Blackberry Creek Watershed Planning

Welcome!

Hosted by
Sugar Grove Township
August 16, 2011

Blackberry Creek Watershed Action Plan

Plan Recommendations Chapter

Overview

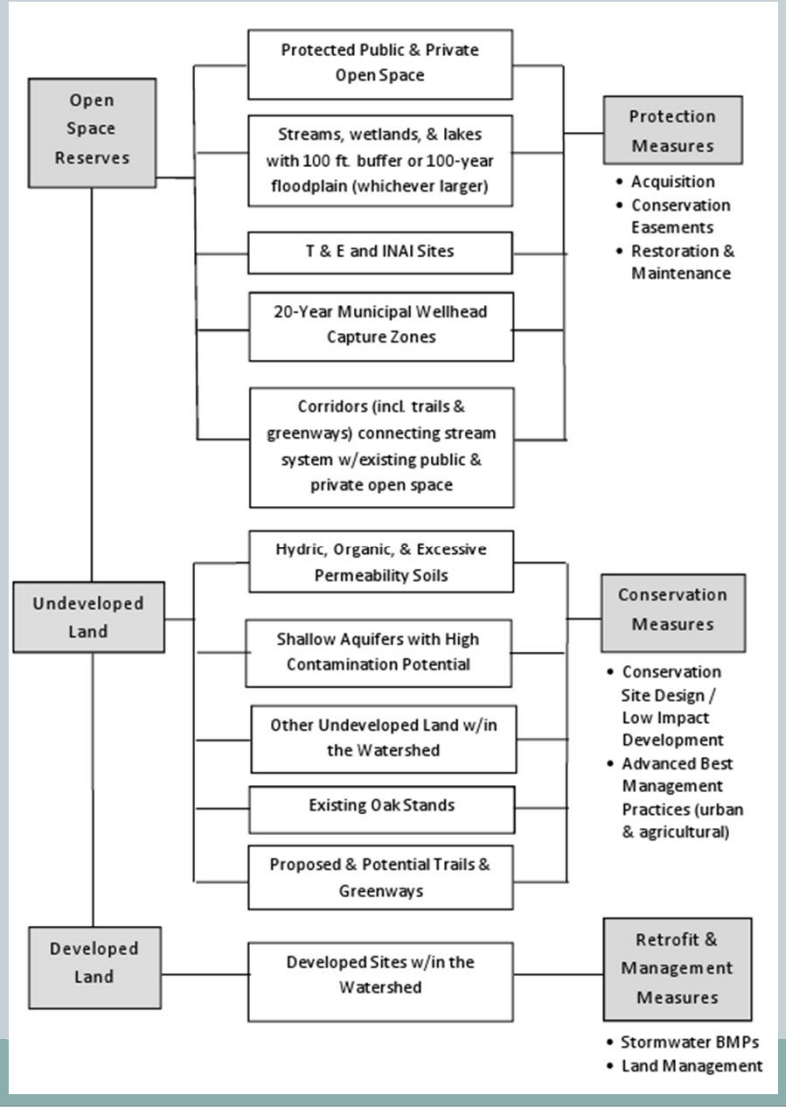
Blackberry Creek Watershed Planning Meeting
August 16, 2011

Blackberry Creek Watershed Goals

- Reduce fecal coliform contributions
- Reduce nutrient and other emerging pollutant loadings
- Minimize sedimentation, siltation, and streambank & streambed erosion
- Reduce risk of flooding through initiatives to improve water quality
- Protect groundwater resources
- Promote awareness of watershed resources and threats

Watershed Plan Recommendations

Green Infrastructure Framework for Watershed-Wide Recommendations

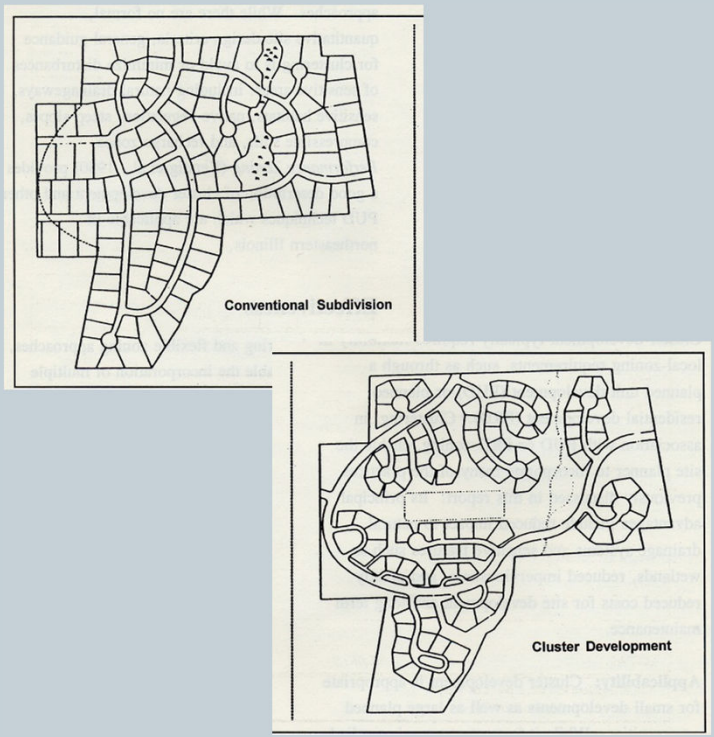


POLICY & PLANNING RECOMMENDATIONS

- **Review of Comprehensive Plans**
  - Conserving Natural Areas and Open Space
  - Promoting Green Infrastructure Approaches to Manage Stormwater Runoff
  - Promoting Efficient, Compact Development Patterns
  - Promoting Efficient Street and Parking Lots Designs to Minimize Impervious Surfaces
  - Integrating Land Use and Water Supply& Demand Planning

Policy & Planning Recommendations

- **Review of Local Ordinances**
  - Comprehensive Stormwater Management
  - Conservation Design
  - Natural Landscaping
  - Impervious Area Reduction
  - Water Use Conservation



BMP Recommendations

- **Strategies to Reduce Nonpoint Source Pollutant Loads to Protect Surface Waters**
  - Stream Channel, Riparian Corridor, & Shoreline Protection & Rehabilitation
  - Education & Outreach Programs
  - Agricultural / Rural BMPs
  - Urban BMPs

Strategies to Reduce NPS Pollutants

- **Stream channel, riparian corridor, and shoreline protection & rehabilitation**
  - Minimize imperviousness
  - Native vegetation buffers
  - Exclusion (ORVs, livestock)
  - Streambank, stream channel, & shoreline stabilization practices

Strategies to Reduce NPS Pollutants

- **Education & Outreach**
  - Community Concerns
  - Target Audiences
  - Approaches
  - Tools

Strategies to Reduce NPS Pollutants

Agricultural / Rural BMPs

- Constructed Wetlands / Wetland Restoration
- Grassed Waterways
- Filter Strips
- Conservation Tillage
- Nutrient Management
- Livestock Exclusion
- Manure Management
- Roadside Bioswales
- Septic System Inspection & Maintenance

Photo courtesy of USDA NRCS

BMP Strategies to Reduce NPS Pollutants

- **Urban BMPs**
  - Land & water management practices
    - Landscaping and turf management practices
    - Road de-icing products and practices
    - Water use conservation programs
    - Rain garden & rain barrel programs

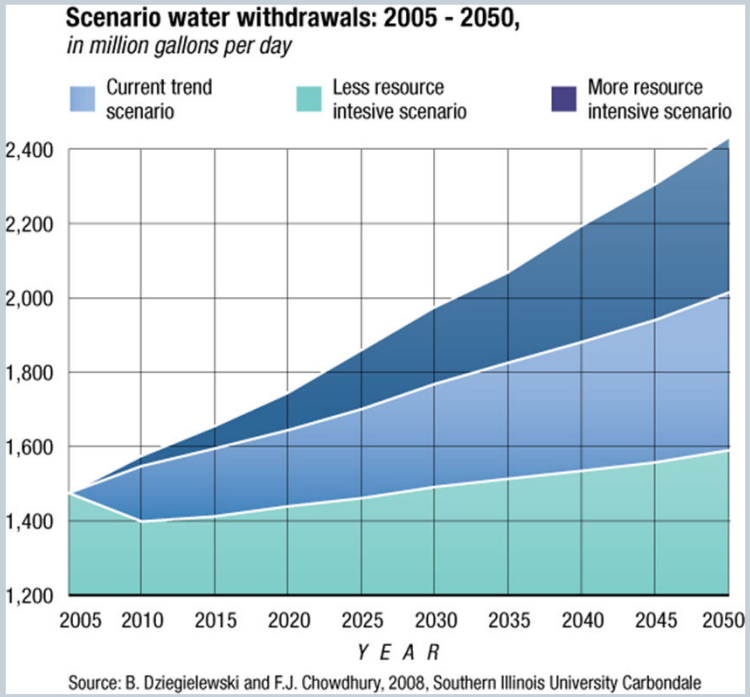
Strategies to Reduce NPS Pollutants

- **Urban BMPs**
  - Stormwater Retrofits
    - Existing stormwater ponds
    - Downstream of outfalls
    - Within the existing conveyance system
    - Within transportation rights of way
    - Large & small parking lots
    - Hotspot operations
    - Individual rooftops
    - Landscape and hardscapes
    - Individual streets
    - Underground

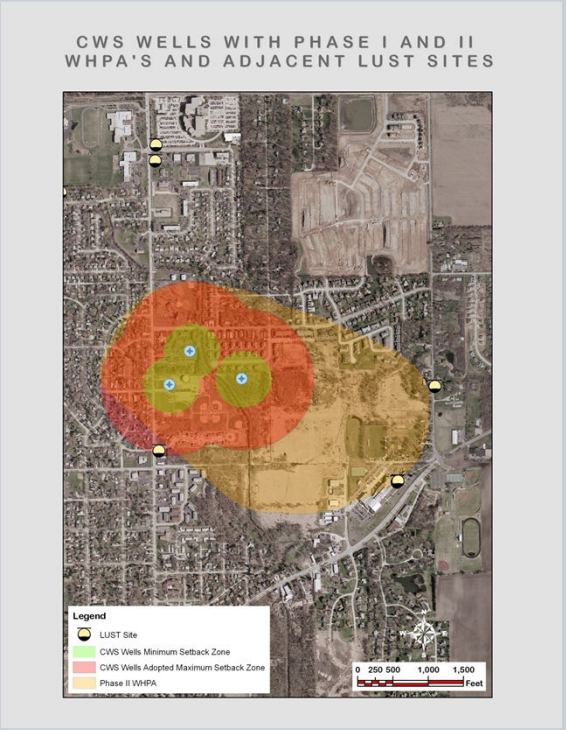
BMP Recommendations

- **Strategies to Protect Groundwater Resources**

Quantity



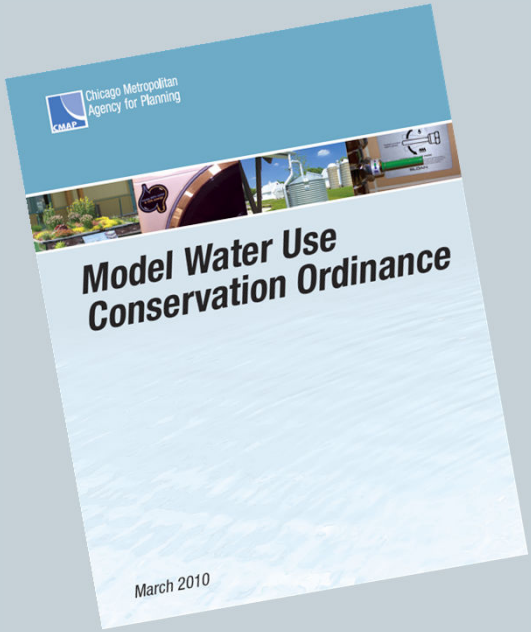
Quality



Strategies to Protect Groundwater Resources

Quantity

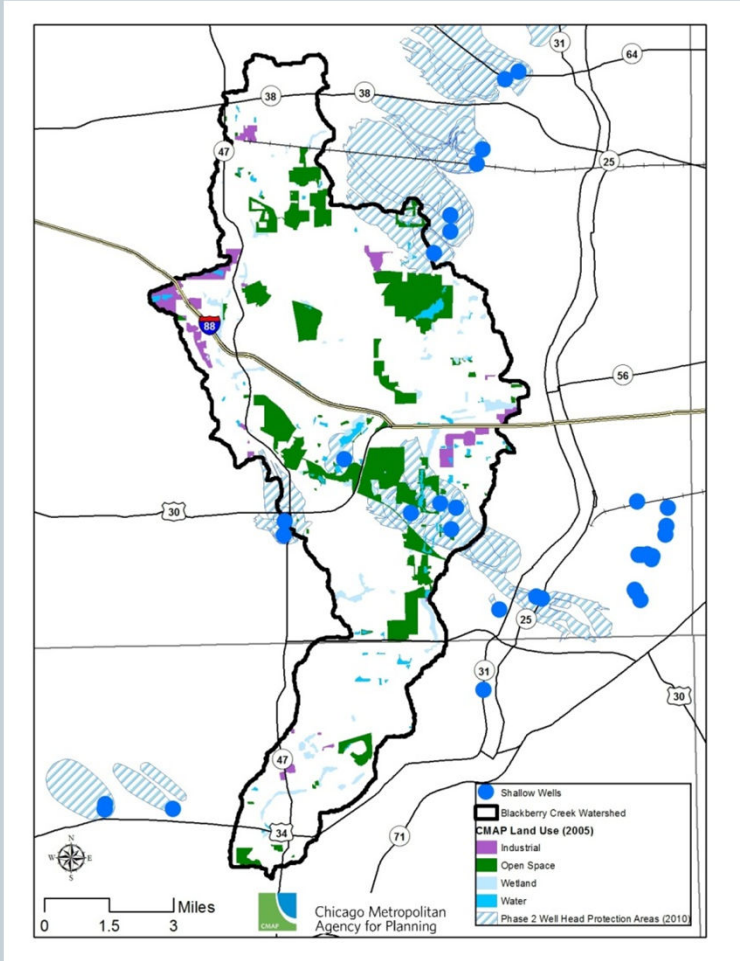
- Water use conservation ordinance
- Conservation design principals (minimize imperviousness)



Strategies to Protect Groundwater Resources

Quality

- Prepare wellhead protection plans
- Adopt maximum setback zones
- Delineate 20-yr capture zones
- Seal abandoned wells
- Designate Class III Special Resource Groundwater (fens)
- Establish unwanted medicine and household hazardous waste drop-off programs



Watershed Plan Requirements

- Description of Best Management Practice
- Project Location on Map *(as applicable)*
- Unit and Quantity
- Cost
- Project Lead, Partners

- Estimated Pollutant Load Reduction
  - Sediment
  - Total Suspend Solids
  - Phosphorus
  - Nitrogen

Table 6-1: BMP implementation projects with estimated costs and pollutant load reductions.

Property Location	Municipality	County	BMP Type	Landowner	Nitrogen (lb)	Phosphorous (lb)	Sediment (tons)	Chloride (lb)	Fecal coliform (CFU in billions)	Project cost
Southeast of Emerson Lane and Fieldcrest Drive	Naperville	DuPage	Wetland Creation	Ivy Ridge Homeowners Association	390	78	9.2	23,291	755	$463,750
Northeast of Rickert Drive and South River Road	Naperville	DuPage	Wetland Creation	The Fields Community c/o 1st United Property Management	55	9	0.6	3,586	120	$218,750
Southwest of 87th Street and Book Road	Naperville	Will	Wetland Creation	Stillwater Homeowners Association c/o Rowell Inc.	49	8	0.6	3,700	122	$75,800
Southwest of 87th Street and Foxboro Lane	Naperville	Will	Wetland Creation	Stillwater Homeowners Association c/o Rowell Inc.	75	12	0.9	5,929	194	$135,625
Southeast of 95th Street and Naperville./Plainfield Road	Naperville	Will	Streambank Stabilization	Naperville Park District	31	5	0.4	3,314	42	$126,750
th Street and Knoch Knolls Road	Unincorporated	Will	Wetland Creation	Mark R. & Denise L. Burke	69	11	0.9	3,267	66	$157,500
Southeast of Route 53 and Rockhurst Road	Bolingbrook	Will	Streambank Stabilization	Bolingbrook Park District	111	28	16.9	6,528	61	$120,375
Northwest of Heggs Road and West Kelly Court	Unincorporated	Will	WASCB or Grassed Waterway	J. Greene TR 1099397	151	20	19	23	42	$47,875
Southeast of Wooley Road and Stewart Road	Unincorporated	Kendall	Grassed Waterway	J. Greene TR 1105082	214	39	36.8	1,216	71	$286,888
Southwest of 119th Street and Naper Plainfield Road	Plainfield	Will	Wetland Creation	Plainfield CC Schools School District 202	49	10	2.2	2,308	26	$367,500
Northwest of Frontier Land and Mustang Road	Unincorporated	Will	Concrete Ditch Removal and Wetland Creation	Plainfield Township Park District	73	11	0.8	3,532	76	$164,794
Feeney Drive and Lexington Drive	Unincorporated	Will	Wetland bottom detention basin retrofit	Plainfield Township	320	62	8.7	18,351	477	$25,463
Northwest of Feeney Drive and Howard Street	Plainfield	Will	Wetland Creation	Plainfield Property Management LLC	320	62	8.7	18,351	477	$25,463
West of County Line Road and Reflection Drive	Unincorporated	Kendall	WASCB	Schroeder Agricultural Invest	121	29	27.1	17	24	$2,813
Northwest of Green Trails Drive and Phelps Land	Joliet	Will	Wetland Creation	First Midwest Bank TR6697 c/o Vangaurd Community Management	154	28	2.1	12,327	401	$275,625
East of Rushwood Avenue and Greenfield Road	Shorewood	Will	Stream Enhancement and Wetland Creation	Village of Shorewood Countrywest Park	56	10	0.7	4,341	142	$81,250
Southwest of Ravinia Drive and Oxford Land	Shorewood	Will	Wetland Creation	Village of Shorewood dry bottom detention	225	45	12.6	7,051	246	$39,375
Southwest of Seil Road and South River Road	**Shorewood**	**Will**	**Wetland Creation**	**Kipling Estates Homeowners Association Karen's association people concerned about pond**	**55**	**10**	**0.7**	**4,443**	**145**	**$118,125**
Between Cumberland Lane and Canterbury Lane	Bolingbrook	Will	Streambank Stabilization/ Constructed Wetland	Village of Bolingbrook	26	13	12.8	0	0	$200,000
Blackhawk Drive west of Schmidt Road	Bolingbrook	Will	Constructed Wetland	Village of Bolingbrook	12	6	6.0	0	0	$172,000
East of Bronk from Black Road to Sunset Ridge Drive	**Joliet**	**Will**	**Constructed Wetland**	**City of Joliet/FPDWC**	**458**	**89**	**8.7**	**18,060**	**5,725**	**$2,981,000**
25334 W Eames Street	Channahon	Will	Permeable Parking Lot with Depressed Islands	Channahon Park District	2	0	0.1	219	5	$500,000
East of DuPage River, north of US 6, west of Bell	Channahon	Will	Streambank stabilization	Channahon Park District	153	77	76.5	0	0	$28,750
Southeast of I-55, west of Weber Road	Unincorporated	Will	Wetland Bottom Detention Basin Retrofit	Lakewood Falls Homeowners Association	1080	201	16	28656	16414	$172,000
				Total Reduction and Cost	**3013**	**585**	**176**	**139635**	**9212**	**$6,787,471**

Bank Stabilization

If estimating for just one bank, put "0" in areas for Bank #2.

Please select a soil textural class:

○ Sands, loamy sands	○ Silty clay loam, silty clay
○ Sandy loam	○ Clay loam
○ Fine sandy loam	○ Clay
○ Loams, sandy clay loams, sandy clay	○ Organic
◉ Silt loam	

Please fill in the gray areas below:

Parameter	Bank #1	Bank #2	Example	
Length (ft)	500	500	**500**	
Height (ft)	10	10	**15**	
Lateral Recession Rate (ft/yr)*	0.2	0.2	**0.5**	
Soil Weight (tons/ft3)	0.0425	0.0425	**0.04**	
Soil P Conc (lb/lb soil)** USER	0.0005	0.0005	**0.0005**	**
Soil N Conc (lb/lb soil)** USER	0.001	0.001	**0.001**	**

** If not using the default values, users must provide input (in red) for Total P and Total N soil concentrations
*Lateral Recession Rate (LRR) is the rate at which bank deterioration has taken place and is measured in feet per year. This rate may not be easily determined by direct measurement. Therefore best professional judgement may be required to estimate the LRR. Please refer to the narrative descriptions in Table 1.

Estimated Load Reductions

	BMP Efficiency* Bank #1	BMP Efficiency* Bank #2	Bank #1	Bank #2	Example
Sediment Load Reduction (ton/year)	1.0	1.0	42.5	42.5	**150**
Phosphorus Load Reduction (lb/year)			42.5	42.5	**150**
Nitrogen Load Reduction (lb/yr)			85.0	85.0	**300**

* BMP efficiency values should be between 0 and 1, and 1 means 100% pollutant removal efficiency.

Table 1

LRR (ft/yr)	Category	Description
0.01 - 0.05	Slight	Some bare bank but active erosion not readily apparent. Some rills but no vegetative overhang.
0.06 - 0.2	Moderate	Bank is predominantly bare with some rills and vegetative overhang.
0.3 - 0.5	Severe	Bank is bare with rills and severe vegetative overhang. Many exposed tree roots and some fallen trees and slumps or slips. Some changes in cultural features such as fence corners missing and realignment of roads or trails. Channel cross-section becomes more U-shaped as opposed to V-shaped.
0.5+	Very Severe	Bank is bare with gullies and severe vegetative overhang. Many fallen trees, drains and culverts eroding out and changes in cultural features as above. Massive slips or washouts common. Channel cross-section is U-shaped and streamcourse or gully may be meandering.

Source: Steffen, L.J. 1982. Channel Erosion (personal communication), as printed in "Pollutants Controlled Calculation and Documentation for Section 319 Watersheds Training Manual," June 1999 Revision; Michigan Department of Environmental Quality - Surface Water Quality Division - Nonpoint Source Unit. EQP 5841 (6/99).

Agricultural Fields and Filter Strips

Please check which BMPs apply:

- [x] Agricultural Field Practices
- [x] * Filter Strips

Please select a state and a county, and default USLE parameter values will be entered.

Users should use the local USLE parameter values if available!

State: Colorado

County: Baca

Please fill in the gray areas below:

USLE or RUSLE	Before Treatment	After Treatment	Example Before Treatment	Example After Treatment
Rainfall-Runoff Erosivity Factor (R)	100.00	100.00	**120**	**120**
Soil Erodibility Factor (K)	0.28	0.28	**0.35**	**0.35**
Length-Slope Factor (LS)	0.27	0.27	**0.44**	**0.44**
Cover Management Factor (C<=1.0)*	0.20	0.20	**0.7**	**0.5**
Support Practice Factor (P<=1.0)*	0.99	0.99	**0.775**	**0.11**
Predicted Avg Annual Soil Loss (ton/acre/year)	1.49	1.49	**10.03**	**1.02**

* User must use the local C and/or P values (in red) to obtain the reduction due to the field practices.

		Example
Enter contributing area (acres)	50	**14**

Please select a gross soil texture:

- ( ) Clay (clay, clay loam, and silt clay)
- (•) Silt (silt, silty clay loam, loam, and silt loam)
- ( ) Sand (sand, sandy clay, sandy clay loam, sandy loam, and loamy sand)
- ( ) Peat

Estimated Load Reductions for Agricultural Field Practices

	Treated	Example
Sediment Load Reduction (ton/year)	0	**85**
Phosphorus Load Reduction (lb/year)	0	**100**
Nitrogen Load Reduction (lb/yr)	0	**200**

Estimated Additional Load Reductions through Filter Strips

	Filter-Strip Efficiency	Filter-Strip Treated	Example
Sediment Load Reduction (ton/year)	0.65	28	**92**
Phosphorus Load Reduction (lb/year)	0.75	53	**114**
Nitrogen Load Reduction (lb/yr)	0.70	99	**227**

Total Estimated Load Reductions

	Total	Example
Sediment Load Reduction (ton/year)	28	**177**
Phosphorus Load Reduction (lb/year)	53	**214**
Nitrogen Load Reduction (lb/yr)	99	**427**

Application of BMPs will change C and/or P values in the USLE, and may include:

Prescribed Grazing
Residue Management, Mulch Till
Conservation Crop Rotation
Conservation Cover
Cover and Green Manure
Critical Area Planting
Stripcropping, Contour
Stripcropping, Field
Stripcropping, Field

* Filter Strips may further reduce sediment by 65%, phosphorous by 75%, and nitrogen by 70% based on Pennsylvania state university (1992).

Pennsylvania State University. 1992. Nonpoint Source Database. In U.S. EPA, Guidance specifying management measures for sources of nonpoint pollution in coastal waters, page 2-15.

URBAN RUNOFF BMP POLLUTANT LOAD REDUCTION WORKSHEET

Please fill in the gray areas below.

Notes:
The methodology and efficiency values used in this w orksheet were developed by the Illinois Environmental Protection Agency.

Please Select a Best Management Practice:

☐ Vegetated Filter Strips	☐ Sand Filters	☐ Sand Filter/Infiltration Basin
☐ Grass Swales	☐ WQ Inlets	☐ WQ Inlet w/ Sand Filter
☐ Infiltration Device	☐ Weekly Street Sweeping	☐ Oil/Grit Separator
☐ Extended Wet Detention	☐ Infiltration Basin	☐ Wet Pond
◉ Wetland Detention	☐ Infiltration Trench	
☐ Dry Detention	☐ Porous Pavement	
☐ Settling Basin	☐ Concrete Grid Pavement	

Please enter landuse of contributing/drainage area in acres:

	Sewered	Unsewered
Commercial	100	10
Industrial	100	10
Institutional	50	10
Transportation	50	0
Multi-Family	100	10
Residential	200	10
Agriculture	0	20
Vacant	20	0
Open Space	250	250

Note: Sewered and Unsewered refer to storm sewers.

Estimated Load and Load Reductions

	Load before BMP (lbs/yr)		Load after BMP (lbs/yr)		Load Reduction (lbs/yr)
BOD	30,640		11,337		19,303
COD	234,750		117,375		117,375
TSS	681,250		153,281		527,969
LEAD	531		186		345
COPPER	102		U		U
ZINC	785		510		275
TDS	1,210,084		U		U
TN	7,850		6,280		1,570
TKN	4,293		U		U
DP	363		U		U
TP	928		520		408
CADMIUM	6		U		U

U = Removal Efficiency for the particular BMP and constituent unavailable.

PLAN REQUIREMENTS

Watershed-wide Summary of BMPs Recommended for Implementation within 5 Years of Plan Adoption

					Estimated Load Reduction				
Category	**BMP**	**Unit**	**Amount**	**Cost**	**Sediment (tons/yr)**	**TSS (lbs/yr)**	**Phosphorus (lbs/yr)**	**Nitrogen (lbs/yr)**	**Priority**
AGRICULTURE	Filter Strip	acre							
AGRICULTURE	Grassed Waterway	acre							
AGRICULTURE	Water and Sediment Control Basin	feet							
URBAN	Porous Pavement	acre							
URBAN	Urban Stormwater Wetlands	number							
URBAN	Permeable Pavement	acre							
EDUCATION	Storm Drain Markers	each							
HYDROLOGIC	Streambank and Shoreline Protection	feet	5,000	1,000,000	1,000		1,000	2,000	High
HYDROLOGIC	Wetland Restoration	acre							

Questions? Project Ideas? Schedule a Meeting?

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