

Lake Ontario South Shore

2012 Watershed Report Card

Surface Water Quality and Natural Heritage



Watershed Characteristics



Area	598 km ² encompas	sing Forty Mile C	reek, Twenty Mile Creek, an	nd 15-16-18 Mile Cr	eek.				
Land Use	Agriculture is the pr greenhouses, and p Hamilton, North Pe Bruce Trail, The Wa golfing are available	Agriculture is the predominant land use and focuses on corn and wheat, hay, vineyards and orchards, greenhouses, and pasture. Concentrations of residential land uses occur in urban areas within Grimsby, Hamilton, North Pelham, Lincoln and West Lincoln. There are many natural areas in the watershed such as the Bruce Trail, The Waterfront Trail, and Ball's Falls. Opportunities for fishing and boating, hiking, hunting, and golfing are available within the watershed.							
Soil Type	1% Upland Escarpm Loam, 40% Mixed S	1% Upland Escarpment, <0.1% Beach, 6% Developed Area, 48% Mixed Clay and Loam, 4% Mixed Sand and Loam, 40% Mixed Silt and Loam, 0.1% Organic Soil, 1% Water, 0.4% Unknown							
Physiography	Most of the waters along the north-we portions of the sour plains exist along th Mile Creek flows fro	Most of the watershed falls on the northern edge of the Haldimand Clay Plain. Shale plain exists in some areas along the north-western portion, and the escarpment stretches throughout. Northern Twenty Mile Creek and portions of the southern watershed are part of the Niagara Falls Moraine and the Fort Erie Moraine. Sand plains exist along the southern shore of Lake Ontario where the creeks drain. A small eastern portion of Fifteen Mile Creek flows from the Fonthill Kame.							
Dams & Barriers	The Niagara Escarp	ment acts as a n	atural barrier to fish movem	ent within the wat	ershed.				
Sewage Services	Local waste water t by private septic sy	reatment occurs stems. Sewage la	s within municipalities and u agoons release clean surface	irban centers, while water into nearby	e rural residents are se v streams.	rviced			
% Natural Area Types	Total Natural Area= 38% Wooded, 8% V	Total Natural Area= 141.2 km ² 38% Wooded, 8% Wetland, 28% Swamp, 26% Successional, <0.3% Unique							
	Size Category	Number of Woodlots	Total Woodland Area in WPA (ha)	% Woodland	Largest Woodlot (ha)	i.			
	20 to 50 ha	58	2004.47	3.35	49.04	1			
Woodlot or Patch	50 to 75 ha	21	877.67	1.47	68.56				
5120	75 to 100 ha	8	703.84	1.18	97.52				
	100 to 200 ha	10	1219.27	2.04	173.80				
	>200 ha	1	67.95	0.11	266.26				
Fisheries Resources	35 Fish species are present in the watershed. This includes Northern Pike, various bass, shiner, and minnow species.								
Species at Risk	Birds such as the Ba Redhorse. Mamma Pawpaw, and Swan Salamander. Variou	Birds such as the Barn Owl, King Rail, and Red-headed Woodpecker. Fish such as Grass Pickerel and Greater Redhorse. Mammals such as the Woodland Vole. Mussels such as Snuffbox. Plants including Common Hoptree, Pawpaw, and Swamp Rose-mallow. Reptiles including Blanding's turtle, Eastern Milksnake, and Jefferson							

Groundwater



Groundwater Vulnerability

The Niagara Water Strategy, NPCA Groundwater Study, and the Niagara Peninsula Source Protection Area Assessment Report have identified the Lake Ontario Shore watershed as highly vulnerable to groundwater contamination primarily due to thin overburden (less than 5 metres) and bedrock outcrops. Thin overburden is unable to effectively provide groundwater with sufficient protection from bacteria, sediment and other insoluble forms of contaminants that in thicker overburden would become trapped and filtered within the soil pores. In addition, the openings in the fractured bedrock allow for the direct passage of surface water and contaminants to groundwater resources.

Private Wells

The Lake Ontario South Shore watershed is primarily serviced by municipal water supplies with about 36% of the population on private water supplies such as groundwater wells. Water wells need to be properly constructed and maintained to prevent contamination. The safety, testing and treatment of a private well is the responsibility of the well owner.

Groundwater Stress

The Niagara Peninsula Source Protection Tier 1 Water Budget identified the Fifteen-Sixteen-Eighteen Creeks watersheds at a moderate stress level with respect to groundwater supply relative to their overall demands. The remaining watersheds were classified as at a low stress level.

Groundwater Monitoring

The NPCA has been monitoring two Provincial Groundwater Monitoring Network (PGMN) wells in the Lake Ontario South Shore watershed since 2003. One PGMN well (W288) is located on Dickinson Road in Hamilton and it monitors chemistry and water levels of the Guelph/Lockport bedrock formation. There have been no exceedances of Ontario Drinking Water Quality Standards at this site. The other PGMN well (W341) is located on Moyer Road in Lincoln and it monitors chemistry and water levels of the Clinton Group bedrock formation. Water quality results for PGMN well W341 exceeded Ontario Drinking Water Quality Standards for selenium and sodium. All exceedances were thoroughly investigated by Ministry of Environment, NPCA, Municipal and Public Health staff and found to be caused by natural groundwater conditions. Data for both PGMN wells show that groundwater levels generally decline from May to October, and increase from fall to spring with the largest increase in March. Groundwater levels were lowest in 2007 during a significant drought year.

Stewardship Highlights

The Lake Ontario South Shore Watersheds have benefited from the many activities and the active involvement of individuals, organizations and municipalities on private and public lands. Some examples of the progress which has occurred in the watershed follows:

- Watershed landowners have completed 104 water and habitat improvement projects with the assistance of the NPCA's Water Quality Improvement Program and other organizations such as *Ducks Unlimited Canada* (DUC), *Ontario Power Generation* (OPG), *Niagara Restoration Council* (NRC), and *Land Care Niagara* (LCN). These projects included Farm Best Management Practices as well as forest, stream and wetland habitat enhancements, using over 26000 native trees, shrubs and wildflowers.
- Annual Hawkwatch Event hosted at Beamer Memorial Conservation Area to educate the public about bird migration and environmental monitoring through raptor population.



• Annual Ball's Falls Thanksgiving Festival that provides an opportunity for people to experience the outdoors and learn of nature as part of this outdoor event.

- The NPCA partnered with *the Niagara Sportsman Ambassadors* for the Jordan Harbour Clean-Up of the Great Lakes Shorelines. Over 40 volunteers assisted and over 600 kilograms of garbage was removed from the shoreline.
- Between 2007-2010 twenty elementary schools within the Lake Ontario South Shore Watersheds participated in the NPCA's ECO School schoolyard naturalization program. This program has now been replaced by the NPCA's Canopies for Kids program which provides shade trees to elementary school with little or no natural cover.
- In 2011, the NPCA implemented a 5-year Invasive species removal of European Buckthorn and Garlic Mustard from Beamer and Ball's Falls Conservation Areas. Approximately 0.5 hectares have been addressed.



- The NPCA has implemented several education outreach initiatives throughout the conservation areas in the Lake Ontario South Shore such as the Family of Skeleton Project and the Bee Pollinator Booth.
- Through Trout Unlimited Canada's Yellow Fish Road program, The NPCA coordinated 14 events in the Lake Ontario South Shore Watershed Area. 63 people from local community groups helped paint yellow fish on 204 stormwater drains and distributed 979 door hangers to inform the public that the water (clean and dirty) that goes down these drains ends up in our local water bodies.
- The *Bruce Trail Conservancy* has been active in the Lake Ontario South Shore Watershed Area as the trail runs through the watershed. Several garbage clean ups have taken place on properties managed by BTC.

There has been much work completed on research and improving the health of the Lake Ontario South Shore watershed since 2007. **Appendix A** provides a list of published documents that describe local issues and contain recommendations and actions for further improvements.



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Forty Mile Creek

2012 Watershed Report Card



D

F

Surface Water Quality Forest Conditions



Surface Water Quality

GRADE

D

GRADE

F

Surface water quality monitoring of Forty Mile Creek on Olive Street was initiated in 2003 and was given an overall grade of D. The water quality of this watershed regularly exceeded the provincial guidelines for phosphorus and *E. coli*. The concentrations of these parameters have remained unchanged since 2003. Chloride exceedances have also been observed at this site. The benthic community found in this watershed consisted of a mix of pollutant tolerant and pollutant sensitive animals and nearly achieved the Benthic Indicator target. Watershed initiatives that reduce nutrient and bacteria contamination will improve the water quality of Forty Mile Creek.

Indica	Indicators		Provincial Guideline	Indicator Description
Phosphorus $(\mu g/L)^*$ 21030GradeFB	30	Phosphorus is found in products such as soap, detergent, and fertilizer as		
	Grade	F	В	and rivers
Bacteria	(<i>E. coli/</i> 100ml)**	478	100	<i>E. coli</i> is a fecal coliform bacteria found in human and animal (livestock/wildlife/pets) waste and, in water, indicates fecal contamination. <i>E coli</i> is a strong indicator for the potential to have other disease-causing organisms in the water.
	Grade	D	В	
Benthic	(FBI)	5.04	<5.00 (Target Only)	Benthic organisms (aquatic invertebrates that live in stream sediments) are good indicators of water quality and stream health. The Family Biotic Index
	Grade	С	В	(FBI) scores each taxa according to its pollution tolerance.

*75th percentile, NPCA data. **Geometric mean, NPCA data. Province-wide Grading System used.

Forest Conditions

The forest condition indicators for Forty Mile Creek watershed produced an overall grade of F. The Forest Cover % received a grade of D due in part to one large corridor in the headwaters of the watershed south of Kemp Road. The Forest Interior % grade of F was well below the provincial standard. This grade can be attributed to the lack of connectivity between the forest patches that do remain. The Riparian Zone Forested % also received a grade of F as the vegetation that does exist along watercourses is successional in nature.

Indicators		2007 - 2011	S. Ont. Target**	Indicator Description
Forest Cover	%	12	30	Percent forest cover is the percentage of the watershed that is forested or
Forest Cover	Grade	D	В	wooded. Forest cover includes upland and lowland forest types.
Forest Interior	%	2.2	10.0	Percent forest interior is the percentage of the watershed that is forested interior. Forest interior is the protected core area 100 m inside a woodlot that
	Grade	F	В	some bird species require to nest successfully. The outer 100 m is considered 'edge' habitat and is prone to high predation, wind damage and alien species invasion.
Riparian Zone Forested	%	9.2	50.0	Percent riparian zone forested is a measure of the amount of forest cover within a 30 m riparian/buffer zone adjacent to all open watercourses. Riparian
	Grade	F	В	habitats support high numbers of wildlife species and provide an array of ecological functions.



Spring Creek

2012 Watershed Report Card

GRADES

D

Surface Water Quality Forest



Surface Water Quality

GRADE

GRADE

D

D

Surface water quality monitoring of Spring Creek on Tintern Road was initiated in 2004 and was given an overall grade of D. The water quality of this watershed regularly exceeded the provincial guidelines for phosphorus and *E. coli*. High concentrations of total suspended solids from upstream erosion have also been observed in this watershed. The benthic community found in this watershed mainly consisted of pollutant tolerant animals with some sensitive animals, but overall indicated impaired water quality. Watershed initiatives that reduce nutrient and bacteria contamination will improve the water quality of Spring Creek.

Indica	tors	2007 - 2011	Provincial Guideline	Indicator Description
Dhoonhouse	(µg/L)*	350	30	Phosphorus is found in products such as soap, detergent, and fertilizer as
Phosphorus	Grade	F	В	and rivers
Bacteria	(<i>E. coli/</i> 100ml)**	283	100	<i>E. coli</i> is a fecal coliform bacteria found in human and animal (livestock/wildlife/pets) waste and, in water, indicates fecal contamination <i>E coli</i> is a strong indicator for the potential to have other disease-causing organisms in the water.
	Grade	С	В	
(FBI) 5.75 (<5.00 (Target Only)	Benthic organisms (aquatic invertebrates that live in stream sediments) are good indicators of water quality and stream health. The Family Biotic Index		
	Grade	С	В	(FBI) scores each taxa according to its pollution tolerance.

*75th percentile, NPCA data. **Geometric mean, NPCA data. Province-wide Grading System used.

Forest Conditions

The forest condition indicators for Spring Creek watershed produced an overall grade of D. The Forest Cover % received a grade of C due in part to several mid-sized forest patches in the south western headwaters of the watershed. The Forest Interior % grade of D was well below the provincial standard. This grade can be attributed to the lack of connectivity between the forest patches that exist. The Riparian Zone Forested % received a grade of D as the vegetation that does exist along watercourses in most of the watershed is largely successional in nature.

Indicato	ors	2007 - 2011	S. Ont. Target**	Indicator Description
Forest Course	%	19	30	Percent forest cover is the percentage of the watershed that is forested or
Forest Cover	Grade	С	В	wooded. Forest cover includes upland and lowland forest types.
Forest Interior	%	3.1	10.0	Percent forest interior is the percentage of the watershed that is forested interior. Forest interior is the protected core area 100 m inside a woodlot that
	Grade	D	В	some bird species require to nest successfully. The outer 100 m is considered 'edge' habitat and is prone to high predation, wind damage and alien species invasion.
Riparian Zone Forested	%	24.8	50.0	Percent riparian zone forested is a measure of the amount of forest cover within a 30 m riparian/buffer zone adjacent to all open watercourses. Riparian
	Grade	D	В	habitats support high numbers of wildlife species and provide an array of ecological functions.



North Creek

2012 Watershed Report Card

GRADES

D

Surface Water Quality Forest



D

GRADE

D

Surface Water Quality

Surface water quality monitoring of North Creek on Patterson Road was initiated in 2004 and was given an overall grade of D. The water quality of this watershed regularly exceeded the provincial guidelines for phosphorus and *E. coli*. The concentrations of these parameters have remained unchanged since 2004. Algal blooms occurred regularly at this site due to high phosphorus concentrations. The benthic community found in this watershed mainly consisted of pollutant tolerant animals and indicated impaired water quality. Watershed initiatives that reduce nutrient and bacteria contamination will improve the water quality of North Creek.

Indica	Indicators		Provincial Guideline	Indicator Description
Phoenhorus	(µg/L)*	370	30	Phosphorus is found in products such as soap, detergent, and fertilizer as
Phosphorus	Grade	F	В	and rivers
Bacteria	(<i>E. coli/</i> 100ml)**	441	100	<i>E. coli</i> is a fecal coliform bacteria found in human and animal (livestock/wildlife/pets) waste and, in water, indicates fecal contamination
	Grade	D	В	<i>E coli</i> is a strong indicator for the potential to have other disease-causing organisms in the water.
Benthic	(FBI)	5.81	<5.00 (Target Only)	Benthic organisms (aquatic invertebrates that live in stream sediments) are good indicators of water quality and stream health. The Family Biotic Index
Dentific	Grade	D	В	(FBI) scores each taxa according to its pollution tolerance.

*75th percentile, NPCA data. **Geometric mean, NPCA data. Province-wide Grading System used.

Forest Conditions

The forest condition indicators for North Creek watershed produced an overall grade of D. The Forest Cover % received a grade of C due in part to several mid-sized forest patches in the headwaters of the watershed. The Forest Interior % grade of F was well below the provincial standard. This grade can be attributed to the lack of connectivity between the forest patches that do remain. The Riparian Zone Forested % received a grade of D as the vegetation that does exist along watercourses is largely successional in nature.

Indicators		2007 - 2011	S. Ont. Target**	Indicator Description
Forest Cover	%	18	30	Percent forest cover is the percentage of the watershed that is forested or
rorest cover	Grade	С	В	wooded. Forest cover includes upland and lowland forest types.
Forest Interior	%	2.2	10.0	Percent forest interior is the percentage of the watershed that is forested interior. Forest interior is the protected core area 100 m inside a woodlot that
	Grade	F	В	some bird species require to nest successfully. The outer 100 m is considered 'edge' habitat and is prone to high predation, wind damage and alien species invasion.
Riparian Zone Forested	%	19.0	50.0	Percent riparian zone forested is a measure of the amount of forest cover within a 30 m riparian/buffer zone adjacent to all open watercourses. Riparian
	Grade	D	В	habitats support high numbers of wildlife species and provide an array of ecological functions.



Upper Twenty Mile Creek

2012 Watershed Report Card

Surface Water Quality

GRADES

D



D

Surface Water Quality

Surface water quality monitoring of the upper Twenty Mile Creek on Woodburn Road was initiated in 2002 and was given an overall grade of D. The water quality of this watershed regularly exceeded provincial guidelines for phosphorus and *E. coli*. Concentrations of phosphorus have been increasing since 2002 suggesting that water quality conditions are becoming more stressed. The benthic community found in this watershed mainly consisted of pollutant tolerant animals and indicated impaired water quality. Watershed initiatives that reduce nutrient and bacteria contamination will improve the water quality of the Twenty Mile Creek at this site.

Indica	Indicators		Provincial Guideline	Indicator Description
Phoenhorus	(µg/L)*	320	30	Phosphorus is found in products such as soap, detergent, and fertilizer as
Phosphorus	Grade	F	В	and rivers
Bacteria -	(<i>E. coli/</i> 100ml)**	162	100	<i>E. coli</i> is a fecal coliform bacteria found in human and animal (livestock/wildlife/pets) waste and, in water, indicates fecal contamination.
	Grade	С	В	<i>E coli</i> is a strong indicator for the potential to have other disease-causing organisms in the water.
Benthic	(FBI)	7.88	<5.00 (Target Only)	Benthic organisms (aquatic invertebrates that live in stream sediments) are good indicators of water quality and stream health. The Family Biotic Index
	Grade	F	В	(FBI) scores each taxa according to its pollution tolerance.

*75th percentile, NPCA data. **Geometric mean, NPCA data. Province-wide Grading System used.

Forest Conditions

GRADE

D

The forest condition indicators for Upper Twenty Mile Creek watershed produced an overall grade of D. The Forest Cover % received a grade of D due in part to several mid-sized forest patches in the central portion of the watershed. The Forest Interior % grade of F was well below the provincial standard. This grade can be attributed to the lack of connectivity between the forest patches that do exist. The Riparian Zone Forested % received a grade of D as the vegetation that does exist along watercourses in most of the watershed is largely successional in nature.

Indicators		2007 - 2011	S. Ont. Target**	Indicator Description
Forest Cover	%	10	30	Percent forest cover is the percentage of the watershed that is forested or
Forest Cover	Grade	D	В	wooded. Forest cover includes upland and lowland forest types.
Forest Interior	%	0.2	10.0	Percent forest interior is the percentage of the watershed that is forested interior. Forest interior is the protected core area 100 m inside a woodlot that
	Grade	F	В	some bird species require to nest successfully. The outer 100 m is considered 'edge' habitat and is prone to high predation, wind damage and alien species invasion.
Riparian Zone Forested	%	16.0	50.0	Percent riparian zone forested is a measure of the amount of forest cover within a 30 m riparian/buffer zone adjacent to all open watercourses. Riparian
	Grade	D	В	habitats support high numbers of wildlife species and provide an array of ecological functions.



Lower Twenty Mile Creek

2012 Watershed Report Card

GRADES

Surface Water Quality

Forest **Conditions**



С

Surface Water Quality

Surface water quality monitoring of the Twenty Mile Creek on 21st Street was initiated in 2003 and was given an overall grade of C. This site represents the entire Twenty Mile Creek watershed and the water quality regularly exceeded the provincial guideline for phosphorus but met the guideline for *E. coli*. This portion of the watershed was prone to algal blooms in the summer likely due to high nutrients. The benthic community found in this watershed consisted of a mix of pollutant tolerant and pollutant sensitive animals and nearly reached the Benthic Indicator target. Watershed initiatives that reduce nutrient contamination will improve the water quality.

Indicators		2007 - 2011	Provincial Guideline	Indicator Description
Phoenhorus	(µg/L)*	205	30	Phosphorus is found in products such as soap, detergent, and fertilizer as
Phosphorus	Grade	F	В	and rivers
Bacteria(E. coli/ 100ml)**99100E. coli is a fecal coliform bacteria found (livestock/wildlife/pets) waste and, in w E coli is a strong indicator for the potent organisms in the water.	<i>E. coli</i> is a fecal coliform bacteria found in human and animal (livestock/wildlife/pets) waste and, in water, indicates fecal contamination.			
	Grade	В	В	<i>E coli</i> is a strong indicator for the potential to have other disease-causing organisms in the water.
Benthic	(FBI)	5.13	<5.00 (Target Only)	Benthic organisms (aquatic invertebrates that live in stream sediments) are good indicators of water quality and stream health. The Family Biotic Index
Dentint	Grade	С	В	(FBI) scores each taxa according to its pollution tolerance.

*75th percentile, NPCA data. **Geometric mean, NPCA data. Province-wide Grading System used.

Forest Conditions

GRADE

D

The forest condition indicators for Lower Twenty Mile Creek watershed produced an overall grade of D. The Forest Cover % received a grade of C due in part to several large forested patches in the central watershed along Tintern Road and within the valleylands. The Forest Interior % grade of F was well below the provincial standard. This grade can be attributed to the lack of connectivity between the forest patches that do remain. The Riparian Zone Forested % received a grade of D despite the fact that many of the forested areas that remain are within the Twenty Mile Valley.

Indicato	ors	2007 - 2011	S. Ont. Target**	Indicator Description
Forest Cover	%	14	30	Percent forest cover is the percentage of the watershed that is forested or
rorest cover	Grade	С	В	wooded. Forest cover includes upland and lowland forest types.
Forest Interior	%	1.0	10.0	Percent forest interior is the percentage of the watershed that is forested interior. Forest interior is the protected core area 100 m inside a woodlot that
	Grade	F	В	some bird species require to nest successfully. The outer 100 m is considered 'edge' habitat and is prone to high predation, wind damage and alien species invasion.
Riparian Zone Forested	%	20.2	50.0	Percent riparian zone forested is a measure of the amount of forest cover within a 30 m riparian/buffer zone adjacent to all open watercourses. Riparian
	Grade	D	В	habitats support high numbers of wildlife species and provide an array of ecological functions.



Eighteen Mile Creek

2012 Watershed Report Card

Surface Water Quality

GRADES

D

D

Forest

Conditions



D

Surface Water Quality

Surface water quality monitoring of Eighteen Mile Creek on Honsberger Road was initiated in 2006 and was given an overall grade of D. The water quality of this watershed regularly exceeded the provincial guidelines for phosphorus and *E. coli*. Copper exceedances are also regularly observed in this watershed and currently are being investigated further. The benthic community found in this watershed mainly consisted of pollutant tolerant animals and indicated impaired water quality. Watershed initiatives that reduce nutrient and bacteria contamination will improve the water quality of Eighteen Mile Creek.

Indica	Indicators		Provincial Guideline	Indicator Description
Dhocphorus	(µg/L)*	400	30	Phosphorus is found in products such as soap, detergent, and fertilizer as
Phosphorus	Grade	F	В	and rivers
Bacteria	(<i>E. coli/</i> 100ml)**	230	100	<i>E. coli</i> is a fecal coliform bacteria found in human and animal (livestock/wildlife/pets) waste and, in water, indicates fecal contamination.
	Grade	С	В	<i>E coli</i> is a strong indicator for the potential to have other disease-causing organisms in the water.
Benthic(FBI)6.30<5.00 (Target Only)Benthi good in (FBI) soGradeDB(FBI) so	Benthic organisms (aquatic invertebrates that live in stream sediments) are			
	Grade	D	В	(FBI) scores each taxa according to its pollution tolerance.

*75th percentile, NPCA data. **Geometric mean, NPCA data. Province-wide Grading System used.

Forest Conditions

GRADE

D

The forest condition indicators for Eighteen Mile Creek watershed produced an overall grade of D. The Forest Cover % received a grade of D due in part to one large corridor in the central watershed south of King Road between Seventeenth and Nineteenth Streets. The Forest Interior % grade of F was well below the provincial standard. This grade can be attributed to the lack of connectivity between the forest patches that do remain. The Riparian Zone Forested % received a grade of D as the vegetation that does exist along watercourses is successional in nature.

Indicators		2007 - 2011	S. Ont. Target**	Indicator Description
Forest Cover	%	11	30	Percent forest cover is the percentage of the watershed that is forested or wooded. Forest cover includes upland and lowland forest types.
	Grade	D	В	
Forest Interior	%	0.5	10.0	Percent forest interior is the percentage of the watershed that is forested interior. Forest interior is the protected core area 100 m inside a woodlot that some bird species require to nest successfully. The outer 100 m is considered 'edge' habitat and is prone to high predation, wind damage and alien species invasion.
	Grade	F	В	
Riparian Zone Forested	%	22.8	50.0	Percent riparian zone forested is a measure of the amount of forest cover within a 30 m riparian/buffer zone adjacent to all open watercourses. Riparia habitats support high numbers of wildlife species and provide an array of ecological functions.
	Grade	D	В	



Sixteen Mile Creek

2012 Watershed Report Card

GRADES Surface D

D

Water Quality

Forest **Conditions**



Area of Natural and Scientific Interest Municipal Boundary

Surface Water Quality

GRADE

D

Surface water quality monitoring of Sixteen Mile Creek on 4th Avenue was initiated in 2006 and was given an overall grade of D. The water quality of this watershed regularly exceeded the provincial guidelines for phosphorus and *E. coli*. The concentrations of these parameters have remained unchanged since 2006. High concentrations of total suspended solids from upstream erosion have also been observed in this watershed. The benthic community found in this watershed mainly consisted of pollutant tolerant animals and indicated impaired water quality. Watershed initiatives that reduce nutrient and bacteria contamination will improve the water quality of Sixteen Mile Creek.

Indicators		2007 - 2011	Provincial Guideline	Indicator Description
Phosphorus	(µg/L)*	272	30	Phosphorus is found in products such as soap, detergent, and fertilizer as well as waste, and contributes to excess algae and low oxygen in streams and rivers
	Grade	F	В	
Bacteria	(<i>E. coli/</i> 100ml)**	286	100	<i>E. coli</i> is a fecal coliform bacteria found in human and animal (livestock/wildlife/pets) waste and, in water, indicates fecal contamination. <i>E coli</i> is a strong indicator for the potential to have other disease-causing organisms in the water.
	Grade	С	В	
Benthic	(FBI)	6.53	<5.00 (Target Only)	Benthic organisms (aquatic invertebrates that live in stream sediments) are good indicators of water quality and stream health. The Family Biotic Index (FBI) scores each taxa according to its pollution tolerance.
	Grade	F	В	

*75th percentile, NPCA data. **Geometric mean, NPCA data. Province-wide Grading System used.

Forest Conditions

GRADE

D

The forest condition indicators for Sixteen Mile Creek watershed produced an overall grade of D. The Forest Cover % received a grade of C due in part to a large corridor in the headwaters north of Pelham Road between Seventeenth and Eleventh Streets. The Forest Interior % grade of F was well below the provincial standard. This grade can be attributed to the lack of connectivity between the forest patches in other areas of the watershed. The Riparian Zone Forested % received a grade of D due to the vegetation adjacent to the creek mostly in the lower reaches.

Indicators		2007 - 2011	S. Ont. Target**	Indicator Description
Forest Cover	%	16	30	Percent forest cover is the percentage of the watershed that is forested or wooded. Forest cover includes upland and lowland forest types.
	Grade	С	В	
Forest Interior	%	1.8	10.0	Percent forest interior is the percentage of the watershed that is forested interior. Forest interior is the protected core area 100 m inside a woodlot that some bird species require to nest successfully. The outer 100 m is considered 'edge' habitat and is prone to high predation, wind damage and alien species invasion.
	Grade	F	В	
Riparian Zone Forested	%	20.1	50.0	Percent riparian zone forested is a measure of the amount of forest cover within a 30 m riparian/buffer zone adjacent to all open watercourses. Riparia habitats support high numbers of wildlife species and provide an array of ecological functions.
	Grade	D	В	



Fifteen Mile Creek

2012 Watershed Report Card

Surface Water Quality

GRADES

D

D

Forest Conditions



D

GRADE

D

Surface Water Quality

Surface water quality monitoring of Fifteen Mile Creek on Glass Avenue was initiated in 2003 and was given an overall grade of D. The water quality of this watershed regularly exceeded the provincial guidelines for phosphorus and *E. coli*. The concentrations of these parameters have remained unchanged since 2003. Algal blooms occurred regularly at this site due to high phosphorus concentrations. The benthic community found in this watershed mainly consisted of pollutant tolerant animals and indicated impaired water quality. Watershed initiatives that reduce nutrient and bacteria contamination will improve the water quality of Fifteen Mile Creek.

Indicators		2007 - 2011	Provincial Guideline	Indicator Description
Phosphorus	(µg/L)*	300	30	Phosphorus is found in products such as soap, detergent, and fertilizer as well as waste, and contributes to excess algae and low oxygen in streams and rivers
	Grade	F	В	
Bacteria	(<i>E. coli/</i> 100ml)**	169	100	<i>E. coli</i> is a fecal coliform bacteria found in human and animal (livestock/wildlife/pets) waste and, in water, indicates fecal contamination. <i>E coli</i> is a strong indicator for the potential to have other disease-causing organisms in the water.
	Grade	С	В	
Benthic	(FBI)	6.04	<5.00 (Target Only)	Benthic organisms (aquatic invertebrates that live in stream sediments) are good indicators of water quality and stream health. The Family Biotic Index (FBI) scores each taxa according to its pollution tolerance.
	Grade	D	В	

*75th percentile, NPCA data. **Geometric mean, NPCA data. Province-wide Grading System used.

Forest Conditions

The forest condition indicators for Fifteen Mile Creek watershed produced an overall grade of D. The Forest Cover % received a grade of C due to several large forested patches in the headwaters south of Highway 20 and in the central section of the system along Roland Road. The Forest Interior % grade of F was well below the provincial standard. This grade can be attributed to the lack of connectivity between the forest patches that remain. The Riparian Zone Forested % received a grade of D due in part to the corridor north of Pelham Road.

Indicators		2007 - 2011	S. Ont. Target**	Indicator Description
Forest Cover	%	19	30	Percent forest cover is the percentage of the watershed that is forested or wooded. Forest cover includes upland and lowland forest types.
	Grade	С	В	
Forest Interior	%	2.3	10.0	Percent forest interior is the percentage of the watershed that is forested interior. Forest interior is the protected core area 100 m inside a woodlot that some bird species require to nest successfully. The outer 100 m is considered 'edge' habitat and is prone to high predation, wind damage and alien species invasion.
	Grade	F	В	
Riparian Zone Forested	%	24.9	50.0	Percent riparian zone forested is a measure of the amount of forest cover within a 30 m riparian/buffer zone adjacent to all open watercourses. Riparia habitats support high numbers of wildlife species and provide an array of ecological functions.
	Grade	D	В	