St. Clair Region Conservation Authority

Clean Up Rural Beaches (CURB)
Implementation Program
Year 3
Annual Report

April 1, 1994 to March 31, 1995

CURB
CLEAN UP RURAL BEACHES

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Prepared for:
Ontario Ministry of the Environment and Energy

ST. CLAIR REGION CONSERVATION AUTHORITY

Ontario

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1.0 BACKGROUND

The Clean Up Rural Beaches (CURB) Implementation Program is a $57 million financial assistance program initiated by the Ontario Ministry of the Environment (MOE) in 1991. The program is proposed to operate for 10 years, closing in the year 2001. The goal of the program is to improve the water quality at rural beaches by providing landowners in designated CURB watersheds with grant money to repair problems on the farm and homestead which have been contributing bacteria to surface waters.

Designated CURB watersheds are those watersheds in the province which have been identified as having an impact on a downstream beach. Under the Provincial Rural Beaches Program, Conservation Authorities were funded to study these watersheds and produce a CURB Plan. The CURB Plan is a report which identifies the relative impact of pollution sources in the watershed and the amount of money and clean-up needed to restore acceptable water quality at the beaches.

Participating Conservation Authorities administer the CURB Implementation Program at the local level for a 5-year period. A fixed amount of grant money is allocated to each Authority annually for water quality improvement projects. A local Steering Committee is set up to oversee the program, approve/deny projects and ensure the money is spent in a cost-effective manner. Each local committee is made up of five voting members and includes representatives from:

Ministry of the Environment and Energy (MOEE)
Ontario Ministry of Agriculture and Food (OMAF)
Ontario Soil and Crop Improvement Association (OSCIA)
Ministry of Health or Health Unit
Conservation Authority (acts as Chair)

The St. Clair Region Conservation Authority (SCRCA) completed CURB Plans on four watersheds within its jurisdiction in 1992. In the spring of 1992, the SCRCA received approval and funding from the MOEE to begin the Implementation Program in these 4 watersheds. The following year (1993) additional watersheds along Lake Huron were added and in 1994 two along the St. Clair River were included.

2.0 YEAR THREE IN REVIEW

2.1 Watersheds

The Baby and Clay Creek watersheds along the St. Clair River were added to the list of eligible watersheds in 1994. This was in response to a sampling study conducted in 1993 which showed that these rural watersheds were a source of bacterial pollution to the public beaches along the St. Clair River. A portion of Bosanquet Township which is not governed by a Conservation Authority, was facilitated by the SCRCA in 1994 as well (formerly facilitated by the ABCA). This brought the total area of eligibility to 798 km^2. Figure 1 illustrates the location of all CURB watersheds within the SCRCA. A list of these watersheds along with their size and the beaches they impact is given in Table 1.

2.2 Advertising

Single page flyers advertising the CURB Program were sent general delivery to homes in most of the eligible areas in late March. Some flyers were put into mailboxes by hand in those watersheds which did not conform with rural route boundaries (eg. Coldstream). This early date was chosen avoid the busy spring period farmers experience. Due to the relatively small and irregular shape of the watersheds, flyers were felt to be more cost-effective than newspaper advertising or local workshops/open houses. There was a good response from these flyers and many calls were received within a few weeks of the deliveries. A copy of this flyer is included in the Appendices.

A news release summarizing the first two years of the program was sent to local newspapers. In August, an editorial was published in the London Free Press in response to an earlier editorial which over-simplified water pollution problems. In January of 1995 two articles were submitted to the local Soil and Crop Improvement Association Newsletter. They discussed raised septic beds and manure storages. All of these articles are included in the Appendices.

Presentations were made to two township councils (Bosanquet and Enniskillen). A report in the SCRCA Annual Report provided highlights of the program. The provincial advertising provided through MOEE Toronto also generated a few inquiries. The CURB display was also set up and staffed at Sarnia's Enviro-Festival from June 24-25, 1994. Hundreds of school children and the public attended.

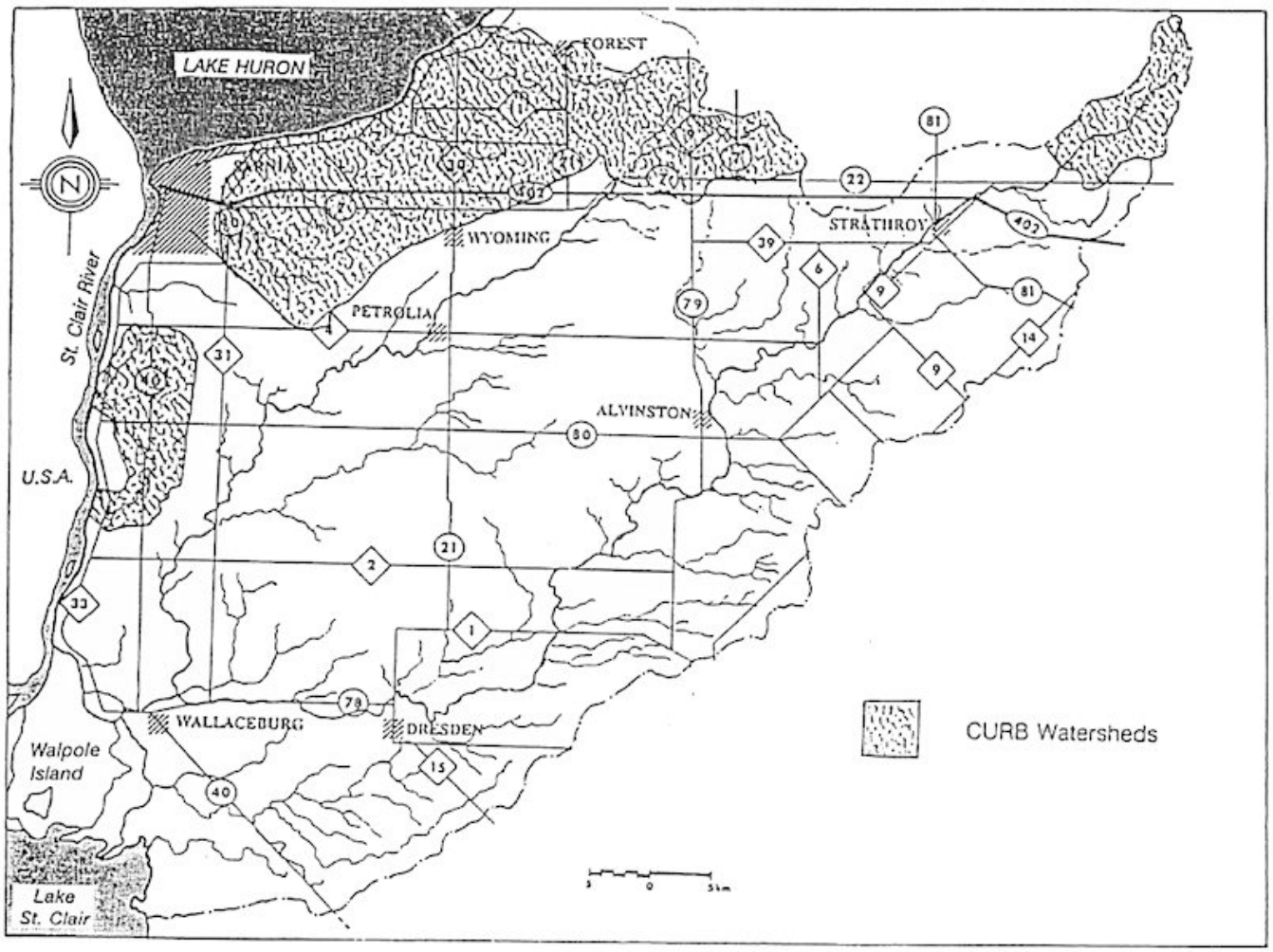


Figure 1: Location of the CURB Watersheds within the SCRCA**.**

Table 1. St. Clair Region Conservation Authority CURB Watersheds

Watercourse	Beaches Impacted	Watershed Area (km^2)
Upper East Sydenham R.	Coldstream Conservation Area	59
Bear Creek	Warwick Conservation Area	81
*Lake Huron Tributaries**		
Hickory Creek	Hillsboro Beach	64
Two small creeks	Fisher, Invercairn and Hillcrest Height Beaches	6
Highland Creek	Highland Glen Conservation Area and Gallimere Beach	38
Aberarder Creek	Highland Glen Conservation Area	49
Blue Point creeks	Blue Point, Blue Point Bay Beaches	9
Patterson Creek	C.J. McEwen Conservation Area, Baldwin, Point View and Bonnie Doon Subdivision Beaches	59
Small creeks/drains	California Avenue Beaches	3
Errol Creek	Errol Beach	19
Perch Creek	Bright's Grove Public Beach, Huron Heights, Eton Court and Murphy Subdivision Beaches	68
Pulse Creek	Sarnia beaches west of Bright's Grove	145
St. Clair River Tributaries		
Baby Creek	Willow Park	25
Clay Creek	Cathcart and Lambton-Cundick Park	57
Bosanquet Township **	Ipperwash Public Beach and shoreline areas to the west	116
TOTAL		798

* Beaches Impacted along Lake Huron varies according to wind/current direction. The beaches listed are all located west of the creek mouth in the direction of the St. Clair River, but often the surf/current pushes water north-east, towards Grand Bend.

** Portion of Bosanquet Township not inside ABCA or SCRCA boundaries.

2.3 Projects

In total, 31 projects were approved by the local committee in 1994, totalling $137,100 in grant dollars. The Implementation Committee was permitted to allocate beyond the budget of $90,000 since it was expected that not all landowners would actually complete their projects. This was, in fact, what happened.

By year end, 12 projects were completed and $35,513.45 was paid out to these 9 landowners. Three landowners did two projects which accounts for the smaller number of landowners than projects. Three projects were carry-overs (re-applications) from 1993. Table 2 summarizes the numbers and types of projects completed since the CURB Program began in 1992. The last line shows the number of projects approved which represents about two or three times the number completed. Table 3 contains a more detailed list of each project completed in 1994.

Table 2. Summary of CURB Projects completed in Years 1, 2 and 3.

Project	1992		1993		1994	
	No.	Grant Paid	No.	Grant Paid	No.	Grant Paid
Septic System	1	$823.03	4	$ 14,115.82	5	$9,616.13
Manure Storage	3	$ 26,000.00	4	$ 23,883.67	3	$7,406.29
Cattle Access	1	$6,664.15	4	$ 16,397.38	2	$6,494.81
Milkhouse Washwater	0	$0	1	$1,469.51	2	$ 10,044,01
Total Spent	5	$ 33,487.18	12	$ 55,866.38	14	$ 33,561.24
Approved	14	$ 91,000.00	22	$117,000.00	31	$137,100.00

Table 3. Detailed List of 1994/95 Completed CURB Projects.

	NAME	PROJECT TYPE	DESCRIPTION	CODE	GRANT $
1		Septic	Filter Bed + Tank	03-029	2,000.00
2	N A M E S	Milkhouse (C + D)	Earthen pit containment	03-033	6,286.97
3		Storage (C+D)	Earthen runoff pit, walled pad	03-034	1,912.36
4		Septic	Tank and 146 m tile, in ground	03-032	2,000.00
5	N O T	Fencing	Page wire fence	02-009	1,619.81
6		Fencing	Spider fence, electric wire, solar panel	02-010	4,875.00
7	A V A I L A B L E	Storage	Eavestroughing	03-028	290.63
8		Milkhouse (C+D)	Earthen Pit	03-039	3,757.34
9		Storage	Earthen Runoff Pit	03-040	4,203.30
10		Septic	Tank and Filter Bed	03-036	2,000.00
11		Septic	Tank and 146 m tile, clay replacement	03-042	1,871.72
12		Septic	Tank, Pump, 146 m tile	03-044	1,796.00
			TOTAL		**$35,513.45**

The majority of the landowners completed their projects in the late summer and fall, as was expected. Unfortunately, many decided to postpone the work until the following year due to financial difficulties. Many delayed construction too long and then discovered they could not complete the work before winter and so they also postponed their projects until 1995/96. Table 4 summarizes these hold-over projects. Only three landowners cancelled, and these are listed in Table 5.

This has been a common scenario over the last two years. It was suggested that phoning the approved landowners in mid-late summer may re-fresh their minds about their projects and entice them to complete the projects sooner. Phone calls were made to the approved landowners in August to inquire about the status of their projects and again in fall and early winter. However, the large percentage of uncompleted projects remained. It is unclear what method could be used to ensure more projects are completed within the appropriate time frame.

All completed projects (except septic systems) were given the CURB sign to post on their properties. It is felt that this will further the promotion of the program. Several landowners indicated that they had discussed their projects with neighbours and this will also spread the word.

Four applications were denied in 1994. A manure storage project was denied due to the fact that the barn was recently built. Three septic proposals in the Ipperwash Beach area of Bosanquet Township were denied due to lack of evidence of surface water impairment. These homes had inadequate septic systems but due to the sandy nature of the soil, it was more probable that the local ground water was affected. It was doubtful that a lot of the pollutants would make their way to the beach several hundred meters away.

Overall, the Authority is pleased with the program and the positive feedback it has received from Board Members and the public. The figures in Table 2 indicate there has been a steady increase in the number of applicants over the three years the CURB Program has been in operation. This may be due to increased awareness about the program and the environment and/or an enlarged area of eligibility. It is anticipated that the level of interest will peak in the last two years of the program.

Table 4. Approved applicants who wish to re-apply in 1995.

	NAME	PHONE (519)	LOT + CONC, TWP	PROJECT	CODE	APPROX GRANT
1			Plympton	Storage	03-019	10,000
2	N		Warwick	Storage	03-023	5,000
3	A		N Warwick	Milkhouse	03-024	5,000
4	M		London	Septic	03-021	6,000
5	E		Plympton	Storage	03-022	6,000
6	S		N Warwick	Storage		5,000
7	R		Plympton	Fencing	02-008	12,000
8	E		Plympton	Fencing	02-011	1,000
9	M		Plympton	Storage	03-038	10,000
10	O		Sarnia	Septic	03-035	2,000
11	V		Warwick Village	Septic	03-037	2,000
12	E		Sarnia	Septic	03-041	2,000
13	D		Lobo	Fencing	02-012	2,250
14			Sarnia	Fencing	02-007	10,000
15			London	Storage	03-043	10,000
	TOTAL					$98,250

Table 5. Approved applicants who cancelled.

Name	Phone	Location	Project	Code	Grant
1		Bosanquet	Septic		$ 2,000
2			Milkhouse	03-030	$ 5,000
3			Storage	03-031	$ 6,000
4		Lakeshore Sarnia	Septic		$ 2,000

3.0 WATER QUALITY MONITORING

Water samples were taken at the mouths of the major creeks and beaches within the CURB area on alternate weeks from May 16 to October 11, 1994. Some sites were only sampled until August 22 due to laboratory cut-backs. This amounted to 11 samples at most sites and 7 at those that experienced a reduction. However, this does represent an increase from the eight samples taken in 1993 at the CURB sites.

The samples were analyzed by the MOEE laboratory in London. The parameters tested included:

E. coli	Suspended solids	Total + Soluble Phosphorus
streptococci	Ammonia	pH
P. aeruginosa	TKN	Conductivity
	Nitrate + Nitrite	Chloride

This by-weekly sampling was supplemented by weekly samples taken by the Lambton Health-Unit at certain beaches along the St. Clair River and Lake Huron. In fact, the sampling dates coincided so that a comparison could be made between the Health Unit results and the MOEE results. A preliminary examination of the data revealed that the results do support one another.

3.1 *E. coli* Levels

Table 6 lists the *E. coli* levels reported at each CURB sampling station throughout the season. A quick inspection will demonstrate the usual peaks and valleys in bacterial quality from week to week.

As expected, the rivers/creeks are consistently more contaminated than their respective beaches. In general, the creeks experience levels above the swimming objective of 100 *E. coli* organisms per 100 ml water (100/100 ml) over 50% of the time, while the beaches experience only occasional peaks in bacteria levels. The Lake Huron beaches were closed 1-2 times in 1994. Often, when one site experiences elevated bacteria levels, the rest do as well.

Table 6. *E. coli* levels at all sampling stations in 1994.

Station :	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
May 16	620	840	210	150	180	30	1300	20	70		10	260	370	20	700	24	40	10	8400
May 30	180	10	50	10	40	10	480	10	80	10	30	20	140	10	150	30	4	8	24000
Jun 13	310	20	300	10	40	8	1000	8	140	4	92	12	620	24	330	140	40	16	380000
Jun 27	460	208	540	380	400	400	2100	260	1500	780									
Jul 11	240	100	250	40	280	10	3300	10	50	12	28	4	440	4	280	330	30	20	1000
Jul 25	470	100	270	100	400	40	1000	10	900	310	70	570	1000	8	100	40	30	12	1000
Aug 8	520	30	190	30	80	20	1100	4	150	80	140	110	370	16	100	20	30	30	1000
Aug 22	250	4	156	10	670	36	2800	28	700	60									
Sep 12	100	200	320	100	50	10	1000	10			20		240	10	150	16			190000
Gx	306	59	217	44	148	24	1333	15	220	48	40	50	385	11	204	46	24	14	10551

Gx = Geometric Mean Concentration

Station No.

1	Sydenham River	7	Perch/Cow Creek	14	Willow Park (St. Clair River)
2	Coldstream CA Beach	8	Bright's Grove Beach (Lake)	15	Clay Creek
3	Bear Creek	9	Pulse Creek	16	Lambton—Cundick Park (St. Clair River)
4	Warwick CA Beach	10	Huron Shores Beach (Lake)	17	Wadsworth Drain
5	Highland Creek	11	U/S of Talfourd Creek (St. Clair River)	18	MacDonald Park (Snye)
6	Highland Glen Beach (Lake)	12	Talfourd Creek	19	Ilderton Storm Sewer
		13	Baby Creek		

Samples collected along the St. Clair River showed good quality overall, but the more frequent and numerous samples taken by the Health Unit staff revealed sporadic peaks in *E. coli* levels above the standard.

Perch/Cow Creek near Bright's Grove continues to be the most polluted watercourse with *E.coli* levels commonly in the 1000-3000/100 ml range. Other creeks rarely reached 1000/100 ml. The drains along the southerly end of the St. Clair River showed good results, never exceeding the standard. However, these sites were sampled less frequently than the others due to laboratory loading cutbacks and their watersheds are quite small.

The inland reservoirs (Coldstream and Warwick) show significantly higher *E. coil* levels than the beaches along Lake Huron or the St. Clair River. Again, this is to be expected since they exist in a closed system with their sole or major water source being the contaminated inflowing creeks. One would expect even higher levels if there was a lot of activity in the water (eg. swimmers). These beaches are permanently posted by the Health Unit and so the water remains relatively undisturbed. The contaminated sediments are less likely to re-suspend bacteria into the water column if there is no activity.

E. coli levels in 1994 are fairly similar to those recorded in 1993 and 1992 (see Appendices). Levels are somewhat lower in 1994 but several factors may account for this. In 1993 there was a week when all of the stations reported exceptionally high bacteria levels. This skewed the geometric means. In addition, there was a shorter sampling season in 1993. Longer term sampling is necessary to draw any conclusions about trends.

Station #15 at Clay Creek showed some dramatic changes. In 1993 the geometric mean was 3374/100 ml, but dropped to 186/100 ml in 1994. The sampling location was moved one road upstream in 1994 and this may suggest a localized input near the mouth. Additional sampling is required. Two fencing projects were completed near this site in late 1994 and this may have some influence.

Sewer projects in three CURB watersheds are well underway and completion is expected in 1995. These projects are located in the Village of Ilderton upstream of Coldstream, along the Lake Huron shoreline in Plympton Twp., and along the St. Clair River in Moore and Sombra Townships. Continued sampling may demonstrate some improvement.

3.2 Weather and Sampling Frequency

Weather conditions appear to play a more important role in elevated E. coli levels along the Lake Huron waterfront than along the St. Clair River. The lake is affected by wind, waves, churning action, seiches, and the formation of sandbars which block the creeks at various times. The St. Clair River, on the other hand, is less affected by these parameters, and river water tends to move steadily southward at a constant rate. The tributary creeks are open to the St. Clair River at all times as their banks are protected by seawalls.

Strong winds and to a lesser extent, high precipitation, appear to be correlated with elevated bacteria levels along the Lake Huron beaches. Health Units often advise the public to avoid swimming up to 48 hours after a rain event but it should be expanded too include high winds. During dry weather conditions, the creeks often flow very slowly or stagnate and do not discharge into the Lake due to the formation of sandbars across the mouth.

The low frequency of sampling (twice a month and one sample per site) does not permit a statistical comparison of weather and water quality. In 1993 one week of extremely high pollution levels skewed the geometric mean. Samples taken every 14 days may or may not pick up such extreme events in any given year. In addition, precipitation readings are only accurate at the weather station where the information is collected. Precipitation is highly variable, especially in the summer when localized storms are common. To overcome this, stream flow is recorded at each sampling site (creek) and this, of course, reflects precipitation patterns in that watershed.

The point should not be belaboured too much since the CURB Model has already established that some pollution sources discharge continuously and some are precipitation-driven. The aim is to eliminate the pollution source since weather cannot be controlled.

3.3 Special Water Samples

A water sample was collected from a field tile outlet following liquid manure spreading. The sample was taken at the farm of a landowner who completed a manure storage project (sampling was a condition of approval). The bacteria results in Appendix A reveal that the tiles were picking up manure, even though flow was quite small. This highlights the need to investigate better methods to apply liquid manure. Large storages alone do not eradicate pollution from spreading.

Another sample was collected from a field tile outlet following liquid manure spreading using a till and inject spreader. Bacteria results were not available, but the chemical analysis does not indicate severe pollution. This equipment should be studied further.

The experimental Peat Bed Septic System installed in 1993 did not produce much data in 1994. The sample bucket underneath the tile failed to collect water. This suggest that the peat has a great absorption capacity or does not saturate to the point that liquid can be collected from a small area (one inverted perforated pipe). A piezometer installed at the foot of the bed also experienced problems. A larger diameter piezometer is to be installed to draw and hold more water. Results should be forthcoming in 1995.

Table 7. Results of Special Samples

a) Cates Farm, Liquid Manure, Irrigation

No.	Time	Fecal *streptococci*	*Pseudomonas aeruginosa*	*E. coli*
1	4:30 pm 18 May 94	159	<4	10
2	9:00 pm 18 May 94	15,000	<10	100
3	7:30 am 19 May 94	21,000	<10	200

Notes:
- windy, soil fairly dry, very little rain previously, small flow coming out of tile outlet
- about 30 cm water sitting in bottom of drain next to outlet (sampled here)
- spread on wheat ground, some residue - used irrigation equipment, some pooling at pipe joints, puddles over tiles - spread on 4-6 acres between moving equipment, about 30 acres in total
- estimated spread at about 4600-6000 gallons per acre

b) Graham Farm, Liquid Manure, Till and Inject, August 4, 1994

No.	SS	Amm	TKN	Nitrite	Nitrate	T.P.	S.P.	pH	Cl	Cond
1	480	0.10	17.8	0.03	0.1	5.8	1.61	6.58	23.2	459
2	563	1.21	7.43	0.96	3.1	2.0	0.82	6.91	12.0	341

Notes:
- spread on hay residue, dry soil, absorbed quickly, no puddling
- tile didn't start running until a day or two after spreading

APPENDICES

St. Clair Region Conservation Authority

Fact Sheet

205 Mill Pond Crescent, Strathroy, Ontario
N7G 3P9 245-3710

Grant available for home and farm projects which improve water quality

The Clean Up Rural Beaches (CURB) Program is providing financial assistance to landowners to repair or replace systems which are presently polluting local surface water bodies (watercourses and lakes). The grant is offered to those in the Upper East Sydenham River watershed upstream of the Coldstream Conservation Area.

If you are aware of problems and would like to make improvements, you may be eligible for a grant under the CURB Program. All inquiries are treated with the strictest of confidence. The following projects are eligible:

ELIGIBLE ITEMS	GRANT RATE	GRANT CEILING
Septic system repair	50%	$ 2,000
Livestock access restriction	75%	$10,000
Milkhouse washwater treatment	50%	$ 5,000
Manure containment and storage	50%	$12,000

For further information contact the
St. Clair Region Conservation Authority

CURB is offered in cooperation with the
Ontario Ministry of the Environment + Energy
and several Conservation Authorities

Ontario

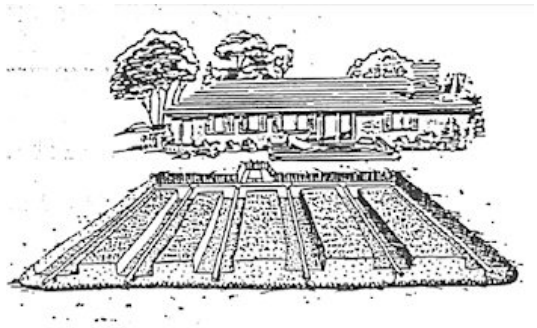
CURB
CLEAN UP RURAL BEACHES

FAULTY SEPTIC SYSTEMS HAVE DIRECT IMPACT ON WATER QUALITY AT LOCAL BEACHES

Septic systems have a great potential for contaminating our local beaches. Systems that are not functioning properly, or not treating all of the waste water, are polluting the creeks and downstream beaches.

The result of these pollutants entering our creeks and beaches is poor water quality, and may pose a health risk to swimmers. High bacteria levels cause skin, eye, ears, nose, and throat infections and may lead to stomach disorders. Excessive phosphorus levels enhance algae growth which will deplete oxygen supplies and release toxins as it decomposes, resulting in an unhealthy habitat for aquatic life. Nitrates in the water represent the threat of "blue baby" syndrome in infants, and increases the risk of scours in livestock operations. Human body wastes may contain parasitic worms, eggs and larvae, as well as microbial pathogens and parasites. Improper disposal of these wastes pose a serious health threat as numerous diseases and viruses may be spread if household wastes are not properly treated.

Not enough people realize the damage that can occur when septic systems are not properly constructed or maintained. As long as the toilets flush, the sinks don't back up, and the laundry water runs away, most of us are content to remain oblivious as to where our wastes ends up. Studies conducted by the St. Clair Region Conservation Authority indicate that failed septic systems are the leading source of bacterial pollution in many watersheds.



Typical Layout of Septic Tank Tile Bed System

Many septic systems may only be handling sewage wastes, while "grey water" (wash water from laundry and dishwashing facilities) is being disposed of through farm drainage tiles, storm sewers, or by being tiled directly into a watercourse. For many years grey water was not considered to be a pollutant. Research, however, has indicated that grey water contains excessive levels of phosphorus, bacteria, and dissolved solids. Therefore, all grey water must be handled in a septic system.

The purpose of the septic tank is to treat and store the solid part of the waste and disperse the liquid portion into a weeping bed. When septic systems are poorly installed or maintained, the waste will contaminate local water sources with bacteria and excessive nutrients.

Properly constructing and maintaining your system will protect your investment and the quality of water in our creeks and lakes.

St. Clair Region Conservation Authority

ST. CLAIR REGION CONSERVATION AUTHORITY
205 Mill Pond Crescent, Strathroy, Ontario, N7G 3P9 Tel.: 519-245-3710
Fax: 519-245-3348

News Release

Grants popular to improve rural water quality

1993 marked the second year the St. Clair Region Conservation Authority offered grants to rural landowners in designated watersheds to repair systems which were polluting local creeks and beaches. The grant was offered through the Ministry of the Environment and Energy's Clean Up Rural Beaches (CURB) Implementation Program.

Over the last two years, approximately $90,000 was paid to 15 landowners who completed 18 projects around their farms and homesteads. The projects included 5 septic system repairs/replacements, 5 fencing projects to restrict cattle from watercourses, 7 manure storage/barnyard runoff projects and I milkhouse washwater containment project. the grant covers 50-75% of the total project cost up to a maximum dollar value set for each type of project. The landowners provide the remaining amount.

Authority and Ministry staff are pleased with the growing interest this voluntary program has generated in the agricultural and rural communities.

Cathy Quinlan, facilitator of the program commented that "Many landowners arc aware of the pollution leaving their properties. The CURB Program offers the technical and financial assistance needed to correct the problems properly. The landowners benefit from a cleaner, healthier property and the entire downstream watershed benefits as well, especially the local swimming beach."

Ms Quinlan noted that there is already a lot of interest in the program for 1994. The program will run for another three years, ending March 31, 1997. Landowners who live in the following watersheds are eligible: Upper East Sydenham river upstream of the Coldstream Conservation Area, ear Creek upstream of the Warwick Conservation Area, all creeks which discharge directly into Lake Huron, and Baby and Clay Creeks along the St. Clair River. Anyone interested in the CURB Program is invited to contact the Conservation Authority at 245-3710.

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For further information contact:
Cathy Quinlan, Water Quality Technician
St. Clair Region Conservation Authority
205 Mill Pond Crescent
Strathroy, Ontario, N7G 3P9

Working together for a better environment.

London Free Press, Aug. 13, 1994

Farmers cause lake pollution

There is much uproar in the paper about pollution of the Lake Huron beaches, but no one seems to get to the root of the problem.

The reason these waters are polluted is that farmers spread liquid manure on the land, which in 20 minutes has seeped into the tile drains after a heavy rain. The drains run into the creeks and the creeks run into the lake. When I had a cottage at Ipperwash, I sent a water sample to the ministry of Health in Sarnia. The analysis came back. "agricultural runoff."

KEITH McKENNA
St. Marys

Editorial Response, London Free Press

Sources of lake pollution are many

It is heartening to see people like Keith McKenna take an interest in the problems of water pollution. Mr. McKenna's editorial entitled "Farmers cause lake pollution" (Aug 13/94), however, described only one source of pollution - manure spreading.

We must take caution not to over-simplify the problems or to point fingers.

Contrary to the statement that "no one seems to get to the root of the problem", government and non-government organizations have been working together since the late 1980's at doing just that.

After years of extensive water sampling, literature review and experimentation, a model was developed to determine what the biggest sources of pollution are to a beach.

As you may guess, each creek and beach is unique depending on the landuse in its watershed. However, the most common sources of bacterial pollution in rural areas are: faulty septic systems, manure spreading, cattle defecating in creeks, runoff from barnyards and stacks, improper disposal of milkhouse washwater (from dairy operations), urban stormwater runoff, and numerous other smaller sources.

To help correct the problem, the Ministry of the Environment and Energy has devoted $57 million towards the Clean Up Rural Beaches (CURB) Program. Conservation Authority staff have been promoting and implementing this program in many parts of Ontario since 1991. Under this program rural landowners can apply for a grant to correct problems on their properties which have been contributing Io water pollution of local creeks and beaches.

Cathy Quinlan, Water Quality Technician
St. Clair Region Conservation Authority

Ted Briggs, Water Quality Specialist
Upper Thames River Conservation Authority

Raised Septic Beds - Excess Water, Excess Problems

Cathy Quinlan, Water Quality Technician
St. Clair Region Conservation Authority

Try talking about septic systems with a group of neighbours and see how long it takes the conversation to swing around to the topic of raised beds. I often hear people say raised beds don't work but no one will point to a specific case.

To determine the reality or magnitude of the problem, the Ausable-Bayfield Conservation Authority did a brief survey of home owners with raised beds in Middlesex County in 1994.

A total of the 197 surveys were mailed out and 40 were completed and returned. Owners were asked a variety of questions about their systems such as when it was installed, who installed it and who inspected it, how big is it, how often is it pumped out, how much water they used and how many people there were in the home. Owners were not required to identify themselves.

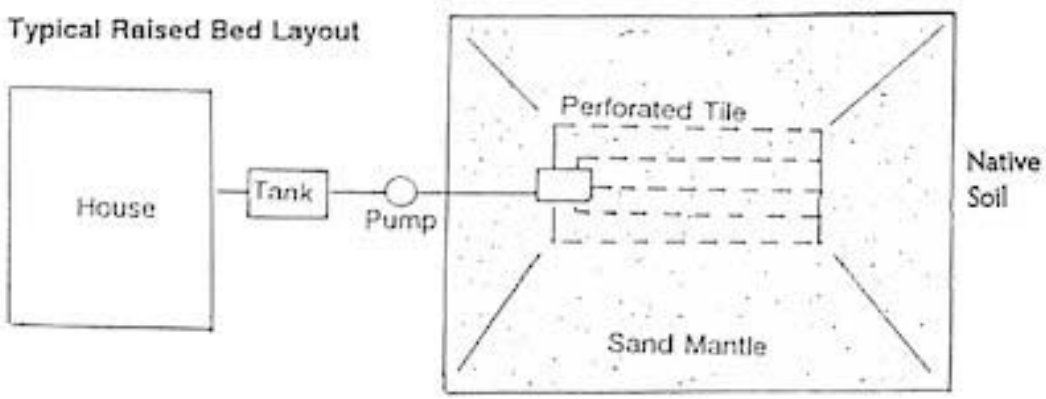
Of the 40 responses, 12 reported problems with their raised beds. The only significant difference between those with and without problems was the average rate of water consumption.

In homes reporting problems, water usage was three times higher than in homes reporting no problems. This suggests that excess water could be a major cause of raised bed failure.

Overloading any septic system (raised or in-ground) with more water than it was designed for leads to problems. Firstly, effluent won't sit in the septic tank as long as it should, leaving less time for solids to drop out. If solids enter the weeping bed, clogging can occur.

Secondly, the tile bed becomes oversaturated and a breakout occurs on the ground's surface. The soil can only absorb and treat effluent at a set rate. Once the sand mantle is saturated, the liquids then move through the clay layer. Evaporation is also an important factor in the proper functioning of a raised bed.

Homeowners can prolong the life of their systems by installing low-flow fixtures, fixing leaks, using the suds-saver on their washing machines, getting the tank pumped regularly, and avoid planting trees or shrubbery near the bed. Call your local Conservation Authority or approvals agency for free advice and/or brochures on how to care for your septic system.



Manure Storages.
An Option or a Necessity?

While carrying out my duties as Facilitator of the CURB (Clean Up Rural Beaches) Program, I see a lot of farmers who are interested in grants for manure storage facilities. Although every operation is different the common denominator is the desire of the farmer to control pollution and improve the way the manure is handled. However, not all of the problems my colleagues and I see across the province are old problems.

Years ago animal manure was thought to be a small factor in water pollution. As a result, barns were built with little regard for manure storage and so it is understandable that many old barnyards would be in need of remediation to meet today's standards. The CURB (Clean Up Rural Beaches) Grant Program is an excellent avenue for farmers with old problems to get a grant to repair them.

Today we know that manure is a concentrated source of nitrates, phosphates and bacteria which is great for soil fertility, but deadly for waterbodies. This is especially significant when you consider the fact that in many Counties (eg. Lambton), the number of domestic animals far out-weighs the number of humans.

We treat our human waste with a great deal of care in terms of requiring approvals and permits for septic systems. However, when dealing with a new barn or an expanded facility, there are no approvals required to ensure that the manure is properly stored or spread. Is there a way of doing this without significantly increasing the red tape or causing undue hardship on the farmer?

Most farmers consider the manure system as an integral part of their operation and treat it with the care it deserves. However, some prefer to get the barn up and worry about the manure later. Without the facilities and a plan in place, manure can be handled poorly leading to water pollution and complaints from neighbours. It would be a sad statement if we find ourselves spending tax dollars in the near future to fix manure storages for operations which were built in the 1990's.

Although we may not agree on what the ideal manure storage or manure plan would be, most would agree some minimum standard should be set. If we can be proactive instead of reactive, all the better. But how?

There are several options. Perhaps a manure management plan should be required before a Building Permit is issued, but who would be responsible for reviewing this documents? What about expanding the Environmental Farm Plan program to make it a requirement before new facilities are built? You may have your own ideas. I don't have the answers, but if we start talking about this problem, maybe the solution will emerge.

Cathy Quinlan
Water Quality Technician
St. Clair Region Conservation Authority

E. coli Levels at all Sampling Stations — — 1992

Station >	1	2	3	4	5	6	7	8	9
MAY 7	20	10	100	13	4	4	4	4	120
MAY 14	116	20	60	40	76	4	76	56	290
MAY 21	240	22	300	186	440	4	104	4	128
MAY 28	144	24	112	50	16	4	240	4	4
JUN 4	224	77	80	10	130	4	250	4	120
JUN 11	136	8	116	10	80	4	170	4	160
JUN 18	400	13	400	81	400	72	400	4	204
JUN 25	176	48	130	20	20	4	80	4	220
JUL 2	130	22	230	17	30	20	220	8	30
JUL9	400	300	1000	1000	1000	400	1000	12	1000
JUL 16	1100	890	1000	3200	3600	120	1600	705	1600
JUL 23	540	260	200	100	920	240	470	210	350
JUL 30	470	40	150	10	80	20	360	10	100
AUG 6	188	10	120	180	64	10	220	4	60
AUG 13	280	42	290	244	330	84	590	14	280
AUG 20	240	300	90	120	610	10	400	10	410
AUG 27	890	320	110	15	44	60	790	430	170
SEP 3	510	160	90	20	440	20	650	36	170
SEP 10	2500	6450	800	3750	2500	1400	4700	45	7500
SEP 24	500	200	200	350	300	10	10	55	100
OCT 27	80	30	40	120	60	70	50	10	
G MEAN	273	70	175	81	159	23	230	16	190

Station Locations:

1	Sydenham River	6	Highland Glen Beach (Lake)
2	Coldstream CA Beach	7	Perch/Cow Creek
3	Bear Creek	8	Bright's Grove Beach (Lake)
4	Warwick CA Beach	9	Pulse Creek
5	Highland Creek	10	Huron Shores Beach (Lake)

E.COLI LEVELS AT ALL STATIONS — — 1993

1993 #	1	2	3	4	7	8	15	16	17	18	1	2	5	7	9	11	18
1994 #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	18
Jun 7	40	150	220	10	160	10	270	10	10	10	10	405	240	10	55	135	25
Jun 21	120	150	410	220	4300	455	148000	4	16000	8	206	380	5500	180	13500	3000	230
July 5	50	10	360	50	420	10	770	10	90	40	240	145	300	285	9000	210	20
Jul 19	520	10	600	10	120	40	1000	210	100	20	276	100	470	340	4000	470	365
Aug 16	550	84	990	12	10	38	9400	10	80	20	220	15	300	105	575	35	60
Aug 30	280	60	570	12	164	4	1000	12	264	4	270	20	1000	205	77000	950	180
Sept 13	190	50	1900	6100	212	4	1000	4	9300	12	100	25	490	45	4050	105	55
Sept 27	164	4	240	680	48	8	1800	8	110	8	416	30	1060	35	3500	555	185
Gx	167	35	516	71	166	18	2186	12	273	12	155	69	642	94	3374	306	91

Notes:

1993 Station Numbers Converted to 1994/95 Numbers
Gx = Geometric Mean

Station Numbers and Locations:

1	Sydenham River	7	Perch/Cow Creek	13	Baby Creek
2	Coldstream CA Beach	8	Bright's Grove Beach (Lake)	14	Willow Park (St. Clair River)
3	Bear Creek	9	Pulse Creek	15	Clay Creek
4	Warwick CA Beach	10	Huron Shores Beach (Lake)	16	Lambton—Cundick Park (St. Clair River)
5	Highland Creek	11	U/S of Talfourd Creek (St. Clair River)	17	Wadsworth Drain (not sampled it
6	Highland Glen Beach (Lake)	12	Talfourd Creek	18	MacDonald Park (Snye)