

PHOSPHORUS TRADING & WATER QUALITY

The Total Phosphorus Management Program (TPM)



ONTARIO



LEGEND / LÉGENDE

- International boundary /
Frontière internationale
- - - - - Provincial boundary /
Limite provinciale



SOUTH POINT
CONSERVATION
AUTHORITY
DE LA N.

SOUTH NATION RIVER WATERSHED

- 4,000 sq. km.
- 80 m elev. drop
- 15 municipalities
- 100,000 pop'n
- 60% agriculture
 - dairy, cash crop



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Completed Projects: 1993-2006

- 520 projects completed
- \$1,796,202 in grants
- \$7,350,642 total project costs
- 11,761 kg/year phosphorus reduction
(phosphorus “credits”)



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Watershed Water Quality

- Phosphorus degradation
 - Annual mean 5 times > P.W.Q.O.
- >90% P from non-point sources (SNC 1990 report)
- 18 wastewater lagoons: most discharge 1x per year
- Several new or expanding facilities (including landfills)
- Each discharging more P



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Policy Background For TPM

- Pilot application of PWQO, Section 3, Policy 2:
 - water quality which does not meet PWQO shall not be degraded further, and all practical measures shall be taken to upgrade water quality to the objectives
 - previously, Province gave deviation permits if PWQO could not be met (eg economic impact, suitable pollution prevention techniques unavailable, etc)
- Since 1998:
 - new/expanded wastewater dischargers must achieve no net increase to P loading in the watershed
- Province decides if stream meets Policy 2 criteria



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Method of Capping Decided by Discharger, not Province

- Dischargers prepare environmental assessments prior to expansion or new construction
- EA's must now show options to control P:
 - New tertiary treatment plant: \$15 million +
 - Implement a TPM strategy (\$370/kg)
 - Other: treatment wetlands, etc.
- Capping Applies to P only:
 - wastewater discharge must still meet Provincial treatment standards for all other parameters



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December '96 Headlines

Page 6 THE VALLEY FARMERS' FORUM December 15, 1996

NEWS

Memo says sting farmers

A memo by the South Nation River Conservation Authority says several municipalities about to increase their discharge of waste water into the river will give rise to "very costly measures to protect water quality".

Water quality co-ordinator, Mary-Ann Wilson, proposes that the bill be shared by farmers and landowners, even though they don't contribute to the increased pollution.

Fifteen municipalities,

South Nation Authority will pass cost of polluting river from villages on to farmers

Ault Foods and Nestle have lagoons that effect the river. South Nation spokesperson, Leslie Vancielief, said in a telephone interview that "population expansion has led to more discharge".

In the memo, Wilson reasons that phosphorous levels in the South Nation River already exceed provincial

guidelines for the protection of fish. But since 93 per cent of the total phosphorous in the river comes from sources other than the 15 lagoons, it would be more cost effective to pass some of the increased cost to farmers and landowners. The Authority is funded by municipalities.

What the memo doesn't

say is that a significant part of the phosphorus run-off comes from natural sources such as soil erosion on river banks.

For most of the year, the river sleeps like a drugged pussy cat. But for a brief week or so each spring turns into a raging tiger, overflowing its banks. During this period many of the lagoons spew excessive phosphorous into the river.

While farmers in the 3700 square kilometre river basin, stretching from Elizabeth

Township in Leeds County to Plantagenet, are going to have to pay they apparently are not to blame. The only regional study completed, says Vancielief, showed herbicide levels far below the federal guidelines.

Conducted in 1991-1992 on the Payne River, the study reflected a "typical" farm area, said Vancielief.

Hard pressed to financially survive, the Authority has had provincial funding cut by 70 per cent, with more cuts coming in the new year.



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January '97 Headlines

South Nation says pay farmers

The December edition of the *Farmer's Forum* somehow confused a big issue in an article discussing pollution of the South Nation River watershed.

Both the headline and the article in your December issue claimed that South Nation Conservation (SNC) plans to bill farmers for pollution caused by municipal wastewater discharge.

The opposite is true. SNC suggests that municipalities pay farmers to implement water quality improvement measures and to help increase wastewater discharge potential.

Several of the 16 municipalities with wastewater lagoons in the watershed are applying to increase their discharges. In order to meet provincial requirements for phosphorus loadings, very costly technology is required. This expansion

may be unaffordable for municipalities since provincial funding is now unavailable.

But grants for non-point sources (farms) pollution improvements can lower costs for taxpayers and villages; and result in much greater water quality improvements.

This practice is used in New York State where cities pay farmers to protect their surface water quality supply. In Ontario, paying farmers is still only in the concept stage for wastewater management, and requires approval from the Ministry of Environment and Energy, and the public.

Studies show that over 93 per cent of the phosphorus in the river is from non-point sources. Moreover, it costs 10 times less to remove phosphorus from non-point sources than from

point sources such as lagoons. Non-point sources include agricultural runoff, stormwater runoff, streambank erosion and septic systems.

The *Forum* article stated that "it would be more cost-effective to pass the cost to farmers and landowners". In fact, it is much cheaper for taxpayers to pay farmers and landowners to address non-point sources than to pay for lagoon improvements. It would also achieve greater water quality improvements.

Any program to fund non-point sources would be voluntary and provide financial incentives. This scenario would still require that the municipality meet minimum discharge standards.

Mary-Ann Wilson, Water Quality Coordinator, South Nation River Conservation

VALLEY FARMERS' FORUM
JAN 1997



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March '97 Headlines

Plan to pay farmers to clean up could start a dangerous trend

Valley Farmers Forum / March 97

The South Nation River wants to pay farmers for implementing water quality improvements on their farms. The reason simply put is that municipalities have put themselves into an expensive bind. While they want the taxes from new housing and industrial development, they don't want the cost of increased phosphorous discharge into the river system. Evidently, they're on the brink of having to acquire expensive technology.

If farmers pollute less, then municipalities reason, under the guidelines, they'll be allowed to pollute more at a lower cost. For municipalities that's a good solution, especially since they cause only seven per cent of the phosphorous that goes into the river system. The rest comes from land-owners and natural causes.

The only study on farm pollution, done in 1991

and 1992 on the nearby Payne River, showed herbicide levels well below federal guidelines. In other words, farmers are not excessive polluters.

It's a win-win situation, as group facilitators are fond of saying. Municipalities save money and farmers get paid to put in pollution controls.

But maybe farm organizations should heed the words of Gordon Garlough, Dundas Federation of Agriculture president before jumping on the bandwagon.

"I find it dangerous that one industry buys its (right to) pollution from another," he told *Farmers' Forum*. Is that industry also selling its right to expansion? He says he would like to see this whole plan set out in detail. As he sees it now, "The farm community should look after its problems and the municipalities theirs".



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June 1997 Headlines

The Chieftain, Wednesday, June 18, 1997

Page Seven

Municipalities could possibly be getting away with murder

by Sean McKibbin
Chieftain Staff Reporter

A new water quality program might be letting municipalities get away with environmental murder, says Gordon Garlough, vice president of the Dundas Federation of Agriculture.

"The idea is that instead of spending money on treating their own sewage, the municipalities spend a roughly equivalent amount of money on other pro-

Lawrence and Ottawa branches of the Ontario Institute of Agrol-ogists, the symposium will feature Garlough along with local farmer Denis St. Pierre and South Nation Conservation Director of Operations Mary Ann Wilson.

He says that municipalities are some of the largest producers of

phosphate pollution through their sewage systems. He says it is more expensive for them to reduce their output of phosphates because the chemical is contained in traces in a relatively large volume of waste matter. The phosphates build up over time he says, but are tough to get at.



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June 1997 Headlines

Page 22 The AgriNews June 1997

Phosphorous program not "sinister scheme"

By Tom Van Dusen
AgriNews Staff Writer

The Total Phosphorous Management Program is not some kind of "sinister scheme" aimed at trying to get farmers to pay for municipal pollution control.

That's how MOEE representative Conrad DeBarros introduced his presentation to about 20 agricultural community representatives gathered at South Nation Conservation offices in Berwick June 12.

DeBarros felt the comment was needed to counteract suspicion among Eastern

farmers, to show that agriculture is proactive," Coukell said. "We live and work in this environment so obviously we have an interest."

The program is a trial approach to dealing with the serious phosphorous overload in the South Nation River watershed which will allow municipalities to participate in reasonably priced non-point source pollution reduction instead of installing more costly lagoon infrastructure.

The Village of Casselman, which has been pushing for three years to get MOEE's permission to expand its sewage

lagoons. The essential difference which allows flexibility with phosphorous is that it's a nuisance rather than a toxic substance.

Obviously excited about the concept, DeBarros said it represented a chance for "true water quality enhancement" in the watershed.

Some spin-offs from the program would include reduction of sediment, a decrease in organic matter, enhanced erosion control and an overall improvement in habitat, he said.

The phosphorous load in the South Nation has been measured

at five times the recommended provincial guideline. It's not known what percentage is from natural sources such as streambank erosion.

As explained by SNC staffers Mary-Ann Wilson and Leslie Vanclief, the authority has been involved for the past four years in 50-50 shared phosphorous-abatement projects with the farming community. The projects tackle barnyard runoff, manure storage, milkhouse wastewater disposal and cattle crossings.

Wilson, the SNC's director of operations, suggested the

authority is well positioned to administer the Total Phosphorous Management Program as an extension of what it already does. The level of funding to farmers is expected to be higher under the new program.

Wilson called for formation of a special SNC committee to oversee distribution of funds and decide upon specific projects under the program. The proposal will be discussed at a future meeting.

SNC chair Denis Perrault said the program has the potential for forging productive rural-urban partnerships.



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March '98 Headlines

March, 1998

NEWS

Valley Farmers' Forum page A7

South Nation chairman says sorry

BERWICK — The South Nation Conservation (SNC) has cried *mea culpa* and told Farmers' Forum he was sorry for the conflict with farmers living along the river from east of Brockville to Plantagenet,

Phosphorous offsetting program might cost South Nation \$750,000 if farmers don't buy in

east of Ottawa. The SNC was at fault for not encouraging farmers to join the committee to manage the phosphorus offsetting program, said SNC general manager Dennis O'Grady.

"One of the biggest mistakes we made was not involving farmers from day one."

The conservation's latest move to encourage farmer involvement on the committee is hoped to ease its two-and-a-half year stormy relations with farmers over phosphorus run-

in Dundas for channelization. Explaining the stormy relationship, he said: "We got caught in the crossfire" between the Ministry of Environment (MOE) and farmers.

While admitting that he doesn't know in the long run if the phosphorous offsetting program will work, he said the program is good for the rural community and farmers. Parmalat, the giant milk proc-

G&S
Farm Equipment
R.R. #1, Cobden, Ontario 613-746-2554

Spring Specials:
Clean the Yard Days



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“Trading” Quotes From High Profile Farm Leaders:

- Lets municipalities off the hook
- Urban society pushing farm community to obtain clean water (for urban areas)
- Shifts responsibility from point source to farms
- A godsend to MOE: a miracle to offset budget cuts and downloading
- Need to know the portion of P from industry, nature, municipalities, agriculture before we can begin trading



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More “Trading” Quotes

- You’re headed for the (US) Clean Water Act
- Looks at farmers as polluters
- Massive land grab by urban areas
- Designed to save urban people money and not clean up water
- Trading, GIS and nutrient accountability the same thing
- We don’t care how much those urban people pay



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Initial Agricultural Concerns

- offset ratio for P reduction too low (was 2:1)
- funding level per kg P too low (was \$150/kg)
- what was the responsibility of landowners who accepted funding?
- what was the responsibility of municipality / industry if P reductions not achieved?
- perception that urban people allowed to pollute water
- General wariness by farm community



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Solution

- Cancelled all trading projects until ag issues fixed
- Had Ag Ministry take lead
- SNC made no moves without farmers approving
- MOU between MOE, OFA, SNC
 - signed agreement of roles and responsibilities
 - 4:1 offset
 - higher cost per kg. of P
 - evaluation and monitoring strategy
 - open reporting to dischargers, public
 - confidentiality agreements



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Solution: Clean Water Committee

- Focussed on BMP grant delivery, not trading: **Kept it simple!**
- Composition:
 - Farm organizations, farmers, government, industry, env'l groups,
- Broker for all aspects of trading program:
 - Roles and responsibilities
 - Research
 - Who gets the money, who doesn't
 - Reporting
 - Evaluation
 - Lobbying
- Flexible
- **No vetoes**



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Solution: Farmers Deliver Program

- Committee pays farmers to conduct all site visits
 - Farmers are leaders in community
- Farmers make recommendations to Committee on which projects to accept
- Cost effective: \$6,626 for 85 project site visits
- Increased credibility/uptake in program
- Use people who speak the same language to deliver the program:
 - Industrial CEO? Logger?



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Making TPM Work: Other Factors

- Agri-awareness
- Post-Walkerton
- Nutrient Management Act
- Little funding elsewhere for BMP's
- Strong desire to improve



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Generating P Credits



- Through BMP delivery program:
 - Septic
 - Manure storage
 - Milkhouse washwater
 - Barnyard runoff control
 - Livestock access
 - Buffer strips



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Market Size Certainty

- SNC delivered BMP's prior to trading:
 - 1993-2006: 520 projects; \$1.7 million grants
 - Always more projects than money
- Manipulating grant size/rates will increase number of projects
 - Grants capped at 50%, with maximum payout of, for e.g., \$10,000 for manure storage



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Cost Certainty

- Previous BMP delivery allowed SNC to calculate cost of P reduction
 - Staff time
 - Reporting
 - Water quality monitoring
 - Construction costs
 - Committee costs



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P Reduction Certainty

- Previous BMP delivery allowed SNC to calculate size of P market
 - P formulae applied to previous BMP's
 - Regulators assured that P targets could be met
- 11,761 kg/year phosphorus reduction (phosphorus “credits”)



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Agreement On Science

- Regulators agreed that P reduction formulae constituted good science
- 2002 review of 80 primary research papers
- Milkhouse washwater
 - Old: $P \text{ controlled/yr} = \# \text{ cows} \times 1.26 \text{ kg/yr}$
 - New: - 0.69 kg TP/cow/yr (excluding manure)
- 2.76 kg TP/cow/yr (with manure)



Measuring Success

- Can't always use chemical analysis:
 - Watersheds too complex
 - Must use other indicators: visual, biological, etc.
- If we agree that the P reduction formulae are based on primary research, then we must accept that they accurately measure the amount of P removed
 - If we don't accept this premise, then which science do we accept or reject, and why?



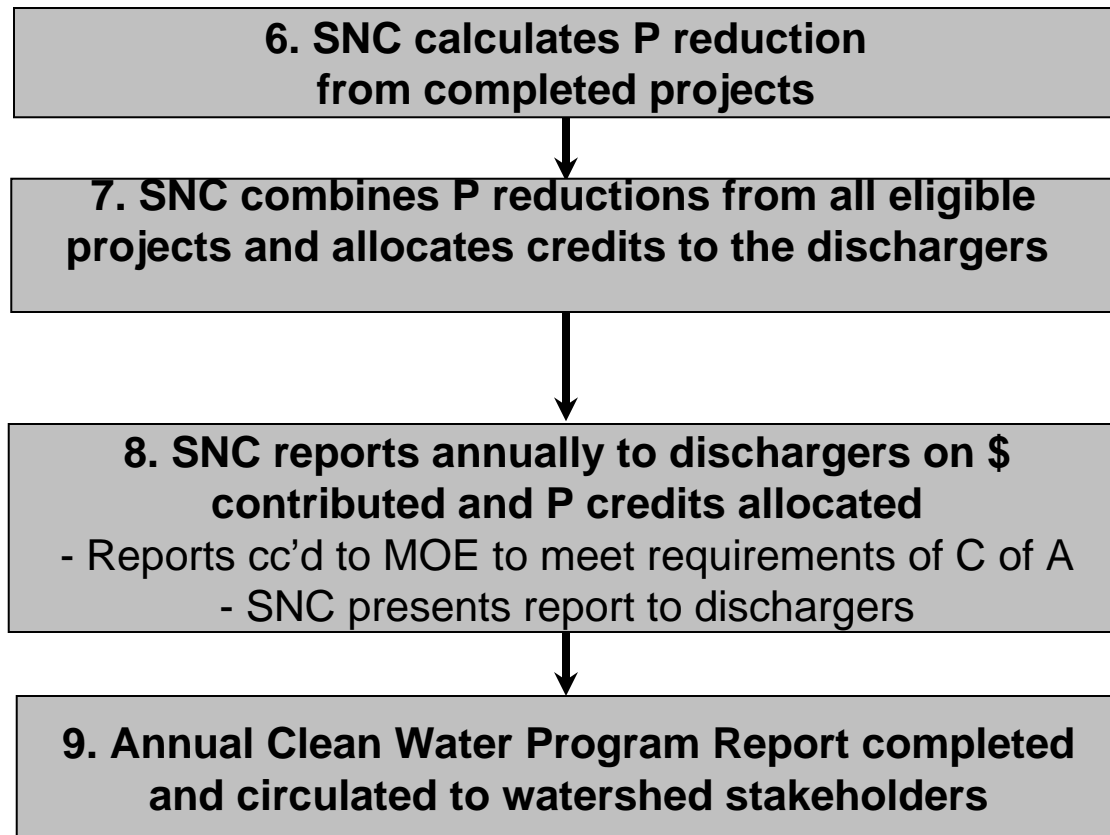
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Trading Process Summary



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Trading Process - continued



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Trading Is About Watershed Stewardship

- Regulators must provide more tools to manage the watershed
- Legal organization needed for
 - Autonomy
 - Greater buy-in by the public
 - Credit brokering
 - Accountability
 - Sustainable staffing, funding



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**National Watershed Stewardship
Report:**
**Policy recommendations and
suggested actions to expand and
strengthen watershed stewardship in
Canada.**

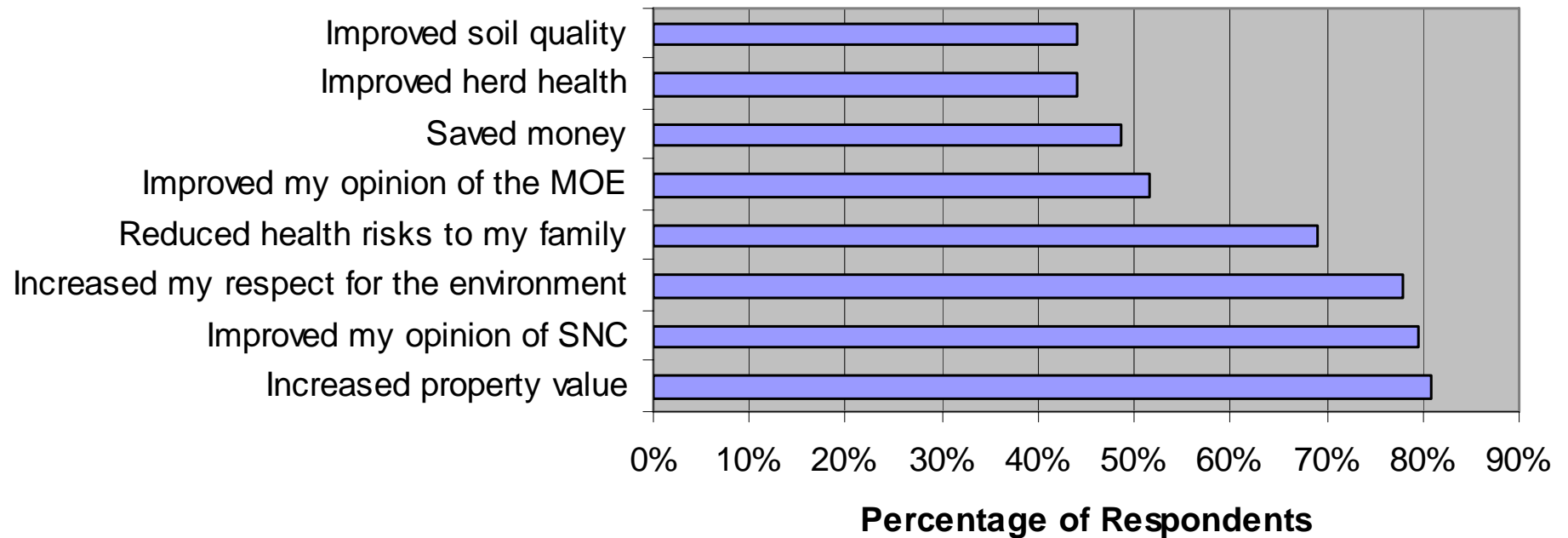
Prepared by

Langley Environmental Partners Society (Lead Agency)
Land Stewardship Centre of Canada, Alberta
Conservation Ontario
Comité ZIP Baie des Chaleurs
Clean Annapolis River Project

With support from the Voluntary Sector Initiative and
Fisheries and Oceans Canada

Making TPM Work: Evaluation

Improvements Noticed (Unprompted)



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Landowner Acceptance, Satisfaction

Would you recommend that other watersheds undertake a similar program?

- Nine in ten have already recommended the program to a friend or neighbor (85.7%) or intended to (3.9%)



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Final Points

- Adoption of trading program takes 4 - 5 years
- Can't afford to lag behind
 - governments: lower costs for infrastructure
 - Frees up funds for other projects
 - taxpayer, industry, businesses: lower taxes
 - agriculture: financial support
 - environment: controls many contaminants, not just P




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Current Trading In Canada

- MOE hasn't adopted trading as Provincial policy
 - C trading going strong
- Other watersheds across Canada trying, but still regulator refusal
- No national water quality driver like the CWA
- Some interest at Federal Level to stir interest in trading

INNOVATIONS IN WATERSHED STEWARDSHIP

 Conservation
ONTARIO
Natural Champions

Watershed Economic Incentives Through
**PHOSPHORUS TRADING and
WATER QUALITY**



Clean and plentiful water supplies are among the most important natural resources. As the population grows and development intensifies, the challenge to maintain high quality and quantities of water has grown in scope and complexity. The Ontario government is working with many partners including conservation authorities, watershed councils, farmers, environmental groups, other stakeholders and interested citizens to address these challenges.

From this collaboration, a series of watershed-based demonstration projects were carried out using new and innovative approaches to environmental stewardship. The project reports are intended to assist both practitioners and non-practitioners in applying the results in other local watersheds.

The full reports and fact sheets are available on Conservation Ontario's website.

PHASE I PILOT PROJECTS

www.conservation-ontario.on.ca



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