


# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1-01	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	Across from 72 Water St.			
GPS Coordinates	Easting:	297680	Northing:	4836308
Property Owner Contacted:	No	Related Waterbody:	Waukegan	
Land Use:	Town Road	Direct Flow to:	Lake	
Issues:	Moderate surface erosion, moderate road shoulder erosion, bare soil. Lots of bare soil drains to catch basin and outfalls directly at lake across the st.			
Images				

Area Dimensions:	60' x 60'	Connected to site:	
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Recommendations:	Vegetate Shoulder, install detention basin, stabilize cleared lot and road shoulder
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Impact Rating:	Medium	Cost Materials:	Medium	Labor Cost:	Medium
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Overall Cos	Medium	Comments:	Catch basin covered with sediment and leaves, lots of flow through basin
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Sediment (t/yr)	0.9	TP (kg/yr):	0.363
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BMP Cost Est:	\$5,000.00	BMP Annual C	\$250.00	10 yr cost:	\$7,500.00
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10 yr Cost for TP removed (\$/kg):	\$20,668.35
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Cost Determination:	Vegetate/stabilize road shoulder (~60') = \$500, Plunge Pool/detention basin at outlet= \$500, Redirecting CB outlet away from lake=\$4000
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# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1-02 A	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	Next to 110 Water St- culvert/crossing upstream			
GPS Coordinates	Easting:	297604	Northing:	4836794
Property Owner Contacted:	No	Related Waterbody:	Waukegan	
Land Use:	Town Road	Direct Flow to:	Lake, Stream	
Issues:	Moderate surface erosion, moderate road shoulder erosion, bare soil, streambank erosion, winter sand. Stormwater from Rd has created gullies toward crossing/stream, small stream flows to Waukegan- lots of inputs from winter sand and road shoulder		Images	

Area Dimensions:		Connected to site:	
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Recommendations:	Vegetate shoulder, armor ditch with stone, reshape ditch, install turnouts away from stream into woods, reseed bare soil & thinning grass
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Impact Rating:	High	Cost Materials:	High	Labor Cost:	High
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Overall Cos	High	Comments:	Culvert looks new, black HDPE material
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Sediment (t/yr)	0.7	TP (kg/yr):	0.318
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BMP Cost Est:	\$2,075.00	BMP Annual C	\$250.00	10 yr cost:	\$4,575.00
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10 yr Cost for TP removed (\$/kg):	\$14,408.80
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Cost Determination:	Reshape and armor ditch with stone (~50') = \$375, Turnouts (2) = \$1,200, Vegetating shoulder/re-seeding remaining bare areas = \$500
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# Lake Waukewan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1-02 B	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukewan	
Location(road)	Next to 110 Water St. (downstream side)			
GPS Coordinates	Easting:	297604	Northing:	4836794
Property Owner Contacted:	No	Related Waterbody:	Waukewan	
Land Use:	Town Road	Direct Flow to:	Lake, Stream	
Issues:	Moderate surface erosion, moderate road shoulder erosion, lots of winter sand, streambank erosion		Images	

Area Dimensions:		Connected to site:	
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Recommendations:	Vegetate ditch, armor ditch with stone, reshape ditch, install turnouts away from stream, reseed bare soil & thinning grass
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Impact Rating:	High	Cost Materials:	High	Labor Cost:	Medium
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Overall Cos	High	Comments:	
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Sediment (t/yr)	0.7	TP (kg/yr):	0.272
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BMP Cost Est:	\$1,475.00	BMP Annual C	\$250.00	10 yr cost:	\$3,975.00
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10 yr Cost for TP removed (\$/kg):	\$14,605.64
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Cost Determination:	Reshape and armor ditch with stone (~50') = \$375, Turnouts (1) = \$600, Vegetating shoulder/re-seeding remaining bare areas = \$500
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# Lake Waukewan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1-02 C	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukewan	
Location(road)	Next to 108 + 110 Water St.			
GPS Coordinates	Easting:	297659	Northing:	4836319
Property Owner Contacted:	No	Related Waterbody:	Waukewan	
Land Use:	Residential	Direct Flow to:	Lake, Stream	
Issues:	Undercut shoreline, lack of shoreline vegetation, inadequate shoreline vegetation, shoreline erosion			
Images				

Area Dimensions:		Connected to site:	
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Recommendations:	Mulch/erosion control mix, establish buffer, add to buffer
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Impact Rating:	Medium	Cost Materials:	Medium	Labor Cost:	Low
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Overall Cos	Medium	Comments:	
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Sediment (t/yr)	0.5	TP (kg/yr):	0.181
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BMP Cost Est:	\$2,390.00	BMP Annual C	\$50.00	10 yr cost:	\$2,890.00
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10 yr Cost for TP removed (\$/kg):	\$15,928.41
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Cost Determination:	Add to Buffer (~80') = \$1,920 (CCSWCD estimate of \$480/20' length for vegetative buffers), Mulch remaining bare areas = \$470 (CCSWCD estimate for ECM for 30'x30'x4' area)
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# Lake Waukewan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1-03 A	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukewan	
Location(road)	Next to 87/88 Pike Island Rd (culvert)			
GPS Coordinates	Easting:	297362	Northing:	4837080
Property Owner Contacted:	No	Related Waterbody:	Waukewan	
Land Use:	Private Road	Direct Flow to:	Stream, ditch	
Issues:	Sever surface erosion, unstable inlet, crushed/broken inlet, severe ditch erosion, severe road shoulder erosion, winter sand, gravel Rd - poor surface material and no crown			
Images				

Area Dimensions:		Connected to site:	1-04		
Recommendations:	Remove culvert clog, vegetate ditch, armor ditch with stone, reshape ditch, install turnouts, install check dams or sediment pools, Build up/add new surface material (gravel) to road or pave, reshape crown, grade road, vegetate shoulder				
Impact Rating:	High	Cost Materials:	Medium/High	Labor Cost:	Medium/High
Overall Cos	High	Comments:			
Sediment (t/yr)	0.8	TP (kg/yr):	0.272		
BMP Cost Est:	\$5,970.00	BMP Annual C	\$250.00	10 yr cost:	\$8,470.00
10 yr Cost for TP removed (\$/kg):	\$31,121.95				
Cost Determination:	Replace culvert and armor inlet/outlet with stone = \$1,500, Build-up/elevate roadway and resurface with new gravel reshaped to a crown=\$2,720, Install armored ditch with turnouts = \$1,750				
					
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# Lake Waukewan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1-03 B	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukewan	
Location(road)	88 Pike Island Rd			
GPS Coordinates	Easting:	297315	Northing:	4837047
Property Owner Contacted:	No	Related Waterbody:	Waukewan	
Land Use:	Driveway	Direct Flow to:	Stream, Ditch, Lake	
Issues:	Slight surface erosion, bare soil		Images	

Area Dimensions:		Connected to site:	
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Recommendations:	Armor inlet/outlet, install runoff diverters- direct runoff away from stream and into the woods
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Impact Rating:	Low	Cost Materials:	Low	Labor Cost:	Low
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Overall Cos	Low	Comments:	See Site Sketch
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Sediment (t/yr)	0.2	TP (kg/yr):	0.091
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BMP Cost Est:	\$1,160.00	BMP Annual C	\$25.00	10 yr cost:	\$1,410.00
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10 yr Cost for TP removed (\$/kg):	\$15,542.60
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
Cost Determination:	Armor culvert inlet and outlet = \$400 (rough estimate for riprap stone and geotextile fabric - small driveway culvert) Install two water diverters (rubber razors) = \$760 (CCSWCD estimate of \$380 for a 16 ft rubber razor) TOTAL = \$1,160"
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# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1-03 C	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	84 Pike Island Rd?			
GPS Coordinates	Easting:	297313	Northing:	4837040
Property Owner Contacted:	NO	Related Waterbody:	Waukegan	
Land Use:	Driveway	Direct Flow to:	Stream, Ditch	
Issues:	Slight surface erosion, bare soil			
				

Area Dimensions:		Connected to site:	
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Recommendations:	Armor inlet/outlet, install runoff diverters
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Impact Rating:	Low	Cost Materials:	Low	Labor Cost:	Low
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Overall Cos	Low	Comments:	See Site Sketch
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Sediment (t/yr)	0.2	TP (kg/yr):	0.091
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BMP Cost Est:	\$1,160.00	BMP Annual C	\$25.00	10 yr cost:	\$1,410.00
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10 yr Cost for TP removed (\$/kg):	\$15,542.60
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Cost Determination:	Armor culvert inlet and outlet = \$400 (rough estimate for riprap stone and geotextile fabric)Install two water diverters (rubber razors) = \$760 (CCSWCD estimate of \$380 for a 16 ft rubber razor)TOTAL = \$1,160"
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# Lake Waukewan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1-04	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukewan	
Location(road)	84 Pike Island Rd.			
GPS Coordinates	Easting:	297364	Northing:	4837033
Property Owner Contacted:	No	Related Waterbody:	Waukewan	
Land Use:	Private Road	Direct Flow to:	Lake	
Issues:	Severe surface erosion, severe ditch erosion, severe road shoulder erosion, bare soil, lots of winter sand			
Images				

Area Dimensions:		Connected to site:	
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Recommendations:	Armor inlet/outlet, vegetate ditch, armor ditch with stone, reshape ditch, install turnouts, install check dams, vegetate shoulder, install runoff diverters, install water retention swales? Pave road?
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Impact Rating:	High	Cost Materials:	Medium/High	Labor Cost:	Medium/High
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Overall Cos	High	Comments:	
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Sediment (t/yr)	1.6	TP (kg/yr):	0.726
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BMP Cost Est:	\$3,150.00	BMP Annual C	\$250.00	10 yr cost:	\$5,650.00
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10 yr Cost for TP removed (\$/kg):	\$7,785.08
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Cost Determination:	Armor culvert inlet and outlet = \$600 , Reshape and armor ditch with stone (~100') = \$750, Turnouts (2) = \$1,200, Vegetate road shoulder near culvert = \$600
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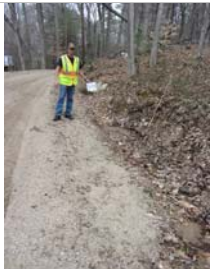


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# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1-05	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	74 Pike Island Rd			
GPS Coordinates	Easting:	297429	Northing:	4836959
Property Owner Contacted:	No	Related Waterbody:	Waukegan	
Land Use:	Private Road	Direct Flow to:	Lake	
Issues:	Moderate surface erosion, unstable outlet, partially buried/clogged culvert, moderate ditch erosion, moderate road shoulder erosion, bare soil		Images	

Area Dimensions:		Connected to site:	
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Recommendations:	Armor outlet, remove clog and clean out culvert, vegetate ditch and armor with stone, reshape ditch, install check dams or sediment pools, vegetate road shoulder, install runoff diverters, install plunge pool to slow flow down slope
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Impact Rating:	High	Cost Materials:	Medium	Labor Cost:	Medium/High
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Overall Cos	High	Comments:	
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Sediment (t/yr)	0.3	TP (kg/yr):	0.136
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BMP Cost Est:	\$5,470.00	BMP Annual C	\$250.00	10 yr cost:	\$7,970.00
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10 yr Cost for TP removed (\$/kg):	\$58,569.52
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Cost Determination:	Armor culvert inlet/outlet with stone = \$500, Build-up/elevate roadway and resurface with new gravel reshaped to a crown = \$2,720, Install armored ditch with turnouts = \$1,750, Vegetate road shoulder near culvert = \$500
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# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1-06	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	Waukegan St.			
GPS Coordinates	Easting:	297919	Northing:	4835863
Property Owner Contacted:	No	Related Waterbody:	Waukegan	
Land Use:	Town Road	Direct Flow to:	Lake	
Issues:	Slight surface erosion, slight road shoulder erosion, bare soil, shoreline erosion from ice action, road sediment into catch basin and ditch along railroad tracks that outfalls directly to the lake		Images	

Area Dimensions:		Connected to site:	
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Recommendations:	Vegetate shoulder, install detention basin
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Impact Rating:	Low	Cost Materials:	Medium/Low	Labor Cost:	Medium/Low
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Overall Cos	Medium	Comments:	See site Sketch. Catch basin is not deep or in good shape and water goes directly to lake. Lots of sediment in the bottom
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Sediment (t/yr)	6.3	TP (kg/yr):	2.5
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BMP Cost Est:	\$3,000.00	BMP Annual C	\$250.00	10 yr cost:	\$5,500.00
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10 yr Cost for TP removed (\$/kg):	\$2,245.45
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Cost Determination:	Vegetate/stabilize road shoulder = \$500, Plunge Pool/detention basin at outlet= \$500 , Redirecting CB outlet away from lake (installing new storm pipe to outlet in adjacent wooded buffer with detention)= \$2,000
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# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1-07	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	Waukegan St. next to beach area (south end)			
GPS Coordinates	Easting:	297766	Northing:	4835760
Property Owner Contacted:		Related Waterbody:	Waukegan	
Land Use:	Town Road	Direct Flow to:	Lake	
Issues:	Moderate surface erosion, shoreline erosion			
	Images			

Area Dimensions:	10' x 15'	Connected to site:	
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Recommendations:	Install runoff diverter (waterbar), establish buffer, add to buffer, reseed bare soil and thinning grass
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Impact Rating:	Medium	Cost Materials:	Medium/Low	Labor Cost:	Medium/Low
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Overall Cos	Medium	Comments:	
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Sediment (t/yr)	0.6	TP (kg/yr):	0.227
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BMP Cost Est:	\$1,100.00	BMP Annual C	\$100.00	10 yr cost:	\$2,100.00
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10 yr Cost for TP removed (\$/kg):	\$9,259.42
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Cost Determination:	Riprap and geotextile for stone swale = \$500, Vegetate road shoulder and add to buffer = \$60, TOTAL = \$1,100"
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# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1-08 A	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	Waukegan Swimming Bath House Parking Lot			
GPS Coordinates	Easting:	297758	Northing:	4835734
Property Owner Contacted:	No, Town owned	Related Waterbody:	Waukegan	
Land Use:	Municipal/Public	Direct Flow to:	Lake	
Issues:	Slight to moderate surface erosion, slight road shoulder erosion, bare soil in parking area, winter sand- snow dump area with lots of snow and winter sand adjacent to catchbasin		Images	


Area Dimensions:		Connected to site:			
Recommendations:	Add new surface material to parking area (crushed stone?) to prevent movement of sand, vegetate shoulder				
Impact Rating:	Medium	Cost Materials:	Medium	Labor Cost:	Medium
Overall Cos	Medium	Comments:	See site Sketch		
Sediment (t/yr)	10.5	TP (kg/yr):	4.037		
BMP Cost Est:	\$1,260.00	BMP Annual C	\$300.00	10 yr cost:	\$4,260.00
10 yr Cost for TP removed (\$/kg):	\$1,055.25				
Cost Determination:	Cover parking area with crushed stone to prevent movement of sand into catchbasin and encourage infiltration (~50' x 20' area) = \$260 , Vegetate road shoulder and bare areas near catchbasin = \$500, Armor catchbasin outlet and install plunge pool = \$500				



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# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1-08 B	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	Catchbasin at corner of RR tracks and Waukegan St.			
GPS Coordinates	Easting:	297732	Northing:	4835710
Property Owner Contacted:	No	Related Waterbody:	Waukegan	
Land Use:	Town Road	Direct Flow to:	Catchbasin draining to Lake	
Issues:	Slight surface erosion, slight to moderate ditch erosion, lots of winter sand, slight road shoulder erosion			
Images				

Area Dimensions:		Connected to site:	flows to site 1-08 A
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Recommendations:	Vegetate ditch, armor ditch with stone, vegetate shoulder
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Impact Rating:	Low	Cost Materials:	Low	Labor Cost:	Low
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Overall Cos	Low	Comments:	
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Sediment (t/yr)	0.2	TP (kg/yr):	0.091
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BMP Cost Est:	\$875.00	BMP Annual C	\$125.00	10 yr cost:	\$2,125.00
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10 yr Cost for TP removed (\$/kg):	\$23,424.13
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Cost Determination:	Armor ditch with stone (~50') = \$375 (CCSWCD estimate for rock-lined ditches) Vegetate road shoulder = \$500 TOTAL: \$875"
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# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1-08 C	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	RR tracks behind beach bath house on Waukegan St.			
GPS Coordinates	Easting:	297750	Northing:	4835714
Property Owner Contacted:	No	Related Waterbody:	Waukegan	
Land Use:	RR ROW	Direct Flow to:	Ditch	
Issues:	Slight to moderate ditch erosion, unknown pipes draining to ditch, lots of water in ditches		Images	

Area Dimensions:		Connected to site:	
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Recommendations:	Armor inlet/outlet, armor ditch with stone, investigate pipes from adjacent residence
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Impact Rating:	Low	Cost Materials:	Low/Medium	Labor Cost:	Low/Medium
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Overall Cos	Medium	Comments:	Ducks observed congregating in ditches
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Sediment (t/yr)	0.4	TP (kg/yr):	0.181
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BMP Cost Est:	\$850.00	BMP Annual C	\$100.00	10 yr cost:	\$1,850.00
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10 yr Cost for TP removed (\$/kg):	\$10,196.39
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Cost Determination:	Armor ditch with stone (~100') = \$750 (CCSWCD estimate for rock-lined ditches)Armor pipe outlets to prevent erosion on slope above = \$300 (rough estimate)TOTAL: \$850"
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# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1-09 A	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	Stream Crossing West of Beach area, Waukegan St.			
GPS Coordinates	Easting:	297676	Northing:	4835645
Property Owner Contacted:	No	Related Waterbody:	Waukegan	
Land Use:	Town Road	Direct Flow to:	Stream (near shore of lake)	
Issues:	Unstable inlet, severe ditch erosion, moderate to severe road shoulder erosion, bare soil, winter sand, severe undercut streambank with lack of vegetation and erosion		Images	

Area Dimensions:		Connected to site:	
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Recommendations:	Armor inlet, vegetate ditch, armor ditch with stone, install turnouts into wooded adjacent areas, install check dams, vegetate shoulder, add to buffer
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Impact Rating:	Medium	Cost Materials:	Medium	Labor Cost:	High
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Overall Cos	High	Comments:	
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Sediment (t/yr)	1.2	TP (kg/yr):	0.544
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BMP Cost Est:	\$3,280.00	BMP Annual C	\$200.00	10 yr cost:	\$5,280.00
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10 yr Cost for TP removed (\$/kg):	\$9,700.35
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Cost Determination:	Armor large culvert inlet (extend headwalls to stabilize slumping road shoulder around culvert inlet) = \$2,500 Vegetate road shoulder upstream = \$300 Add to buffer downstream = \$480
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# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1-09 B	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	Culvert West of Site 1-09 A near driveway of #82 Waukegan St.			
GPS Coordinates	Easting:	297614	Northing:	4835629
Property Owner Contacted:	No	Related Waterbody:	Waukegan	
Land Use:	Town Road, Driveway	Direct Flow to:	Ditch and Wetland	
Issues:	Slight surface erosion, unstable inlet, slight to moderate ditch erosion, slight road shoulder erosion, bare soil, winter sand			
Images				

Area Dimensions:		Connected to site:	
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Recommendations:	Armor inlet, vegetate ditch, armor ditch with stone, vegetate shoulder, establish buffer
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Impact Rating:	Low	Cost Materials:	Medium	Labor Cost:	Low/Medium
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Overall Cos	Medium	Comments:	
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Sediment (t/yr)	0.1	TP (kg/yr):	0.045
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BMP Cost Est:	\$1,680.00	BMP Annual C	\$250.00	10 yr cost:	\$4,180.00
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10 yr Cost for TP removed (\$/kg):	\$92.153.30
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Cost Determination:	Armor culvert inlet (extend headwalls to stabilize slumping road shoulder around culvert inlet) = \$1,000
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# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1-09 C	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	Waukegan St. (W of site 1-09 B)			
GPS Coordinates	Easting:	297522	Northing:	4835598
Property Owner Contacted:	No	Related Waterbody:	Waukegan	
Land Use:	Town Road	Direct Flow to:	Catchbasin to wetland/lake	
Issues:	Bare soil- adjacent parking lot, winter sand		Images	

Area Dimensions:		Connected to site:	
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Recommendations:	Remove winter sand early spring, reseed bare soil and thinning grass on adjacent property
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Impact Rating:	Low	Cost Materials:	Low	Labor Cost:	Low
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Overall Cos	Low	Comments:	Res.w/ dirt parking U04-1-B
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Sediment (t/yr)	15.8	TP (kg/yr):	6.078
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BMP Cost Est:	\$575.00	BMP Annual C	\$75.00	10 yr cost:	\$1,325.00
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10 yr Cost for TP removed (\$/kg):	\$217.99
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Cost Determination:	Seeding ~100' x 30' area on property adjacent to catchbasins = \$575 + labor TOTAL: \$575 (does not include labor)"
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# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1-10 A	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	Waukegan St. next to Carder Lane (see photo for utility pole)			
GPS Coordinates	Easting:	297475	Northing:	4835592
Property Owner Contacted:		Related Waterbody:	Waukegan	
Land Use:	Town Road	Direct Flow to:	Wetland, Lake	
Issues:	Unstable inlet/outlet, slight road shoulder erosion, bare soil, winter sand			
Images				

Area Dimensions:		Connected to site:	
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Recommendations:	Armor inlet/outlet, vegetate shoulder, reseed bare soil and thinning grass
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Impact Rating:	Low	Cost Materials:	Low	Labor Cost:	Medium
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Overall Cos	Medium	Comments:	
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Sediment (t/yr)	0.1	TP (kg/yr):	
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BMP Cost Est:	\$700.00	BMP Annual C	\$75.00	10 yr cost:	\$1,450.00
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10 yr Cost for TP removed (\$/kg):	
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Cost Determination:	Armor culvert inlet = \$500, Vegetate road Shoulder = \$200
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Add Record

# Lake Waukegan & Winona Lake Watershed Survey


## BMP Site Information

Site I.D.:	1-10 B	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	House next to Carder Ln on Waukegan St.			
GPS Coordinates	Easting:	297473	Northing:	4835570
Property Owner Contacted:	No	Related Waterbody:	Waukegan	
Land Use:	Residential	Direct Flow to:	Wetland, Lake	
Issues:	Lack of streambank vegetation, inadequate vegetation, mowed close to streambanks		Images	

Area Dimensions:		Connected to site:			
Recommendations:	Establish buffer, add to buffer				
Impact Rating:	Low	Cost Materials:	Low	Labor Cost:	Low
Overall Cos	Low	Comments:			
Sediment (t/yr)	0	TP (kg/yr):			
BMP Cost Est:	\$960.00	BMP Annual C	\$25.00	10 yr cost:	\$1,210.00
10 yr Cost for TP removed (\$/kg):					
Cost Determination:	Add to Buffer (~40') = \$960 (CCSWCD estimate of \$480/20' length for vegetative buffers), TOTAL: \$960				
					
Add Record					

# Lake Waukewan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1-11	Date:	4/22/1014	
Town:	Meredith	Watershed:	Waukewan	
Location(road)	At bend of Waukewan St. near Wall St. (un-named stream crossing)			
GPS Coordinates	Easting:	296742	Northing:	4835665
Property Owner Contacted:	No, town owned	Related Waterbody:	Waukewan	
Land Use:	Town Road	Direct Flow to:	Stream	
Issues:	Moderate surface erosion, slight road shoulder erosion, undercut streambank (upstream), lots of road sediment from sanding, pipe (green pvc) outlet in down-stream side from yard across st.		Images	

Area Dimensions:		Connected to site:	
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Recommendations:	Vegetate ditch, install turnouts, install sediment pools, vegetate/stabilize shoulder
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Impact Rating:	Medium	Cost Materials:	Medium	Labor Cost:	Medium
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Overall Cos	Medium	Comments:	
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Sediment (t/yr)	0.2	TP (kg/yr):	0.091
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BMP Cost Est:	\$1,675.00	BMP Annual C	\$250.00	10 yr cost:	\$4,175.00
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10 yr Cost for TP removed (\$/kg):	\$46,021.53
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Cost Determination:	Install ditch and armor with stone (~50') = \$375, Turnouts (2) = \$1,000, Vegetating shoulder/re-seeding remaining bare areas = \$300
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Add Record

# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1-12	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	Catch basin outlet to Waukegan at bend in waukegan St.(at Wall St corner)			
GPS Coordinates	Easting:	296714	Northing:	4835654
Property Owner Contacted:	No	Related Waterbody:	Waukegan	
Land Use:	Town Road	Direct Flow to:	Ditch, Lake	
Issues:	Slight surface erosion, slight road shoulder erosion, lots of sediment into drainage ditch			
Images				

Area Dimensions:		Connected to site:	
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Recommendations:	Vegetate ditch, vegetate shoulder
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Impact Rating:	Low	Cost Materials:	Low	Labor Cost:	Low
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Overall Cos	Medium	Comments:	
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Sediment (t/yr)	0.1	TP (kg/yr):	0.045
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BMP Cost Est:	\$675.00	BMP Annual C	\$50.00	10 yr cost:	\$1,175.00
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10 yr Cost for TP removed (\$/kg):	\$25,904.34
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Cost Determination:	Install ditch and armor with stone (~50') = \$375 (CCSWCD estimate for rock-lined ditches), Vegetating shoulder/re-seeding remaining bare areas = \$300
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Add Record

# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1-13	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	Wall Street culvert			
GPS Coordinates	Easting:	296334	Northing:	4835914
Property Owner Contacted:	No, Town owned	Related Waterbody:	Waukegan	
Land Use:	Town Road	Direct Flow to:	Stream	
Issues:	Moderate surface erosion, moderate road shoulder erosion, gravel road deposits lots of sediment into stream at crossing, stormwater from Waukegan Street flows to this spot and into ditch/drainage			
Images				

Area Dimensions:		Connected to site:	
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Recommendations:	Vegetate shoulder, water retention swales, create fore bays to trap sediment from eroding road shoulder and ditch,
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Impact Rating:	High	Cost Materials:	High	Labor Cost:	High
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Overall Cos	High	Comments:	New culvert looks good, but sediment deposits in stream are significant. Sediment deposits /delta w ways downstream- lots of soil from RD (see photos)
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Sediment (t/yr)	1.2	TP (kg/yr):	0.544
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BMP Cost Est:	\$2,900.00	BMP Annual C	\$500.00	10 yr cost:	\$12,900.00
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10 yr Cost for TP removed (\$/kg):	\$23,699.71
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Cost Determination:	Create riprap forebays/detention basins adjacent to culvert headwalls to prevent sediment movement down slope into stream = \$2,500 (rough estimate) Vegetate Road shoulder = \$400 (rough estimate)
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Add Record

# Lake Waukewan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1-14	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukewan	
Location(road)	Wall Street culvert # 2			
GPS Coordinates	Easting:	296409	Northing:	4835833
Property Owner Contacted:	No, Town owned	Related Waterbody:	Waukewan	
Land Use:	Town Road	Direct Flow to:	Stream	
Issues:	Moderate surface erosion, moderate road shoulder erosion, road sediment into stream from gravel road			
Images				

Area Dimensions:		Connected to site:	
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Recommendations:	Vegetate ditch, vegetate shoulder, install detention basin and water retention swales to capture sediment
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Impact Rating:	Medium	Cost Materials:	Medium/High	Labor Cost:	Medium/High
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Overall Cos	High	Comments:	New culvert looks good but need sediment capturing device
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Sediment (t/yr)	0.4	TP (kg/yr):	0.181
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BMP Cost Est:	\$2,900.00	BMP Annual C	\$500.00	10 yr cost:	\$7,900.00
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10 yr Cost for TP removed (\$/kg):	\$43,541.33
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Cost Determination:	Create riprap forebays/detention basins adjacent to culvert headwalls to prevent sediment movement down slope into stream = \$2,500 (rough estimate) Vegetate Road shoulder = \$400 (rough estimate)
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Add Record

# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1-15	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	23 Wall Street on Road			
GPS Coordinates	Easting:	296439	Northing:	4835793
Property Owner Contacted:	No	Related Waterbody:	Waukegan	
Land Use:	Town Road	Direct Flow to:	Stream	
Issues:	Moderate surface erosion, unstable inlet/outlet, culvert slightly crushed, moderate road shoulder erosion, sediment from road into stream ditch			
Images				

Area Dimensions:		Connected to site:	
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Recommendations:	armor inlet/outlet, replace/enlarge/lengthen culvert, vegetate ditch or armor with stone, install turnouts into woods, vegetate shoulder
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Impact Rating:	High	Cost Materials:	Medium/High	Labor Cost:	High
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Overall Cos	High	Comments:	
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Sediment (t/yr)	0.5	TP (kg/yr):	0.227
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BMP Cost Est:	\$5,720.00	BMP Annual C	\$250.00	10 yr cost:	\$8,220.00
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10 yr Cost for TP removed (\$/kg):	\$36,244.03
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Cost Determination:	Replace culvert and armor inlet/outlet with stone = \$1,500, Build-up/elevate roadway and resurface with new gravel reshaped to a crown = \$2,720, Install armored ditch (~200') = \$1,500
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Add Record



# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1-16	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	Wall Street culvert			
GPS Coordinates	Easting:	296590	Northing:	4835740
Property Owner Contacted:	No	Related Waterbody:	Waukegan	
Land Use:	Town Road	Direct Flow to:	Stream	
Issues:	moderate surface erosion, moderate to severe ditch erosion, moderate road shoulder erosion, road sediment into stream-heavy inputs		Images	

Area Dimensions:		Connected to site:	
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Recommendations:	Armor inlet/outlet, enlarge culvert, vegetate ditch, pave road, vegetate shoulder, water retention swales, establish buffer
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Impact Rating:	High	Cost Materials:	Medium/High	Labor Cost:	Medium/High
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Overall Cos	High	Comments:	
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Sediment (t/yr)	0.2	TP (kg/yr):	0.091
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BMP Cost Est:	\$2,750.00	BMP Annual C	\$250.00	10 yr cost:	\$5,250.00
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10 yr Cost for TP removed (\$/kg):	\$57,871.39
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Cost Determination:	Armor culvert inlet/outlet with stone = \$500, Install armored ditch with turnouts = \$1,750, Vegetate road shoulder near culvert = \$500
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Add Record

# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1-17	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	Rt. 104 stream crossing, Reservoir Brook, upstream			
GPS Coordinates	Easting:	297838	Northing:	4835157
Property Owner Contacted:	No	Related Waterbody:	Waukegan	
Land Use:	State Road	Direct Flow to:	Stream, Lake	
Issues:	slight surface erosion, unstable inlet/outlet (top erosion headwall), moderate ditch erosion			
Images				

Area Dimensions:		Connected to site:	
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Recommendations:	armor inlet/outlet, vegetate ditch, armor ditch with stone, reshape ditch
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Impact Rating:	Low	Cost Materials:	Medium	Labor Cost:	Medium
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Overall Cos	High	Comments:	
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Sediment (t/yr)	0.4	TP (kg/yr):	0.181
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BMP Cost Est:	\$1,300.00	BMP Annual C	\$100.00	10 yr cost:	\$1,000.00
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10 yr Cost for TP removed (\$/kg):	\$5,511.56
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Cost Determination:	Repair/ patch crumbling headwall portion = \$1,000 (rough estimate) place riprap and fabric along eroding ditch down slope from roadway (~20 riprap swale) = \$300
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Add Record

# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1-18	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	Rt. 104 Reservoir Brook crossing			
GPS Coordinates	Easting:	297815	Northing:	4835204
Property Owner Contacted:	No	Related Waterbody:	Waukegan	
Land Use:	State Road	Direct Flow to:	Lake	
Issues:	Unstable outlet, broken culvert, undersized culvert, delta in stream			
Images				

Area Dimensions:		Connected to site:	
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Recommendations:	Armor outlet, enlarge culvert
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Impact Rating:	High	Cost Materials:	High	Labor Cost:	High
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Overall Cos	High	Comments:	large pool blow out
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Sediment (t/yr)	0.6	TP (kg/yr):	0.181
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BMP Cost Est:	\$4,500.00	BMP Annual C	\$0.00	10 yr cost:	\$4,500.00
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10 yr Cost for TP removed (\$/kg):	\$24,802.02
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Cost Determination:	Repair crumbling headwalls and stabilize disturbed soil with stone = \$4,500
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Add Record

# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1-19 A	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	Reservoir St between 20 and 22			
GPS Coordinates	Easting:	298068	Northing:	4834872
Property Owner Contacted:	No	Related Waterbody:	Waukegan	
Land Use:	Town Road	Direct Flow to:	Lake	
Issues:	Moderate to severe surface erosion, unstable outlet, clogged culvert, slight to moderate road shoulder erosion, bare soil, winter sand		Images	

Area Dimensions:		Connected to site:	
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Recommendations:	Armor outlet, vegetate ditch, reshape ditch, vegetate shoulder, work with owner to clean/vegetate bank
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Impact Rating:	High	Cost Materials:	High	Labor Cost:	Medium/High
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Overall Cos	High	Comments:	
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Sediment (t/yr)	0.4	TP (kg/yr):	0.181
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BMP Cost Est:	\$2,550.00	BMP Annual C	\$100.00	10 yr cost:	\$3,550.00
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10 yr Cost for TP removed (\$/kg):	\$19,566.04
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Cost Determination:	Armor culvert inlet and outlet with stone = \$600, Install armored ditch with turnout = \$1,750, Vegetate road shoulder near culvert = \$200
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Add Record

# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1- 19 B	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	Reservoir Rd Stream Crossing			
GPS Coordinates	Easting:	298084	Northing:	4834847
Property Owner Contacted:	No	Related Waterbody:	Waukegan	
Land Use:	Residential	Direct Flow to:	Stream	
Issues:	Slight to moderate surface erosion, bare soil, undercut shore line with lack of/inadequate shoreline vegetation			
Images				

Area Dimensions:		Connected to site:	
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Recommendations:	Mulch/erosion control mix, water retention swales (lots of parked vehicles and equipment on property), establish buffer, add to buffer, reseed bare soil and thinning soil
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Impact Rating:	Medium	Cost Materials:	Medium	Labor Cost:	Low/Medium
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Overall Cos	Medium	Comments:	
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Sediment (t/yr)	0.7	TP (kg/yr):	0.318
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BMP Cost Est:	\$4,800.00	BMP Annual C	\$50.00	10 yr cost:	\$5,300.00
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10 yr Cost for TP removed (\$/kg):	\$16,692.16
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Cost Determination:	Establish buffer on private property (~200) = \$4,800 (CCSWCD estimate of \$480/20' length for vegetative buffers)
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Add Record

# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1-20	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	Right branch of Sawmill Shores			
GPS Coordinates	Easting:	297074	Northing:	4837627
Property Owner Contacted:	No	Related Waterbody:	Waukegan	
Land Use:	Town Road	Direct Flow to:	Lake	
Issues:	Slight road shoulder erosion			
Images				

Area Dimensions:		Connected to site:	
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Recommendations:	Vegetate shoulder
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Impact Rating:	Low	Cost Materials:	Medium	Labor Cost:	Medium
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Overall Cos	Medium	Comments:	young trout spotted near culvert inlet/outlet
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Sediment (t/yr)	0.1	TP (kg/yr):	0.045
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BMP Cost Est:	\$1,200.00	BMP Annual C	\$50.00	10 yr cost:	\$1,700.00
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10 yr Cost for TP removed (\$/kg):	\$37,478.62
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Cost Determination:	Vegetate / stabilize road shoulders = \$1,200 (rough estimate)
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Add Record

# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1-21	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	Waukegan ditches from Rt. 104 to bottom of hill at Wall Street			
GPS Coordinates	Easting:	296439	Northing:	4835408
Property Owner Contacted:	No	Related Waterbody:	Waukegan	
Land Use:	Town Road	Direct Flow to:	Lake	
Issues:	Moderate to severe ditch erosion, moderate road shoulder erosion, winter sand			
Images				

Area Dimensions:		Connected to site:	
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Recommendations:	Vegetate ditch, reshape ditch, install sediment pools, vegetation mats or riprap
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Impact Rating:		Cost Materials:		Labor Cost:	
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Overall Cos	Medium	Comments:	included all ditches as single site in survey- many ditches along rd need to be stabilized. Installing structures to slow flow will help with areas
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Sediment (t/yr)	12.6	TP (kg/yr):	4.853
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BMP Cost Est:	\$2,000.00	BMP Annual C	\$250.00	10 yr cost:	\$4,500.00
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10 yr Cost for TP removed (\$/kg):	\$927.18
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Cost Determination:	Vegetate ditches with erosion control matting and seed (in areas with bar soil), and stone in high velocity areas (~2,000 ft) = \$2,000 (rough estimate)
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Add Record

# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1-22	Date:	4/23/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	Red Gate Lane			
GPS Coordinates	Easting:	297578	Northing:	4836937
Property Owner Contacted:	No	Related Waterbody:	Waukegan	
Land Use:	Town Road	Direct Flow to:	Lake	
Issues:	Moderate surface erosion, undersized ditches on either side of road, moderate road shoulder erosion, winter sand, gravel road that slopes towards the lake		Images	

Area Dimensions:	length of road	Connected to site:	
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Recommendations:	install turnouts, install ditch, install sediment pools, buildup road with gravel, install runoff diverters, install waterbar
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Impact Rating:	High	Cost Materials:	Medium	Labor Cost:	High
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Overall Cos	High	Comments:	
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Sediment (t/yr)	2.5	TP (kg/yr):	1.134
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BMP Cost Est:	\$13,720.00	BMP Annual C	\$500.00	10 yr cost:	\$18,720.00
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10 yr Cost for TP removed (\$/kg):	\$16,508.23
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Cost Determination:	Resurface with correct gravel, reshape to crown (~1,500' of roadway) = \$9,520, Create stone-lined ditching with check dams to collect runoff down slope toward lake = \$3,00, Install Turnouts = \$1200
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Add Record



# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1-23	Date:	4/23/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	Bonney Shore Road			
GPS Coordinates	Easting:	297254	Northing:	4837520
Property Owner Contacted:		Related Waterbody:	Waukegan	
Land Use:	Private Road	Direct Flow to:	Ditch	
Issues:	Moderate surface erosion, moderate ditch erosion, slight road shoulder erosion, winter sand			
Images				

Area Dimensions:		Connected to site:	
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Recommendations:	Vegetate and/or armor ditches, line turnouts/ sediment capturing basins so they can be cleaned out
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Impact Rating:	Medium	Cost Materials:	High	Labor Cost:	High
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Overall Cos	High	Comments:	Looks like newly shaped ditches and turnouts installed stopping quite a bit of sediment. Road looks good, turnouts appear to be working
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Sediment (t/yr)	1.8	TP (kg/yr):	0.816
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BMP Cost Est:	\$4,000.00	BMP Annual C	\$1,000.00	10 yr cost:	\$14,000.00
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10 yr Cost for TP removed (\$/kg):	\$17,147.08
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Cost Determination:	Line existing turnouts with geotextile fabric and stone riprap = 1,000 (rough estimate for 4 large turnouts)
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Add Record

# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1-24 A	Date:	4/23/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	Waukegan Street next to 107 (stream crossing)			
GPS Coordinates	Easting:	297261	Northing:	4835561
Property Owner Contacted:	No	Related Waterbody:	Waukegan	
Land Use:	Town Road	Direct Flow to:	Lake	
Issues:	Moderate surface erosion, unstable inlet/outlet, moderate road shoulder erosion			
Images				

Area Dimensions:		Connected to site:	
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Recommendations:	Armor inlet/outlet, vegetate shoulder around streambank, establish buffer near residential yards mowing very close to the stream
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Impact Rating:	Medium	Cost Materials:	Low	Labor Cost:	Low/Medium
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Overall Cos	Medium	Comments:	
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Sediment (t/yr)	0.3	TP (kg/yr):	0.136
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BMP Cost Est:	\$1,000.00	BMP Annual C	\$50.00	10 yr cost:	\$1,500.00
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10 yr Cost for TP removed (\$/kg):	\$11,023.12
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Cost Determination:	Armor culvert inlet and outlet = \$700 (rough estimate given size of crossing) Vegetate road shoulder = \$300
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Add Record

# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	1-24 B	Date:	4/23/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	Stream Crossing near 107 Waukegan St			
GPS Coordinates	Easting:	297270	Northing:	4835580
Property Owner Contacted:	No	Related Waterbody:	Waukegan	
Land Use:	Residential	Direct Flow to:	Stream, Lake	
Issues:	Undercut shoreline with lack of/inadequate vegetation		Images	

Area Dimensions:		Connected to site:	
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Recommendations:	Establish buffer, add to buffer
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Impact Rating:	Low	Cost Materials:	Low	Labor Cost:	Low
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Overall Cos	Low	Comments:	
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Sediment (t/yr)	0.1	TP (kg/yr):	0.045
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BMP Cost Est:	\$1,920.00	BMP Annual C	\$50.00	10 yr cost:	\$2,420.00
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10 yr Cost for TP removed (\$/kg):	\$53,351.91
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Cost Determination:	Add to buffer (~80') = \$1,920 (CCSWCD estimate of \$480/20' length for vegetative buffers)
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Add Record

# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	2-01	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	9 Winona Shores (on rd)			
GPS Coordinates	Easting:	295758	Northing:	4835503
Property Owner Contacted:	No	Related Waterbody:	Waukegan	
Land Use:	Private Road	Direct Flow to:	Ditch	
Issues:	Slight surface erosion, slight road shoulder erosion, bare soil, road drainage intermittent, culvert under road, erosion of both shoulders			
Images				

Area Dimensions:	25'x 10', 25' x 4'	Connected to site:	
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Recommendations:	Vegetate shoulder (downstream and upstream)
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Impact Rating:	Low	Cost Materials:	Low	Labor Cost:	Low
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Overall Cos	Low	Comments:	
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Sediment (t/yr)	0.4	TP (kg/yr):	0.181
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BMP Cost Est:	\$1,000.00	BMP Annual C	\$50.00	10 yr cost:	\$1,500.00
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10 yr Cost for TP removed (\$/kg):	\$8,267.34
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Cost Determination:	Vegetate road shoulder (~50 ft) = \$700 Better armor culvert with riprap = \$300
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Add Record

# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	2-02	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	Robin Way			
GPS Coordinates	Easting:	295944	Northing:	4835809
Property Owner Contacted:		Related Waterbody:	Waukegan	
Land Use:	Private dirt road	Direct Flow to:	Ditch	
Issues:	Moderate surface erosion, moderate ditch erosion, moderate road shoulder erosion, bare soil			
Images				

Area Dimensions:	250' x 3'	Connected to site:	
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Recommendations:	Armor ditch with stone, vegetate shoulder, remove railroad ties and direct to a vegetated swale
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Impact Rating:	Medium	Cost Materials:	Medium	Labor Cost:	Medium
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Overall Cos	High	Comments:	
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Sediment (t/yr)	5.2	TP (kg/yr):	2.359
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BMP Cost Est:	\$3,600.00	BMP Annual C	\$150.00	10 yr cost:	\$5,100.00
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10 yr Cost for TP removed (\$/kg):	\$2,162.23
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Cost Determination:	Armor ditch with stone (~200 ft) = \$1,500, Vegetate road shoulder = \$600, Create turnouts to vegetated or rock lined swales = \$1,500
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Add Record

# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	2-03 A	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	28 Forest Hill Road (driveway)			
GPS Coordinates	Easting:	295593	Northing:	4836405
Property Owner Contacted:	No	Related Waterbody:	Waukegan	
Land Use:	Driveway (paved)	Direct Flow to:	Ditch	
Issues:	Moderate surface erosion, bare soil, winter sand build-up in riprap ditch along driveway			
Images				

Area Dimensions:		Connected to site:	
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Recommendations:	Install turnouts, clean out sediment from riprap ditch (and other debris), vegetate shoulder, reseed bare soil and thinning grass
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Impact Rating:	Medium	Cost Materials:	Medium	Labor Cost:	Low
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Overall Cos	Medium	Comments:	
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Sediment (t/yr)	0.1	TP (kg/yr):	0.045
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BMP Cost Est:	\$1,500.00	BMP Annual C	\$50.00	10 yr cost:	\$2,000.00
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10 yr Cost for TP removed (\$/kg):	\$44.092.49
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Cost Determination:	Reshape existing riprap ditch and create turnouts = \$1,200, Vegetate road shoulder = \$300
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Add Record

# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	2-03 B	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	Rd ditch near 28 Forest Hill Rd			
GPS Coordinates	Easting:	295572	Northing:	4836424
Property Owner Contacted:	No	Related Waterbody:	Waukegan	
Land Use:	Private Rd	Direct Flow to:	Ditch	
Issues:	Moderate surface erosion, moderate ditch erosion, moderate road shoulder erosion, bare soil, winter sand			
Images				

Area Dimensions:	157' x 3'	Connected to site:	
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Recommendations:	Armor ditch with stone, install check dams, vegetate shoulder
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Impact Rating:	Medium	Cost Materials:	Medium	Labor Cost:	Medium
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Overall Cos	High	Comments:	
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Sediment (t/yr)	8.9	TP (kg/yr):	4.037
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BMP Cost Est:	\$2,400.00	BMP Annual C	\$500.00	10 yr cost:	\$7,400.00
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10 yr Cost for TP removed (\$/kg):	\$1,833.06
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Cost Determination:	Armor ditch with stone (~200 ft) = \$1,900 (1,500 (CCSWCD estimate for rock-lined ditches) plus additional material for check dams \$400), Vegetate road shoulder = \$500
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Add Record

# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	2-04	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	36 Forest Hill			
GPS Coordinates	Easting:	295507	Northing:	4836509
Property Owner Contacted:	No	Related Waterbody:	Waukegan	
Land Use:	Private road	Direct Flow to:	Stream	
Issues:	unstable inlet/outlet, hanging culvert into plunge pool with eroded bank, bare soil			
Images				

Area Dimensions:	2' x 3'	Connected to site:	
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Recommendations:	Install plunge pool, vegetate shoulder
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Impact Rating:	Low	Cost Materials:	Low	Labor Cost:	Low
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Overall Cos	Low	Comments:	
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Sediment (t/yr)	0	TP (kg/yr):	0
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BMP Cost Est:	\$1,875.00	BMP Annual C	\$100.00	10 yr cost:	\$2,875.00
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10 yr Cost for TP removed (\$/kg):	
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Cost Determination:	Armor culvert inlet and outlet = \$700 (rough estimate), Create plunge pool at outlet = \$875, Vegetate road shoulder around culvert = \$300
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Add Record



# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	2-05	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	Other side of 36 Forest Hill			
GPS Coordinates	Easting:	295466	Northing:	4836579
Property Owner Contacted:	No	Related Waterbody:	Waukegan	
Land Use:	Private Road	Direct Flow to:	Ditch	
Issues:	Moderate surface erosion, moderate ditch erosion, moderate road shoulder erosion, bare soil, winter sand			
Images				

Area Dimensions:	200' x 6'	Connected to site:	
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Recommendations:	Armor ditch with stone, install check dams, add another cross culvert and divert to level spreader
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Impact Rating:	Medium	Cost Materials:	Medium	Labor Cost:	Medium
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Overall Cos	High	Comments:	Potential UNH design site
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Sediment (t/yr)	8	TP (kg/yr):	3.629
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BMP Cost Est:	\$4,100.00	BMP Annual C	\$300.00	10 yr cost:	\$7,100.00
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10 yr Cost for TP removed (\$/kg):	\$1.956.60
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Cost Determination:	Install armored ditch (~200') = \$2,000 ( based on CCSWCD estimates of \$750 for 100' rock-lined ditch and additional \$500 for check dams), Install cross culvert = \$1,500, install plunge pool with level spreader = \$600
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Add Record

# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	2-06	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	Indian Trail Rd & Chapman Point			
GPS Coordinates	Easting:	295543	Northing:	4837134
Property Owner Contacted:	No	Related Waterbody:	Waukegan	
Land Use:	Private Road	Direct Flow to:		
Issues:	General gravel road maintenance, poor crown, bare soil, moderate surface erosion, winter sand, wrong aggregate mix?			
Images				

Area Dimensions:		Connected to site:	
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Recommendations:	Build-up road/add new surface material, reshape crown, vegetate shoulder
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Impact Rating:	Medium	Cost Materials:	High	Labor Cost:	High
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Overall Cos	High	Comments:	
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Sediment (t/yr)	18	TP (kg/yr):	8.165
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BMP Cost Est:	\$8,300.00	BMP Annual C	\$2,500.00	10 yr cost:	\$33,300.00
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10 yr Cost for TP removed (\$/kg):	\$4,078.56
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Cost Determination:	Resurface with correct gravel, reshape to crown (~1,000' of roadway) = \$6,800 (CCSWCD estimate for gravel and grading of 200' of roadway (\$1,360), Vegetate Road Shoulder = \$1500
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Add Record

# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	2-07	Date:	4/22/2014	
Town:	Meredith	Watershed:	Waukegan	
Location(road)	100 Forest Hill road			
GPS Coordinates	Easting:	295801	Northing:	4836588
Property Owner Contacted:	No	Related Waterbody:	Waukegan	
Land Use:	Private paved road	Direct Flow to:	Ditch	
Issues:	Slight to moderate ditch erosion (will get worse with big storms), slight road shoulder erosion, lots of winter sand		Images	

Area Dimensions:	100' x 3'	Connected to site:	
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Recommendations:	Vegetate ditch or armor with stone, vegetate shoulder
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Impact Rating:	Low	Cost Materials:	Low/Medium	Labor Cost:	Low/Medium
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Overall Cos	Medium	Comments:	
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Sediment (t/yr)	13.8	TP (kg/yr):	6.26
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BMP Cost Est:	\$1,150.00	BMP Annual C	\$50.00	10 yr cost:	\$1,650.00
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10 yr Cost for TP removed (\$/kg):	\$263.60
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Cost Determination:	Armor ditch with stone = \$750 (CCSWCD estimate for 100' of rock-lined ditch is \$750), Vegetate road shoulder = \$400
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Add Record

# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	2-08	Date:	4/22/2014	
Town:	New Hampton	Watershed:	Waukegan	
Location(road)	Picket fence & Winona (across from cemetery)			
GPS Coordinates	Easting:	294615	Northing:	4836392
Property Owner Contacted:	No	Related Waterbody:		
Land Use:	State and Private	Direct Flow to:	Ditch	
Issues:	Severe ditch erosion at one point along road, ditch turnout is plugged- will take out road at some point, moderate surface erosion, bare soil			
Images				

Area Dimensions:	150' x 2'	Connected to site:	
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Recommendations:	Change ditch cross-section & remove plug and/or stabilize new ditch, install detention pond?
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Impact Rating:	Medium	Cost Materials:	Medium	Labor Cost:	Medium
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Overall Cos	High	Comments:	Need a willing land owner
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Sediment (t/yr)	17.9	TP (kg/yr):	8.119
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BMP Cost Est:	\$3,625.00	BMP Annual C	\$250.00	10 yr cost:	\$6,125.00
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10 yr Cost for TP removed (\$/kg):	\$754.38
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Cost Determination:	Install armored ditch = \$1,125 (CCSWCD estimate for 100' of rock-lined ditch is \$750) Turnout to detention pond feature= 2,000 (rough estimate) Vegetate road shoulder = \$500
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Add Record

# Lake Waukegan & Winona Lake Watershed Survey


## BMP Site Information

Site I.D.:	2-09	Date:	4/22/2014	
Town:	New Hampton	Watershed:	Waukegan	
Location(road)	Saywood brook on Seminole Road (culvert under RR tracks where it goes under the road)			
GPS Coordinates	Easting:	294928	Northing:	4837293
Property Owner Contacted:	No	Related Waterbody:	Waukegan	
Land Use:	RR ROW?	Direct Flow to:	Lake, Stream	
Issues:	Undersized culvert on the downstream side, probably more water than used to be there and eroding downstream bank, large amount of eroded debris		Images	

Area Dimensions:		Connected to site:				
Recommendations:	Either replace culvert or armor bank					
Impact Rating:	Medium	Cost Materials:	High or Low	Labor Cost:	High or Low	
Overall Cos	Medium	Comments:	Upstream side is ok so probably no need to replace, price depends on solution			
Sediment (t/yr)	0.2	TP (kg/yr):	0.091			
BMP Cost Est:	\$6,000.00	BMP Annual C		10 yr cost:	\$6,000.00	
10 yr Cost for TP removed (\$/kg):	\$66,138.73					
Cost Determination:	Armor culvert inlet and outlet and extend headwalls to prevent slumping with boulders= \$6,000					
						Add Record

# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	2-10	Date:	4/22/2014	
Town:	New Hampton	Watershed:	Waukegan	
Location(road)	On RR tracks off Winona on Snake River by sign C41			
GPS Coordinates	Easting:	293935	Northing:	4837907
Property Owner Contacted:	No	Related Waterbody:	Snake River	
Land Use:	RR ROW	Direct Flow to:	Stream (Snake River)	
Issues:	Continued historic sand movement, monitor in the future, lots of sand in channel, moderate surface erosion (deposition in stream at crossing), delta in stream			
Images				

Area Dimensions:		Connected to site:	
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Recommendations:	Armor inlet/outlet? Stabilize bare/eroding soils at crossing, vegetate slopes
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Impact Rating:	Medium	Cost Materials:	Low/Medium	Labor Cost:	Low
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Overall Cos	Medium	Comments:	
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Sediment (t/yr)	1.2	TP (kg/yr):	0.544
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BMP Cost Est:	\$5,000.00	BMP Annual C	\$100.00	10 yr cost:	\$6,000.00
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10 yr Cost for TP removed (\$/kg):	\$11,023.12
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Cost Determination:	Slope stabilization = \$5,000 (rough average/estimate. Stabilization may vary between seeding slope and/or using a geoweb base stabilization system for a more long term solution)
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Add Record

# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	2-11	Date:	4/22/2014	
Town:	New Hampton	Watershed:	Waukegan	
Location(road)	Purdy property- Bay View			
GPS Coordinates	Easting:	292925	Northing:	4838729
Property Owner Contacted:		Related Waterbody:	Winona	
Land Use:	Residential	Direct Flow to:	Stream	
Issues:	Lack of shoreline vegetation, slumping streambank, bare soil, slight surface erosion			
Images				

Area Dimensions:		Connected to site:	
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Recommendations:	Add vegetation, stabilize streambank (should not just add rock), water retention swales (move runoff away from stream), establish buffer, add to buffer, reseed bare soils and thinning grass
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Impact Rating:	Medium	Cost Materials:	Low/Medium	Labor Cost:	Low
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Overall Cos	Medium	Comments:	
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Sediment (t/yr)	2.1	TP (kg/yr):	0.953
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BMP Cost Est:	\$3,920.00	BMP Annual C	\$75.00	10 yr cost:	\$4,670.00
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10 yr Cost for TP removed (\$/kg):	\$4,902.66
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Cost Determination:	Establish Buffer = \$1,920 (CCSWCD estimate of \$480/20' length for vegetative buffers) Streambank Stabilization (live-staking and or wattles?) = \$2,000
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Add Record

# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	2-12 A	Date:	4/22/2014	
Town:	Center Harbor	Watershed:	Waukegan	
Location(road)	Winona Rd at boat launch near Snake River			
GPS Coordinates	Easting:	293520	Northing:	4838585
Property Owner Contacted:	No	Related Waterbody:	Winona	
Land Use:	Municipal/Public, State Rd	Direct Flow to:	Lake	
Issues:	Slight surface erosion, slight road shoulder erosion, bare soil, winter sand, water flows off Rd and erodes boat launch parking areas			
Images				

Area Dimensions:		Connected to site:	
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Recommendations:	Create swales to direct water from Rd into woods, add new surface material (pea stone?) to parking areas, water retention swales
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Impact Rating:	Medium	Cost Materials:	Medium	Labor Cost:	Medium
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Overall Cos	Medium	Comments:	
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Sediment (t/yr)	17.1	TP (kg/yr):	6.577
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BMP Cost Est:	\$4,380.00	BMP Annual C	\$250.00	10 yr cost:	\$6,880.00
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10 yr Cost for TP removed (\$/kg):	\$1.046.06
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Cost Determination:	Install 2 swales to move water moving from roadway into adjacent wooded areas& away from lake=\$1,500, Cover parking lot with crushed stone to prevent erosion into lake (~100'x65')= \$1,680, retention pools (2) at end of swales=\$1200
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Add Record



# Lake Waukewan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	2-12 B	Date:	4/22/2014	
Town:	Center Harbor	Watershed:	Waukewan	
Location(road)	Winona Lake / Snake River boat launch at Winona Rd.			
GPS Coordinates	Easting:	293511	Northing:	4838580
Property Owner Contacted:	No	Related Waterbody:	Winona	
Land Use:	Municipal/Public, Boat access	Direct Flow to:	Lake	
Issues:	Moderate surface erosion, bare soil			
Images				

Area Dimensions:		Connected to site:	
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Recommendations:	Install runoff diverter (waterbar), rain garden on either side of launch
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Impact Rating:	Medium	Cost Materials:	Low	Labor Cost:	Low
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Overall Cos	Low	Comments:	
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Sediment (t/yr)	0.6	TP (kg/yr):	0.272
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BMP Cost Est:	\$1,380.00	BMP Annual C	\$50.00	10 yr cost:	\$1,880.00
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10 yr Cost for TP removed (\$/kg):	\$6,907.82
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Cost Determination:	Install waterbar = \$380 (CCSWCD estimate for 16' rubber razor) Add stone or pavers to launch = \$1,000 (average. Stone is much less than pavers/concrete grid system)
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Add Record

# Lake Waukegan & Winona Lake Watershed Survey


## BMP Site Information

Site I.D.:	2-13 A	Date:	4/22/2014	
Town:	Center Harbor	Watershed:	Waukegan	
Location(road)	Shoreline along Winona Rd, guardrail near 692 Winona Rd			
GPS Coordinates	Easting:	293272	Northing:	4839145
Property Owner Contacted:	No	Related Waterbody:	Winona	
Land Use:	State Road	Direct Flow to:	Lake	
Issues:	Alight surface erosion, undercut shoreline, erosion on the shoreline, road is slumping toward lake			
Images				

Area Dimensions:		Connected to site:			
Recommendations:	Need to armor and stabilize shoreline where Rd is closest to lake				
Impact Rating:	High	Cost Materials:	High	Labor Cost:	High
Overall Cos	High	Comments:	Don has good pictures from the Lake side that he will send to us		
Sediment (t/yr)	78.8	TP (kg/yr):	30.345		
BMP Cost Est:	\$25,000.00	BMP Annual C	\$200.00	10 yr cost:	\$27,000.00
10 yr Cost for TP removed (\$/kg):	\$889.76				
Cost Determination:	Shoreline stabilization \$25,000 (rough estimate - would require engineering)				
					
Add Record					

# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	2-13 B	Date:	4/22/2014	
Town:	Center Harbor	Watershed:	Waukegan	
Location(road)	Ditch across from site 2- 13 A on Winona Rd			
GPS Coordinates	Easting:	293276	Northing:	4839161
Property Owner Contacted:	No	Related Waterbody:	Winona	
Land Use:	State Road	Direct Flow to:	Ditch	
Issues:	Slight surface erosion, moderate ditch erosion, bare soil			
Images				

Area Dimensions:		Connected to site:	
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Recommendations:	vegetate ditch and armor with stone
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Impact Rating:	Medium	Cost Materials:	Medium	Labor Cost:	Medium
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Overall Cos	Medium	Comments:	
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Sediment (t/yr)	11.3	TP (kg/yr):	4.581
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BMP Cost Est:	\$1,500.00	BMP Annual C	\$200.00	10 yr cost:	\$3,500.00
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10 yr Cost for TP removed (\$/kg):	\$763.98
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Cost Determination:	Install armored ditch = \$1,500 (CCSWCD estimate for 100' of rock-lined ditch is \$750) Place erosion control mulch on back walls of slope = \$500
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Add Record

# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	2-14	Date:	4/22/2014	
Town:	Center Harbor	Watershed:	Waukegan	
Location(road)	Ditch on Winona			
GPS Coordinates	Easting:	292652	Northing:	4840371
Property Owner Contacted:	No	Related Waterbody:	Winona	
Land Use:	State Road	Direct Flow to:		
Issues:	Moderate ditch erosion, slight surface erosion, slight road shoulder erosion			
Images				

Area Dimensions:	240' x 2'	Connected to site:	
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Recommendations:	Armor ditch with stone, vegetate ditch
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Impact Rating:	Medium	Cost Materials:	Medium	Labor Cost:	Medium
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Overall Cos	Medium	Comments:	
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Sediment (t/yr)	8.4	TP (kg/yr):	3.221
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BMP Cost Est:	\$2,000.00	BMP Annual C	\$150.00	10 yr cost:	\$3,500.00
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10 yr Cost for TP removed (\$/kg):	\$1.086.79
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Cost Determination:	Install armored ditch = \$1,500 (CCSWCD estimate for 100' of rock-lined ditch is \$750) Vegetate road shoulder = \$500 (~25 yards ECM)
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Add Record

# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	2-15	Date:	4/22/2014	
Town:	Ashland	Watershed:	Waukegan	
Location(road)	Both ends of Lambert RD (hills to stream)			
GPS Coordinates	Easting:	291150	Northing:	4841091
Property Owner Contacted:		Related Waterbody:	Unnamed tributary/Inflow to Winona Lake	
Land Use:	Town Road	Direct Flow to:	Stream	
Issues:	Bare soil, bringing lots of sand downstream, delta in stream, winter sand, slight surface erosion, slight ditch erosion, slight road shoulder erosion		Images	

Area Dimensions:		Connected to site:			
Recommendations:	Install turnouts and level spreader, reshape ditch, vegetate ditch				
Impact Rating:	High	Cost Materials:	Medium	Labor Cost:	Medium

Overall Cos	Medium	Comments:	Lakes Region Conservation Trust " Homestead Forest"
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Sediment (t/yr)	0.4	TP (kg/yr):	0.181
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BMP Cost Est:	\$2,075.00	BMP Annual C	\$100.00	10 yr cost:	\$3,075.00
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10 yr Cost for TP removed (\$/kg):	\$16,948.05
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Cost Determination:	Reshape ditch, vegetate = \$575 (CCSWCD estimate for 100' of grass-lined ditch) Install turnouts (2) = \$1,200 ( based on JH's estimate \$500-600 per rock lined turnout with level spreader) Vegetate shoulders = \$300
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Add Record

# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	2-16 A	Date:	4/22/2014	
Town:	Center Harbor	Watershed:	Waukegan	
Location(road)	Hawkins Pond Boat Launch			
GPS Coordinates	Easting:	293446	Northing:	4840222
Property Owner Contacted:	No, NH Fish and Game	Related Waterbody:	Hawkins Pond	
Land Use:	Boat access	Direct Flow to:	Lake/Pond	
Issues:	Slight surface erosion, slight road shoulder erosion, bare soil, winter sand, water from Rd is eroding areas of the boat launch parking lots and into Pond			
Images				

Area Dimensions:		Connected to site:	
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Recommendations:	Add new surface material (crushed stone to prevent sediment movement off site, install runoff diverter (waterbar), rain garden near launch/slope, infiltration trench to collect runoff before it enters parking area
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Impact Rating:	Medium	Cost Materials:	Medium/High	Labor Cost:	Medium
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Overall Cos	High	Comments:	
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Sediment (t/yr)	11	TP (kg/yr):	4.264
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BMP Cost Est:	\$3,684.00	BMP Annual C	\$200.00	10 yr cost:	\$5,684.00
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10 yr Cost for TP removed (\$/kg):	\$1,333.09
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Cost Determination:	Cover parking surface with crushed stone to prevent sediment movement off-site (70'x60') = \$1,384 (\$684 (38 yards of crushed 3/4" stone @ \$18/yd) plus \$700 labor)
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Add Record

# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	2-16 B	Date:	4/22/2014	
Town:	Center Harbor	Watershed:	Waukegan	
Location(road)	Rd Ditches near boat launch at Hawkins Pond			
GPS Coordinates	Easting:	293450	Northing:	4840212
Property Owner Contacted:	No	Related Waterbody:	Hawkins Pond	
Land Use:	Town Road	Direct Flow to:	Ditch	
Issues:	Moderate ditch erosion, slight road shoulder erosion, bare soil, winter sand			
Images				

Area Dimensions:		Connected to site:	
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Recommendations:	Vegetate ditch, armor ditch with stone, install turnouts
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Impact Rating:	Medium	Cost Materials:	Medium	Labor Cost:	Medium
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Overall Cos	Medium	Comments:	
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Sediment (t/yr)	0.4	TP (kg/yr):	0.181
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BMP Cost Est:	\$1,275.00	BMP Annual C	\$100.00	10 yr cost:	\$2,275.00
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10 yr Cost for TP removed (\$/kg):	\$12,538.80
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Cost Determination:	Install riprap ditch with check dams (~50 ft) = \$375, Vegetate road shoulder = \$300
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Add Record

# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	2-17	Date:	4/23/2014	
Town:	New Hampton	Watershed:	Waukegan	
Location(road)	Saywood Brook @ Waukegan Road (Winona Rd intersection)			
GPS Coordinates	Easting:	294248	Northing:	4836968
Property Owner Contacted:	No	Related Waterbody:	Saywood Brook	
Land Use:	State Road	Direct Flow to:	Stream	
Issues:	Slight road shoulder erosion, undercut streambank (slightly), inadequate shoreline vegetation			
Images				

Area Dimensions:	75'	Connected to site:	
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Recommendations:	Vegetate shoulder, investigate origin of pipe that outlet from property to the stream, vegetate shoulder/stabilize near culverts
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Impact Rating:	Low	Cost Materials:	Low	Labor Cost:	Low
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Overall Cos	Medium	Comments:	cutting adjacent to stream on residential property
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Sediment (t/yr)	0.4	TP (kg/yr):	0.181
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BMP Cost Est:	\$1,920.00	BMP Annual C	\$50.00	10 yr cost:	\$2,420.00
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10 yr Cost for TP removed (\$/kg):	\$13,337.98
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Cost Determination:	Add to buffer (~80') = \$1,920 (CCSWCD estimate of \$480/20' length for vegetative buffers)
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# Lake Waukegan & Winona Lake Watershed Survey


## BMP Site Information

Site I.D.:	2-18	Date:	4/23/2014	
Town:	Center Harbor	Watershed:	Waukegan	
Location(road)	Piper Hill Road, Bear Pond stream crossing			
GPS Coordinates	Easting:	294290	Northing:	4839939
Property Owner Contacted:	No	Related Waterbody:	Bear Pond/Hawkins Pond	
Land Use:	Town Road	Direct Flow to:	Pond	
Issues:	Undersized culvert (is currently under water), moderate road shoulder erosion, lots of winter sand, Looks like road need to be built up and new crossing constructed- water is almost to Rd level		Images	

Area Dimensions:		Connected to site:			
Recommendations:	Enlarge culvert, vegetate/stabilize shoulder, water within 4' of road shoulder- lots of sediment input				
Impact Rating:	Medium	Cost Materials:	High	Labor Cost:	High
Overall Cos	High	Comments:	Cost would be lower if just stabilization		
Sediment (t/yr)	0.4	TP (kg/yr):	0.091		
BMP Cost Est:	\$9,560.00	BMP Annual C	\$200.00	10 yr cost:	\$11,560.00
10 yr Cost for TP removed (\$/kg):	\$127,427.29				
Cost Determination:	Replace and enlarge culvert and armor inlet/outlet with stone = \$2,500, Build-up/elevate roadway and resurface with new pavement = \$1,360, \$5,700 (paving 100 x 15 sq ft area)				
					
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# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	2-19	Date:	4/23/2014	
Town:	Center Harbor	Watershed:	Waukegan	
Location(road)	Catchbasins on Hawkins Pond Rd + Piper Rd median			
GPS Coordinates	Easting:	293434	Northing:	4840208
Property Owner Contacted:	No	Related Waterbody:	Hawkins Pond	
Land Use:	Town Road	Direct Flow to:	Hawkins Pond	
Issues:	Lots of winter sand, 2 catchbasins on corner that drain to Hawkins Pond outlet, road slopes to this intersection with lots of winter sand entering catchbasins, Alight ditch erosion, slight surface erosion, slight road shoulder erosion			
Images				

Area Dimensions:		Connected to site:	
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Recommendations:	Divert stormwater from road or install sediment catch
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Impact Rating:	Medium	Cost Materials:	Medium	Labor Cost:	Medium
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Overall Cos	Medium	Comments:	
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Sediment (t/yr)	6.3	TP (kg/yr):	2.449
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BMP Cost Est:	\$1,275.00	BMP Annual C	\$100.00	10 yr cost:	\$2,275.00
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10 yr Cost for TP removed (\$/kg):	\$928.80
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Cost Determination:	Install rock-lined ditch along slope to detention basin - directing water away from storm drain = \$375, \$600 detention basin, stabilize surrounding areas (erosion control) = \$300
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# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	2-20	Date:	4/23/2014	
Town:	Center Harbor	Watershed:	Waukegan	
Location(road)	Piper Hill Rd, Hawkins Pond outlet crossing downstream side			
GPS Coordinates	Easting:	293412	Northing:	4840223
Property Owner Contacted:	No	Related Waterbody:	Hawkins Pond	
Land Use:	Town Road	Direct Flow to:	Hawkins Pond outlet	
Issues:	Slight road shoulder erosion, winter sand forming delta down into stream			
Images				

Area Dimensions:		Connected to site:	
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Recommendations:	Install sediment pools to control winter sand
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Impact Rating:	High	Cost Materials:	High	Labor Cost:	Medium
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Overall Cos	High	Comments:	
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Sediment (t/yr)	0.4	TP (kg/yr):	0.181
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BMP Cost Est:	\$1,950.00	BMP Annual C	\$100.00	10 yr cost:	\$2,950.00
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10 yr Cost for TP removed (\$/kg):	\$16,259.11
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Cost Determination:	Install ditch with turnouts into adjacent wooded buffer and away from stream crossing = \$750, \$1,200 for turnouts ( based on JH's estimate \$500-600 per rock lined turnout with level spreader)
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# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	2-21 A	Date:	4/23/2014	
Town:	Center Harbor	Watershed:	Waukegan	
Location(road)	Corner of Winona Rd and Hawkins Pond Rd- upstream Hawkins Pond stream crossing			
GPS Coordinates	Easting:	293076	Northing:	4839714
Property Owner Contacted:	No	Related Waterbody:	Winona	
Land Use:	Town and State Road Intersection	Direct Flow to:	Lake Winona	
Issues:	Lots of winter sand deposited from road into stream, lack of shoreline vegetation, slight surface erosion, slight ditch erosion, slight road shoulder erosion			
Images				

Area Dimensions:		Connected to site:	
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Recommendations:	Vegetate shoulder, add to buffer, install sediment pools to capture winter sand, sweep roads and remove winter sand before movement toward stream
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Impact Rating:	High	Cost Materials:	Medium	Labor Cost:	Medium
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Overall Cos	Medium	Comments:	
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Sediment (t/yr)	0.3	TP (kg/yr):	0.136
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BMP Cost Est:	\$1,000.00	BMP Annual C	\$100.00	10 yr cost:	\$2,000.00
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10 yr Cost for TP removed (\$/kg):	\$14,697.50
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Cost Determination:	Install detention basin with level spreader at corner of road to collect road runoff and sediment = \$700 Vegetate/stabilize surrounding areas = \$300 ( rough estimate to account for ECM or seed)
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# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	2-21 B	Date:	4/23/2014	
Town:	Center Harbor	Watershed:	Waukegan	
Location(road)	Downstream Side of crossing at intersection of Winona Rd and Hawkins Pond Rd (Hawkins Pond outlet stream- downstream side of crossing)			
GPS Coordinates	Easting:	293060	Northing:	4839717
Property Owner Contacted:	No	Related Waterbody:	Winona	
Land Use:	Residential	Direct Flow to:	Stream	
Issues:	Slight surface erosion, slight road shoulder erosion, winter sand, lack of shoreline vegetation, tar lined ditch brings water from Rd and adjacent driveway into stream			
Images				

Area Dimensions:		Connected to site:	
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Recommendations:	Vegetate shoulder, establish buffer, add to buffer, remove tar-lined ditch and replace with infiltrating /sediment capturing structure to treat runoff properly
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Impact Rating:	Medium	Cost Materials:	Medium	Labor Cost:	Low
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Overall Cos	Medium	Comments:	retaining wall on residence at stream shoreline
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Sediment (t/yr)	0.1	TP (kg/yr):	0.045
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BMP Cost Est:	\$1,560.00	BMP Annual C	\$100.00	10 yr cost:	\$2,560.00
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10 yr Cost for TP removed (\$/kg):	\$56,438.39
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Cost Determination:	Remove tar-lined ditch and install riprap swale (~20' long) = \$600 Add to buffer = \$960 (CCSWCD estimate of \$480/20' length for vegetative buffers)
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# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	2-22	Date:	4/23/2014	
Town:	Center Harbor	Watershed:	Waukegan	
Location(road)	Snake River crossing inlet to Waukegan			
GPS Coordinates	Easting:	294775	Northing:	4837829
Property Owner Contacted:	No	Related Waterbody:	Waukegan	
Land Use:	State Road	Direct Flow to:	Lake Waukegan	
Issues:	Winter sand, moderate road shoulder erosion, lack of shoreline vegetation, stormwater created gully has eroded slope towards water carrying trash ect.			
Images				

Area Dimensions:		Connected to site:	
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Recommendations:	Install sediment polls or other device, stabilize shoreline/road shoulder, establish buffer
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Impact Rating:	High	Cost Materials:	Medium	Labor Cost:	Medium
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Overall Cos	Medium	Comments:	
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Sediment (t/yr)	0	TP (kg/yr):	0
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BMP Cost Est:	\$2,130.00	BMP Annual C	\$100.00	10 yr cost:	\$3,130.00
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10 yr Cost for TP removed (\$/kg):	
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Cost Determination:	Install curbing to direct road runoff to a detention basin nearby (~30') = \$450 (at \$15/linear foot installed) Detention basin = \$600, Add to buffer = \$480, Additional costs to adjust grade to move water to basin = \$600
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# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	2-23	Date:	4/23/2014	
Town:	Center Harbor	Watershed:	Waukegan	
Location(road)	Waukegan Rd, driveway adjacent w/ cut wood			
GPS Coordinates	Easting:	295416	Northing:	4838088
Property Owner Contacted:	No	Related Waterbody:	Waukegan	
Land Use:	State Road	Direct Flow to:	Ditch, Lake Waukegan	
Issues:	Slight ditch erosion, winter sand, slight road shoulder erosion, unknown source of water drains directly to lake		Images	

Area Dimensions:		Connected to site:	
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Recommendations:	Vegetate shoulder, establish buffer
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Impact Rating:	Low	Cost Materials:	Low	Labor Cost:	Low
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Overall Cos	Low	Comments:	
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Sediment (t/yr)	0	TP (kg/yr):	0
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BMP Cost Est:	\$480.00	BMP Annual C	\$50.00	10 yr cost:	\$980.00
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10 yr Cost for TP removed (\$/kg):	
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Cost Determination:	Vegetate shoulder and add to buffer around crossing (downstream) = \$480 (CCSWCD estimate of \$480/20' length for vegetative buffers)
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# Lake Waukegan & Winona Lake Watershed Survey

## BMP Site Information

Site I.D.:	2-24	Date:	4/23/2014	
Town:	Center Harbor	Watershed:	Waukegan	
Location(road)	Mayo Farms Cottages + Campground			
GPS Coordinates	Easting:	295674	Northing:	4838245
Property Owner Contacted:	No	Related Waterbody:	Waukegan	
Land Use:	Commercial	Direct Flow to:	Stream	
Issues:	Slight road shoulder erosion, winter sand, undercut streambank with erosion and lack of vegetation, fields mowed to streambank			
Images				

Area Dimensions:		Connected to site:	
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Recommendations:	Vegetate shoulder, establish buffer
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Impact Rating:	High	Cost Materials:	Medium	Labor Cost:	Medium
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Overall Cos	Medium	Comments:	
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Sediment (t/yr)	1.2	TP (kg/yr):	0.544
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BMP Cost Est:	\$5,000.00	BMP Annual C	\$100.00	10 yr cost:	\$6,000.00
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10 yr Cost for TP removed (\$/kg):	\$11,023.12
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Cost Determination:	Establish buffer on private property upstream (~200') = \$4,800, Vegetate/stabilize road shoulder = \$200 (erosion control mats and seed). Note: If property owner stopped mowing to streambank and allowed vegetation to grow, cost would be reduced.
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