
Section VII. Watershed Management Goals & Indicators

Throughout the Watershed Management Plan development process, the Steering Committee identified measures that could be implemented to reduce pollutant loads and improve water quality.

The Committee developed over-arching Goals to address specific pollutants. Ex: *Protect and improve water quality within the watershed by preventing E. Coli / bacteria from entering the system.*

Using the sources identified in *Section V – Areas of Concern* and parameters associated with those sources (6.01(a) - *Source Identification by Land Use*), the Committee developed source-based Objectives which needed to be met in order to fulfill defined Goals.. Ex: *Reduction / prevention of E. coli from failing septic systems from entering surface water* is required to *Improve water quality by preventing E. coli / bacteria from entering the system.*

The Committee then developed specific Tasks necessary to meet the defined Objectives. Ex: *Local health department inspections of septic system design and installation* is necessary to *Reduce / prevent E. coli from failing septic systems from entering the surface water.*

The Committee then voted on Priority Levels of Tasks. Task-ranking decisions were based upon:

- Critical need – as defined by probable source and pollutant load
- Programmatic need – i.e. a task that must be completed before another can commence
- Effectiveness on pollutant load reductions
- Attainability

Goals, Objectives and Tasks were also developed to further define (more narrowly define) load sources and critical areas, increase the capacity of the watershed partnership, and assure sustainability of the group.

These *Goals, Objectives, & Tasks* are summarized in the Table comprising *Section 7.01*

The Table comprising *Section 7.02 Task Implementation and Indicators* defines

- Key parties required to complete a task
- Timelines for BMP implementation, based upon priority levels set in *Section 7.01*
- Measurements of task completion or success
- Expected costs to complete a task and potential funding sources
- Expected pollutant load reductions associated with BMPs that may be used to reach Objectives.

7.01 Goals, Objectives, & Tasks

Goal	Objective	Task	Priority			
			High	Med	Low	
Goal 1: To protect and improve water quality within the watershed by preventing E. coli / bacteria from entering the system.	Objective 1.1: Reduce / prevent E. coli from failing septic systems from entering surface water.	Task 1.1.1: Develop septic system management and design ordinances for local soils conditions, including “alternative” approaches such as composting, incineration, and wetlands systems.		◆	◆	
		Task 1.1.2: Work with local health department to insure effective inspection of system design and installation.	◆			
		Task 1.1.3: Work with local banks to insure septic service records and system inspection is a requirement for any home loans.	◆			
		Task 1.1.4: Educate landowners with septic systems on their proper maintenance.	◆			
	Objective 1.2: Reduce / prevent E. coli from CSOs from entering surface water.	Task 1.2.1: Work with businesses and landowners to insure that gutters are not connected to stormwater systems.				◆
		Task 1.2.2: Install public and private raingardens equal in volume to approximately 1% of roof and parking lot runoff.			◆	◆
	Objective 1.3: Work with farmers and landowners to eliminate livestock impact on creeks, streams, and the ponds/lakes connected to creeks/streams.	Task 1.3.1: Implement structural BMPs (exclusionary fencing / watering facilities) in pastures with livestock access to surface waters.	◆	◆		
		Task 1.3.2: Work with landowners to insure that surface water runoff from feedlots, drylots, or other pasture/holding facilities do not directly enter surface waters.			◆	◆
		Task 1.3.3: Work with farmers to implement manure management/application BMPs.	◆			
	Objective 1.4: Reduce / prevent E. coli / bacteria from parks and park-like areas	Task 1.4.1: Work with DNR to promote available help for park and public area managers to eliminate/reduce wildlife (goose) waste runoff.			◆	

	from entering surface water.	Task 1.4.2. Work with / distribute information to landowners to help them adopt management techniques to reduce/eliminate (goose) waste runoff.	◆
Goal 2: To improve and protect the fishery and other indigenous aquatic life and wildlife of the watershed by reducing the amount of sediment entering the system.	Objective 2.1: Identify and stabilize priority bank erosion sites through the installation of corrective measures.	Task 2.1.1: Implement structural BMPs to reduce the amount of sediment entering surface waters.	◆ ◆
		Task 2.1.2: Target riparian landowners with information regarding shoreline protection.	◆
	Objective 2.2: Reduce impacts of stormwater runoff on bank erosion.	Task 2.2.1: Work with landowners to restore streams to a more natural, meandering state to add storage capacity and slow velocity.	◆ ◆
		Task 2.2.2: Work with landowners and municipalities to restore or construct wetlands to add storage capacity and slow velocity of stormwater runoff.	◆ ◆
		Task 2.2.3: Implement agricultural BMPs such as no-till and cover crops to increase infiltration rate of precipitation.	◆
		Task 2.2.4: Implement residential / urban BMPs such as raingardens to increase infiltration rate of precipitation.	◆ ◆
	Objective 2.3: Prevent / reduce erosion from farm fields.	Task 2.3.1: Implement agricultural BMPs such as no-till, cover crops, and ephemeral stream protection / grassed waterways to reduce surface water run-off and resulting soil erosion.	◆
		Task 2.3.2: Work with landowners to strategically restore or construct sediment-trapping wetlands.	◆ ◆
		Task 2.3.3: Work with landowners, Conservancy Districts, and Drainage Boards to restore riparian areas, including tertiary streams.	◆ ◆
		Task 2.3.4: Implement BMPs to improve efficiency of irrigation systems and reduce surface water runoff and resulting soil erosion.	◆
Task 2.3.5: Increase grower participation in NRCS, DNR, and other conservation programs through strategic marketing.		◆	

Objective 2.4: Prevent / reduce erosion resulting from logging / land clearing activities.	Task 2.3.6: Participate in SWCD field days, agricultural customer appreciation days and similar events to highlight environmental and economic benefits of BMP implementation.	◆	
	Task 2.4.1: Host forestry workshops to demonstrate environmental and economic benefits of properly planned and conducted logging activities.		◆
	Task 2.4.2: Work with DNR in development / promotion of certified forester assistance program to help landowners develop logging plans.		◆
Objective 2.5: Reduce / prevent erosion from roads and ditches	Task 2.5.1: Work with Sullivan County officials to clarify road and utility easements.		◆
	Task 2.5.2: Work with County Officials to develop and implement road & ditch protection guidelines.		◆
	Task 2.5.3: Work with DNR and County Departments of Transportation to develop and implement low-cost, low-maintenance ditching solutions.		◆
	Task 2.5.4: Work with County Commisioners and Departments of Transportation to transition to improved road construction materials and methods.		◆
Objective 2.6. Reduce / prevent erosion from current and past mineral extraction activities.	Task 2.6.1: Work with coal mines to enroll farmlands under mine control into conservation programs.	◆	◆
	Task 2.6.2: Launch outreach campaign to education farmers and landowners on the higher susceptibility of minelands to erosion.	◆	◆
	Task 2.6.3: Work with mineral extraction companies to implement sediment and compaction reducing BMPs.		◆
Objective 2.7: Work with farmers and landowners to eliminate livestock access to creeks, streams, and ponds/lakes connected to them.	Task 2.7.1: Work with farmers and landowners to implement exclusionary fencing practices.	◆	◆

<p>Goal 3: To improve and protect the fishery and other indigenous aquatic life and wildlife of the watershed by reducing the amount of nutrients entering the system.</p>	<p>Objective 3.1: Reduce / prevent nutrients from cropping practices from reaching surface water.</p>	<p>Task 3.1.1: Implement agricultural BMPs such as cover crops, buffers, filter strips, and nutrient management planning to reduce nutrient losses.</p>	◆	
		<p>Task 3.1.2: Work with farmers to strategically restore / construct nutrient-trapping wetlands.</p>	◆	◆
		<p>Task 3.1.3: Work with farmers and commercial applicators to adopt precision agriculture technology to reduce excess applications of nutrients.</p>	◆	◆
		<p>Task 3.1.4: Implement BMPs to improve efficiency of irrigation systems and reduce nutrient losses.</p>		◆
		<p>Task 3.1.5: Increase grower participation in NRCS, DNR, and other conservation programs through strategic marketing.</p>	◆	
		<p>Task 3.1.6: Participate in SWCD field days, agricultural customer appreciation days and similar events to highlight environmental and economic benefits of BMP implementation.</p>	◆	
	<p>Objective 3.2: Reduce / prevent nutrients from domestic animals and livestock from entering surface water.</p>	<p>Task 3.2.1: Implement structural BMPs (exclusionary fencing / watering facilities) in pastures with livestock access to surface waters.</p>	◆	◆
		<p>Task 3.2.2: Work with landowners to insure that surface water runoff from feedlots, drylots, or other pasture/holding facilities do not directly enter surface waters.</p>		◆ ◆
		<p>Task 3.2.3: Work with farmers to implement manure management/application BMPs</p>	◆	
	<p>Objective 3.3: Reduce / prevent nutrients from parks and park-like areas from entering surface water.</p>	<p>Task 3.3.1: Work with DNR to promote available help for park and public area managers to eliminate/reduce wildlife (goose) waste runoff..</p>		◆
		<p>Task 3.3.3 Implement buffer strip BMPs on golf courses an parks to eliminate/reduce fertilizer runoff.</p>		◆ ◆

	Objective 3.4: Reduce / prevent nutrients from residential yards from entering surface water.	Task 3.3.4 Work with parks, golf courses, cemeteries and other park-like areas to obtain certification in Audubon International Sanctuary program.	◆	◆
		Task 3.4.1: Educate private landowners in methods of lawn / landscaping care that can reduce nutrient inputs.	◆	◆
		Task 3.4.2: Educate private landowners in how buffers can eliminate / reduce nutrient runoff.	◆	◆
	Objective 3.5: Reduce / prevent nutrients from failing septic systems from entering surface water	Task 3.5.1: Develop septic system management and design ordinances for local soils conditions, including “alternative” approaches such as composting, incineration, and wetlands systems.	◆	◆
		Task 3.5.2: Work with local health department to insure effective inspection of system design and installation.	◆	
		Task 3.5.3: Work with local banks to insure septic service records and system inspection is a requirement for any home loans.	◆	
		Task 3.5.4: Educate landowners with septic systems on their proper maintenance.	◆	
	Objective 3.6: Reduce / prevent E. coli from CSOs from entering surface water.	Task 3.6.1: Work with businesses and landowners to insure that gutters are not connected to stormwater systems.		◆
		Task 3.6..2: Install public and private raingardens equal in volume to approximately 1% of roof and parking area runoff.	◆	◆
	Goal 4: To restore, conserve, and protect the hydrology of the watershed to improve water quality.	Objective 4.1: Perform flood plain management to prevent damaging effects of floods, preserve/enhance natural values, and provide optimal use of land and water resources within the floodplain	Task 4.1.1: Reduce and delay runoff from roofs and paved areas through programs that promote installation of BMPs in urban areas.	◆
Task 4.1.2: Work with County Officials to reduce development within the floodplain by implementing existing floodplain protection ordinance per FEMA / NFIP requirements.			◆	◆

<p>Objective 4.2: Limit net increase of impervious surfaces in order to limit runoff and associated with development.</p>	<p>Objective 4.3: Restore and protect the full surface water network, including headwaters, ephemeral streams, and wetlands to positively impact water temperature, add storage capacity and reduce velocity following rain events.</p>	<p>Task 4.2.1: Implement residential / urban BMPs such as raingardens to offset effects of impervious surfaces.</p>	◆	◆
		<p>Task 4.3.1: Work with landowners to restore streams to a more naturally vegetated and meandering state and conserve high quality stream habitat.</p>	◆	◆
		<p>Task 4.3.2: Work with landowners to restore and conserve wetlands and vernal pools.</p>	◆	◆
		<p>Task 4.3.3: Work with landowners to restore and conserve ephemeral streams and headwaters.</p>	◆	◆
		<p>Task 4.3.4: Develop and implement a Mitigation Clearinghouse to connect landowners with potential stream, wetland, ephemeral stream, and headwater sites to those in need of mitigation projects.</p>	◆	
		<p>Task 4.3.5: Increase landowner participation in programs such as the Wetlands Reserve Program through strategic marketing.</p>	◆	
<p>Goal 5: To improve and protect the fishery and other indigenous aquatic life and wildlife of the watershed by preventing or reducing the amounts of metals and sulfates entering the surface water</p>	<p>Objective 5.1: Reduce/prevent metals and sulfates resulting from acid mine discharge from entering surface water.</p>	<p>Task 5.1.1: Identify and catalog abandoned mine lands sites.</p>	◆	
		<p>Task 5.1.2: Work with Sycamore Trails RC&D, Indiana DNR Division of Restoration, and Office of Surface Mining programs to restore abandoned mine land sites and prevent pollutants associates with those sites from entering the surface water.</p>	◆	◆
	<p>Objective 5.2: Reduce the amount of urban-based pollutants entering surface water.</p>	<p>Task 5.2.1: Develop and implement household waste education programs.</p>		◆
		<p>Task 5.2.2: Continue and promote efforts for annual collection days of Household Hazardous Waste to prevent them from entering the surface water.</p>		◆

		Task 5.2.3: Reduce and delay runoff from roofs and paved areas through programs that promote installation of BMPs in urban areas.	◆	◆
Goal 6: To improve and protect the fishery and other indigenous aquatic life and wildlife of the watershed by preventing or reducing the amount of pesticides entering the surface water.	Objective 6.1: Reduce / eliminate pesticides used in residential applications from reaching surface water.	Task 6.1.1: Continue and promote efforts for annual collection days of Household Hazardous Waste to prevent them from entering the surface water.		◆
		Task 6.1.2: Develop educational materials on integrated pest management and safe use of pesticides.		◆
	Objective 6.2: Reduce / eliminate pesticide used in parks and park-like applications from reaching surface water.	Task 6.2.1: Work with park and golf course managers to implement integrated pest management systems.	◆	◆
		Task 6.2.2: Implement buffer strip BMPs on golf courses and parks to reduce pesticide runoff		◆
		Task 6.2.3: Work with parks, golf courses, cemeteries and other park-like areas to obtain certification in Audubon International Sanctuary program.		◆
	Objective 6.3: Reduce / eliminate pesticides used in agricultural operations from entering surface water.	Task 6.3.1: Work with agronomists and farmers to adopt integrated pest management systems.	◆	
Task 6.3.2: Work with farmers and commercial applicators to adopt precision agriculture technology to reduce excess applications of pesticides.		◆	◆	
Goal 7: Restore, conserve, and protect the surface water network to improve overall stream health, hydrology, and wildlife habitat.	Goal 7.1 Conserve and restore all orders of streams within the watershed to improve overall health of the biosystem	Task 7.1.2: Implement BMPs to protect lower order (headwater) streams and seasonal wetlands.	◆	◆
		Task 7.1.2: Work with landowners to restore streams to a more naturally vegetated and meandering state and conserve high quality stream habitat.	◆	◆
		Task 7.1.3: Develop and implement a Mitigation Clearinghouse to connect landowners with potential stream, wetland, ephemeral stream, and headwater sites to those in need of mitigation projects.	◆	

	<p>Goal 7.2: Incorporate Green Infrastructure planning techniques throughout the watershed to reduce habitat isolation and improve overall health of the biosystem.</p>	<p>Task 7.2.1: Develop and implement conservation plans that incorporate connectivity between various headwaters, streams, and wetlands.</p> <p>Task 7.2.2: Develop and implement large scale conservation planning that provides connectivity between managed lands.</p>	<p>◆ ◆</p> <p>◆ ◆</p>
<p>Goal 8: Improve and protect the warmwater fishery and other indigenous aquatic life and wildlife by eliminating the improper disposal of solid waste.</p>	<p>Objective 8.1: Establish education, outreach, and clean-up programs to reduce in-stream and roadside dumping.</p> <p>Objective 8.1: Establish education, outreach, and clean-up programs to reduce in-stream and roadside dumping.</p>	<p>Task 8.1.1: Develop an outreach and education program to “raise a generation” of non-litterers.</p> <p>Task 8.1.2: Develop an hunter education and outreach about proper disposal of animal carcasses</p> <p>Task 8.2.1: Work with local officials to impose harsh fines for littering / dumping. (Up to \$1000 by Indiana law)</p> <p>Task 8.2.2: Work with law enforcement and judicial officials to implement in-stream and road-side clean up as part of community service for offenders.</p> <p>Task 8.2.3: Sponsor amnesty days for tires, electronics, and appliances.</p> <p>Task 8.2.4: Work with city/township officials to provide trash pick-up as part of utility services.</p> <p>Task 8.2.5: Develop and implement program to provide alternative trash disposal options to area residents.</p>	<p>◆ ◆</p> <p>◆ ◆</p> <p>◆ ◆</p> <p>◆ ◆</p> <p>◆ ◆</p> <p>◆ ◆</p> <p>◆ ◆</p> <p>◆ ◆</p>
<p>Goal 9: Prevent the introduction and spread of invasive species through management practices</p>	<p>Objective 9.1: Establish invasive species control programs to prevent spread of exotics.</p>	<p>Task 9.1.1: Develop education materials on the identification and eradication of invasive species.</p> <p>Task 9.1.2: Incorporate invasive species control practices in other workshops – such as forestry and rain garden workshops.</p>	<p>◆ ◆</p> <p>◆ ◆</p>
<p>Goal 10: Further refine critical areas to</p>	<p>Objective 10.1 Improve effectiveness of BMP deployment by refining probable</p>	<p>Task 10.1.1: Pre-filter probable sources of pollutants through analysis of georeferenced data.</p>	<p>◆ ◆</p>

effectively implement practices to improve water quality.	sources within <i>current</i> critical areas. .	Task 10.1.2: Ground-truth and inventory pollutant sources of pre-filtered drainage areas.	◆
		Task 10.1.3: Continue to refine, develop and implement sampling modeling strategies to identify sources of pollutants within drainage areas.	◆
	Objective 10.2: Prioritize critical <i>sub-areas</i> , such as stream-reaches for sources of loading and probable/practical implementation of BMPs.	Task 10.2.1: Analyze and model data to calculate pollutant loads and sources..	◆
		Task 10.2.2: Catalog and classify probability of landowner participation and current BMP effectiveness.	◆
Goal 11: Build capacities of the BCWP to effectively attain the goals listed above.	Objective 11.1: Develop appropriate planning to insure the long-term viability and effectiveness of the BCWP.	Task 11.1.1: Develop a Plan of Work to outline staffing, equipment, financial, and other needs required to further the goals and mission of the BCWP.	◆
		Task 11.1.2: Develop a financial plan and implement funding strategies to insure the viability of the BCWP.	◆
		Task 11.2.1: Scout for and hire appropriate staff in a timely manner.	◆
	Objective 11.2: Provide human and intellectual resources required to further the goals and mission of the BCWP.	Task 11.2.2: Develop and maintain a catalog of volunteer’s skills, interests, and availability.	◆
		Task 11.2.3: Continue to establish and maintain partnerships with other organizations to further their goals and the goals of the BCWP.	◆
		Task 11.2.4: Maintain the BCWP Technical and Planning Committees to provide input and direction of both work and growth.	◆

7.02 Task Implementation and Indicators

Goal 1: To protect and improve water quality within the watershed by preventing E. coli / bacteria from entering the system.

Objective 1.1: Reduce / prevent E. coli from failing septic systems from entering surface water

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
<p>Task 1.1.1 Following HUD guidelines for new construction, develop septic system management and design ordinances for local soils conditions, including "alternative" approaches such as composting, incineration, and wetlands systems.</p>	<p>For each County or Township adopting a septic system ordinance, water quality can be expected to maintain or improved through the change in practices outlined by the ordinance.</p>	<p>County Commissioners County Health Office Conservation Districts</p>	<p>0-2 yrs: Evaluate model septic system ordinances with Counties to determine what ordinance language and setbacks would be most acceptable for the County. 2-5 yrs: Work with Counties to alter model ordinance to meet County needs 5-10 yrs: Adopt ordinances</p>	<p>Approved ordinances for septic system management and design <i>(Administrative)</i></p>	<p>Cost: \$1,200 - \$1,500 per County or Township to work with a consultant to develop and adopt an ordinance (This estimate assumes minimal oversight and assistance from the consultant)</p>
<p>Task 1.1.2 Work with local health department to insure effective inspection of system design and installation <i>To be performed in conjunction with Task 1.1.1</i></p>	<p>Water quality can be expected to maintain or improve through the change in design review and inspection practices</p>	<p>County Board of Health Building Code Officials</p>	<p>0-2 yrs: Develop design evaluation and installation inspection requirements based on Indiana Board of Health requirements. 2-5 yrs: Begin performing interim design reviews and installation inspections.</p>	<p>Documented inspections of septic designs and installations. <i>(Administrative)</i></p>	
<p>Task 1.1.3 Work with local banks to insure septic service records and system inspection is a requirement for any home loans.</p>	<p>Water quality can be expected to maintain or improve by requiring proper septic inspection to quality for home loans.</p>	<p>Banks / Loan Officers County Recorders Realtors Appraisers</p>	<p>0-1 yrs: Develop web page with downloadable factsheets. Develop form to be file with Board of Health and Buyer. 1-2 yrs: Launch awareness campaign, especially for real estate professionals. By year 3, 50% of all real estate transfers done with septic inspection. By year 5: All real estate transfers done with septic inspection</p>	<p>Number of septic inspections. <i>(Administrative)</i></p>	<p>Cost: \$1,200 - \$1,500 to work with a consultant to develop and adopt inspection procedures and forms. (This estimate assumes minimal oversight and assistance from the consultant)</p>

<p>Task 1.1.4 Educate landowners with septic systems on their proper maintenance</p>	<p>It can be expected that landowners who read the media articles will become more informed as to how their management practices can impact water quality. Some of these landowners can be expected to change their practices and this will improve or maintain water quality</p>	<p>Local Septic Professionals County Board of Health Conservation Districts.</p>	<p>0-1 yrs: Develop web page with downloadable factsheets. 1-2 yrs: Write articles for media. Year 2: Host workshop. Obtain discounts from local septic care professionals as attendee take-aways.</p>	<p>Number of attendees at workshop. <i>(Administrative)</i></p>	<p>Cost: <\$1,000</p>
---	---	--	--	--	--------------------------

Load Reductions (based upon the Watershed Treatment Model from the Center for Watershed Protection):

- *Failing Private Septic*
 A decrease from an estimated 75% failure rate to 50%, should result in a decrease in fecal coliforms attributed to those systems by 20% - from 18 billion cfu / year to 14.5 billion cfu / year.

Goal 1: To protect and improve water quality within the watershed by preventing E. coli / bacteria from entering the system.

Objective 1.2: Reduce / prevent E. coli from CSOs from entering surface water.

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
Task 1.2.1 Work with businesses and landowners to insure that gutters are not connected to stormwater systems	CSOs are currently a substantial source of E. coli in the Buck Creek area. Any and all reductions of stormwater flow through the sewer system will positively impact water quality	Town Councils City and County Sewage Treatment Facilities	0-2 yrs: Review of previous disconnect campaigns. Awareness campaign, including stormwater webpage and “news release”/article to local media. 2-5 yrs: On-foot survey of structures	Completion of on-foot survey. <i>(Administrative)</i> CF of water entering wastewater treatment facilities <i>(Administrative)</i>	Cost: <\$1,000
Task 1.2.2 Install public and private raingardens equal in volume to approximately 1% of roof and parking area runoff.	CSOs are currently a substantial source of E. coli. Any and all reductions of stormwater flow through the sewer system will positively impact water quality.	SWCDs Sullivan County Park & Lake Parks Departments Garden Clubs Garden Centers	0-2 yrs: Awareness campaign, including raingarden webpage and factsheet / flyer. Year 2: Host 1 st raingarden workshop / install raingarden at public facility. Year 5: Host 2 nd raingarden workshop / install raingarden at public facility. 2-10 yrs: Promote raingarden installations	Number of attendees at workshop. <i>(Administrative)</i> Estimated number of garden center clientele installing rain gardens. <i>(Social)</i> Cubic Feet (CF) of water entering wastewater treatment facilities. <i>(Administrative)</i>	Cost: Flyers and webpage: <\$1,000 Workshop: <\$500 Demo Raingarden \$2500 - \$3750 ea (\$10-15 / sf)

Load Reductions (based upon the Watershed Treatment Model from the Center for Watershed Protection)

- *Combined Sewer Overflow*
A decrease from an estimated 40% urban impervious areas to 35%, should result in a decrease in fecal coliforms attributed to those CSOs by 1% - from 75.8 quadrillion cfu / year to 75.2 quadrillion cfu / year.

Goal 1: To protect and improve water quality within the watershed by preventing E. coli / bacteria from entering the system.

Objective 1.3: Work with farmers and landowners to eliminate livestock impact on streams and ponds/lakes connected to streams.

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
<p>Task 1.3.1 Implement structural BMPs (exclusionary fencing / watering facilities) in pastures with livestock access to surface waters.</p> <p>Where applicable, enroll sites into wetland/stream restoration programs.</p>	<p>Reduce break down of streambanks, disturbance of streambeds, and entrance of animal wastes in surface waters.</p>	<p>SWCDs NRCS Regulatory Agencies Mitigation Partners</p>	<p>0-3 yrs: Strategically market program to producers and landowners. Develop site-specific conservation plans. Enroll sites into mitigation clearinghouse.</p> <p>2-4 yrs: Install exclusionary fencing, stream crossings & watering facilities as required.</p> <p>2-5 yrs: Develop engineering plans and secure necessary permits as required.</p> <p>4-10 yrs: Stream restoration activities</p>	<p>Document number of sites completed / lf of stream restored. <i>(Administrative)</i></p> <p>Before & After photographs <i>(Administrative)</i></p> <p>Habitat evaluation <i>(Environmental)</i></p> <p>Water sampling (turbidity, e.coli, D.O., phosphorus, TSS). <i>(Environmental)</i></p>	<p>Cost: Mitigation Clearinghouse: \$5000 / year</p> <p>Fencing: \$2500 - \$3500 / site (2000 lf)</p> <p>Stream Crossing: \$3000 - 4000 / site (1 ea)</p> <p>Watering Facility: \$1200 - 2000 / site (2 ea)</p> <p>Engineering / Permitting: \$5000 – 10,000 / site (1000 lf)</p> <p>Restoration: \$20,000 – 35,000 / site (1000 lf)</p> <p>Sources: 319 Funds, NRCS Programs, DNR Programs, Govt Agencies & Private Parties in need of Mitigation</p>
<p>Task 1.3.2 Work with landowners to insure that surface water runoff from feedlots, drylots, or other pasture/holding facilities do not directly enter surface waters.</p> <p><i>To be implemented in conjunction with Task 1.3.3</i></p>	<p>Reduced entry of surface soil and animal wastes into surface waters.</p> <p>Improved forage quality.</p>	<p>SWCDs NRCS Feed Mills Veterinarians 4-H Clubs Horse & Pony Clubs</p>	<p>0-3 yrs: Strategically market program to producers and landowners. Develop site-specific Conservation Plans.</p> <p>2-5 yrs: Install filter strips and/or buffers. Install fencing as needed. Implement intensive and/or rotational grazing strategies.</p>	<p>Document number of sites completed, acres of buffers and/or filter strips installed, lf of fencing (electric or similar) <i>(Administrative)</i></p> <p>Before & After photographs <i>(Administrative)</i></p> <p>Habitat evaluation <i>(Environmental)</i></p> <p>Water sampling (turbidity, e.coli, D.O., phosphorus, TSS). <i>(Environmental)</i></p>	<p>Cost: Buffers & Filter Strips: \$150 / Ac</p> <p>Fencing: \$750 - \$1000 / site (500 lf)</p> <p>Sources: 319 funds, NRCS Programs.</p>

<p>Task 1.3.3 Work with farmers to implement manure management / application BMPs</p>	<p>Reduced entry of animal wastes into surface waters. Reduced P concentrations in areas of manure application.</p>	<p>SWCDs NRCS Agronomists</p>	<p>0-3 yrs: Strategically market program to effected producers and landowners. Develop & implement comprehensive nutrient management plans.</p>	<p>Document number of comprehensive nutrient management plans developed. <i>(Administrative)</i> Document number of complementary BMPs implemented (soil sampling, storage areas) <i>(Administrative)</i></p>	<p>Cost: Comprehensive Nutrient Management Plan: \$1000 ea Sources: 319 funds, NRCS programs</p>
--	--	---	---	--	---

Load Reductions (based upon PRedICT model from the University of Pennsylvania and the Watershed Treatment Model from the Center for Watershed Protection):

- *Exclusionary Fencing / Watering Facilities*
 160,000 cfu / 100 Ac pasture exclusion / year
- *Feedlot Waste Storage / Management*
 If estimated waste exposed to run-off is cut in half, fecal coliforms attributed to feedlots should decrease by approximately 396,000 billion cfu / year.
- *Manure Management / Application BMPs*
 If estimated waste is applied in such a way as to prevent 85% of run-off from reaching surface waters, fecal coliforms attributed to manure applications can decrease by 632,000 billion cfu / year.

Goal 1: To protect and improve water quality within the watershed by preventing E. coli / bacteria from entering the system.

Objective 1.4: Reduce/prevent E.coli from parks and park-like areas from entering surface water.

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
<p>Task 1.4.1 Work with DNR to promote available help for park and public area managers to eliminate/reduce wildlife (goose) waste runoff</p>	<p>Provide “how-to” documents & strategies in dealing with wildlife (goose) problems.</p> <p>Reduce amount of animal (goose) waste entering surface waters.</p> <p>Reduce impacts of wildlife (goose) population on park use and quality.</p>	<p>DNR – Division of Fish & Wildlife</p> <p>Park Managers & Boards</p>	<p>0-2 yrs: Develop web page specific to wildlife (goose) management.</p> <p>Launch awareness campaign that goose management assistance is available through DNR.</p>	<p>Web page <i>(Administrative)</i></p> <p># on-site training sessions. <i>(Administrative)</i></p> <p>Reduction of goose populations. <i>(Administrative)</i></p>	<p>Web Page: <\$1000</p> <p>Training Sessions: \$500-1000 ea</p> <p>Sources: DNR, 319 funds</p>
<p>Task 1.4.2 Work with and distribute information to landowners to help them adopt management techniques to help reduce/eliminate wildlife (goose) waste runoff.</p>	<p>Reduce amount of animal (goose) waste entering surface waters.</p> <p>Reduce impacts of wildlife (goose) population on private ponds and lakes, including Conservancy District lakes.</p>	<p>DNR – Division of Fish & Wildlife</p> <p>Park Managers & Boards</p> <p>SWCDs</p>	<p>0-2 yrs: <i>See Task 1.4.1</i></p> <p>Year 3: Launch awareness campaign. Provide “news release” / article to local media.</p>	<p>Distributuion of Factsheet and/or guidelines. <i>(Social)</i></p> <p>Web page. <i>(Administrative)</i></p> <p>Requests for additional information. <i>(Social)</i></p>	<p>Printing: \$500</p> <p>Web page: <\$1000</p> <p>Sources: DNR, 319 funds, Conservancy District</p>

Load Reductions (based upon PRedICT model from the University of Pennsylvania and the Watershed Treatment Model from the Center for Watershed Protection):

- For every 100 geese controlled (waste eliminated from direct deposition or runoff), E. coli loads should decrease by approximately 3,000 billion colonies / year. Note: loads were calculated based upon 3lb feces / day / bird.

Goal 2: To improve and protect the fishery and other indigenous aquatic life and wildlife of the watershed by reducing the amount of sediment entering the system.

Objective 2.1: Identify and stabilize priority bank erosion sites through the installation of corrective measures.

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
<p>Task 2.1.1 Implement BMPs to reduce the amount of sediment entering surface waters.</p> <p>Where applicable, enroll sites into wetland/stream restoration programs.</p>	<p>Reduced sedimentation and turbidity resulting from stream bank erosion and collapse.</p> <p>Improved riparian corridors.</p> <p>Improved stream health.</p> <p>Improved wildlife habitat.</p>	<p>SWCDs</p> <p>NRCS</p> <p>Conservation District</p> <p>Regulatory Agencies</p> <p>Mitigation Partners</p> <p>Conservancy District</p>	<p>0-15 yrs: Strategically market program to affected producers and landowners. Develop site-specific conservation plans. Enroll sites into mitigation clearinghouse.</p> <p>2-15 yrs: Develop engineering plans and secure necessary permits as required.</p> <p>4-15 yrs: Streambank stabilization and restoration activities</p>	<p>Document number of sites completed and/or lf of stream restored. <i>(Administrative)</i></p> <p>Before & After photographs <i>(Administrative)</i></p> <p>Habitat evaluations <i>(Environmental)</i></p> <p>Water sampling (turbidity, TSS). <i>(Environmental)</i></p>	<p>Costs: Mitigation Clearinghouse: \$5000 / year</p> <p>Engineering / Permitting: \$5000 – 10,000 / site (1000 lf)</p> <p>Restoration: \$20,000 – 35,000 / site (1000 lf)</p> <p>Sources: 319 Funds, NRCS Programs, DNR Programs, Govt Agencies & Private Parties in need of Mitigation</p>
<p>Task 2.1.2 Target riparian landowners with information about shoreline protection</p>	<p>Enrollment of sites into mitigation clearinghouse.</p> <p>Reduced sedimentation and turbidity resulting from stream bank erosion and collapse.</p> <p>Improved riparian corridors.</p> <p>Improved stream health.</p> <p>Improved wildlife habitat</p>	<p>SWCDs</p> <p>NRCS</p> <p>Conservation District</p> <p>Regulatory Agencies</p> <p>Mitigation Partners</p>	<p>0-1 yr: Develop webpage specific to riparian area conservation. Highlight incentive programs, shoreline management techniques, mitigation clearinghouse. Provide “news release” / article to local media. Host Mitigation Clearinghouse public meeting. Enroll at least 10 sites in mitigation clearinghouse</p> <p>2-5 yrs: Contact riparian area landowners. Enroll at least 20 sites in mitigation clearinghouse. Match at least 5 sites with mitigation partners.</p> <p>Year 5: Host stream and shoreline restoration and conservation workshop.</p> <p>5-15 yrs: Provide</p>	<p>Document number of sites completed and lf of stream restored. <i>(Administrative)</i></p> <p>Before & After photographs <i>(Administrative)</i></p> <p>Habitat evaluations <i>(Environmental)</i></p> <p>Waer sampling (turbidity, TSS). <i>(Environmental)</i></p>	<p>Costs: Mitigation Clearinghouse: \$5000 / year</p> <p>Web page / fact sheets: <\$1000</p> <p>Workshop: \$500-1000</p> <p>Sources: 319 Funds, NRCS Programs, DNR Programs, Govt Agencies & Private Parties in need of Mitigation</p>

construction technical
assistance for at least 15
sites / year.

Load Reductions (based upon STEP-L and PRedICT models):

- *Bank Stabilization*
For moderately degraded streambank (4 ft deep, losing 0.06-0.2 feet / year): 73 T / mile streambank / year
-

Goal 2: To improve and protect the fishery and other indigenous aquatic life and wildlife of the watershed by reducing the amount of sediment entering the system.

Objective 2.2: Reduce impacts of stormwater runoff on bank erosion.

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
<p>Task 2.2.1 Work with landowners to restore streams to a more natural, meandering state to add storage capacity and slow velocity. <i>See Task 2.1.1</i></p>	<p>Reduced scouring and streambank erosion from volume & velocity of peak flows.</p> <p>Reduced sedimentation and turbidity resulting from stream bank erosion and collapse.</p> <p>Improved riparian corridors.</p> <p>Improved stream health.</p> <p>Improved wildlife habitat</p>	<p><i>See Task 2.1.1</i></p>	<p><i>See Task 2.1.1</i></p>	<p><i>See Task 2.1.1</i></p>	<p><i>See Task 2.1.1</i></p>
<p>Task 2.2.2 Work with landowners and municipalities to restore or construct wetlands to add storage capacity and slow velocity of runoff</p>	<p>Reduced scouring and streambank erosion from volume & velocity of peak flows.</p> <p>Reduced sedimentation and turbidity resulting from stream bank erosion and collapse.</p> <p>Improved riparian corridors.</p> <p>Improved stream health.</p> <p>Improved wildlife habitat</p>	<p>SWCDs</p> <p>NRCS</p> <p>Local Government Officials</p> <p>Conservation District</p> <p>Regulatory Agencies</p> <p>Mitigation Partners</p>	<p>0-3 yrs: Strategically market program to govt officials and landowners. Develop site-specific conservation plans. Enroll sites into mitigation clearinghouse.</p> <p>2-15 yrs: Develop engineering plans and secure permits as required.</p> <p>4-15 yrs: Wetland restoration and construction activities.</p>	<p>Document number of sites completed and acres of wetlands restored. <i>(Administrative)</i></p> <p>Before & After photographs <i>(Administrative)</i></p> <p>Habitat evaluations <i>(Environmental)</i></p> <p>Water sampling (turbidity, TSS). <i>(Environmental)</i></p> <p>Observations of peak flow volumes & duration <i>(Environmental)</i></p>	<p>Costs:</p> <p>Mitigation Clearinghouse: \$5000/yr year</p> <p>Engineering / Permitting (emergent wetlands): \$2500 - \$3500 / ac</p> <p>Engineering / Permitting (wooded wetlands); \$4000 - \$5000 / ac</p> <p>Restoration (initial): \$3000 – 5000 / ac</p> <p>Restoration (maintenance through establishment): \$1500 - \$3500 / ac</p> <p>Sources: 319 Funds, NRCS Programs, DNR Programs, Govt Agencies & Private Parties in need of Mitigation</p>

<p>Task 2.2.3 Implement agricultural BMPs to increase infiltration rate of precipitation.</p>	<p>Reduced scouring and streambank erosion from volume & velocity of peak flows. Reduced sedimentation and turbidity resulting from stream bank erosion. Reduced surface run-off. Reduced sedimentation from farm fields. Reduced pollutants associated with soil erosion entering streams. Improved stream health. Improved wildlife habitat</p>	<p>SWCDs NRCS Agronomists Ag-Suppliers</p>	<p>0-3 yrs: Strategically market program to producers. Develop site-specific conservation plans. Enroll at least 3 new producers / year into NRCS or BCWP programs. 3-5 yrs: Continue marketing and conservation plan development. Enroll at least 5 new producers / year into NRCS or BCWP programs. 5-15 yrs: Continue marketing and conservation plan development. By year 15, developed conservation plans at least once for at least 50% of agricultural acreage. By year 15, implement BMPs on at least 50% of agricultural acreage.</p>	<p>Documented number of growers enrolled in programs. (Social) Documented acreage on which BMPs / Conservation Plans have been implemented. (Administrative) Documentation of turbidity, sediment, flow volume and velocity. (Environmental)</p>	<p>Costs: Conservation Plan: \$500 - \$1000 ea Constructed Wetlands: \$3000-5000 / ac Grassed waterways and/or Ephemeral Stream Restoration: \$3000-\$5000 ac Filter Strips: \$150 / ac No-Till Conversion: \$20/ac Conservation Crop Rotation: \$50/ac Cover Crops: \$50-80 / ac Contour Farming: \$12 / ac Field Borders: 50¢ / lf (\$150/ac conservation cover) Windbreak/Shetlerbelt Establishment: \$1 / lf Sediment Basin: \$9000-10,000 ea Terrace: \$8-10 / lf WASCORB: \$2500-3000 ea Sources: 319 Funds, NRCS Programs, DNR Programs, American Farmland Trust, Conservation Organizations (QU, DU, DWF, NWT), Govt Agencies & Private Parties in need of Mitigation</p>
<p>Task 2.2.4 Implement residential / urban BMPs such as raingardens and rain barrels to increase infiltration rate of precipitation</p>	<p>Reduced scouring and streambank erosion from volume & velocity of peak flows. Reduced sedimentation and turbidity resulting from stream</p>	<p>See Task 1.2.2</p>	<p>See Task 1.2.2</p>	<p>See Task 1.2.2</p>	<p>See Task 1.2.2</p>

bank erosion.
Reduced surface run-off.
Reduced pollutants associated
with urban run-off entering
streams.
Improved stream health.
Improved wildlife habitat

Load Reductions (based upon STEP-L and PRedICT models):

- *Bank Stabilization*
For moderately degraded streambank (4 ft deep, losing 0.06-0.2 feet / year): 73 T / mile streambank / year
 - *Wetland Restoration*
Wetland effectiveness depends upon drainage area land uses, conditions, and wetland design. The following figures do not take into account reduction of downstream stream bank erosion.
 - Urban: 7.2 T / 100 Ac / year
 - Agriculture: 370 T / 100 Ac / year
 - Pastureland: 1760 lb / 100 Ac / year
 - *Agricultural BMPs*
Agricultural BMP effectiveness depends land conditions, including soil type, slope, and past management systems.
 - Cover Crops / Crop Rotation: 163 T / 100 Ac / year
 - Conservation Tillage: 300 T / 100 Ac / year
 - Contour Farming: 192 T / 100 Ac / year
 - Terraces and Diversions: 333 T / 100 Ac / year
 - Vegetative Buffers: 272 T / 100 Ac / year
 - *Rain Gardens*
Effectiveness of rain gardens have minimal direct impacts on sedimentation. Their primary effect on erosion is the slowing of water to prevent channel and streambank erosion. A decrease in imperviousness from 40% to 35% in urban areas should yield a 46 T / year reduction in sediments.
-

Goal 2: To improve and protect the fishery and other indigenous aquatic life and wildlife of the watershed by reducing the amount of sediment entering the system.

Objective 2.3: Prevent / reduce erosion from farm fields.

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
Task 2.3.1 Implement agricultural BMPs to reduce surface water run-off and resulting soil erosion.	Reduced surface run-off. Reduced sedimentation from farm fields. Reduced pollutants associated with soil erosion entering streams. Improved stream health. Improved wildlife habitat	See Task 2.2.3	See Task 2.2.3	See Task 2.2.3	See Task 2.2.3
Task 2.3.2 Work with landowners to strategically restore or construct wetlands to trap sediments. Where applicable, enroll sites into wetland/stream restoration programs	Reduced scouring and streambank erosion from volume & velocity of peak flows. Reduced nutrients and sediments entering streams. Improved riparian corridors. Improved stream health. Improved wildlife habitat	SWCDs NRCS Conservancy District Ditch Board Regulatory Agencies Mitigation Partners	See Task 2.2.2	See Task 2.2.2	See Task 2.2.2
Task 2.3.3 Work with landowners to restore riparian areas, including tertiary streams Where applicable, enroll sites into wetland/stream restoration programs	Reduced scouring and streambank erosion from volume & velocity of peak flows. Reduced nutrients, sediments, and other pollutants entering streams. Improved riparian corridors. Improved stream health. Improved wildlife habitat	SWCDs NRCS Conservancy District Ditch Boards Regulatory Agencies Mitigation Partners	See Task 2.2.1	See Task 2.2.1	See Task 2.2.1
Task 2.3.4 Implement BMPs to improve	Reduced surface run-off.	SWCDs	0-3 yrs: Strategically market program to producers.	Documented number of systems and acreage on	Costs: Irrigation Water Management

<p>efficiency of irrigation systems in order to reduce surface water and resulting soil erosion</p>	<p>Reduced sedimentation from farm fields. Reduced pollutants associated with soil erosion entering streams. Reduced sub-surface drainage entering streams Reduced pollutants associated with sub-surface agricultural drainage entering streams. Improved stream health.</p>	<p>NRCS Agronomists Irrigation Dealers</p>	<p>Perform uniformity test and flow monitoring on enrolled systems. Develop & Implement irrigation water management plans on enrolled systems. Enroll at least 5 producers into program. 3-15 yrs: Continue marketing and conservation plan development. Enroll at least 2 new producers / year into program. By year 15, developed and implemented irrigation water management plans least 50% of irrigated agricultural acreage.</p>	<p>which Irrigation Water Management Plans and BMPs have been implemented. <i>(Administrative)</i> Documentation of turbidity and sediment levels <i>(Environmental)</i></p>	<p>Plan: \$500 ea Irrigation Water Management Implementation: \$8.00 / ac Irrigation System Efficiency Upgrade: \$2000 - \$3000 ea</p>
<p>Task 2.3.5 Increase grower participation in NRCS, DNR, and other conservation programs through strategic marketing.</p>	<p>The number of growers and/or agricultural acreage enrolled in conservation programs is directly related to reductions of agriculture-related pollutants entering surface water.</p>	<p>SWCDs NRCS Agronomists Ag Suppliers</p>	<p>0-3 yrs: Work with agronomists and ag suppliers to strategically market program to producers. Tak applications from at least 5 new producers / year into program. 3-15 yrs: Continue marketing and conservation plan development. Enroll at least 2 new producers / year into program.</p>	<p>Documented number of growers enrolled in programs <i>(Social)</i></p>	<p>Costs: Staff: \$40,000 / yr Sources: SWCDs, Partnership for Turtle Creek</p>
<p>Task 2.3.6 Participate in SWCD field days, agricultural customer appreciation days, and other similar events to highlight environmental and economic benefits of BMP implementation</p>	<p>Demonstrating environmental and economic benefits can help increase the number of growers and/or agricultural acreage enrolled in conservation programs. See <i>Task 2.3.5</i> Demonstrating economic benefits can directly impact SCWD funding at county levels.</p>	<p>SWCDs NRCS Agronomists Ag Suppliers</p>	<p>0-2 yrs: Develop catalog of all area SWCD field days and ag customer appreciation days. Review and/or revise annually. BCWP rep to give presentations at field day for each participating SWCD. 2-15 yrs: Give presentation on programs or have information booth at 20% of events each year. (Rotating to hit each event at least once every five years)</p>	<p>Documented number of events and attendees. <i>(Administrative)</i></p>	<p>Costs: Labor & Travel: \$4000-6000 / yr Sources: 319 funds, SWCDs, Clean Water Indiana</p>

Load Reductions (based upon STEP-L and PRedICT models):

- *Agricultural BMPs*
Agricultural BMP effectiveness depends land conditions, including soil type, slope, and past management systems.
 - Cover Crops / Crop Rotation: 163 T / 100 Ac / year
 - Conservation Tillage: 300 T / 100 Ac / year
 - Contour Farming: 192 T / 100 Ac / year
 - Terraces and Diversions: 333 T / 100 Ac / year
 - Vegetative Buffers: 272 T / 100 Ac / year
 - *Wetland Restoration*
Wetland effectiveness depends upon drainage area land uses, conditions, and wetland design. The following figures do not take into account reduction of downstream stream bank erosion.
 - Agriculture: 370 T / 100 Ac / year
 - Pastureland: 1760 lb / 100 Ac / year
 - *Bank Stabilization*
For moderately degraded streambank (4 ft deep, losing 0.06-0.2 feet / year): 73 T / mile streambank / year.
 - *Irrigation*
 - Improved Water Management
Although studies indicate reduction of sediments through irrigation scheduling and efficiency, none have indicated potential reduction figures.
At an efficiency similar to half that of conservation tillage: 148 T / 100 Ac / year
 - Tailwater Reuse / Sediment Retention Basins: 300 T / 100 Ac / year
 - Farming “In the Round”
By farming in patterns mimicking center pivot tracks, run-off can be mostly confined to the irrigated area. Studies indicate this to be a well-known practice that is widely adopted in the Western U.S., but potential reduction figures are lacking.
At an efficiency similar to half that of conservation tillage: 148 T / 100 Ac / year
-

Goal 2: To improve and protect the fishery and other indigenous aquatic life and wildlife of the watershed by reducing the amount of sediment entering the system.

Objective 2.4: Prevent / reduce erosion resulting from logging / land clearing activities.

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
Task 2.4.1 Host forestry workshops to demonstrate environmental and economic benefits of properly planned and conducted logging activities	<p>Reduced turbidity.</p> <p>Reduced water temperature.</p> <p>Improved health of riparian communities.</p> <p>Increase economic gains through timber management and sales.</p>	<p>DNR – Division of Forestry</p> <p>Sycamore Trails RC&D Forestry Committee</p> <p>Certified Foresters</p>	<p>0-1 yrs: Work with RC&D committee to schedule and host workshops.</p> <p>1-2 yrs: Develop web page with downloadable factsheets. Launch media campaigns for workshops.</p> <p>2-15 yrs: Review / revise workshop topics, locations, etc.</p>	<p>Documented number attendees at workshops. <i>(Administrative)</i></p> <p>Reduced or less invasive logging activities, especially near surface waters. <i>(Environmental)</i></p>	<p>Costs: Workshop: \$1000 ea</p> <p>Sources: 319 funds, DNR, Sycamore Trails</p>
Task 2.4.2 Work with DNR in development / promotion of certified forester assistance program to help landowners develop logging plans	<p>Reduced turbidity.</p> <p>Reduced water temperature.</p> <p>Improved health of riparian communities.</p> <p>Increase economic gains through timber management and sales.</p>	<p>DNR – Division of Forestry</p> <p>Sycamore Trails RC&D Forestry Committee</p> <p>Society of American Foresters</p> <p>Certified Foresters</p>	<p>0-1 yrs: Develop contact list of regional certified foresters.</p> <p>1-2 yrs: Launch awareness campaign, including web page and fact sheets.</p> <p>2-15 yrs: Target forested area landowners to participate in program.</p>	<p>Number of classified forests. <i>(Administrative)</i></p> <p>Number of logging plans developed. <i>(Administrative)</i></p>	<p>FWS</p>

Load Reductions:

Studies indicate that proper harvest planning and forestry BMP implementation result in little impact to water quality. Forestry BMPs are less about load reduction than *load prevention*.

- *Conversion to Ag Lands*
Based upon conversion from agricultural to forested land use (92% efficiency), 425 T / 100 Ac / year *prevented* for lands kept in timber
- *Clearing of Riparian Areas*
Based upon stabilization of stream banks (95% efficiency), 125 T / mile streambank / year *prevented* for riparian areas kept in timber

Goal 2: To improve and protect the fishery and other indigenous aquatic life and wildlife of the watershed by reducing the amount of sediment entering the system.

Objective 2.5: Reduce / prevent erosion from roads and ditches.

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
<p>Task 2.5.1 Work with Sullivan County officials to clarify road and utility easements</p> <p><i>To be implemented concurrently with Task 2.5.2</i></p>	<p>Clear definitions of road and ditch right-of-ways will allow appropriate space for construction and maintenance of county roads.</p> <p>Clearly defined right-of-ways will reduce encroachment of landowners into ditches, reducing ditch erosion, sedimentation, and collapse.</p>	<p>County Attorney, Commissioners, and Council</p> <p>Conservancy District</p> <p>Drainage Board</p> <p>Utility companies with roadside ROWs.</p>	<p>0-1 yrs: Review existing road, utility, and drainage board easements. Review applicability of Indiana State legislation.</p> <p>2-5 yrs: Develop and implement county-wide road/ditch ROW.</p>	<p>Adoption of county-wide road/ditch ROW. <i>(Administrative)</i></p>	
<p>Task 2.5.2 Work with County Officials to develop and implement road and ditch protection guidelines.</p> <p><i>To be implemented concurrently with Task 2.5.1</i></p>	<p>Clearly defined road and ditch protection ordinances will reduce encroachment of landowners into ditches, reducing ditch erosion, sedimentation, and collapse</p>	<p>County Attorney, Commissioners, and Council</p> <p>Conservancy District</p> <p>Drainage Board</p> <p>Utility companies with roadside ROWs.</p>	<p>0-1 yr: Evaluate model road & ditch protection ordinances with County Commissioners & County Attorney. Develop road & ditch buffer guidelines.</p> <p>2 yr: Adopt guidelines. Provide road & ditch buffer guidelines to landowners.</p> <p>3-5 yrs: Implementation of buffers. Enforcement of ordinance.</p>	<p>Adoption of road/ditch protection guidelines. <i>(Administrative)</i></p> <p>LF of ditch buffer installation <i>(Administrative)</i></p>	<p>Buffers: \$150 / Ac</p>
<p>Task 2.5.3 Work with DNR and County Department of Transportation to develop and implement low-cost, low-maintenance ditching solutions.</p> <p><i>To be implemented concurrently with Task 2.5.2</i></p>	<p>Reduced ditch and stream sedimentation.</p> <p>Reduced road and ditch maintenance costs.</p>	<p>DNR – LARE Program.</p> <p>County Dept. of Transportation</p> <p>SWCDs</p> <p>SCPL</p> <p>Shakamak Park</p>	<p>0-1 yr: Apply for DNR LARE program assistance.</p> <p>Year 2: Ditch design by DNR or consultant. Install 2-4 demonstration projects and train Department of Transportation personnel.</p> <p>3-5 yrs: Install 1-2 mi approved ditches ea year. Install 2-3 mi field borders and buffers ea year.</p> <p>5-15 yrs: Install 1-2 mi</p>	<p>Approved ditch design <i>(Administrative)</i></p> <p>Mi / LF of approved ditch installations <i>(Administrative)</i></p> <p>Maintenance savings <i>(Administrative)</i></p>	<p>Demonstration Projects: \$30,000 (\$7500 match)</p> <p>New Ditches: \$25 / lf (\$132,000 / mi)</p> <p>Buffers: 50¢ / lf (\$2600 / mi; Conservation Cover \$150/ac)</p> <p>Cost Savings: Buffers: \$12,500 / year ditch maintenance.</p>

<p>Task 2.5.4 Work with County Commissioners and Departments of Transportation to transition to improved road construction materials & methods</p> <p><i>To be implemented concurrently with Task 2.5.3</i></p>	<p>Reduction of aggregate loss. (Ave. loss of 1”/ yr = 20T/mi)</p> <p>Reduced sedimentation of ditches and streams.</p> <p>Reduced maintenance costs.</p>	<p>County Engineers</p> <p>County Commissioners</p> <p>County Departments of Transportataion</p> <p>Surface Mines (re design / road settling)</p>	<p>approved ditches ea year. Install 2-3 mi field borders and buffers ea year. Maintain 1-2 mi approved ditches ea year.</p> <p>0-1 yr: Develop guidelines based on PA Center for Dirt & Gravel Roads, Bay State Roads Program.</p> <p>Year 2: Implement improved materials and methods at ditch demo sites <i>See Task 2.5.3</i></p> <p>3-5 yrs: Install 1-2 mi improved gravel roads in conjunction with ditch improvements. <i>See Task 2.5.3</i></p> <p>5-15 yrs: Install 1-2 mi improved gravel roads in conjunction with ditch improvements. <i>See Task 2.5.3.</i></p>	<p>Adoption of improved road construction materials & methods guidelines. <i>(Administrative)</i></p> <p>Mi / LF of improved road installations. <i>(Administrative)</i></p> <p>Maintenance savings <i>(Administrative)</i></p>	<p>Costs: Difference between pit run and crusher run gravel.</p> <p>Crew Training: part of initial design installation.</p> <p>Sources: County Highway Funds, 319 funds, DNR, Clean Water Indiana</p>
--	---	---	---	---	--

Load Reductions: Based upon studies by the Pennsylvania Center for Dirt and Gravel Roads on sediment losses (these figures do not include generation of dust or loss of gravel):

- *Buffer Zones*
 15 T / ditch mile / year
- *Improved Ditch Design*
 37 T / ditch mile / year
- *Improved Driving Surface Aggregates*
 220 lbs / road mile / year
- *Raised Road Elevations*
 560 lbs / road mile / year
- *Gradebreaks*
 150 lbs / road mile / year
- *Additional Drainage Outlets*
 144 lbs / road mile / year
- *Berm Removal (Shoulder Regrade)*
 177 lbs / road mile / year

Goal 2: To improve and protect the fishery and other indigenous aquatic life and wildlife of the watershed by reducing the amount of sediment entering the system.

Objective 2.6: Reduce / prevent erosion from current and past mineral extraction activities.

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
Task 2.6.1 Work with coal mines to enroll farmlands under mine control into conservation programs.	The number of growers and/or agricultural acreage enrolled in conservation programs is directly related to reductions of agriculture-related pollutants entering surface water.	Coal Companies SWCDs NRCS	0-1 yrs: Meet with coal mine land managers to explain control requirements of conservation programs 0-2 yrs: Work with coal mines to increase lease terms to 3-5 year 5 yr: Review / update based upon program requirements (5 year cycle)	Number of leases modified to allow enrollment into conservation programs. <i>(Social)</i>	Cost: Labor <\$500 Sources: SWCD, NRCS
Task 2.6.2 Launch outreach campaign to educate farmers and landowners on the higher susceptibility of minelands to erosion	Reduced removal of reclamation practices. Maintain or improve water quality.	Coal Companies SWCDs NRCS	0-2 yrs: Promote use of <i>Farm Management Practices for Reclaimed Farmlands</i> . Develop list of tracts due to be released from bonds. Target already-released lands for conservation program enrollment. 2-15 yrs: Call on and distribute information packet to farmers and landowners of reclaimed minelands. Perform windshield survey of reclaimed minelands on annual basis to determine levels of conservation needed.	Before and after photos. <i>(Administrative)</i> Enrollment of reclaimed lands into conservation programs. <i>(Administrative)</i>	Cost: Information Packet: \$1000 Surveys & Calls: \$3000-4000 / year Sources: 319 funds, SWCDs

<p>Task 2.6.3 Work with mineral extraction companies to implement sediment and compaction reducing BMPs.</p>	<p>Reduced compaction on Oil & Gas Well sites. Reduced soil erosion during soil & gas well installation Reduced sedimentation from pre-mining and reclamation activities</p>	<p>Mineral Companies DNR – Division of Reclamation DNR – Division of Oil & Gas Wells Permitting / Regulatory Agencies</p>	<p>0-3yrs: Secure assurance from permitting / regulatory agencies that improved techniques will not affect existing permits. Work with Oil & Gas companies to implement BMPs used on traditional construction sites. 3-5 yrs: Continue to implement BMPs on Oil / Gas Wells. Develop BMPs to implement on pre/post mine lands. 5-15yrs: Implement BMPs on mine lands</p>	<p>Agreements with regulatory agencies. <i>(Administrative)</i> BMP guidelines. <i>(Administrative)</i></p>	<p>Costs: Labor: \$3000-5000 Sources: 319 funds, Private Investment</p>
---	--	--	--	--	---

Load Reductions (based upon STEP-L and PRedICT models):

- *Agricultural BMPs (as apply to reclaimed mine lands)*
 Agricultural BMP effectiveness depends land conditions, including soil type, slope, and tract management systems.
 - Cover Crops / Crop Rotation: 163 T / 100 Ac / year
 - Conservation Tillage: 300 T / 100 Ac / year
 - Contour Farming: 192 T / 100 Ac / year
 - Vegetative Buffers: 272 T / 100 Ac / year

Goal 2: To improve and protect the fishery and other indigenous aquatic life and wildlife of the watershed by reducing the amount of sediment entering the system.

Objective 2.7: Work with farmers and landowners to eliminate livestock access to creeks, streams, and ponds/lakes connected to them.

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
Task 2.7.1: Work with farmers and landowners to implement exclusionary fencing programs. Where applicable, enroll sites into wetland/stream restoration programs. See Task 1.3.1	See Task 1.3.1	See Task 1.3.1	See Task 1.3.1	See Task 1.3.1	See Task 1.3.1

Load Reductions (based upon STEP-L and PRedICT models):

- *Exclusionary Fencing / Watering Facilities*
 For severely degraded streambank (4 ft deep, losing 0.3-0.5 feet / year): 215 T / mile streambank / year
- *Bank Stabilization*
 For severely degraded streambank (4 ft deep, losing 0.3-0.5 feet / year): 280 T / mile streambank / year
- *Wetland Restoration*
 Wetland effectiveness depends upon drainage area land uses, conditions, and wetland design. The following figures do not take into account reduction of downstream stream bank erosion.
 - Agriculture: 370 T / 100 Ac / year
 - Pastureland: 1760 lb / 100 Ac / year

Goal 3: To improve and protect the fishery and other indigenous aquatic life and wildlife of the watershed by reducing the amount of nutrients entering the system.

Objective 3.1: Reduce / prevent nutrients from cropping practices from entering surface water.

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
<p>Task 3.1.1 Implement agricultural BMPs to reduce nutrient losses. See Task 2.2.3</p>	<p>Reduced surface run-off</p> <p>Reduced pollutants associated with soil erosion, leaching, or application overlap entering streams.</p> <p>Improved stream health.</p> <p>Improved wildlife habitat.</p>	<p>SWCDs</p> <p>NRCS</p> <p>Agronomists</p> <p>Ag-Suppliers</p>	<p>See Task 2.2.3</p>	<p>See Task 2.2.3</p>	<p>See Task 2.2.3 In addition to those costs listed: Comprehensive Nutrient Management Plan: \$1000</p> <p>Nutrient Management: \$20 / Ac</p> <p>Sources: 319 Funds, NRCS Programs, DNR Programs, American Farmland Trust, Conservation Organizations (QU, DU, DWF, NWT), Govt Agencies & Private Parties in need of Mitigation</p>
<p>Task 3.1.2 Work with farmers to strategically restore / construct nutrient-trapping wetlands. Where applicable, enroll sites into wetland/stream restoration programs. See Tasks 2.3.1, 2.2.3, 2.2.2</p>	<p>Reduced surface run-off</p> <p>Reduced pollutants associated with soil erosion, leaching, or application overlap entering streams.</p> <p>Improved stream health.</p> <p>Improved wildlife habitat.</p>	<p>SWCDs</p> <p>NRCS</p> <p>Conservancy District</p> <p>Regulatory Agencies</p> <p>Mitigation Partners</p>	<p>See Tasks 2.3.1, 2.2.3, 2.2.2</p>	<p>See Tasks 2.3.1, 2.2.3, 2.2.2</p>	<p>See Tasks 2.3.1, 2.2.3, 2.2.2</p>
<p>Task 3.1.3 Work with farmers and commercial applicators to adopt precision agriculture technology to reduce excess applications of nutrients</p>	<p>Reduced pollutants associated with application overlap.</p>	<p>SWCDs</p> <p>NRCS</p> <p>Agronomists</p> <p>Ag-Suppliers</p>	<p>0-2 yrs: Market Precision Ag as tiered cost-share. (Based upon other BMP adoptions). Host P.A. training.</p> <p>2-15 yrs: Review new P.A. technology on annual basis. Develop adoption / cost share guidelines on new technology.</p> <p>Continue hosting P.A. training on annual basis.</p>	<p>Costs:</p> <p>Lightbar: \$1500-5000 ea system</p> <p>Basic system required for other PA apps: \$7,000-\$11,000 ea system</p> <p>Autosteer app: \$9000-\$12,000 ea system</p> <p>Autoswath app: \$9000 - \$15,000 ea system</p>	

<p>Task 3.1.4 Implement BMPs to improve efficiency of irrigations systems and reduce nutrient losses through surface run-off and leaching <i>See Task 2.3.4</i></p>	<p>Reduced surface run-off. Reduced pollutants associated with soil erosion entering streams. Reduced pollutants associated with sub-surface agricultural drainage entering streams. Improved stream health.</p>	<p><i>See Task 2.3.4</i></p>	<p><i>See Task 2.3.4</i></p>	<p><i>See Task 2.3.4</i></p>	<p><i>See Task 2.3.4</i></p>
<p>Task 3.1.5 Increase grower participation in NRCS, DNR, and other conservation programs through strategic marketing. <i>See Task 2.3.5</i></p>	<p><i>See Task 2.3.5</i></p>	<p><i>See Task 2.3.5</i></p>	<p><i>See Task 2.3.5</i></p>	<p><i>See Task 2.3.5</i></p>	<p><i>See Task 2.3.5</i></p>
<p>Task 3.1.6 Participate in SWCD field days, agricultural customer appreciation days, and other similar events to highlight environmental and economic benefits of BMP implementation <i>See Task 2.3.6</i></p>	<p><i>See Task 2.3.6</i></p>	<p><i>See Task 2.3.6</i></p>	<p><i>See Task 2.3.6</i></p>	<p><i>See Task 2.3.6</i></p>	<p><i>See Task 2.3.6</i></p>

Load Reductions (based upon STEP-L and PRedICT models):

- *Agricultural BMPs*
Agricultural BMP effectiveness depends land conditions, including soil type, slope, and past management systems.
 - Cover Crops / Crop Rotation: 130 lbs N, 37 lbs P / 100 Ac / year (does not include credits from N-fixing cover crops)
 - Conservation Tillage: 260 lbs N, 39 lbs P / 100 Ac / year
 - Contour Farming: 120 lbs N, 41 lbs P / 100 Ac / year
 - Terraces and Diversions: 230 lbs N, 43 lbs P / 100 Ac / year
 - Vegetative Buffers: 334 lbs N, 54 lbs P / 100 Ac / year
 - Nutrient Management: 365 lbs N, 29 lbs P / 100 Ac / year
 - Split Nitrogen Applications: 28 lbs / 100 Ac / year
- *Wetland Restoration*: 365 lbs N, 87 lbs P / 100 Ac / year

Precision Agriculture (Industry Studies, Ohio State University, Kansas State University, University of Iowa)

- Variable Rate Applications: 28 lbs N, 2 lbs P / 100 Ac / year (reductions in overall fertilizer application not calculated)
 - AutoSwath: 15 lbs N, 2 lbs P / 100 Ac / year (reductions in overall fertilizer application not calculated)
 - *Irrigation*
 - *Improved Water Management*: 240 lbs N / 100 Ac / year
 - *Credits for Nitrates in Irrigation Water* (say 15ppm): 21 lbs / 100 Ac / year
-

Goal 3: To improve and protect the fishery and other indigenous aquatic life and wildlife of the watershed by reducing the amount of nutrients entering the system.

Objective 3.2: Reduce / prevent nutrients from domestic animals and livestock from entering surface water.

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
<p>Task 3.2.1 Implement structural BMPs (exclusionary fencing / watering facilities) in pastures with livestock access to surface waters.</p> <p>Where applicable enroll sites into streambank/wetland restoration program.</p> <p>See Task 1.3.1</p>	<p>Reduce break down of streambanks, disturbance of streambeds, and entrance of animal wastes in surface waters.</p>	See Task 1.3.1	See Task 1.3.1	See Task 1.3.1	See Task 1.3.1
<p>Task 3.2.2 Work with landowners to insure that surface water runoff from feedlots, drylots, or other pasture/holding facilities do not directly enter surface waters.</p> <p>See Task 1.3.2</p>	<p>Reduced entry of surface soil and animal wastes into surface waters.</p> <p>Improved forage quality.</p>	See Task 1.3.2	See Task 1.3.2	See Task 1.3.2	See Task 1.3.2
<p>Task 3.2.3 Work with farmers to implement manure management / application BMPs.</p> <p>See Task 1.3.3</p>	<p>Reduced entry of animal wastes into surface waters.</p> <p>Reduced P concentrations in areas of manure application.</p>	See Task 1.3.3	See Task 1.3.3	See Task 1.3.3	See Task 1.3.3

Load Reductions (based upon Watershed Treatment Model, STEP-L and PRedICT models):

- *Exclusionary Fencing / Watering Facilities:* 380 lbs N, 40 lbs P / 100 Ac / year
- *Wetland Restoration:* 475 lbs N, 43 lbs P / 100 Ac / year
- *Feedlot Waste Storage / Management*
If estimated waste exposed to run-off is cut in half, should see total reduction of 831 T N, 166 T P / year
- *Manure Management / Application BMPs*

If estimated waste is applied in such a way as to prevent 85% of run-off from reaching surface waters, should see a total reduction of 1330 T N, 266 T P / year.

Goal 3: To improve and protect the fishery and other indigenous aquatic life and wildlife of the watershed by reducing the amount of nutrients entering the system.

Objective 3.3: Reduce / prevent nutrients from parks and park-like areas from entering surface water.

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
<p>Task 3.3.1 Work with DNR to promote available help for park and public area managers to eliminate/reduce wildlife (goose) waste runoff <i>See Task 1.4.1</i></p>	<p>Provide "how-to" documents & strategies in dealing with wildlife (goose) problems.</p> <p>Reduce amount of animal (goose) waste entering surface waters.</p> <p>Reduce impacts of wildlife (goose) population on park use and quality.</p>	<p><i>See Task 1.4.1</i></p>	<p><i>See Task 1.4.1</i></p>	<p><i>See Task 1.4.1</i></p>	<p><i>See Task 1.4.1</i></p>
<p>Task 3.3.3 Implement buffer strip BMPs on golf courses and parks & cemeteries to eliminate/reduce fertilizer runoff.</p>	<p>Reduced surface run-off</p> <p>Reduced pollutants associated with surface run-off from entering streams.</p> <p>Improved stream health.</p> <p>Improved wildlife habitat.</p>	<p>SWCDs</p> <p>DNR</p> <p>Park Boards</p> <p>Cemetery Boards</p> <p>Park & Golf Course Managers</p>	<p>0-1 yrs: Work with park boards & managers to define buffer strip needs. Define implementation plan.</p> <p>2-15 yrs: Install buffers</p> <p>Achieve 30% of stream and lake bank buffer by year 10.</p> <p>Achieve 60% of stream and lake banks buffered by yr 15.</p>	<p>Number of buffer implementation plans. <i>(Social)</i></p> <p>Buffer installations. <i>(Administrative)</i></p>	<p>Cost: Implementation Plan: \$1500-2500</p> <p>Buffers: 50¢ / LF (\$150/Ac Conservation Cover)</p> <p>Sources: Parks, 319 funds, DNR, Conservation Organizations (QU, DU, DWF)</p>
<p>Task 3.3.4 Work with parks, golf courses, cemeteries and other park-like areas to obtain certification in Audubon International Cooperative Sanctuary Program.</p>	<p>Obtaining certification in Audubon Sanctuary program requires implementation of BMPs to reduce use and potential runoff of nutrients.</p> <p>Improved marketing image of certified parks & park-like areas.</p> <p>Potential for reduced insurance premiums.</p> <p>Savings on chemical inputs.</p> <p>Reduced exposure to chemicals.</p>	<p>Audubon International</p> <p>Park Boards</p> <p>Cemetery Boards</p> <p>Park & Golf Course Managers</p>	<p>0-1 yrs: Enroll in program. Perform Site Assessment. Develop Environmental Plan.</p> <p>1-5 yrs: Implement Environmental Plan.</p> <p>Achieve first property certification by yr. 5.</p> <p>Achieve 50% property certification by yr 15.</p>	<p>Number of properties enrolled in program and implementing Environmental Plans. <i>(Social)</i></p> <p>Number of properties that have achieved program certification. <i>(Administrative)</i></p>	<p>Annual AI registration fee \$200 / yr (ea property)</p> <p>Environmental Plan \$1500 – 2000 <i>See Task 3.3.3</i></p> <p>Buffers: 50¢ / LF (\$150/Ac Conservation Cover)</p> <p>Sources: Parks, 319 funds, DNR, Conservation Organizations (QU, DU, DWF)</p>

Load Reductions (based upon STEP-L, PRedICT model from the University of Pennsylvania and the Watershed Treatment Model from the Center for Watershed Protection):

- *Wildlife Management:* nominal reductions
- *Buffers:* 575 lbs N, 383 lbs P / 100 Ac / year
Calculated at a 3:1 ratio of N to P and a rate of 4 lbs N / 1000 sf.

Goal 3: To improve and protect the fishery and other indigenous aquatic life and wildlife of the watershed by reducing the amount of nutrients entering the system.

Objective 3.4: Reduce / prevent nutrients from residential yards from entering surface water.

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
Task 3.4.1 Educate private landowners in methods of lawn/landscaping care that can reduce nutrient inputs.	Reduced nutrients from urban areas entering surface waters. Increased understanding of residential impacts on surface water quality.	Lawn and Garden Care Professionals. Garden Centers Garden Clubs 4-H Clubs	0-1 yr: Develop web page with downloadable fact sheets. 1-2 yrs: Write articles for media. Host workshop in conjunction with rain garden workshop.	Number of attendees at workshop. <i>(Administrative)</i> Requests for additional information. <i>(Social)</i>	Cost: <\$1000
Task 3.4.2 Educate private landowners in how buffers can eliminate / reduce nutrient runoff.	Reduced nutrients from urban areas entering surface waters. Increased understanding of residential impacts on surface water quality.	Lawn and Garden Care Professionals. Garden Centers Garden Clubs 4-H Clubs	0-1 yr: Develop web page with downloadable fact sheets. 1-2 yrs: Write articles for media. Host workshop in conjunction with rain garden workshop. Provide technical assistance in buffer design and installation.	Number of attendees at workshop. <i>(Administrative)</i> LF Urban Stream & Lake Buffers installed. <i>(Administrative)</i> Requests for additional information. <i>(Social)</i>	Cost: Workshop & Webpage: <\$1000 Buffers: 50¢ / LF (\$150/Ac Conservation Cover) Sources: 319 funds, DNR

Load Reductions (based upon STEP-L, PRedICT model from the University of Pennsylvania and the Watershed Treatment Model from the Center for Watershed Protection):

- *Buffers:* 575 lbs N, 383 lbs P / 100 Ac / year
Calculated at a 3:1 ratio of N to P and a rate of 4 lbs N / 1000 sf.

Goal 3: To improve and protect the fishery and other indigenous aquatic life and wildlife of the watershed by reducing the amount of nutrients entering the system.

Objective 3.5: Reduce / prevent nutrients from failing septic systems from entering surface water.

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
Task 3.5.1 Develop septic system management and design ordinances for local soils conditions, including “alternative” approaches such as composting, incinerating, and wetlands systems. See Task 1.1.1	For each County or Township adopting a septic system ordinance, water quality can be expected to maintain or improved through the change in practices outlined by the ordinance.	See Task 1.1.1	See Task 1.1.1	See Task 1.1.1	See Task 1.1.1
Task 3.5.2 Work with local health departments to insure effective inspection of septic system design and installation. See Task 1.1.2	Water quality can be expected to maintain or improve through the change in design review and inspection practices	See Task 1.1.2	See Task 1.1.2	See Task 1.1.2	See Task 1.1.2
Task 3.5.3 Work with local banks to insure septic service records and system inspection is a requirement for any home loans. See Task 1.1.3	Water quality can be expected to maintain or improve by requiring proper septic inspection to quality for home loans.	See Task 1.1.3	See Task 1.1.3	See Task 1.1.3	See Task 1.1.3
Task 3.5.3 Education landowners with septic systems on their proper maintenance. See Task 1.1.4	It can be expected that landowners who read the media articles will become more informed as to how their management practices can impact water quality. Some of these landowners can be expected to change their practices and this will improve or maintain water quality	See Task 1.1.4	See Task 1.1.4	See Task 1.1.4	See Task 1.1.4

Load Reductions (based upon PRedICT model from the University of Pennsylvania and the Watershed Treatment Model from the Center for Watershed Protection):

- *Failing Private Septic*
A decrease from an estimated 75% failure rate to 50%, should result in total decreases of 13 T N, 5 T P / year.
-

Goal 3: To improve and protect the fishery and other indigenous aquatic life and wildlife of the watershed by reducing the amount of nutrients entering the system.

Objective 3.6: Reduce / prevent nutrients from CSOs from entering surface water.

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
Task 3.6.1 Work with businesses and landowners to insure that gutters are not connected to stormwater systems. <i>See Task 1.2.1</i>	CSOs are currently a substantial source urban based nutrient loads. Any and all reductions of stormwater flow through the sewer system will positively impact water quality	<i>See Task 1.2.1</i>	<i>See Task 1.2.1</i>	<i>See Task 1.2.1</i>	<i>See Task 1.2.1</i>
Task 3.6.2 Install public and private raingardens equal in volume to approximately 1% of roof and parking area runoff. <i>See Task 1.2.2</i>	CSOs are currently a substantial source urban based nutrient loads. Any and all reductions of stormwater flow through the sewer system will positively impact water quality	<i>See Task 1.2.2</i>	<i>See Task 1.2.2</i>	<i>See Task 1.2.2</i>	<i>See Task 1.2.2</i>

Load Reductions (based upon the Watershed Treatment Model from the Center for Watershed Protection):

- Combined Sewer Overflow**
 A nominal reduction of CSO-generated N and P loads can be expected by decreasing from an estimated 40% urban impervious areas to 35%.

Goal 4: To restore, conserve, and protect the hydrology of the watershed to improve water quality.

Objective 4.1: Perform flood plan management to prevent damaging effects of floods, preserve/enhance natural values, and provide optimal use of land and water resources within the floodplain.

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
Task 4.1.1 Reduce and delay runoff from roofs and paved areas through programs that promote installation of BMPs in urban areas.	<p>Improved infiltration of precipitation.</p> <p>Reduced volume and velocity of stormwater runoff from urban areas.</p> <p>Reduced scouring and streambank erosion from volume & velocity of peak flows.</p> <p>Reduced surface run-off.</p> <p>Reduced sedimentation and turbidity resulting from stream bank erosion.</p> <p>Reduced pollutants associated with urban run-off entering streams.</p> <p>Improved stream health.</p> <p>Improved wildlife habitat</p>	<p>SWCDs</p> <p>NRCS</p> <p>Local Government Officials</p> <p>Conservation District</p> <p>Parks Departments</p> <p>Garden Clubs</p> <p>4-H Clubs</p>	<p>See Task 1.2.2</p> <p>See Task 2.2.4</p> <p>In addition to the above:</p> <p>0-1 yr: Obtain “buy in” from local governing bodies.</p> <p>2-3 yrs: Work with partners to establish incentives to install BMPs, including structures such as grassed waterways around parking lots.</p> <p>Have at least 30% of new construction implementing recommended BMPs by year 10.</p>	<p>See Task 1.2.2</p> <p>See Task 2.2.4</p> <p>Number of commercial raingardens, grassed waterways and other stormwater detention and filtration projects. <i>(Administrative)</i></p>	<p>See Task 1.2.2</p> <p>See Task 2.2.4</p> <p>Constructed Wetlands: \$3000-5000 / ac</p> <p>Grassed waterways:: \$3000-\$5000 ac</p>
Task 4.1.2 Work with County Officials to reduce development within the floodplain by implementing existing floodplain protection ordinance per FEMA / NFIP requirements.	<p>Ability of property owners to insure against flood losses.</p> <p>Mitigation of potential flood loss through construction practice oversight and floodplain management as required by the program.</p> <p>Reduced chance of contaminants entering surface water through destruction of man-made structures during flood events.</p>	<p>Local Government Officials</p> <p>FEMA</p>	<p>0-1 yr: Obtain “buy in” from local governing body to enforce ordinance.</p> <p>2-3 yrs: Provide training to building code officials.</p>	<p>Enforcement of ordinances. <i>(Social)</i></p> <p>Number of design / location inspections. <i>(Administrative)</i></p>	<p>Costs: increased building code enforcement.</p>

Load Reductions (based upon STEP-L, PRedICT model from the University of Pennsylvania and the Watershed Treatment Model from the Center for Watershed Protection):

- *Bank Stabilization*
For moderately degraded streambank (4 ft deep, losing 0.06-0.2 feet / year): 73 T / mile streambank / year
 - *Wetland Restoration*
Wetland effectiveness depends upon drainage area land uses, conditions, and wetland design. The following figures do not take into account reduction of downstream stream bank erosion.
 - Urban: 7.2 T / 100 Ac / year
 - *Detention Basin*
Wetland effectiveness depends upon drainage area land uses, conditions, and wetland design. The following figures do not take into account reduction of downstream stream bank erosion.
 - Urban: 7.4 T / 100 Ac / year
 - *Rain Gardens*
Effectiveness of rain gardens have minimal direct impacts on sedimentation. Their primary effect on erosion is the slowing of water to prevent channel and streambank erosion. A decrease in imperviousness from 40% to 35% in urban areas should yield a 46 T / year reduction in sediments.
-

Goal 4: To restore, conserve, and protect the hydrology of the watershed to improve water quality.

Objective 4.2: Limit net increase of impervious surfaces in order to limit runoff associated with development.

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
Task 4.2.1 Implement residential / urban BMPs such as raingardens to offset effects of impervious surfaces. See Task 2.2.4	<p>Reduced scouring and streambank erosion from volume & velocity of peak flows.</p> <p>Reduced sedimentation and turbidity resulting from stream bank erosion.</p> <p>Reduced surface run-off.</p> <p>Reduced pollutants associated with urban run-off entering streams.</p> <p>Improved stream health.</p> <p>Improved wildlife habitat</p>	See Task 2.2.4	See Task 2.2.4	See Task 2.2.4	See Task 2.2.4

Load Reductions (based upon STEP-L, PRedICT model from the University of Pennsylvania and the Watershed Treatment Model from the Center for Watershed Protection):

- *Detention Basin*
 Wetland effectiveness depends upon drainage area land uses, conditions, and wetland design. The following figures do not take into account reduction of downstream stream bank erosion.
 - Urban: 7.4 T / 100 Ac / year
- *Rain Gardens*
 Effectiveness of rain gardens have minimal direct impacts on sedimentation. Their primary effect on erosion is the slowing of water to prevent channel and streambank erosion. A decrease in imperviousness from 40% to 35% in urban areas should yield a 46 T / year reduction in sediments.

Goal 4: To restore, conserve, and protect the hydrology of the watershed to improve water quality.

Objective 4.3: Restore and protect the full surface water network, including headwaters, ephemeral streams, and wetlands to positively impact water temperature, add storage capacity, and reduce velocity following rain events.

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
Task 4.3.1 Work with landowners to restore streams to a more naturally vegetated and meandering state and conserve high quality stream habitat.	See Tasks 1.3.1, 2.1.1, 2.2.2 Overall improved riparian health, water quality, wildlife habitat, and water storage capacities.	See Tasks 1.3.1, 2.1.2	See Tasks 1.3.1, 2.1.2	See Tasks 1.3.1, 2.1.2	See Tasks 1.3.1, 2.1.2
	See Tasks 1.3.1, 2.1.1, 2.2.2	See Tasks 1.3.1, 2.1.2	See Tasks 1.3.1, 2.1.2	See Tasks 1.3.1, 2.1.2	See Tasks 1.3.1, 2.1.2
Task 4.3.2 Work with landowners to restore and conserve wetlands and vernal pools.	Overall improved riparian health, water quality, wildlife habitat, and water storage capacities. Improved habitat for marginal species.	See Tasks 1.3.1, 2.1.2	See Tasks 1.3.1, 2.1.2	See Tasks 1.3.1, 2.1.2	See Tasks 1.3.1, 2.1.2
	See Tasks 1.3.1, 2.1.1, 2.2.1	See Tasks 1.3.1, 2.1.2	See Tasks 1.3.1, 2.1.2	See Tasks 1.3.1, 2.1.2	See Tasks 1.3.1, 2.1.2
Task 4.3.4 Work with landowners to restore ephemeral streams and headwaters.	Overall improved riparian health, water quality, wildlife habitat, and water storage capacities. Improved habitat for marginal species.				
Task 4.3.5 Develop and implement a Mitigation Clearinghouse to connect landowners with potential stream, wetland, ephemeral stream or headwater sites to those in need of mitigation projects.	Increased likelihood of practice implementation. Improved practice financing strategies.	IDEM / INDOT / DNR Mitigation Partners SWCDs Conservancy Districts Drainage Boards	0-1 yr: Design database structure. Hold public meeting. Enroll potential sites into program. Elicit potential mitigation partner support. 2-15 yrs: Continue marketing and enrollment into program. Track active project / project costs.	Number of projects. (Administrative) LF of stream restoration. (Administrative) Acres of wetland restoration. (Administrative) Number of ephemeral streams and headwaters restored. (Administrative)	\$5,000 / year

<p>Task 4.3.6 Increase landowner participation in programs such as the Wetland Reserve Program through strategic marketing.</p>	<p>The number of landowners and/or acreage enrolled in conservation programs is directly related to reductions of surface water volume, surface water velocity, and surface water quality.</p>	<p>SWCDs NRCS Financial Institutions Realtors</p>	<p>0-3 yrs: Work with agronomists and ag suppliers to strategically market program to producers. Take applications from at least 1 new producer / year into program. 3-15 yrs: Continue marketing and conservation plan development.</p>	<p>Documented number of growers enrolled in programs (<i>Social</i>)</p>	<p>Costs: \$5,000 / yr Sources: SWCDs, Partnership for Turtle Creek</p>
--	--	--	--	--	--

Load Reductions:

Load reductions are dependent upon land uses and conditions. Any and all BMPs listed in Goals 1-3 can be applied as a base guide.

It is known that implementation of multiple BMPs usually has a synergistic impact, so that the value of the whole is greater than the sums of individual practices.

Goal 5: To improve and protect the fishery and other indigenous aquatic life and wildlife of the watershed by preventing or reducing the amounts of metals and sulfates entering the surface waters.

Objective 5.1: Reduce / prevent metals and sulfates resulting from acid mine discharge from entering surface water.

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
Task 5.1.1 Identify and catalog abandoned mine land sites.	Geo-referenced information can improve efficiency of multiple small site AML reclamation projects.	DNR – DOR Sycamore Trails RC&D SWCDs	0-2 yrs: Launch awareness campaign. Work with Sycamore Trails to educate public on AML identification. 2-4 yrs: Develop and market AML Clearinghouse. 2-15 yrs: Ground-truth and inventory land-owner / citizen submitted AML sites.	Number of sites identified and entered into AML Clearinghouse. <i>(Administrative)</i> Number of restoration projects completed. <i>(Administrative)</i>	\$5,000 / year
Task 5.1.2 Work with Sycamore Trails RC&D, Indiana DNR – Division of Reclamation, and Office of Surface Mining to restore abandoned mine land sites and prevent pollutants associated with those sites from entering surface waters.	Reduction of AML-related pollutants entering surface waters. Improved ecosystem health.	DNR – DOR Sycamore Trails RC&D SWCDs	0-2 yrs: Launch awareness campaign. Work with Sycamore Trails to educate public on AML identification. 2-15 yrs: Use AML Clearinghouse to identify and prioritize sites.	Number of restoration projects completed. <i>(Administrative)</i> Water sampling (turbidity, pH, TDS, sulfates, metals) <i>(Environmental)</i>	Costs: Project Dependent Sources: IDNR, Sycamore Trails RC& D

Load Reductions:

Load reductions are project and source dependent.

Goal 5: To improve and protect the fishery and other indigenous aquatic life and wildlife of the watershed by preventing or reducing the amounts of metals and sulfates entering the surface waters.

Objective 5.2: Reduce the amount of urban-based pollutants entering surface water.

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
Task 5.2.1 Develop and implement household waste education programs.	Each resident properly disposing of potentially hazardous materials will result in maintained and improved water quality.	Solid Waste Districts Indiana Household Waste Management Task Force Sycamore Trails RC&D	0-2 yrs: Launch awareness campaign. Work with Sycamore Trails & use existing documentation to educate public on proper disposal of household waste. Develop webpage with downloadable materials	Web page. <i>(Administrative)</i> Requests for materials. <i>(Social)</i>	Costs: <1000 Source: 319 Funds, Sycamore Trails
Task 5.2.2 Promote efforts for annual collection days of Household Hazardous Waste to prevent them from entering the surface waters.	Each resident properly disposing of potentially hazardous materials will result in maintained and improved water quality.	Solid Waste Districts Indiana Household Waste Management Task Force Sycamore Trails RC&D	0-2 yrs: Plan collection, locate hazardous waste disposal firm, set date. 2-3 yrs: Launch publicity campaign. Host collection day. Determine appropriate timeframe for additional collection days. 3-15 yrs: Host collection days.	Amount of waste collected. Number of collection day participants. <i>(Administrative)</i>	Costs: Organization: \$1000 – 2000 Collection and Disposal: TBD Sources: Private grants, Indiana Household Waste Grant Program (temporarily suspended)
Task 5.2.3 Reduce and delay runoff from roofs and paved surfaces through programs that promote installation of BMPs in urban areas.	See Tasks 2.2.4, 4.2.1	See Tasks 2.2.4, 4.2.1	See Tasks 2.2.4, 4.2.1	See Tasks 2.2.4, 4.2.1	See Tasks 2.2.4, 4.2.1

Load Reductions:

Household hazardous waste pollutant sampling has not been conducted. Existing loads from household hazardous wastes have not been determined.

Goal 6: To improve and protect the fishery and other indigenous aquatic life and wildlife in the watershed by preventing or reducing the amount of pesticides entering the surface water.

Objective 6.1: Reduce / eliminate pesticides used in residential applications from reaching surface waters.

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
Task 6.1.1 Continue and promote efforts for annual collection days of Household Hazardous Waste to prevent them from entering the surface waters <i>See Task 5.2.2</i>	<i>See Task 5.2.2</i>	<i>See Task 5.2.2</i>	<i>See Task 5.2.2</i>	<i>See Task 5.2.2</i>	<i>See Task 5.2.2</i>
Task 6.1.2 Develop educational materials on integrated pest management and safe use of pesticides.	It can be expected that landowners who read the media articles will become more informed as to how their use of pesticides can impact water quality. Some of these landowners can be expected to change their practices and this will improve or maintain water quality	SWCDs Extension Service Garden Clubs Garden Centers	0-1 yrs: Develop web page with downloadable factsheets. 1-2 yrs: Write articles for media. Year 2: Incorporate integrated pest management concepts into rain garden workshop.	Requests for information. <i>(Social)</i> Number of attendees at workshop. <i>(Administrative)</i>	Cost: <\$1,000

Load Reductions:

Pesticide pollutant sampling has not been conducted. Existing loads from pesticides have not been determined.

Goal 6: To improve and protect the fishery and other indigenous aquatic life and wildlife in the watershed by preventing or reducing the amount of pesticides entering the surface water.

Objective 6.2: Reduce / eliminate pesticides used in parks and park-like applications from reaching surface waters.

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
<p>Task 6.2.1 Work with park, cemetery, and golf course managers to implement integrated pest management systems.</p>	<p>IPM can reduce use and potential runoff of chemicals.</p> <p>Reduced costs related to chemical useage.</p>	<p>SWCDs</p> <p>NRCS</p> <p>DNR</p> <p>Extension Service</p> <p>Park Boards</p> <p>Cemetery Boards</p> <p>Park & Golf Course Managers</p>	<p>0-1 yrs: Develop web page with downloadable factsheets.</p> <p>1-2 yrs: Meet with park, cemetery & golf course managers to provide assistance in IPM implementation.</p> <p>Year 2: Follow-up with park, cemeteries, & golf courses on IPM implementation</p> <p>Yrs 5, 10, 15: (Or as needed) Review current IPM standards, provide updated information to park, cemeteries, & golf courses.</p>	<p>Number of properties implementing IPM practices. <i>(Administrative)</i></p>	<p>Webpage, factsheets: <1,000</p> <p>Meetings & Workshops: \$1000 / year</p>
<p>Task 6.2.2 Implement buffer strip BMPs on golf courses and parks to reduce pesticide runoff.</p> <p>See Task 3.3.3</p>	<p>See Task 3.3.3</p>	<p>See Task 3.3.3</p>	<p>See Task 3.3.3</p>	<p>See Task 3.3.3</p>	<p>See Task 3.3.3</p>
<p>Task 6.2.3 Work with parks, golf courses, cemeteries and other park-like areas to obtain certification in Audubon International Cooperative Sanctuary Program.</p>	<p>Obtaining certification in Audubon Sanctuary program requires implementation of BMPs to reduce use and potential runoff of chemical.</p> <p>Improved marketing image of certified parks & park-like areas.</p> <p>Potential for reduced insurance premiums.</p> <p>Savings on chemical inputs.</p> <p>Reduced exposure to</p>	<p>Audubon International</p> <p>Park Boards</p> <p>Cemetery Boards</p> <p>Park & Golf Course Managers</p>	<p>0-1 yrs: Enroll in program. Perform Site Assessment. Develop Environmental Plan.</p> <p>1-5 yrs: Implement Environmental Plan.</p> <p>Achieve first property certification by yr. 5.</p> <p>Achieve 50% property certification by yr 15.</p>	<p>Number of properties enrolled in program and implementing Environmental Plans. <i>(Administrative)</i></p> <p>Number of properties that have achieved program certification. <i>(Administrative)</i></p>	<p>Annual AI registration fee \$200 / yr (ea property)</p> <p>Environmental Plan \$1500 – 2000 See Task 3.3.3</p> <p>Buffers: 50¢ / LF (\$150/Ac Conservation Cover)</p> <p>Sources: Parks, 319 funds, DNR, Conservation Organizations (QU, DU, DWF)</p>

chemicals.

Load Reductions:

Pesticide pollutant sampling has not been conducted. Existing loads from pesticides have not been determined.

Goal 6: To improve and protect the fishery and other indigenous aquatic life and wildlife in the watershed by preventing or reducing the amount of pesticides entering the surface water.

Objective 6.3: Reduce / eliminate pesticides used in agricultural operations from entering surface waters.

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
<p>Task 6.3.1 Work with agronomists and farmers to adopt integrated pest management systems.</p>	<p>IPM can reduce use and potential runoff of chemicals. Reduced costs related to chemical inputs.</p>	<p>SWCDs NRCS DNR Extension Service Agronomists Ag Suppliers</p>	<p>0-3 yrs: Strategically market program to producers. Enroll at least 3 new producers / year into NRCS or BCWP programs. Provide presentation on IPM at Pesticide Applicator Recertification Program (PARP) accredited workshop. 3-5 yrs: Continue marketing program. Enroll at least 5 new producers / year into NRCS or BCWP program. Continue to provide IPM information at PARP-crediting workshops. By year 15, 50% of all growers implementing some type of IPM program.</p>	<p>Number of properties implementing IPM practices. <i>(Administrative)</i></p>	<p>Costs: Scouting: \$20 / Ac Workshop presentations: <\$1000 Source: 319 Funds, NRCS, Vegetable Packers</p>
<p>Task 6.3.2 Work with farmers and commercial applicators to adopt precision agriculture technology to reduce excess applications of pesticides. See Task 3.1.3</p>	<p>Lightbars or autosteer technology can reduce application overlap by 5%. Autoswath technology can reduce application overlap by 10-15% - potentially more in odd-shaped fields. Reduced input costs. Reduced field time.</p>	<p>SWCDs NRCS Agronomists Ag Suppliers</p>	<p>See Task 3.1.3</p>	<p>See Task 3.1.3</p>	<p>See Task 3.1.3</p>

Load Reductions:

Pesticide pollutant sampling has not been conducted. Existing loads from pesticides have not been determined.

Use of Precision Ag technology can reduce pesticide overlap by an average of 10% - *without* PA, 1 out of 10 acres will be sprayed twice. (Based upon industry studies, and information from Ohio State University, Kansas State University and Iowa State University.)

Goal 7: Restore, conserve, and protect the surface water network to improve overall stream health, hydrology, and wildlife habitat

Objective 7.1: Conserve and restore all orders of streams within the watershed to improve overall health of the biosystem

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
<p>Task 7.1.1 Implement BMPs to protect lower order (headwater) streams and seasonal wetlands. Where applicable, enroll sites into wetland restoration programs.</p>	<p>Increased precipitation infiltration. Decreased turbidity, sedimentation. Decreased nutrient and pesticide runoff Improved biotic community.</p>	<p>SWCDs NRCS Conservancy District Drainage Boards. Mitigation Partners</p>	<p>0-3yrs: Develop site-specific conservation plans. Enroll sites into mitigation clearinghouse. 2-15 yrs: Develop engineering plans and secure permits as required. 4-15 yrs: Intermittent stream preservation / restoration activities.</p>	<p>LF of intermittent streams restored. <i>(Administrative)</i></p>	<p>Costs: Mitigation Clearinghouse: \$5,000 / yr Engineering / Permitting: \$500 ea (100 lf) Restoration: \$2500 - \$5000 / site (100 lf) Sources: 319 funds, NRCS Programs, DNR Programs, Government Agencies & Private Parties in need of mitigation.</p>
<p>Task 7.1.2 Work with landowners to restore streams to a more naturally vegetated and meandering state and conserve high quality stream habitat See Tasks 2.1.1, 2.2.1</p>	<p>See Tasks 2.1.1, 2.2.1</p>	<p>See Tasks 2.1.1, 2.2.1</p>	<p>See Tasks 2.1.1, 2.2.1</p>	<p>See Tasks 2.1.1, 2.2.1</p>	<p>See Tasks 2.1.1, 2.2.1</p>
<p>Task 7.1.3 Develop and implement a Mitigation Clearinghouse to connect landowners with potential stream, wetland, ephemeral stream and headwater sites to those in need of mitigation projects.</p>	<p>Leveraging of grant funds. Improved financial viability of restoration for private individuals. Improved overall health of riparian community</p>	<p>SWCDs Conservancy District Drainage Boards Landowner Associations</p>	<p>0-1 yr: Develop web site, registration guidelines, and database of enrolled properties. Develop core group of mitigation partners. Enroll potential sites into statewide database By year 5, matched at least 1 mile of streams and 25 Ac of wetlands with mitigation ptrs. By year 10, matched at least 5 miles of streams and 75 acres of wetlands with mitigation partners.</p>	<p>LF of streams / Ac of wetlands enrolled in Mitigation Clearinghouse <i>(Administrative)</i> LF of streams / Ac of wetlands matched to mitigation partners <i>(Administrative)</i></p>	<p>Cost: \$5,000 / years Sources: 319 funds, Clean Water Indiana</p>

Load Reductions:

Load reductions are dependent upon land uses and conditions. Any and all BMPs listed in Goals 1-3 can be applied as a base guide.

It is known that implementation of multiple BMPs usually has a synergistic impact, so that the value of the whole is greater than the sums of individual practices.

Goal 7: Restore, conserve, and protect the surface water network to improve overall stream health, hydrology, and wildlife habitat

Objective 7.2: Incorporate Green Infrastructure planning techniques throughout the watershed to reduce habitat isolation and improve overall health of the biosystem.

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
<p>Task 7.2.1 Develop and implement conservation plans that incorporate connectivity between various headwaters, streams, and wetlands.</p> <p>Where applicable, enroll sites into wetland/stream restoration programs.</p>	<p>Synergistic relationships between various systems can magnify water and environmental quality improvement.</p> <p>Connectivity between systems provides essential corridors for wildlife, especially reptiles and amphibians.</p>	<p>SWCDs</p> <p>NRCS</p> <p>DNR</p> <p>Conservancy District</p> <p>Conservation Groups</p> <p>Regulatory Agencies</p> <p>Mitigation Partners</p>	<p>0-15 yrs: Strategically market program to producers and landowners in conjunction with other BMPs / Conservation Plan development.</p> <p>By year 5, 5% of all projects incorporate connectivity.</p> <p>By year 10, 10% of all projects incorporate connectivity</p> <p>By year 15, 20% of all projects incorporate connectivity.</p>	<p>LF of interconnected streams. <i>(Administrative)</i></p> <p>Number of projects incorporating connectivity. <i>(Administrative)</i></p>	<p>Costs: Mitigation Clearinghouse: \$5,000 / year</p> <p>Conservation Plans: \$500 - \$1,000 each</p> <p>Green Infrastructure / Development Plan: \$5000 - \$10,000</p> <p>Sources: 319 funds, DNR programs, Conservation Groups (QU, DU, Audubon, etc)</p>
<p>Task 7.2.2 Develop and implement large scale conservation planning that provides connectivity between managed lands.</p>	<p>Synergistic relationships between various systems can magnify water and environmental quality improvement.</p> <p>Connectivity between systems provides essential corridors for wildlife, especially reptiles and amphibians.</p> <p>Corridors can provide means of wildlife travel, reducing isolation and improving genetic diversity.</p>	<p>SWCDs</p> <p>NRCS</p> <p>DNR</p> <p>FWS</p> <p>Conservation Groups</p>	<p>0-3 yrs: Develop conceptual land use / land planning targets.</p> <p>3-5 yrs: Prioritize areas for restoration and/or conservation.</p> <p>3-15 yrs: Target landowners for conservation / restoration programs.</p>	<p>Land-use / Land Planning documents. <i>(Administrative)</i></p> <p>Ranked target areas. <i>(Administrative)</i></p> <p>LF / Acres of connected corridors. <i>(Administrative)</i></p>	<p>Costs: Mitigation Clearinghouse: \$5,000 / year</p> <p>Conservation Plans: \$500 - \$1,000 each</p> <p>Green Infrastructure / Development Plan: \$5000 - \$10,000</p> <p>Sources: 319 funds, DNR programs, Conservation Groups (QU, DU, Audubon, etc)</p>

Load Reductions:

Load reductions are dependent upon land uses and conditions. Any and all BMPs listed in Goals 1-3 can be applied as a base guide.

It is known that implementation of multiple BMPs usually has a synergistic impact, so that the value of the whole is greater than the sums of individual practices.

Goal 8: Improve and protect the warmwater fishery and other indigenous aquatic life and wildlife by eliminating improper disposal of solid waste.

Objective 8.1: Establish education, outreach, and clean-up programs to reduce in-stream and roadside dumping.

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
Task 8.1.1 Develop an outreach and education program to “raise a generation” of non-litterers.	Schoolchildren who are well-educated on the impacts of littering and dumping are less likely to litter / dump as adults. Children of non-litterers / dumpers are far less likely to litter or dump as adults.	School Districts 4-H Clubs Church Organizations Media Local Businesses Keep America Beautiful	0-2 yrs: Development of webpage, downloadable materials. Become KAB Affiliate. 2-5 yrs: Organize “clean-up” days based on Adopt a River / Adopt a Highway campaigns. Work with media to deploy PSAs. Post Flyers / Posters at local businesses 3-15 yrs: Bi-annual update of campaign materials.	Webpage <i>(Administrative)</i> Number of “Clean-up” groups. <i>(Social)</i> Number of PSAs <i>(Social)</i> Number of participating businesses <i>(Social)</i>	Costs Webpage: <\$1000 Clean-up Supplies (trash bags, gloves, safety vests, etc): \$1500 / yr Printing / Design: \$500 / yr Sources: Private Funds, INDOT (Hwys), KAB, Other Grant sources
Task 8.1.2 Develop an hunter education and outreach about proper disposal of animal carcasses.	Reduction of in-stream carcasses should result in reduction of potential health-hazardous bacteria in surface waters.	DNR Hunters Check Stations Hunting Supply Shops	0-2 yrs: Development of webpage, downloadable materials. Provide flyers to shops, check stations, DNR 2-15 yrs: Review impact, revise flyers / campaign.	Reduction of dumped carcasses or offal. <i>(Administrative)</i>	Costs: Webpage: <\$1000 Printing / Design: \$500 / yr Sources: DNR, Private Sources

Load Reductions:

Levels of pollutants directly related to dumping / littering is unknown, however, no levels of hazardous materials sources have been identified for the BCW and include: car batteries, alkaline batteries, computer components, refrigerators, freezers, chemical containers, and meth lab remnants.

Loads of carcass and offal-related pollutants (bacteria) has not been determined.

Goal 8: Improve and protect the warmwater fishery and other indigenous aquatic life and wildlife by eliminating improper disposal of solid waste.

Objective 8.1: Establish education, outreach, and clean-up programs to reduce in-stream and roadside dumping.

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
<p>Task 8.2.1 Work with local officials to impose harsh fines for littering / dumping. (Up to \$1000 by Indiana law)</p>	<p>Enforcement of anti-litter / dumping laws have been shown to be far more effective than education campaigns in litter/dumping reduction.</p>	<p>City / County Law Enforcement DNR Conservation Officers Judicial Officials (Prosecutor, Judges) Incarceration Officials (Probation Officers, Jail Officials)</p>	<p>0-2 yrs: Work with local officials to develop scale of fines. (IA fines \$5000 for dumping of materials over 5 lbs). Work with local prosecutors / judges to insure penalties will be imposed. Launch awareness campaign. 2-5 yrs: Work with law officials to effectively enforce laws without hindering other services. 5-15 yrs: Review and adapt enforcement plans.</p>	<p>Number of tickets issued. (Administrative) Reduction in volume of dumping. (Administrative)</p>	<p>Costs: \$2,500 - \$5,000 / yr Sources: Fines Non-tangible improvement of community perception by companies or those seeking to relocate.</p>
<p>Task 8.2.2 Work with law enforcement and judicial officials to implement in-stream and road-side clean up as part of community service for offenders.</p>	<p>Once a site has been cleaned up, it tends to stay cleaned up. Community Service can be a more economical option to criminal justice than jail time.</p>	<p>City / County Law Enforcement DNR Conservation Officers Judicial Officials (Prosecutor, Judges) Incarceration Officials (Probation Officers, Jail Officials)</p>	<p>0-2 yrs: Work with law officials to effectively enforce laws without hindering other services. Work with local prosecutors / judges to implement community service in lieu of incarceration. 2 – 15 yrs: Review and adapt enforcement plans</p>	<p>Number of violators prosecuted. (Administrative) Reduction in volume of dumping. (Administrative)</p>	<p>Costs: Supplies: trash bags, gloves, safety vests, etc): \$1500 / yr Staff: \$5,000 - \$10,000 / yr Sources: Savings over incarceration costs.</p>
<p>Task 8.2.3 Sponsor amnesty days for tires, electronics, and appliances.</p>	<p>Providing centralized, inexpensive or no-cost options for disposal of potential hazardous chemicals and/or components can reduce potential in-stream loading.</p>	<p>Solid Waste Districts County Health Departments Local and Regional Businesses</p>	<p>0-2 yrs: Identify potential partners. Plan amnesty day events. 2-5 yrs: Implement Amnesty Days (Electronics, Appliance, Tire – 1 ea / quarter) 4-15 yrs: Review and adapt amnesty day requirements</p>	<p>Number of participants. (Administrative) Volume of collected materials (Administrative)</p>	<p>Costs: \$8,000 - \$10,000 / yr Sources: IDEM Electronic Waste Program, IDEM Waste Tire Fund (temporarily suspended), IDEM Recycling Promotion Assistance Fund (temporarily suspended), Businesses (who already</p>

					collect items) Savings from reduction of dump sites.
Task 8.2.4 Work with city/township officials to provide trash pick-up as part of utility services.	Reduction of roadside / in-stream trash, especially on roads commonly used as dumps. (Typically within 2 miles of the town) Possible semi-annual pickup of large items (sofas, furniture).	City Officials Solid Waste Districts Refuse Removal Companies	0-3 yrs: Work with City Officials to plan / launch trash pick-up services. Launch awareness campaign. 3-5 yrs: Trash pick-up for all incorporated communities 5-7 yrs: Trash pick-up for all communities. 7-10 yrs: Investigate potential rural trash pickup.	Communities with available trash pickup. (Social) Number of residents with trash pickup. (Social)	Costs: Public Awareness - \$1500 - \$3000 Residential Pickup: \$9-15/mo Sources: In-Kind (PSAs, media), Direct Utility Charges. Savings from reduction of dump sites.
Task 8.2.5 Develop and implement program to provide alternative trash disposal options to area residents.	Reduction of roadside / in-stream trash, especially on roads commonly used as dumps. (Typically within 2 miles of the town)	Solid Waste Districts Business / Corporate Sponsor	0-5 yrs: Work with local Business / Industry to implement pilot "self-serve" dumpster program. 5-10 yrs: Review / adapt appropriate deployment of additional dumpsters.	Placement of Pilot "Self-Serve" Dumpster. (Administrative) Use of dumpster without abuse. (Social)	Costs: Dumpster – Sources: "Vending" Dumpster Fees, Sponsor

Load Reductions:

Levels of pollutants directly related to dumping / littering is unknown, however, no levels of hazardous materials sources have been identified for the BCW and include: car batteries, alkaline batteries, computer components, refrigerators, freezers, chemical containers, and meth lab remnants.

Goal 9: Prevent the introduction and spread of invasive species through management practices

Objective 9.1: Establish invasive species control programs to prevent spread of exotics

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
Task 9.1.1 Develop education materials on the identification and eradication of invasive species.	Reduction of invasive species can provide: Improved wildlife habitat. Improved preservation of sensitive biosystems	SWCDs Sycamore Trails RC&D Central Indiana Weed Management Association.	0-1 yrs: Compile existing documentation. Develop web page with downloadable factsheets. 1-3 yrs: Write articles for media. Participate in workshops and other events with existing weed management groups.	Monitor spread of invasive species. <i>(Environmental)</i>	Costs: Web page, flyers, factsheets: <\$1,000 Workshops: <\$500
Task 9.1.2 Incorporate invasive species control practices in other workshops – such as forestry and rain garden workshops.	Reduction of invasive species can provide: Improved wildlife habitat. Improved preservation of sensitive biosystems	SWCDs Sycamore Trails RC&D Central Indiana Weed Management Association.	0-1 yrs: Develop presentation materials, flyers, handouts. 1-3 yrs: Present information on invasive species at other workshops.	Requests for additional information <i>(Social)</i> Number of workshop attendees. <i>(Administrative)</i>	Costs: Web page, flyers, factsheets: <\$1,000 Workshops: <\$500

Load Reductions:

Levels of pollutant load reduction will be related to preservation of sensitive biosystems, including riparian areas and wetlands.

Goal 10: Further refine critical areas to effectively implement practices to improve water quality.

Objective 10.1: Improve effectiveness of BMP deployment by defining probable sources within current critical areas.

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
Task 10.1.1 Pre-filter probable sources of pollutants through analysis of georeferenced data.	Provides probable targets for BMP marketing.	USGS IGS Indiana Water Resources Assn. ISU Vincennes University Consultants	Ongoing: geostatistical analysis to narrow critical areas within 14-digit watersheds	Correlation of analysis with real-world data <i>(Administrative)</i>	Cost: Additional Sampling: \$30,000 - \$40,000 / year (\$100 ea sample, no metals) Analysis: \$10,000 / year Sources: 319 funds, DNR programs, ESRI
Task 10.1.2 Ground-truth and inventory pollutant sources of pre-filtered drainage areas. <i>To be performed with Task 10.1.1</i>	Provides verifiable documentation of pollutant sources.	USGS IGS Indiana Water Resources Assn. ISU Vincennes University Consultants	Ongoing: Visual assessment and of identified stream reaches (from Task 10.1.1). Locate potential sampling points.	Correlation of analysis with real-world data <i>(Administrative)</i> Database of probable pollutant sources. <i>(Administrative)</i>	<i>See Task 10.1.1</i>
Task 10.1.3 Develop and implement sampling modeling strategies to identify sources of pollutants within drainage areas.	Provides improved methodology to document pollutant sources.	USGS IGS Indiana Water Resources Assn. ISU Vincennes University Consultants	Ongoing: Sampling and modeling of identified and confirmed stream reaches. Geostatistical analysis of results.	Correlation of analysis with real-world data. <i>(Administrative)</i> Database of verified pollutant sources. <i>(Administrative)</i> Identification of critical stream reaches <i>(Administrative)</i> Quality Assurance / Quality Control Guidelines <i>that work</i> . <i>(Administrative)</i>	<i>See Task 10.1.1</i>

Load Reductions:

Indirect – through more efficient targeting of BMP implementation sites and types.

Goal 10: Further refine critical areas to effectively implement practices to improve water quality.

Objective 10.2: Prioritize critical sub-areas for sources of loading and probable/practical implementation of BMPs.

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
Task 10.2.1 Analyze and model data to calculate pollutant loads and sources within critical sub-areas.	Provides improved methodology to document pollutant sources. More effective prioritization of BMP implementation and landowner participation.	USGS IGS Indiana Water Resources Assn. ISU Vincennes University Consultants	Ongoing: Sampling and modeling of identified and confirmed stream reaches. Geostatistical analysis of results.	Correlation of analysis with real-world data. <i>(Administrative)</i> Database of verified pollutant sources. <i>(Administrative)</i> Identification of critical stream reaches <i>(Administrative)</i> Quality Assurance / Quality Control Guidelines <i>that work</i> . <i>(Administrative)</i>	See Task 10.1.1
Task 10.2.2 Catalog and classify probability of landowner participation and current BMP effectiveness.	More effective prioritization of BMP implementation and landowner participation.	USGS IGS Indiana Water Resources Assn. ISU Vincennes University Consultants	Ongoing: review of landowners in target areas to “cherry pick” BMP implementation	Prioritized database of landowners / BMPs <i>(Administrative)</i>	See Task 10.1.1

Load Reductions:

Indirect – through more efficient targeting of BMP implementation sites and types.

Goal 11: Build capacities of the BCWP to effectively attain the goals listed above.

Objective 11.1: Develop appropriate planning to insure the long-term viability and effectiveness of the BCWP.

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
<p>Task 11.1.1 Develop a Plan of Work to outline staffing, equipment, financial and other needs required to further the goals and mission of the BCWP.</p>	<p>Planned and documented capacity building strategies provide guidelines for the group as a whole and for new partnership staff and volunteers.</p>	<p>SWCDs Sycamore Trails RC&D Partnership for Turtle Creek</p>	<p>0-1 yr: Outline and main draft complete. 1-2 yrs: Completion of plan of work. 2-15 yrs: Annual review and update of plan of work.</p>	<p>Completion of Plan of Work <i>(Administrative)</i></p>	<p>Costs: Plan: \$5,000 Review / Update: \$2,500 / yr</p> <p>Sources: 319 Funds, Partnership for Turtle Creek</p>
<p>Task 11.1.2 Develop a financial plan and implement funding strategies to insure the viability of the BCWP.</p>	<p>Outline of necessary funding provides basic budgetary guidance. A Financial Plan can serve as a prospectus for potential granting agencies.</p>	<p>SWCDs Sycamore Trails RC&D Partnership for Turtle Creek</p>	<p>0-1 yr: Outline and main draft complete. 1-2 yrs: Completion of Financial Plan 2-15 yrs: Annual review and update of Financial Plan.</p>	<p>Completion of Financial Plan <i>(Administrative)</i></p>	<p>Costs: Plan: \$5,000 Review / Update: \$2,500 / yr</p> <p>Sources: 319 Funds, Partnership for Turtle Creek</p>

Load Reductions:

Indirect – through more efficient deployment of programs, use of funds, and development of funding sources.

Goal 11: Build capacities of the BCWP to effectively attain the goals listed above.

Objective 11.2: Develop appropriate planning to insure the long-term viability and effectiveness of the BCWP.

Task	Benefits	Key Parties	Timeline	Success / Performance Measure	Cost and Funding Sources
Task 11.2.1 Scout for and hire appropriate staff in a timely manner.	Efficient use of time and funds by targeting / pre-screening potential staff.	SWCDs NRCS IWRA Conservation Groups Conservation Professionals	0 – 1 yr: Develop 5-yr staffing needs. Match with potentially available candidates. 1 – 15 yrs: Annual review of 5-yr staffing needs. Timely hiring of staff.	Pool of appropriate, pre-scouted candidates. <i>(Administrative)</i>	Cost: \$500 - \$1000 / yr Sources: SWCDs, Watershed Partnerships
Task 11.2.2 Develop and maintain a catalog of volunteer’s skills, interests, and availability.	Improved relationships with volunteers. Increased volunteer list. Improved efficiency of “on-the-ground” project implementation.	SWCDs Sycamore Trails RC&D	0-1 yr: Acquire Volunteer Management Software. Develop database 1-2 yrs: Volunteer / staff in place to maintain database	Working, filterable database in place <i>(Administrative)</i>	Cost: Software: 0 - \$1000 Database development: \$2,000 - \$5,000 Database maintenance: \$2,500 - \$5,000 / year Source: In-kind, SWCD, RC&Ds
Task 11.2.3 Continue to establish and maintain partnerships with other organizations to further their goals and the goals of the BCWP	Maintain and improve relationships with project partners and organizations. Improved funding potential.	SWCDs IASWCD IDEM IWRA National Assn of Conservation Districts Sycamore Trails RC&D Key Mitigation Partners	0-2 years: Develop “prospectus” to provide potential partners. Develop template for marketing materials Ongoing: Review / update marketing materials on annual basis. 3-5 new partners each year.	List of partnership. <i>(Administrative)</i>	Cost: Marketing materials: \$1500 - \$1500 / year “Prospectus” = Financial Plan (Task 11.1.2) Source: In-kind, Watershed Partnerships, Private Sponsors.
Task 11.2.4 Maintain the BCWP Technical and Planning Committees to provide input and direction of both work and growth.	Maintain and improve community input, dialogue, and buy-in.	SWCDs Conservancy District Government Officials Successful Watershed Groups	Annual: Review of committee members, enlistment of new members. Review / Revise how committees work.	Active Technical and Planning Committees <i>(Social)</i>	Cost: \$1,000 - \$1,500 / yr Source: 319 Funds, Watershed Partnerships

Load Reductions:

Indirect – through more efficient deployment of programs, use of funds, and development of funding sources to insure long-term sustainability.

THIS PAGE INTENTIONALLY BLANK