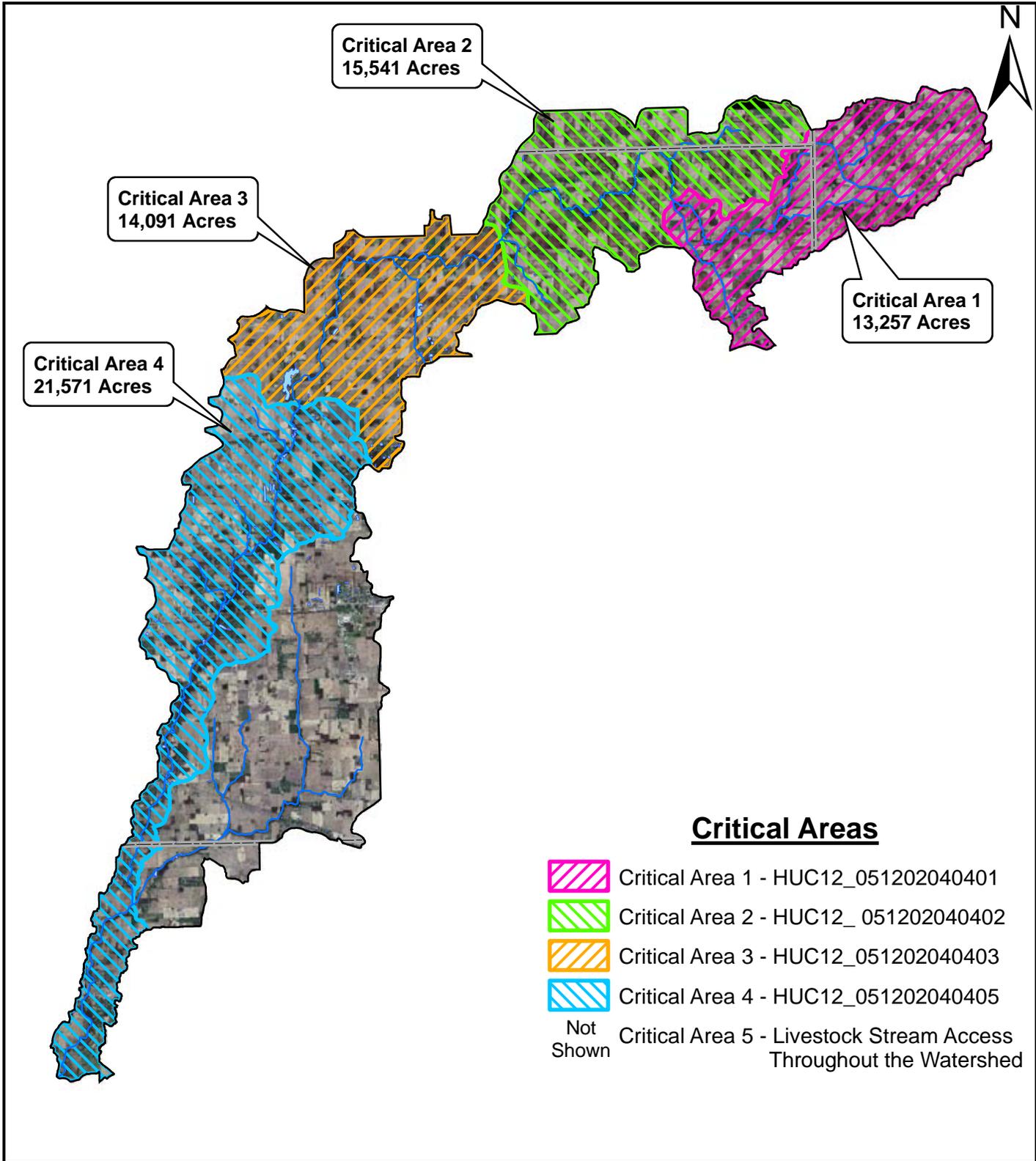
Critical Area #3, HUC-12 number 051202040403, includes the urban area associated with Eden and the problematic floodplain area between Nashville and Eden. The critical area is 14,091 acres and is located in Hancock County. Barrett Ditch and three other tributaries, along with Sugar Creek combine for a total of 16 miles of stream reach. This area has been identified as being a critical area because implementing BMPs to control the source of sediment loads and nutrient loads will reduce the amount of TSS, nutrients and phosphorus in the streams. Critical Area #3 possesses locations which have the following problems observed by the Steering Committee during the Fall 2007 and Spring 2008 Windshield Surveys:

- Areas of sedimentation
- Areas where bank protection and stabilization are needed
- Areas where excessive streambank erosion is occurring
- Areas where flooding occurs
- Areas where livestock have direct access to Sugar Creek or its tributaries
- Areas where excessive trash and debris are located
- Areas where septic system pipes discharge into Sugar Creek or its tributaries

Critical Area #4, HUC-12 number 051202040405, includes: the urban area associated with Mohawk and Mohawk Campground, Conservation Club; the Leary Weber Ditch; the Heartland Resort; the S&H Campground; urban areas surrounding Philadelphia; the Wildwood Subdivision; urban areas surrounding Spring Lake; the Arrowhead Mobile Park; the Overlook Subdivision; and the problematic floodplain corridor along Sugar Creek between 200 S and 600 S. The critical area is 21,571 acres which includes 38 miles of waterway and is located in Hancock and Shelby Counties. Both the town of Mohawk and the Mohawk Campground have been identified as contributors to the problem of nutrients, *E. coli*, and sediment. The Heartland Resort, located immediately south of the town of Mohawk, is identified as a contributor to the problem of nutrients and *E. coli*. The steering committee noted this subwatershed as the most significant contributor of *E. coli* through failing septic systems. Critical Area #4 possesses locations which have the following problems observed by the Steering Committee during the Fall 2007 and Spring 2008 Windshield Surveys:

- Areas of sedimentation
- Log jams
- Areas where bank protection and stabilization are needed
- Areas where excessive streambank erosion is occurring
- Areas where flooding occurs
- Areas where livestock have direct access to Sugar Creek or its tributaries
- Areas where excessive trash and debris are located
- Areas where septic system pipes discharge into Sugar Creek or its tributaries
- Areas where vegetated buffer is lacking along a waterway within the Watershed

Critical Area #5, not shown on an exhibit, is the livestock stream access critical area. Areas in the watershed where livestock have direct access to the stream are identified as being critical as they contribute to the problems of *E. coli* and sediment. Addressing these concerns will also impact concerns regarding streambank degradation. The implementation of BMPs such as exclusion fencing and alternative water supply would improve the condition of the Watershed.



 <p>V3 Companies 7325 Janes Avenue Woodridge, IL 60517 630.724.9200 phone 630.724.9202 fax www.v3co.com</p>	<p>TITLE: <b>Final Nutrient, E. Coli, Sediment, and Flooding Critical Areas</b></p>	<p>PROJECT: <b>Sugar Creek Watershed Project</b></p>		
	<p>BASE LAYER: 2005 Aerial Indiana University Spatial Data Portal</p>	<p>PROJECT NO. 07065</p>	<p>EXHIBIT: 43</p>	<p>SHEET: 1 OF: 1</p>
	<p>CLIENT: Hancock County SWCD 1101 W. Main Street, Ste N Greenfield, IN 46140</p>	<p>QUADRANGLE: N/A</p>	<p>DATE: 9/8/08</p>	<p>SCALE: NTS</p>

## SET GOALS AND OBJECTIVES

The Steering Committee evaluated the priority resource concerns that were gathered from stakeholders throughout the Sugar Creek Watershed, evaluated the problem statements, and examined the mission statement of the Sugar Creek WMP. With this information in mind, seven goals were developed, which the committee hopes to achieve through the implementation of the Sugar Creek WMP. The complete listing of the Sugar Creek WMP's goals is as follows:

**Goal #1:** Sustain the Sugar Creek Watershed Stakeholder Group.

**Objectives:**

- Meet as a Committee on a quarterly basis,
- Increase involvement and participation with the planning process from Stakeholders within the Watershed,
- Pursue and implement watershed improvement projects,
- Sustaining active subcommittees.

**Goal #2:** Reduce *E. coli* concentrations to meet state standard of 235 CFU/100 ml in the Sugar Creek Watershed by 2030.

**Objectives:**

- Reduce the amount of *E. coli* runoff from agricultural lands through the encouragement of exclusionary fencing installation, the promotion of alternative water supplies, and the education and implementation of manure management practices,
- Reduce the amount of *E. coli* runoff from urban lands,
- Reduce the amount of *E. coli* runoff from point sources, failed septic systems, and package plants, and
- Reduce the amount of *E. coli* in Sugar Creek to allow the waters to be fishable and swimmable for all stakeholders.

**Goal #3:** Reduce the maximum concentration so that there are no exceedances of Nitrate plus Nitrite of 10 mg/L and Total Phosphorus of 0.3 mg/L by 2030.

**Objectives:**

- Improve the efficiency of urban and agricultural fertilizer application using grid mapping, and variable rate technology,
- Educate the public/Stakeholders (urban and agricultural) of the importance of reduced application of fertilizers,
- Increase the riparian buffer zone using filter strips and grassed waterways,
- Increase the amount of BMPs used in the Sugar Creek Watershed including but not limited to: cover crops in the winter, grid mapping, and variable rate technology,
- Discourage the Fall and Winter application of fertilizer,

- Encourage more soil testing to optimize Nitrogen application (Home owners, farmers, etc.),
- Encourage lower application rates of fertilizers within the watershed through education workshops and field days.

**Goal #4:** Reduce soil erosion/sedimentation from agricultural and urban lands to meet 80 mg/L of total suspended solids (TSS) by 2030.

**Objectives:**

- Reduce soil erosion and sedimentation from agricultural lands,
- Reduce soil erosion and sedimentation from urban lands, and
- Encourage enforcement of erosion control practices associated with the issuance of building permits within the Watershed.

**Goal #5:** Reduce flood damage in the Sugar Creek Watershed by 2030.

**Objectives:**

- Reduce flow rates and volumes from existing developed areas and prevent increases in flow rates and volumes from new development within the Watershed,
- Protect and restore floodplain functions,
- Encourage the maintenance and management of the Sugar Creek corridor and other drainageways to minimize flooding,
- Create and restore wetland areas to increase storage within the Watershed.

**Goal # 6:** Develop and implement watershed education and outreach programs in the Sugar Creek Watershed.

**Objectives:**

- Effectively use forms of media (TV, newspaper, newsletters and radio) to share and communicate past, current, and future activities of the Sugar Creek Steering Committee with the media, public, and current and potential Sugar Creek Steering Committee members,
- Recruit and train volunteers to monitor at a minimum, each of the subwatersheds, obtaining both wet and dry weather data at each site at least twice each year, and provide continuing education opportunities for volunteer monitors,
- Promote sustainable drainage practices,
- Educate homeowners in urban communities about the use of fertilizers,
- Educate stakeholders using septic systems about the importance of septic system maintenance,
- Establish a legislative liaison,
- Educate stakeholders and landowners about the detrimental effects that All Terrain Vehicles (ATV's) have on the Sugar Creek Watershed,
- Educate the stakeholders in the Watershed about other efforts and studies conducted within the Watershed,
- Educate homeowners within the Watershed about the Storm Drain Marking Program.

**Goal #7:** Increase preservation and restoration of open space within the Sugar Creek Watershed by 2030.

**Objectives:**

- Increase acquisition of land to be dedicated to open space and greenways,
- Increase the preservation of wildlife habitat and protected areas within the Sugar Creek Watershed,
- Encourage the utilization of proper wildlife management practices within the Sugar Creek Watershed,
- Encourage farmland preservation within the Watershed.

## SELECTED BEST MANAGEMENT PRACTICES

Based on what is practical for this Watershed and what Best Management Practices (BMPs) will provide the most cost effective pollutant reduction, the Steering Committee has chosen twelve agricultural BMPs and eight urban BMPs. The BMPs chosen will help achieve the Watershed goals and objectives by decreasing the concentrations of pathogens (*E. coli*), sediment, and nutrients, as well as decrease the impacts of flooding.

### **Agricultural Best Management Practices:**

1. Exclusion Fencing
2. Rotational Grazing
3. Nutrient Management Plan
4. Manure Management Plan
5. Alternative Watering System
6. No-till/Reduced Till (Conservation Tillage)
7. Grassed Waterways
8. Buffers/Filter Strips
9. Grade-Stabilization Structures
10. Cover Crop
11. Wetland Restoration
12. Soil Infiltration Trench

### **Urban Best Management Practices:**

1. Rain Barrel/Rain Garden
2. Naturalized Wet-bottom Detention Basin
3. Filtration Basin
4. Pervious Paving
5. Soil Infiltration Trench
6. Sand Filter
7. Bioretention Practices
8. Natural Stream Buffer

## MONITORING EFFECTIVENESS

The Steering Committee established both a programmatic action plan and measurable milestones for the goals of the WMP. The programmatic action plan assigns goal as a short-term or long-term measurable milestone, identifies the objectives and action items, identifies the responsible party or parties involved with the implementation of the actions, and outlines both the technical and financial assistance needs for each action item (see Section 5 of this report). Tables 32a-32g lists the measurable milestones for each of the seven goals identified by the Steering Committee. These milestones have been suggested in order to help track the process of implementing action items within the Sugar Creek Watershed.

**Table 32a Priority Ranking of Objectives:**

**Goal #1:** Sustain the Sugar Creek Watershed Stakeholder Group. All action items are short-term measurable milestone priorities.

<b>Objective</b>	<b>Action Item</b>	<b>Responsible Party</b>	<b>Technical Assistance</b>	<b>Financial Assistance</b>
Meet as a Committee on a quarterly basis	Retain active committee participants and acquire new committee members.	<b>Steering Committee</b>	Volunteers, SWCDs	Volunteer/Donations
Increase involvement and participation with the planning process from Stakeholders within the Watershed	Expand responsibilities and stewardship of active committee participants and stakeholders with the planning process.	<b>Steering Committee</b>	Volunteers, SWCDs	Volunteer/Donations
	Research local stakeholder groups with similar missions or interest within the Watershed.	<b>Steering Committee</b>	Volunteers, SWCD	Volunteer/Donations
	Network with related stakeholder groups and use public forums as recruiting opportunities	<b>Steering Committee</b>	Volunteers, SWCD	Volunteer/Donations
Pursue and implement watershed improvement projects	Promote urban BMPs by pursuing funding, implementing urban BMP demonstration projects and providing field day tours of implementation sites.	<b>Research/Grant Writing; Media/Marketing/Website; Urban Sub-Committees</b>	Volunteers, SWCDs, NRCS, IDNR, IDEM, Consultant	Volunteer/Donations/Grant Funding
	Promote rural BMPs by pursuing funding, implementing rural BMP demonstration projects and providing field day tours of implementation sites.	<b>Research/Grant Writing; Media/Marketing/Website; Agricultural Sub-Committees</b>	Volunteers, SWCDs, NRCS, IDNR, IDEM, Consultant	Volunteer/Donations/Grant Funding
Sustaining active subcommittees	Retain active subcommittee participants and acquire new subcommittees and subcommittee members.	<b>Steering Committee</b>	Volunteers, SWCDs	Volunteer/Donations

**Table 32b Priority Ranking of Objectives:**

**Goal #2:** Reduce *E. coli* concentrations to meet state standards of 235 CFU/100 ml in the Sugar Creek Watershed by 2030. All action items are long-term measurable milestone priorities.

Objective	Action Item	Responsible Party	Technical Assistance	Financial Assistance
Reduce the amount of <i>E. coli</i> runoff from agricultural lands through the encouragement of exclusionary fencing installation, the promotion of alternative water supplies, and the education and implementation of manure management practices	Promote and provide technical assistance to implement exclusionary fencing installation which would prevent livestock from having access to the stream.	<b>Education; Media/Marketing/Website; Agricultural Sub-Committees</b>	Volunteers, SWCDs, NRCS, IDNR, IDEM, Consultant	Volunteer/Donations/ Grant Funding
	Promote and provide technical assistance to implement alternative water supplies for livestock in order to replace direct access to the stream.	<b>Education; Media/Marketing/Website; Agricultural Sub-Committees</b>	Volunteers, SWCDs, NRCS, IDNR, IDEM, Consultant	Volunteer/Donations/ Grant Funding
	Promote and provide technical assistance to educate and implement manure management practices.	<b>Education; Media/Marketing/Website; Agricultural Sub-Committees</b>	Volunteers, SWCDs, NRCS, IDNR, IDEM, Consultant	Volunteer/Donations/ Grant Funding
Reduce the amount of <i>E. coli</i> runoff from urban lands	Promote and provide technical assistance to implement appropriate BMPs.	<b>Steering Committee</b>	Volunteers, SWCDs, NRCS, IDNR, IDEM, Consultant	Volunteer/Donations/ Grant Funding
Reduce the amount of <i>E. coli</i> runoff from point sources, failed septic systems, and package plants	Educate stakeholders about the detrimental impacts to water quality from point sources, failed septic systems and package plants.	<b>Steering Committee</b>	Volunteers, SWCDs	Volunteer/Donations
	Encourage regular maintenance and repair of failing septic systems.	<b>Steering Committee</b>	Volunteers, SWCD	Volunteer/Donations
Reduce the amount of <i>E. coli</i> in Sugar Creek to allow the waters to be fishable and swimmable for all stakeholders	Promote and provide technical assistance to implement appropriate BMPs.	<b>Steering Committee</b>	Volunteers, SWCDs, NRCS, IDNR, IDEM, Consultant	Volunteer/Donations/ Grant Funding

**Table 32c Priority Ranking of Objectives:**

**Goal #3:** Reduce the maximum concentration so that there are no exceedances of Nitrate plus Nitrite of 10 mg/L and Total Phosphorus of 0.3 mg/L by 2030. All action items are long-term measurable milestone priorities.

Objective	Action Item	Responsible Party	Technical Assistance	Financial Assistance
Improve the efficiency of urban and agricultural fertilizer application using grid mapping, and variable rate technology	Educate farmers, home owners, landscaping companies, stakeholders about the proper application of fertilizers.	Steering Committee	Volunteers, SWCDs, NRCS, IDNR, IDEM, Consultant	Volunteer/Donations/Grant Funding
	Utilize and promote the Farm Bill Program.	Steering Committee	SWCDs, NRCS	Grant Funding
Educate the public/Stakeholders (urban and agricultural) of the importance of reduced application of fertilizers	Educate farmers, home owners, landscaping companies, stakeholders about the impacts to water quality (both groundwater and surface water) from the improper application of excessive fertilizers.	Steering Committee	Volunteers, SWCDs, NRCS, IDNR, IDEM, Consultant	Volunteer/Donations/Grant Funding
Increase the riparian buffer zone using filter strips and grassed waterways	Promote and provide technical assistance to implement appropriate BMPs.	Steering Committee	Volunteers, SWCDs, NRCS, IDNR, IDEM, Consultant	Volunteer/Donations/Grant Funding
	Promote filter strips and grassed waterways as BMPs by pursuing funding, implementing demonstration projects and providing field day tours of implementation sites.	Steering Committee	Volunteers, SWCDs, NRCS, IDNR, IDEM, Consultant	Volunteer/Donations/Grant Funding
Increase the amount of BMPs used in the Sugar Creek Watershed including but not limited to: cover crops in the winter, grid mapping, and variable rate technology	Promote and provide technical assistance to implement appropriate BMPs.	Steering Committee	Volunteers, SWCDs, NRCS, IDNR, IDEM, Consultant	Volunteer/Donations/Grant Funding
	Promote BMPs by pursuing funding, implementing demonstration projects and providing field day tours of implementation sites.	Steering Committee	Volunteers, SWCDs, NRCS, IDNR, IDEM, Consultant	Volunteer/Donations/Grant Funding
Discourage the Fall and Winter application of fertilizer	Educate farmers, home owners, landscaping companies, stakeholders about the impacts to water quality (both groundwater and surface water) from the improper application of fertilizers.	Steering Committee	Volunteers, SWCDs, NRCS, IDNR, IDEM, Consultant	Volunteer/Donations/Grant Funding
Encourage more soil testing to optimize Nitrogen application (Home owners, farmers, etc.)	Promote and provide technical assistance to encourage more soil testing to optimize nitrogen application.	Steering Committee	Volunteers, SWCDs, NRCS, IDNR, IDEM, Consultant	Volunteer/Donations/Grant Funding
Encourage lower application rates of fertilizers within the Watershed through education workshops and field days	Educate farmers, home owners, landscaping companies, stakeholders through workshops and field days about the impacts to water quality (both groundwater and surface water) from the improper application of fertilizers.	Steering Committee	Volunteers, SWCDs, NRCS, IDNR, IDEM, Consultant	Volunteer/Donations/Grant Funding

**Table 32d Priority Ranking of Objectives:**

**Goal #4:** Reduce soil erosion/sedimentation from agricultural and urban lands to meet 80 mg/L of total suspended solids (TSS) by 2030. All action items are long-term measurable milestone priorities.

Objective	Action Item	Responsible Party	Technical Assistance	Financial Assistance
Reduce soil erosion and sedimentation from agricultural lands	Promote and provide technical assistance to implement appropriate agricultural land BMPs.	<b>Education; Media/ Marketing/ Website; Agricultural Sub-Committees</b>	Volunteers, SWCDs, NRCS, IDNR, IDEM, Consultant	Volunteer/Donations/ Grant Funding
	Promote agricultural land BMPs by pursuing funding, implementing demonstration projects and providing field day tours of implementation sites.	<b>Education; Research/ Grant Writing; Agricultural Sub-Committees</b>	Volunteers, SWCDs, NRCS, IDNR, IDEM, Consultant	Volunteer/Donations/ Grant Funding
	Utilize and promote the Farm Bill Program.	<b>Steering Committee</b>	SWCDs, NRCS	Grant Funding
	Designate a volunteer for specific areas throughout the Watershed as the main contact for reporting violations.	<b>Steering Committee</b>	Volunteers, Steering Committee	Volunteers
Reduce soil erosion and sedimentation from urban lands	Promote and provide technical assistance to implement appropriate urban land BMPs.	<b>Education; Media/ Marketing/ Website; Urban Sub-Committees</b>	Volunteers, SWCDs, NRCS, IDNR, IDEM, Consultant	Volunteer/Donations/ Grant Funding
	Promote urban land BMPs by pursuing funding, implementing demonstration projects and providing field day tours of implementation sites.	<b>Education; Research/ Grant Writing; Urban Sub-Committees</b>	Volunteers, SWCDs, NRCS, IDNR, IDEM, Consultant	Volunteer/Donations/ Grant Funding
	Designate a volunteer for specific areas throughout the Watershed as the main contact for reporting violations.	<b>Steering Committee</b>	Volunteers, Steering Committee	Volunteers
Encourage enforcement of erosion control practices associated with the issuance of building permits within the Watershed	Work with permitting entities to adopt building permit ordinances with more conservative erosion control practices.	<b>Legislative/ Local Advocacy Sub-Committees</b>	Volunteers, SWCDs, NRCS, IDNR, IDEM, Consultant	Volunteer/Donations/ Grant Funding
	Work with permitting entities to adopt more stringent enforcement of erosion control practices.	<b>Legislative/ Local Advocacy Sub-Committees</b>	Volunteers, SWCDs, NRCS, IDNR, IDEM, Consultant	Volunteer/Donations/ Grant Funding
	Establish a volunteer group that will monitor construction sites for violations.	<b>Monitoring; Legislative/ Local Advocacy Sub-Committees</b>	Volunteers, Steering Committee	Volunteers

**Table 32e Priority Ranking of Objectives:**

**Goal #5:** Reduce flood damage in the Sugar Creek Watershed by 2030. All action items are long-term measurable milestone priorities.

Objective	Action Item	Responsible Party	Technical Assistance	Financial Assistance
Reduce flow rates and volumes from existing developed areas and prevent increases in flow rates and volumes from new development within the Watershed	Work with permitting entities to adopt stormwater permit ordinances with more conservative stormwater runoff rate and volume limits.	<b>Legislative/Local Advocacy Sub-Committees</b>	Volunteers, SWCDs, NRCS, IDNR, IDEM, County Surveyor	Volunteer/Donations/Grant Funding
	Promote and provide technical assistance to implement appropriate BMPs within developed areas to reduce stormwater runoff flow rates and volumes.	<b>Steering Committee</b>	Volunteers, SWCDs, NRCS, IDNR, IDEM, County Surveyor	Volunteer/Donations/Grant Funding
	Promote BMPs within developed areas to reduce stormwater runoff flow rates and volumes by pursuing funding, implementing demonstration projects and providing field day tours of implementation sites.	<b>Steering Committee</b>	Volunteers, SWCDs, NRCS, IDNR, IDEM, County Surveyor	Volunteer/Donations/Grant Funding
Protect and restore floodplain functions	Promote and provide technical assistance to protect and restore floodplain functions within the Watershed.	<b>Steering Committee</b>	Volunteers, SWCDs, NRCS, IDNR, IDEM, County Surveyor	Volunteer/Donations/Grant Funding
	Promote the protection and restoration of floodplain functions by pursuing funding, implementing demonstration projects and providing field day tours of implementation sites.	<b>Steering Committee</b>	Volunteers, SWCDs, NRCS, IDNR, IDEM, County Surveyor	Volunteer/Donations/Grant Funding
Encourage the maintenance and management of the Sugar Creek corridor and other drainageways to minimize flooding	Promote and provide technical assistance for maintenance and management practices which will result in reducing flood damage within the Watershed.	<b>Steering Committee</b>	Volunteers, SWCDs, NRCS, IDNR, IDEM, County Surveyor	Volunteer/Donations/Grant Funding
Create and restore wetland areas to increase storage within the Watershed	Promote and provide technical assistance to implement wetland creation and restoration projects to increase storage.	<b>Steering Committee</b>	Volunteers, SWCDs, NRCS, IDNR, IDEM, County Surveyor	Volunteer/Donations/Grant Funding
	Promote wetland creation and restoration projects by pursuing funding, implementing demonstration projects and providing field day tours of implementation sites.	<b>Steering Committee</b>	Volunteers, SWCDs, NRCS, IDNR, IDEM, County Surveyor	Volunteer/Donations/Grant Funding

**Table 32f Priority Ranking of Objectives:**

**Goal #6:** Develop and implement watershed education and outreach programs in the Sugar Creek Watershed. All action items are short-term measurable milestone priorities.

Objective	Action Item	Responsible Party	Technical Assistance	Financial Assistance
Effectively use forms of media (TV, newspaper, newsletters and radio) to share and communicate past, current, and future activities of the Sugar Creek Steering Committee with the media, public, and current and potential Sugar Creek Steering Committee members	Promote the effective use of media (TV, newspaper, newsletters and radio) to share and communicate watershed improvement activities.	<b>Media/Marketing/Website Sub-Committees</b>	Volunteers, SWCDs, NRCS, IDNR, IDEM, Consultant	Volunteer/Donations/Grant Funding
Recruit and train volunteers to monitor at a minimum, each of the subwatersheds, obtaining both wet and dry weather data at each site at least twice each year, and provide continuing education opportunities for volunteer monitors	Promote activities to recruit and train volunteers for monitoring watershed conditions including biological, physical and chemical parameters.	<b>Education; Monitoring Sub-Committees</b>	Volunteers, SWCDs, NRCS, IDNR, IDEM, Consultant	Volunteer/Donations/Grant Funding
	Provide training and educational opportunities for volunteer monitors.	<b>Education; Monitoring Sub-Committees</b>	Volunteers, SWCDs, NRCS, IDNR, IDEM, Consultant	Volunteer/Donations/Grant Funding
Promote sustainable drainage practices	Encourage implementation of sustainable drainage practices throughout the Watershed.	<b>Steering Committee</b>	Volunteers, SWCDs, NRCS, IDNR, IDEM, Consultant	Volunteer/Donations/Grant Funding
Educate homeowners in urban communities about the use of fertilizers	Educate home owners, stakeholders about the impacts to water quality (both groundwater and surface water) from the improper application of excessive fertilizers.	<b>Steering Committee</b>	Volunteers, SWCDs, NRCS, IDNR, IDEM, Consultant	Volunteer/Donations/Grant Funding
Educate stakeholders using septic systems about the importance of septic system maintenance	Encourage regular maintenance and repair of failing septic systems.	<b>Steering Committee</b>	Volunteers, SWCD	Volunteer/Donations
Establish a legislative liaison	Promote the establishment of a legislative liaison with a prime directive of improving the water quality of the Sugar Creek Watershed.	<b>Legislative/Local Advocacy Sub-Committees</b>	Volunteers, SWCDs, NRCS, IDNR, IDEM, Consultant	Volunteer/Donations/Grant Funding
Educate stakeholders and landowners about the detrimental effects that All Terrain Vehicles (ATV's) have on the Sugar Creek Watershed	Promote awareness of detrimental effects on the health of the Watershed from ATV use in and along Sugar Creek.	<b>Steering Committee</b>	Volunteers, SWCDs, NRCS, IDNR, IDEM, Consultant	Volunteer/Donations/Grant Funding
Educate the stakeholders in the Watershed about other efforts and studies conducted within the Watershed	Encourage stakeholder awareness with respect to studies conducted within the Watershed.	<b>Steering Committee</b>	Volunteers, SWCDs, NRCS, IDNR, IDEM, Consultant	Volunteer/Donations/Grant Funding
Educate homeowners within the Watershed about the Storm Drain Marking Program	Promote implementing a Storm Drain Marking Program throughout the Watershed.	<b>Steering Committee</b>	Volunteers, SWCDs, NRCS, IDNR, IDEM, Consultant	Volunteer/Donations/Grant Funding

**Table 32g Priority Ranking of Objectives:**

**Goal #7:** Increase preservation and restoration of open space within the Sugar Creek Watershed by 2030. All action items are long-term measurable milestone priorities.

Objective	Action Item	Responsible Party	Technical Assistance	Financial Assistance
Increase acquisition of land to be dedicated to open space and greenways	Promote greenway corridors	<b>Steering Committee</b>	Parks Departments, Volunteers	Volunteer/Donations/ and Grants
	Promote park expansion and use of public land	<b>Steering Committee</b>	Parks Departments, Volunteers	Volunteers/ Donations/ and Grants
	Connect open spaces with conservation corridors.	<b>Steering Committee</b>	Volunteers, Consultants	Volunteers/ Donations/ and Grants
	Identify current and future recreational needs and match with appropriate open space within the Watershed.	<b>Steering Committee</b>	Volunteers	Volunteers/ Donations
Increase the preservation of wildlife habitat and protected areas within the Sugar Creek Watershed	Identify natural resources, ecological areas, and unique habitats to be preserved and protected.	<b>Steering Committee</b>	IDEM, DNR, Parks Departments, Volunteers	Volunteers/ Donations/ and Grants
	Promote awareness of invasive species and their impact on native ecosystems.	<b>Steering Committee</b>	Parks Departments, Volunteers	Volunteers/ Donations/ and Grants
	Promote awareness of threatened and endangered species throughout the Watershed. Encourage and educate the public on ways they can protect these species.	<b>Steering Committee</b>	Parks Departments, Volunteers	Volunteers/ Donations/ and Grants
	Manage current open spaces for invasive species.	<b>Steering Committee</b>	Parks Departments, DNR, Volunteers	Volunteers/ Donations/ and Grants
	Support wetland, prairie and woodland restoration.	<b>Steering Committee</b>	IDEM, DNR, Parks Departments, Volunteers	Volunteers/ Donations/ and Grants
Encourage the utilization of proper wildlife management practices within the Sugar Creek Watershed	Educate stakeholders on management practices which simulate natural processes such as burning or thinning.	<b>Steering Committee</b>	Volunteers	Volunteers/ Donations/ and Grants
	Use native vegetation extensively in BMPs to enhance wildlife habitat.	<b>Steering Committee</b>	Volunteers	Volunteers/ Donations/ and Grants
Encourage farmland preservation within the Watershed	Promote the preservation of farmland within the Watershed.	<b>Steering Committee</b>	Volunteers	Volunteers/ Donations/ and Grants

A monitoring plan is needed to track the indicators and evaluate the effectiveness of the implementation efforts over time. Indicators of success are listed for each of the seven goals.

**Goal #1:** Sustain the Sugar Creek Watershed Stakeholder Group.

**Indicators of Success:**

- Having quarterly Steering Committee Meetings,
- Completing grant applications and receiving funding,
- Implementing watershed improvement projects,
- Having active subcommittees.

**Goal #2:** Reduce *E. coli* concentrations to meet state standard of 235 CFU/100 ml in the Sugar Creek Watershed by 2030.

**Indicators of Success:**

- Number of Agricultural BMPs installed, e.g. exclusionary fencing, alternative water supplies, implementation of manure management practices,
- Number of Urban BMPs installed, e.g. increasing infiltration and decreasing stormwater runoff washing pet waste into surface water bodies,

**Goal #3:** Reduce the maximum concentration so that there are no exceedances of Nitrate plus Nitrite of 10 mg/L and Total Phosphorus of 0.3 mg/L by 2030.

**Indicators of Success:**

- Number of Agricultural BMPs installed, participation in CRP, both programs include filter strips and grassed waterways,
- Number of independent participants using cover crops, grid mapping, variable rate technology, soil testing, and low application rates of fertilizers,
- Number of Urban BMPs installed,
- Number of independent participants using rain gardens, rain barrels, no phosphorus fertilizer,
- Nitrogen model demonstrating Load Reduction,
- Phosphorus model demonstrating Load Reduction

**Goal #4:** Reduce soil erosion/sedimentation from agricultural and urban lands to meet 80 mg/L of total suspended solids (TSS) by 2030.

**Indicator of Success:**

- Number of Agricultural BMPs installed, participation in CRP, both programs include filter strips, grassed waterways and field borders,
- Number of independent participants using cover crops and grid mapping,
- Number of Urban BMPs installed,
- Number of construction sites using proper erosion control procedures,
- Total Suspended Solids model demonstrating Load Reduction.

**Goal #5:** Reduce flood damage in the Sugar Creek Watershed by 2030.

**Indicator of Success:**

- Number of new development sites which have incorporated appropriate volume of stormwater retention and/or detention,
- Increase acreage of new floodplain storage and develop new wetland areas,
- Prevent further development within the floodplain,

**Goal # 6:** Develop and implement watershed education and outreach programs in the Sugar Creek Watershed.

**Indicator of Success:**

- Number of events including: workshops, field days, educational display booth events, river clean-up days,
- Number of people involved categories includes: steering committee member participation, general public attendance, number of volunteers at clean up events, number of river watch participants in the watershed,

**Goal #7:** Increase preservation and restoration of open space within the Sugar Creek Watershed by 2030.

**Indicator of Success:**

- Number of acres dedicated to open space and greenways,
- Number of acres for the preservation of wildlife habitat and protected areas, within the Sugar Creek Watershed,

This Management Plan is meant to be a flexible tool to achieve water quality improvements within the Sugar Creek Watershed. The WMP will be evaluated by assessing the progress made on each of the seven goals. The evaluation and adaptation of the plan will be the responsibility of the Steering Committee.

The plan should be evaluated every five years to assess the progress made as well as to revise the plan, if appropriate, based on the progress achieved. The plan will also have a comprehensive review every 15 years. Amendments and changes may be made more frequently as laws change or new information becomes available that will assist in providing a better outlook for the Sugar Creek Watershed. As goals are accomplished and additional information is gathered, efforts may need to be shifted to watershed issues of higher priority.

## INFORMATION AND OBJECTIVES

The Sugar Creek Watershed Planning Process is being sponsored by the Hancock County Soil and Water Conservation District. As mentioned previously, it came out of the desire of Hancock County SWCD to continue to fulfill their mission. The Mission Statement of the Hancock County SWCD is:

The Hancock County Soil and Water Conservation District (SWCD) is a local unit of state government responsible for the conservation and development of our soil, water, and related natural resources through education, public information, leadership, technical assistance, and development of innovative programs.

The mission statement of the Sugar Creek Watershed Management Plan project is:

The Sugar Creek Watershed Project is focused on improving water quality by raising public awareness, and conserving and enhancing natural resources with community involvement in the watershed management program.

### Intentions of the Watershed Management Plan

The Sugar Creek WMP is intended as a guide for the protection and enhancement of the environment and quality of the Sugar Creek Watershed while balancing the different uses and demands of the community on this natural resource. These goals address items such as:

- education and outreach
- increasing preservation, restoration and protection of this vital system
- increasing cooperation, coordination and collaboration among all stakeholders in the Watershed
- building and maintaining a solid organization to look to the welfare of this important natural resource

The WMP follows IDEM requirements for watershed management plans, including sections on: Watershed Description, Problem Cause and Stressor Identification, Stressor Source Identification, Critical Watershed Areas, Setting Goals and Indicator Selection for Performance Assessment, Selecting Measures for Improvement, Calculating Load Reductions, Implementation of Planned Measures, Monitoring Indicators, and Plan Evaluation and Adaptation.

Public input is essential for the sustainability and success of the Watershed improvement effort. Stakeholder input was sought and included during all aspects of the planning process. This local input was essential for developing a plan that would have broad appeal throughout the watershed and continued support. A steering committee and several sub-committees were developed to address the diverse needs in the watershed.

As mentioned previously, the Sugar Creek WMP is intended to be comprehensive, identifying problem areas and suggesting improvement measures for both water quality and quantity concerns. The Sugar Creek Watershed is large and diverse, and thus has a variety of issues and concerns that need to be addressed. To address some of these issues, the Sugar Creek Steering Committee will work with local stakeholder groups to pursue Best Management Practices (BMPs) that will result in the improvement of water quality in the Sugar Creek Watershed. Because of the size of the task at hand, this plan will also be used as a platform on which to pursue additional grants and other funding for implementation of the many different improvement measures recommended in the plan.

## INFORMATION AND OBJECTIVES

### History of the Sugar Creek Watershed Planning Process

The Hancock County Soil and Water Conservation District (SWCD), organized on May 24, 1954, is responsible for the conservation and development of soil, water and related natural resources throughout Hancock County. A large portion of the Sugar Creek Watershed is located in Hancock County. To help accomplish this goal, the SWCD applied for and received an Environmental Protection Agency (EPA) Section 319 watershed planning grant through the Indiana Department of Environmental Management (IDEM) to study the Sugar Creek Watershed and develop a management plan that would evaluate the present state of the resource, and provide guidance on how to improve and protect this fundamental aspect of their community.

The SWCD is governed by a Board of Supervisors consisting of Hancock County stakeholders. Three are elected by landowners in the county and two are appointed by the State Soil Conservation Board, upon recommendation of the local SWCD. Hancock County also has five volunteer Associate Supervisors who complete the Board of the SWCD.

Hancock County, which is mostly agricultural, is seeing drastic changes in land use. An increase in population throughout the area has led to an increase in urban development. Between 2000 and 2004, the population of Hancock County increased 9.53% and between 2000 and 2006 increased 17.40%. It is the third fastest growing county in the State. With changes occurring rapidly throughout the Watershed, the implementation of the Sugar Creek Watershed Management Plan (WMP) will help assist in the use, and protection of this vital resource. In addition, benefits achieved through the use and implementation of this WMP will hopefully assist other portions of the county.

The stakeholders of the Sugar Creek Watershed have many important partners in conservation including:

- Hancock County Soil and Water Conservation District (SWCD)
- Indiana State Department of Agriculture (ISDA) Division of Soil and Water Conservation
- United States Department of Agriculture (USDA) - Natural Resources Conservation Service (NRCS)
- Indiana Department of Natural Resources (IDNR)
- Farm Service Agency (FSA)
- Purdue Cooperative Extension Service
- Indiana Department of Environmental Management (IDEM).

It is hoped that through this process the list of stakeholder groups will continue to grow for the betterment of the Sugar Creek Watershed. A complete list of stakeholder groups and related organizations is available in Appendix A of this document.

## Mission Statement, Hancock County Soil and Water Conservation District

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