

REVIEW OF THE OTTAWA RURAL CLEAN WATER PROGRAM

**POLICY DEVELOPMENT AND URBAN DESIGN
PLANNING AND GROWTH MANAGEMENT DEPARTMENT
INFRASTRUCTURE SERVICES AND COMMUNITY SUSTAINABILITY**

**IN ASSOCIATION WITH
MARBEK RESOURCE CONSULTANTS**

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Executive Summary

The Ottawa Rural Clean Water Program (ORCWP) provides grants to rural residents to undertake projects that improve the quality of surface water and ground water. The program primarily funds best management practices and projects on farm properties as well as replacement and upgrading of private well and septic systems in the rural area. The program operates on a budget of \$184,000 approved annually by Ottawa City Council as a special levy to the Conservation Authorities, which administer the program with the support of rural organizations and agencies. Funding was approved for the 2005 to 2009 period and needs to be renewed for 2010 and beyond if the program is to continue. The purpose of this evaluation is to provide a basis for renewed program funding and refreshed program directions.

The evaluation focussed on three questions:

- Which projects have the greatest benefit with respect to improving and protecting surface and groundwater quality?
- Can the program be designed to increase uptake of the most beneficial projects?
- How will other stewardship programs affect the ORCWP?

Working with an advisory committee, staff and consultants completed 34 interviews with key informants and consulted other information sources to respond to these questions.

Key findings are summarized below:

- Projects that lead to direct improvements in water quality provide the greatest benefits, compared with projects that mitigate a risk in the future. Projects that yield direct improvements include erosion control measures, grassed waterways, livestock restrictions, fragile land retirement, and precision farming. Most of these projects are also among the projects that provide considerable public benefits rather than primarily private property benefits.
- Well decommissioning is a valued project with in the ORCWP. Consideration should be given to simplifying administration of this project by approving payment on receipt of an invoice for this service by a qualified contractor and proof of payment.
- Agriculture best management practices and projects are central to surface water and groundwater quality in the city, given the extent of farmland and the role of farmers as stewards of their land. A one-window approach to the ORCWP and senior government farm stewardship programs, combined with a complementary grant

structure, should be explored to improve access to these grants in Ottawa's agriculture community.

- The amount of the ORCWP grants and the percentage of project costs eligible for funding should be increased, since the participants' share of project costs (50% in most cases) is a barrier to the program.
- Workshops, outreach activities, and on-site advice on environmental projects through the ORCWP should be used to attract new program participants, including owners of rural non-farm properties, small farm operators, and others who are not eligible for farm stewardship programs or who are not choosing to participate in them. Uptake on well decommissioning, fragile land retirement, and other projects could potentially be increased if a wider range of rural residents participated in the ORCWP.
- The City's role in funding well and septic systems should be reconsidered in that these projects serve primarily to mitigate potential risks in the future, rather than yield direct improvements to water quality. These projects are taking an increasing share of program resources; for example, septic replacements accounted for half of the approved projects and 57% of the grants awarded in 2008. Residents complain to program staff when they have to go on a waiting list for next year's program, when program funds are depleted, or when they are not eligible for the grant. The City's role in groundwater protection and private well and septic programs should be considered in a larger context, outside the evaluation of the ORCWP.

The evaluation recommends that the ORCWP continue through 2010 under the current program and budget to allow the Conservation Authorities, City staff, rural organizations and other stakeholders time to refine new program directions and grant structures, as a basis for renewed funding in 2011 and beyond. The current administration of the program through the Conservation Authorities and the advice of rural organizations and provincial ministries has been invaluable in the ongoing operations of the program. The committees that review grant applications provide knowledgeable, consistent oversight of project spending, based in many cases on years of experience with the program.

Table Of Contents

Executive Summary	0
1.0 Introduction.....	4
2.0 Background.....	4
2.1 Program Description	4
2.2 The Rural Environment.....	9
3.0 Evaluation Methods	16
4.0 Findings.....	18
4.1 Project Benefits.....	18
What are some criteria to recommend ‘greatest’ environmental benefits?.....	19
What are other projects or new projects that are not funded?.....	20
What projects would you recommend that the program fund?.....	21
4.2 Increasing Project Uptake	24
Identify the incentives and barriers.....	24
Identify unintended affects	26
Are the grants sufficient to motivate applicants?.....	27
What are the trends in agriculture and the rural community? How do you think they might affect the program?	28
4.3 Relationship with Other Programs.....	30
How will other incentive/grant programs such as incentives from a renewed Canada-Ontario Farm Stewardship Program (COFSP) or the Source Water Protection-Clean Water Act affect the Ottawa Rural Clean Water Program?..	30
5.0 Discussion and Conclusions	33
6.0 Program Recommendations	34
Annex 1	42
Rural Clean Water Program projects approved for funding between 2000 and 2008	42
Ottawa Rural Clean Water Program – Summary of Grant Structure.....	43
Summary of Performance Incentives.....	44
Summary of Grant Structure Changes	45
Annex 2 Evaluation Framework	46
Annex 3 Rural Clean Water Program Review - Benefits	52
Annex 4 Overview of other Rural Clean Water Programs – Watersheds Outside Ottawa	57

1.0 Introduction

In October 2008, the City began an evaluation of the Ottawa Rural Clean Water Program (ORCWP) in consultation with program staff and advisors. The program was nearing the end of a five-year funding arrangement and a basis was needed for Ottawa Council to consider a renewed budget for the program. The evaluation was designed to inform future decisions about the program, as well as give the Conservation Authorities, the organizations that participate in the program, and others an opportunity to build on the program's success.

The evaluation was guided by three key questions:

- Environmental Outcome: Which projects have the greatest benefit with respect to improving and protecting surface and groundwater quality?
- Delivery and Structure: Can the program be designed to increase uptake in the most beneficial projects?
- Context: How will other incentive/ grant programs affect the ORCWP?

An Advisory Committee was formed to guide the evaluation and participate in all stages of the project. Other program stakeholders such as the ORCW Program Committee and the Rural Issues Advisory Committee were also consulted.

2.0 Background

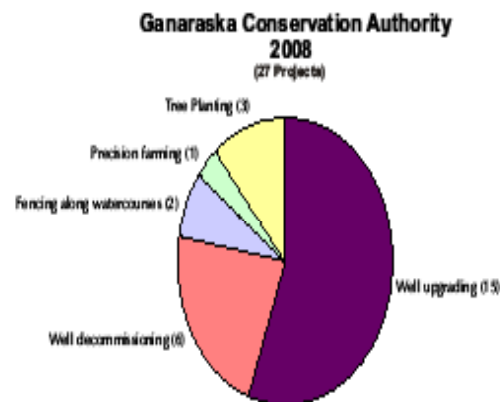
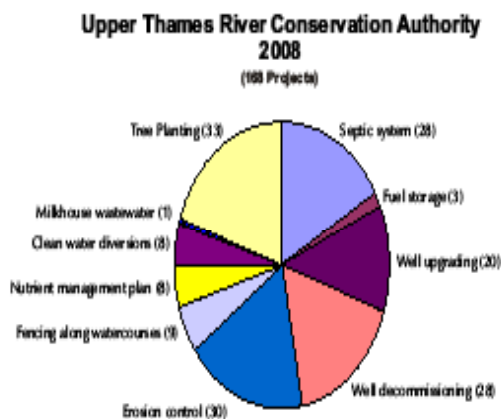
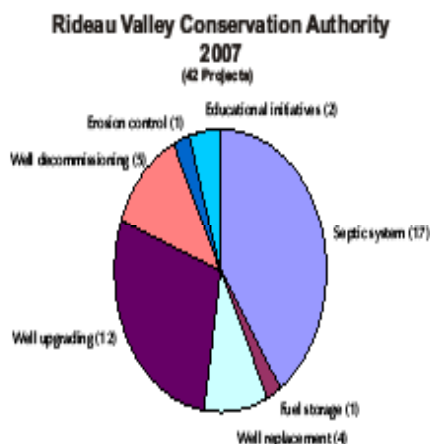
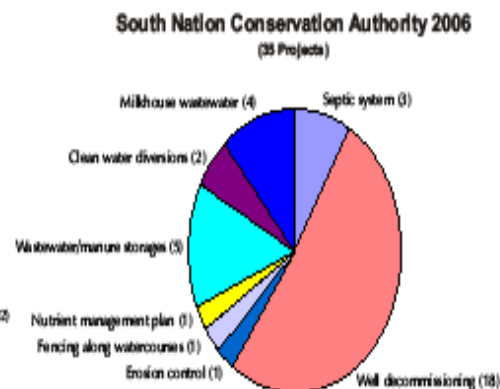
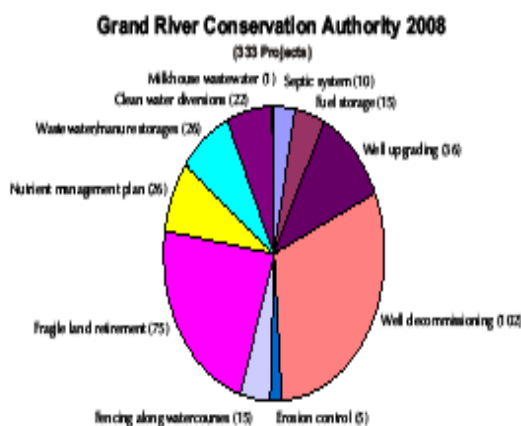
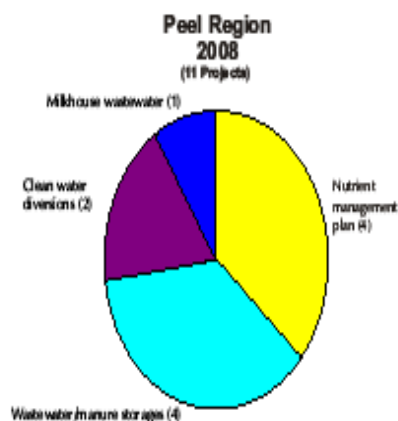
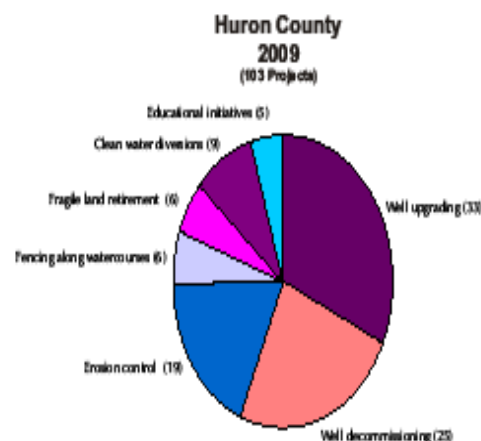
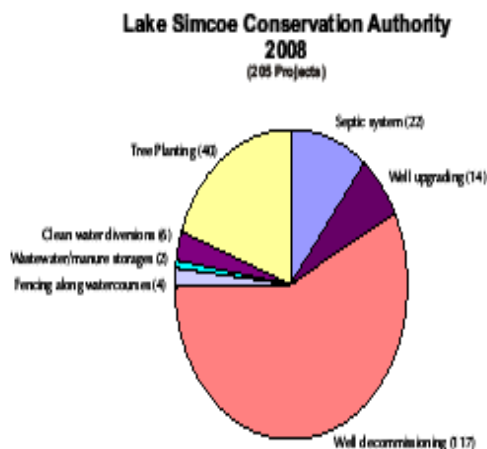
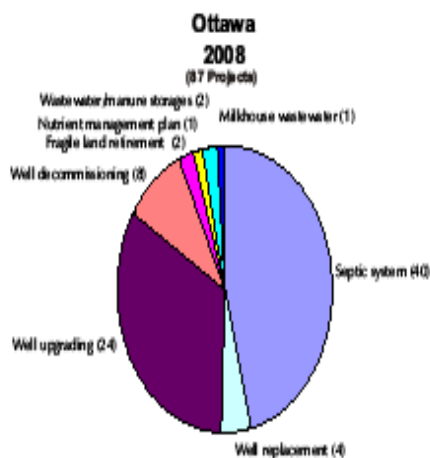
2.1 Program Description

The City of Ottawa funds the Ottawa Rural Clean Water Program (ORCWP) to help rural property owners implement best management practices (BMPs) and projects that improve and protect surface and ground water quality. Since the program's inception in 2000, a total of 459 projects have been funded with \$757,162.43 in grants. This contribution by the City has been matched by investments of over \$940,000 by rural land stewards, who share the cost of projects, for a total investment of approximately \$1.7 million. The graphic on the next page shows where projects were completed in Ottawa.

The program has evolved since its official launch in 2000, following several years of development led by the Regional Municipality of Ottawa-Carleton in partnership with the local Conservation Authorities and other stakeholders. Administration of the program has shifted from the municipality to the Conservation Authorities, and groundwater protection has been added to the original mandate for surface water protection.

The program is now delivered in partnership with the three Conservation Authorities (CAs) that encompass the City of Ottawa's boundaries: Mississippi Valley, Rideau

Rural Clean Water Programs In Ontario - Completed Projects



Valley and South Nation Conservation Authorities. South Nation Conservation coordinates the program across the city and each Conservation Authority administers the program within its watershed boundaries. Applicants are directed to the Rideau Valley Conservation Authority's LandOwner Resource Centre (LRC) as the main point of contact. The LRC provides program information, links applicants to the appropriate field staff in each CA, and maintains program data.

Community residents and representatives from agriculture organizations, the provincial government and agencies help develop and implement the overall program. They serve on the Ottawa Rural Clean Water Program Committee, which advises the City on the development and implementation of the overall program. The terms of reference for the program indicate that the Program Committee is to set funding allocations and priority areas; review and revise the program guidelines and grant structure and alter these at its discretion; provide input to monitoring and evaluation; and perform other roles. Two members of the Program Committee are appointed to each of the Rural Clean Water Program Committees serving the South Nation, Rideau Valley, and Mississippi Valley Conservation Authorities. Each CA has a Clean Water Review Committee that appraises and approves grant applications within Ottawa. The same committees review applications outside Ottawa but within the watershed, where South Nation and Rideau Valley also offer programs.

In 2005, Ottawa City Council approved an annual program fund of \$184,000 for the period of 2005 to 2009 as a special levy to the Conservation Authorities. About 70% of the annual budget is typically allocated to grants and 30% to program delivery. Key program delivery costs include program coordination, committee expenses, material, and promotion and communication costs. Program delivery also includes the cost of site visits to all applicants by program representatives, who provide stewardship and technical guidance and increase property owner awareness about water quality. The cost of these site visits is about \$33,000 annually.

In addition to the home visit, applicants are also required to complete either a Healthy Home Guide or provide documentation of completion of an Environmental Farm Plan (EFP), 3rd edition. The program serves the rural community, although proposals were made in 2007 that it should be extended to urban residents on private well and septic systems. The boundaries of the urban and rural areas are defined in the City's Official Plan.

The projects that are eligible for funding in 2009 from ORCWP and the amount available for each project are listed in Table 1. In recent years, the program has funded up to 100 projects annually on a first-come, first-served basis. The number of funded projects has increased since the program began in 2000, when between 15 and 25 projects were funded annually in the first three years. The levels of grants available through the Rural Clean Water Program and the projects approved for funding each year between 2000 and 2008 are listed in Annex 1. The program has maintained a waiting list of 50 or more in recent years, primarily for septic system replacements and well upgrades.

Table 1: Rural Clean Water Program 2009 Projects

Projects	grant rate	max. grant	performance incentive
Sewage system	50 %	\$2,000	
Fuel storage and handling facility	50 %	\$1,000	
Chemical storage and handling facility	50 %	\$2,000	
Private well replacement	50 %	\$2,000	
Private well upgrading	50 %	\$500	
Private well decommissioning	75 %	\$1,000/well	
Erosion Control Structures	50 %	\$3,000	
<ul style="list-style-type: none"> • streambank stabilization • sediment control basin • drop inlets 			
Livestock access restrictions to watercourse	75 %	\$5,000	
Grassed waterways	50 %	\$5,000	\$150/acre/yr
Fragile land retirement	75 %	\$6,000	\$150/acre/yr
<ul style="list-style-type: none"> • buffer strips • erosion-prone land • field windbreaks 			
Precision Farming	50 %	\$1,000	
Nutrient management plan /turf management plan	50 %	\$1,000	
Wastewater/manure storage	50 %	\$15,000	
Clean water diversion	50 %	\$5,000	
Leachate seepage control	50 %	\$5,000	
Milkhouse/milking parlour washwater treatment and disposal	50 %	\$5,000	
Educational Initiatives	75 %	\$5,000	

In recent years, the program has funded up to 100 projects annually on a first-come, first-served basis. The program has maintained a waiting list of 50 or more in recent years, primarily for septic system replacements and well upgrades.

The suite of projects funded through the program and the value of grants has been modified through the years. Since its inception, the program has funded septic systems and agricultural best management practices related to livestock waste, cropping systems, and storage of fertilizers, pesticides, and fuel. In 2004 well replacements, decommissioning and upgrades also became eligible for funding when a provincial program was discontinued, and the number of projects approved through the ORCWP increased.

The number of farm-related projects has remained somewhat constant since the program's inception, ranging between 15 and 26 annually most years since 2001. Exceptional years were 2004 and 2005 when senior government funding for projects was not available and farm projects through ORCWP totaled 40 each year. The increase was

due to an increase in projects related to no-till or low-till placement of seed and fertilizer on the soil. This category of projects, “fragile land/cropping practices/buffer”, has been the most frequently-funded farm project type in the course of the program (89 projects), followed by precision farming (28), livestock access restriction (15) and manure storage (14). In 2006 grants for projects related to cropping practices (i.e., residue management and no till) were discontinued by the Program Committee as these practices were seen as common practice and incentives were no longer needed to switch cropping practices. Precision farming grants in the form of annual performance payments were also phased out in 2006, but returned the following year as a one-time grant to help farmers set up for precision farming.

Most years the ORCWP funds one or two projects in each of these categories: manure storage, livestock access restriction, milkhouse washwater, nutrient management plan, and erosion control. Less frequently the program funds clean water diversion, education, and leechate seepage, and no projects have been funded related to chemical storage and grassed waterways. Grants for farm-related projects became available through senior government programs in 2005.¹

Project funding shifted to well and septic projects between 2003 and 2005 as well upgrades and decommissioning were added to the ORCWP and grant amounts for well and septic replacement projects increased. In 2008 the program allowed for grants of up to \$2000 each for well and septic replacement, \$1000 for well decommissioning, and \$500 for well upgrading. The number of grants for septic replacement has increased more than grants for other project types and in 2008 accounted for about half of all the approved projects and 57% of the value of grants approved.

Farm-related projects are also eligible for larger farm grants from senior government. The 2009 Canada-Ontario Farm Stewardship Program (COFSP) combines many elements of the previous COFSP program and elements of Greencover Canada and Canada-Ontario Water Supply Expansion Program (COWSEP), which were discontinued. Eligibility for COFSP requires a Farm Business Registration Number² and an Environmental Farm Plan (EFP). EFP is a two-day workshop where farmers discuss environmental issues, assess risk on their farm operations, and identify actions they might undertake to reduce risk. These actions may then be eligible for COFSP funding.

¹ From 2005 to 2009 these were Canada Ontario Farm Stewardship Program, Canada Ontario Water Expansion Program and Greencover Canada, and also Ontario Ministry of Natural Resources' Species at Risk Financial Incentive Program.

² In lieu of a Farm Business Registration Number, applicants may also provide a copy of a letter from the Farm Tax Property Program stating their acceptance in the program, or a combination of a municipal tax bill or municipal property tax assessment notice confirming the property is classified as farm taxable and proof of membership in one of the three large farm organizations in Ontario. Arrangements can also be made for farm businesses that do not have a FBRN for religious or cultural reasons. For a property to be eligible for the Farm Property Class Tax Program, it must meet several criteria. These include farm assessment, a minimum farm income level, a valid Farm Business Registration (FBR) number, and citizenship. According to the Farm Registration and Farm Organizations Act, a valid farm business must gross at least \$7,000 in reported income.

COFSP provides grants of up to \$30,000 and 30% or 50% of the project cost for a large number of eligible projects. The Rural Clean Water Program will top up the senior government grant, provided that no more than 50% (in most cases) or 75% of the total project cost is covered by the combined grants. This means that if an applicant receives a cost-share from the senior program for 50% of a project's cost, the ORCWP will not provide an additional amount if the ORCWP cap is also 50% of costs. Senior government funding is available for well repair and maintenance; well decommissioning; and replacement wells where a well used for agriculture purposes has been decommissioned. Grants through other programs such as the Ontario Species at Risk Stewardship Fund and the Ontario Drinking Water Stewardship Program are also available for some projects eligible for ORCWP, although eligibility is more restrictive.

2.2 The Rural Environment

Land Use and Community in the Rural Area

The rural area comprises 230,600 hectares, approximately 80% of the total land area of Ottawa. The land base includes extensive areas of wetland, forest, and other environmental lands. Just over 50% of the total land area in the city consists of Class 1 – 3 soils suitable for sustained agriculture production, and additional areas of poorer soils can be used for hay, pasture, or other agriculture-related activities.

The 2006 Census of Agriculture found that there were 1267 census farms in Ottawa, a decrease of 51 from 2001. A farm is defined in the census as an agricultural operation that produces at least one of the following products intended for sale: crops, livestock, poultry, animal products or other agricultural products. The average farm size was 91 hectares (225 acres), close to the provincial average of 94 hectares (232 acres). Across the city, 30% or 386 farms were under 27 hectares (69 acres), 55% or 697 farms were between 28 hectares and 162 hectares (70 acres to 400 acres) and 15% or 184 were larger than 162 hectares (400 acres).

Agriculture in Ottawa is characterized by a variety of production activities. The most widespread types of farming activities are cattle ranching and farming (34% of farms); other animal production³ (18% of farms); other crop farming⁴ (17% of farms); and oilseed and grain (15%). The agriculture community includes many different sectors, from beef/dairy and cash crop operations through to horse people and organic farmers.

The distinction between the farm and non-farm community in the rural area is not always clear. The 2006 Census of Agriculture shows that in Ottawa, about half of all farm operators worked off the farm. About 20% worked 20 to 40 hours and another 20% worked more than 40 hours off the farm. However, about two-thirds of farms had sales

³ Other animal production includes farms primarily engaged in raising animals such as horses, rabbits, dogs and other animals that are not included in another classification. Farms producing a combination of animals, including those in other classifications with no one predominating, are also included here.

⁴ Other crop farms include farms primarily engaged in growing crops such as hay, herbs and spices, hops and grass seed that are not included in another classification, or a combination of these crops.

of \$10,000 per year or more, sufficient to meet that component of the requirement to register as a farm business.

In addition to farm households, the rural area is home to residents of villages and country lots. An estimated 84,5000 people lived in the rural area in 2005, about 10% of the city's population. More people live on scattered lots and rural subdivisions than within the villages; the estimated distribution of rural households in 2005 was on country lots (53%), villages (42%) and farms (5%) (*Ottawa Counts*, 2005. vol 3 ottawa.ca)

Development throughout the rural area is primarily dependent on private well and septic services. Eight villages have central services and new serviced areas are only considered in specific circumstances, such as to remedy a health problem or to support growth of a village. Protection of the quality and quantity of the groundwater that supports rural homes is a key issue.

Water Quality

Water quality is a function of climate and the natural attributes of the soil, as well as land use and land management practices. Climate governs air temperatures and the amount, timing and form of precipitation, which in turn strongly influence when and how much water is available to surface water and groundwater systems. Soils, in conjunction with climate, determine the natural productivity of aquatic systems. They may also be a natural source of some potentially hazardous substances, such as aluminum, iron and mercury. Land use and land management practices strongly influence water quality by altering water quantity, by altering the physical form of watercourses, and by creating new potential sources of contamination by chemicals and micro-organisms. On the other hand, they can also be the means by which to mitigate both natural and man-made water quality problems.

Climate

Ottawa's climate is characterized by warm, humid summers and cold winters. This pattern leads to seasonal variations in water quality issues. The annual spring melt can create water quality issues through flooding, erosion, sedimentation and potentially contaminated runoff. Large summer storm events can cause similar problems. However, water quality issues in summer are more commonly related to high temperatures and low rainfall, which can lead to low stream flows. These conditions can result in increased concentrations of contaminants and nutrients, can create algal blooms, and lead to problems of odor, taste, fish mortality and bacterial hazards.

Soils

Ottawa's surface geology and soils generally fall into five broad categories:

- Deep clay;
- Till soils (glacial deposits);
- Sand and gravel soils (post-glacial deposits)
- Shallow soil over bedrock;
- Organic (wetland) soils.

The influence of soils on water quality varies by category:

- *Clay soils*, because of their depth and generally flat topography, tend to support the majority of Ottawa's Class 1 (no limitations) and 2 (moderate limitations) agricultural land. Water infiltration is low on clay soils (*i.e.* they are poorly drained). This tends to protect groundwater aquifers, but it can increase the risks of erosion, sedimentation and surface water contamination. Streams and creeks originating in clay soils tend to have naturally high nutrient levels.
- *Till soils* tend to support class 3 (moderately severe limitations) and 4 (severe limitations) agricultural land, although pockets of higher quality cropland can occur. Water infiltration and drainage varies from poor to moderate depending upon soil depth, topography, and the clay content of the till – as do the relative vulnerabilities of the groundwater and surface water systems. Streams and creeks originating in till soils tend to have naturally moderate nutrient levels.
- *Sand and gravel soils* also tend to support class 3 and 4 agricultural land. Water infiltration and drainage tend to be good, although these soils can be droughty in summer, thereby restricting agricultural uses. These are often areas of groundwater recharge or discharge, and they are frequently associated with headwater areas for coolwater streams and fisheries. Their good drainage makes them vulnerable to groundwater contamination. Streams and creeks originating in sand and gravel soils tend to have naturally low nutrient levels.
- *Shallow soils over bedrock* occur in a variety of situations, both in hilly areas of Canadian Shield and in areas of flat limestone plain. Agricultural capability can vary from class 5 (very severe limitations) to class 7 (no capacity). Drainage is generally related to topography, with flat areas draining more slowly than hilly areas. Nutrient levels in streams and creeks originating in areas of shallow bedrock can vary greatly, depending upon the type of bedrock, the topography, and even the vegetation cover.
- *Organic soils* develop under conditions of soil saturation by groundwater and are typical of wetlands. They may be areas of groundwater discharge or recharge, depending on topography and other geological factors.

The City's Baseline Surface Water Quality Program is the source of water quality data in Ottawa. Program results were summarized in 2004 and 2006, and the data are used in subwatershed studies and other environmental reports. The data show that water quality is good to excellent in the Ottawa and the Rideau Rivers but deteriorates as the tributaries become smaller. Water quality is fair to marginal in the Jock and Carp Rivers and marginal in most of the smaller tributaries. A major theme of the Lower Rideau Subwatershed Study was that the greatest potential for improvement in water quality was in the minor tributaries that feed the larger creeks and rivers.

Eight other subwatershed plans or existing condition reports have been completed in the rural area: the North Castor River (1996), Shirley's Brook/Watts Creek (1999), Upper Poole Creek (2000), Shields Creek (2004), Carp River (2004), Mud Creek/Jock River Reach 2 (2007), Jock River Reach 1 (2007) and Cardinal Creek (2009). These studies identify the key indicators of water quality as phosphorus, bacteria (*E. coli*), the metals copper and zinc, and total suspended solids (TSS). Water quality was assessed against the Provincial Water Quality Objectives (PWQO), which establish targets for the protection of a range of uses and functions, including drinking water, recreation and provision of aquatic habitat.

Total Phosphorous (nutrients)

Phosphorous is the most common nutrient of concern in lakes, rivers and streams, because it is most often associated with excessive plant and algal growth. This growth can deplete oxygen levels in the water column. Levels of total phosphorus found in watercourses can be related to adjacent fertilizer use. Other sources include sewage treatment plants, stormwater runoff, industrial wastes, and soil erosion.

Total phosphorus was found at levels above the PWQO in every subwatershed study. The Baseline Surface Water Quality Program states that the rural sampling locations have values exceeding the objective for phosphorus about two-thirds of the time.

Nitrogen

Although nitrogen occurs abundantly in nature, human sources are often major contributors to groundwater and surface water systems. These include such sources as municipal wastewater, septic systems and agriculture. The nitrite and nitrate forms of nitrogen can affect human health in high concentrations in drinking water (Ministry of Environment Nitrate Guideline 10 mg/l). Nitrate concentrations in the City's surface water systems fall well below this guideline, although it has been an issue for groundwater use in some rural areas.

Bacteria (*E.coli*)

Escherichia coli (*E. coli*) is a coliform bacteria indicating the presence of warm-blooded animal wastes, including human sewage or animal manure. Infection by *E. coli* can be a cause of mild to severe human illness.

In all of the subwatershed studies, E. coli was found at levels above the PWQO for recreational use (100 counts *per* 100 ml). The Baseline Surface Water Quality Program's report states that one-third of the time, the rural sampling locations have values exceeding the objective for E. coli. All of the subwatershed studies recorded occurrences of bacteria contamination exceeding 1000 counts per 100ml, a level that likely indicates direct contamination by animals excreting directly into the watercourse or runoff from poorly located and managed manure stockpiles or failing septic systems. All of the subwatershed studies identify failing septic systems and livestock manure as potential sources of E. coli.

Total Suspended Solids

The levels of total suspended solids were found generally to be low in the subwatershed studies except for in Cardinal Creek Subwatershed where it was a parameter of concern. Total suspended solids are indicative of the amount of sediment in watercourses from erosion and runoff. High levels of suspended sediment can impair fish habitat, increase transport of other contaminants, and reduce the effectiveness of water treatment systems.

Metals

Metals are found in watercourses as a result of inputs from natural weathering of rocks and activities such as salting roads and quarrying. The Baseline Surface Water Quality Program found that two-thirds of the time, the rural sampling locations have values exceeding the PWQO for aluminum and iron. These are often associated with clay soils. The subwatershed studies varied with respect to the type of minerals tested and the results obtained.

Threats to surface water quality

The subwatershed studies and other reports such as the Lower Rideau Watershed Strategy and the Mississippi Rideau Regional Groundwater Study identify practices that threaten surface water quality in the city. The Renfrew County-Mississippi-Rideau Groundwater Study (2003) found that:

Point sources of groundwater contamination such as sewage disposal systems, dry cleaners, gasoline retail operations and accidental spills, may not individually present a significant risk on a regional scale to surface water bodies. Agricultural tile drains, urban stormwater run-off, industrial effluent discharges, riverbank erosion and wastewater treatment plant effluent discharges (for example) are often of greater significance in terms of impacts on surface water.

Subwatershed studies identify the following threats to surface water quality:

- Loss of headwater tributaries due to drainage practices;
- Channelization and straightening of remaining tributaries;
- Removal of natural riparian vegetation;
- Excessive nutrient loading from agricultural activities;
- Loss of wetlands and forest habitats.

The studies do not connect water quality to specific land use practices and environmental conditions within the subwatersheds. Rather, the water quality data reflect the combined and cumulative effects of natural and man-made contributions to poor water quality within the larger catchment areas.

Threats to groundwater quality

The Renfrew County-Mississippi-Rideau Groundwater Study assessed the quality of groundwater in Renfrew County and the Mississippi and Rideau Valley Conservation Areas and found that the natural quality of groundwater in Ottawa is generally good.

The most common water quality problems identified by the study are chloride and nitrate contamination. Pesticide and bacterial contamination are also potential water quality concerns in rural areas.

Chloride can be naturally elevated, due to the presence of marine clays or because groundwater is old and has been within the subsurface flow system for a long time. Other sources of chloride include road de-icers, water softeners and septic systems. Groundwater with moderate to high chloride concentrations was found in many bedrock and overburden aquifers. The highest chloride concentrations were associated with shallow wells. High nitrate contamination can result from nitrogen fertilizers, animal manure, inadequate septic systems, or growing leguminous crops.

One of the objectives of the Renfrew County-Mississippi-Rideau Groundwater Study was to determine if agriculture is a major contributor to groundwater quality impairment in the study area. Agricultural use was compared with the vulnerability of aquifers to pesticide use, nitrogen and bacterial impacts. The study found that the risk to aquifers from agricultural contamination is low, because pesticides and fertilizers are most often used on croplands located on clay soils, which have low to moderate groundwater vulnerability. In agricultural areas where the groundwater vulnerability is higher due to till or sandy soils, the land is used mainly for hay and pasture, which require minimal use of pesticides and fertilizers. The study found no correlation between agricultural activities and elevated nitrate levels in wells. However, the study also concluded that the potential for groundwater contamination could increase as more land with higher vulnerability is converted from hay and pasture to cultivated crops.

Bacteria contamination in wells can sometimes be caused by poorly located or managed manure stockpiles, or by careless application. When spread properly on cultivated soils

and mixed well with the soil, the micro-organisms present in the manure pose little threat to groundwater. Similarly, manure deposited directly on soil by animals is of little concern as long as the animals are kept away from wells, streams and lakes. Bacterial contamination of wells is often related to poor well construction or maintenance and is more common in shallow wells.

The Renfrew County-Mississippi-Rideau Groundwater Study compared distribution of livestock units with aquifer vulnerability. The comparison showed that the highest concentrations of livestock occur in areas where the aquifers are of low vulnerability, although some livestock are present in areas of high aquifer vulnerability.

3.0 Evaluation Methods

The evaluation followed the framework described in the “A Blueprint for Public Health Management – A Program Evaluation Tool kit” (Ottawa-Carleton Health Department – Porteous, Sheldrick and Stewart, 1997). Details of this framework and the research completed for the project are provided in Annex 2.

An advisory committee of program staff and program advisors participated in key steps of the process. The page that follows shows a logic model for the ORCWP developed by the advisory committee at the outset of the project. The three key issues in the evaluation were:

- Which projects have the greatest benefit with respect to improving and protecting surface and groundwater quality?
- Can the program be designed to increase uptake of the most beneficial projects?
- How will other stewardship programs affect the ORCWP?

Each issue was further refined and a research method(s) was identified to address it. The methods used in the evaluation include:

- 34 interviews with program staff and other key informants identified by the Advisory Committee conducted in February and March, 2009
- a review of Rural Clean Water Program files
- a literature review of practices and programs to improve rural water quality
- a survey of other Rural Clean Water Programs and other stewardship programs in Ontario

Objectives:

- a) To maintain and improve water quality by managing non-point source discharges to surface water and groundwater within the rural areas of the City of Ottawa.
- b) To protect and enhance surface water quality for recreation, livestock watering, irrigation, aquatic habitat, and drinking water supplies;
- c) To foster an increased awareness and positive attitude toward water quality protection and stewardship in the farm and rural community that will continue to encourage the voluntary adoption of best management practices (BMP);
- d) To provide education and awareness activities to the rural residents of the City of Ottawa on non-point source reduction;
- e) To monitor the improvements in water quality as a result of the Rural Clean Water Program initiatives, and;
- f) To provide services in both official languages (English and French).

Activity #1: Governance and Administration of the ORCWP

- The Committee appointment and activities including recommendations to Council, grant structure, annual budget, program oversight
- Delivery agreements between City and CAs
- Administrative support activities, including agenda preparation, meeting coordination, answering public inquiries
- Financial support activities, including issuing grant cheques, budget management
- Program reviews and evaluations and subsequent staff recommendations to the Committee
- Reports to City Council and Committees
- Decision-making on scope of eligible activities, project rating system, and grant levels/ percentage
- Decisions on harmonization of the Program with other grants

Activity #2: Program Implementation and Tracking

- Development and on-going review of application process
- Review and consensus on applications re: approval or not
- Site visits
- Technical assistance
- Scientific support to identify BMPs and benefits of the program
- Project monitoring and verification activities, including reviewing each of the projects on its own merit and relative to other funding requests, priority given to greatest potential for reducing P, sediment, bacteria, nitrogen and chemical loading, and in the most cost effective manner to ensure maximum benefit

Activity #3: Promotion, Communications, Education

- Media releases and local promotion
- Workshops and information sessions
- Association visits, farm calls, referrals
- Targeted subwatersheds, targeted practices, targeted BMPs
- Site visit education
- Farm shows, fall fairs and farm tours
- Promotional and educational literature produced
- Target Audience – Rural Residents: Farmers, non-farmers, “hobby” farms, and people living downstream
- Target audience (Governance/Admin): Council, Committees, and CA and City staff

Outputs

- Terms of Reference
- Program grant framework, including list of eligible projects and potential grant levels
- Minutes of meetings
- Public Reports

Outputs

- Grant cheques
- Implemented projects
- Annual reports and recommendations, including reports estimating benefits of BMP projects

Outputs

- Newspaper adds/other media products
- Public outreach materials
- Workshop materials
- Contact lists for potential grantees and other agencies for collaboration/ coordination

Intermediate Outcomes

- Timely and informed decision-making on the grants program
- Clear roles and responsibilities
- Clear grants eligibility and application framework and process
- Harmonized with other programs

Intermediate Outcomes

- Increased knowledge of most effective BMPs
- Milkhouse washwater removed
- Riparian zone protected
- Fragile land retired
- Etc

Intermediate Outcomes

- Increased public awareness of the program
- Increased public awareness of environmental best practices
- Increased capacity in the community to undertake BMPs

Long-term Outcome:

Improved surface water and groundwater quality

4.0 Findings

4.1 Project Benefits

Research question #1 - Which projects have the greatest benefit with respect to improving and protecting surface and groundwater quality?

Respondents received a list of the benefits arising from each type of project (Annex 3) and were asked whether the list was complete. The list, prepared in consultation with the Advisory Committee, distinguished between:

- environmental benefits and other social or economic benefits of the projects
- whether the benefits accrued primarily to the property owner or to the public
- whether the project mitigated an environmental risk or resulted in a direct benefit to the environment

On the whole, most respondents were satisfied with the list. However, most respondents also provided additional comments on the benefits of the projects, especially around the issue of whether projects mitigated the risk of environmental impacts, or served to actually improve water quality. Several said that the benefits of the project depended on local circumstances: where a project such as septic replacement served to replace a faulty system, it removed bacteria from groundwater rather than mitigated the risk of future contamination.

The benefits of septic replacement and well upgrade and replacements were subject to divergent views. Some saw septic systems as posing a widespread risk to water quality but others stated that septic system improvements primarily provided a human health benefit to property owners and that septic systems posed a low risk to surface water or groundwater contamination and the environmental impact is minimal or very localized. Some felt that while individuals benefit from well replacement and upgrades through reduced risk of contamination of their drinking water, the risk of contamination of the groundwater in the aquifer is low. Many interviewees also felt these projects were the individuals' responsibility since the Province requires owners to maintain their septic systems. The current process does not require evidence that the system has failed and is prompted in some cases by a home inspection concern about the age of the system. However, others noted that well and septic projects were delivering the greatest environmental benefits because they were the most frequently-completed projects.

On the whole, most respondents acknowledged that benefits of the eligible grant projects primarily accrued to the individual completing the project, rather than to the public. These private benefits result from reduced health or environmental risk and through reduced liability, such as from storage of potentially problematic materials on properties or improved compliance with regulatory requirements. However, it was noted that a few projects (such as buffer strip planting, livestock restrictions, well decommissioning and

fragile land retirement) benefit the public more than the individual. In these cases, the property owner may actually be inconvenienced by loss of land or the need to develop alternative watering sources.

A theme running through many of the responses was a desire to use the program to encourage adoption of new practices. Once a practice had become commonplace, there was a recommendation by some interviewees to not continue with funding the project. For example, funding for no-till and low-till practices was discontinued as they became more common-place.

Another theme was a desire to use the program as an incentive program, to use the funding to support projects that otherwise would not be implemented. These interviewees believed that a top-up from the ORCWP yielded little benefit if the project was going to go ahead regardless of the ORCWP grant, drawing on a larger senior government grant, or if an immediate repair was needed to replace a well or septic system at the end of its lifecycle.

Respondents also noted that the program helps rural residents meet new provincial legislation and regulations, although this is not a goal of the program. The private well upgrading grant, for example, serves to bring private wells up to provincial standards and the grant for nutrient management plans helps meet the requirements of the Nutrient Management Act.

A few respondents noted that mitigation of risk and preventive measures are preferable to clean-ups, and that the Environmental Farm Plan projects focus on prevention. Other comments on benefits included the following:

- The projects help people understand regulatory requirements for well and septic, and farm practices.
- Nutrient management projects also benefit wildlife habitat and human health.
- Chemical and fuel storage projects provide a public benefit by mitigating the risk of spills, as well as reducing the individual's cost of insurance.
- The project benefit related to public awareness may be over-stated, since projects on individual, private properties may not be widely known.

What are some criteria to recommend 'greatest' environmental benefits?

Many respondents said the program should concentrate on projects that have an immediate and direct benefit to water quality, such as livestock restriction, rather than on projects that mitigate the risk of future impacts.

Some respondents indicated they would take a science-based approach to deciding which projects yielded the most environmental benefit. They proposed reviewing subwatershed

studies to identify known threats and selecting projects to address these. The ORCWP needs to define the issues better, to identify whether the biggest threats are nutrients, pathogens, phosphorus, bacteria, or sediments, and how these can be best addressed. Projects should be targeted in some manner, either geographically or focused on the Rideau River or other subwatershed, or be prioritized to reflect land use, for example whether the land is used for agriculture or non-agriculture purposes.

Several respondents said farm projects, especially precision farming, manure handling and storage, erosion control and livestock restriction, provide the greatest environmental benefits. One questioned whether the greater benefit resulted from improved practices on one large farm, compared with 500 well upgrades. One said that the most visible projects should be prioritized, since farms are receiving more public scrutiny.

Others said that since they believed that septic systems posed the greatest threat to water quality in the rural area, septic replacement provided the greatest environmental benefit.

What are other projects or new projects that are not funded?

Education was the largest, single area of response. Several respondents spoke about the value of workshops such as the drainage day sponsored by the Rideau Valley Conservation Authority in 2008, as effective public education initiatives. Such workshops could help engage property owners who might need technical assistance and support to undertake these projects. One suggestion was to tour moderate and small-size farms and show how they implement projects that work at that scale of activity, since most demonstrations take participants to large farms that have taken on extensive projects. Resources the ORCWP now uses to make home visits to individual applicants could possibly be used instead to promote the projects and practices supported by ORCWP to a larger audience.

Where grants were provided to community groups for education, the group needed to be knowledgeable about the subject and qualified to deliver the program using their own or contracted resources.

The ORCW Program Committee can consider new project types each year but interviewees indicated it needs more support to do this job. One solution suggested was that a sub-committee or Conservation Authority staff should propose leading-edge projects for the committee to consider and one or two new projects could be added each year and some projects could be removed.

Other projects proposed as potential candidates for the program include:

- Ditch cleaning
- Rural business grants to keep pollutants out of watercourses
- “Take it back” collection of used oil and pesticide containers

- Wetland enhancement or stream rehabilitation
- Wildlife habitat creation or restoration
- Well and septic projects in the urban area
- Disposal of dead livestock
- Farm composting
- Manure treatment
- Remediation of tile drainage outlets to address sediment
- Application of biosolids
- Other projects proposed by residents, to be considered on a case-by-case basis by the Review Committees

Some respondents noted that projects such as ditch cleaning benefited individuals economically, rather than benefiting the environment.

What projects would you recommend that the program fund?

A range of views was expressed, with most respondents supporting the new projects they had suggested as part of a mix of farm-related and other environment projects. Some respondents argued strongly that no change should be made in the project list or how projects were implemented, since they had been tried and in place for the most part since the program began in 2000. Well and septic projects should continue because other programs are not funding these projects, there is lots of demand for them, they protect homeowners' health, and the home visit associated with them provides an opportunity for education. A few others also supported the current list but said it was too long and should be condensed by combining several project types into one category.

Well decommissioning was widely supported by all parties, even those who otherwise did not support well projects as part of the program.

Two people said the program should fund only the projects that are easiest to complete: well grants, livestock access restriction, clean water diversion.

Several mentioned the program's role in introducing no till or low till practices as an example of a program success. The project was well-timed to introduce techniques for low disturbance placement of seed and fertilizer, techniques that are now widely (but not universally) practiced.

Other findings

Other Rural Clean Water programs in Ontario fund similar projects as the Ottawa program. The charts on the next page provide a summary of projects funded by other Rural Clean Water Programs in Ontario. Annex 4 provides an overview of the projects these programs fund. The 14 programs outside the Ottawa subwatersheds all support comparable agriculture best management practices. Most other programs fund well upgrades (11 programs) and well decommissioning (11 programs) but fewer fund well replacements (2 programs) and septic replacements (5 programs).

Although the Rural Clean Water programs are open to funding similar projects, the suite of projects funded and the pattern of spending in each program is unique. Well decommissioning is a strong component of several programs, however, comprising one-quarter to one-half of completed projects in some areas. Other programs have had success with erosion control and fragile land retirement, with Grand River approving 75 fragile land retirement projects in 2008. With their large agriculture base, Grand River and Huron County serve communities similar to Ottawa. Grand River's top three projects were well decommissioning, fragile land retirement, and well upgrading. Huron County's top three projects were well upgrading, well decommissioning, and erosion control. Annex 4 provides more information on eligible and funded projects elsewhere in Ontario.

Subwatershed studies and the literature on water quality were reviewed to find out whether some practices are recommended more than others, and whether best management practices yield results.

The Lower Rideau Watershed Strategy adopted by Ottawa Council in 2006 recommended expansion of the Rural Clean Water Program to bring farmers on board with practices to address nutrient loads in watercourses. The management actions recommended in the strategy include:

- Controlling livestock access to streams
- Expanding use of conservation tillage and nutrient management practices
- Addressing point sources such as feedlot and manure storage
- Restoring natural vegetation along shorelines
- Working with local agricultural groups/associations (e.g. OFA, Environmental Farm Plan) to rebuild a rapport with farmers and re-establish agency relations

Recommended actions common to the subwatershed studies include:

- Public and school education programs about protecting areas of ecological importance, and well and septic education

- Community involvement in stream rehabilitation (planting days, stream cleanup, sample for water quality) and monitoring
- Encouragement of best management practices including implementation of nutrient management act, managed woodlots, appropriate storage of chemicals/pollutants, decommissioning of abandoned wells
- Stream rehabilitation projects including buffers, planting, in-stream structures

The literature review found that most contaminant inputs from agricultural land are a form of non-point pollution and are therefore difficult to measure. Consequently, cumulative, synergistic and chronic impacts can result in significant changes to aquatic systems (Spaling and Smit, 1995; Cooper, 1993). Several studies have measured rates and magnitudes of pollutants from agricultural runoff, the specific impacts of these pollutants on surface water and the ability of best management practices to mitigate these impacts (Watzin and McIntosh, 1999).

Of all the non-point source pollution derived from agricultural land use, sediment is seen as having the most widespread and cumulative impact on aquatic environments (Waters, 1995). The erosion of agricultural lands leads to downstream sedimentation, unstable channels, loss of aquatic habitat, impacts to aquatic organisms and plays a role in contaminant transport. It is also an indicator of agricultural sustainability, as the prevention of soil loss from farmland should be a long-term goal.

Determining the most effective agricultural BMPs is dependent upon the goals of the program (e.g., what is the greatest impact, which impact is most feasible to mitigate), the characteristics of the watershed, and the predominant land use activities. For example, agricultural BMPs may be initiated to reduce animal waste (Inamdar *et al.*, 2002), sediment (Lenat, 1981; Owens *et al.*, 1996), or nutrient impacts on receiving watercourses (Cey *et al.*, 1999).

Yates *et al.*, (2007) indicate that several studies have evaluated a single BMP at a small scale, and fewer studies have evaluated BMP effectiveness at the watershed level. Yates *et al.*, (2007) assessed the ability of agricultural BMPs to improve stream water quality in 32 agricultural drainage basins in southern Ontario. They reported improved stream quality in drainage basins containing high levels of BMP implementation compared to drainage basins with low levels of project implementation.

The Rural Clean Water Program (RCWP) in the United States is a federally sponsored non-point source pollution experimental program that was initiated in 1980 to address agricultural impacts in the United States (Gale *et al.*, 1993). The program funded 21 experimental watershed projects in 22 states. In Delaware, the program was implemented in the Appoquinimink drainage basin (30,762 acres). Nearly two-thirds of the watershed is in active cropland, with corn and soybeans as the predominant cash crops.

The Delaware project had excellent producer participation, with 60% of the farmers, representing 87% of the critical area, participating in the project. During the program, no-till acreage was increased from about 50% of the cropland to 90% in the project area. In addition, farmers reduced pesticide use; planted cover crops to reduce winter runoff; and installed grassed waterways, filter strips and other measures. Water quality monitoring in the Appoquinimink River project documented a 60% decrease in phosphorus and a 90% decrease in sediment reaching an impaired water body as the result of implementation of conservation tillage and animal waste management BMPs. Improved fertilizer management cut the pre-project phosphorus application rate in half.

4.2 Increasing Project Uptake

Research Question #2 - Can the program be designed to increase uptake of the most beneficial projects?

Identify the incentives and barriers

Most respondents said money was by far the key incentive for residents to undertake projects. Receipt of the grant was a primary incentive that drew people to the program, coupled with any reduced costs the resident might experience once the project was in place. Other motivations were various forms of personal benefits, including health benefits and image in the community. Also, residents become motivated if something is not working and needs fixing. Environmental benefits were also mentioned as incentives to undertake projects, but were not seen as nearly important as other incentives.

A few respondents said the program serves to give rebates to people for projects they would have completed in any case, and does not work as an incentive for residents to try something new or innovative.

Time and money were viewed as the greatest barriers to farmers and other residents undertaking projects. Other barriers cited included distrust of government, reluctance to invite Conservation Authority representatives onto properties due to their regulatory role, and lack of information or awareness about the program. Even if the applicant is eligible to obtain both the Rural Clean Water Program grant and a senior government grant, the two combined do not exceed more than half of the project costs in most cases. The remaining cost is often too great for the applicant.

The time it takes to complete the application process and find out whether the grant is approved was cited as a time barrier. Several interviewees also spoke about the amount of paperwork and the time taken to schedule and wait for a home visit. Many farmers and other applicants have jobs elsewhere and do not have time for a complicated process. Other administrative issues arise through maintenance of a waiting list when the current year's funding is depleted and the need to respond to dissatisfied residents, including urban residents who are ineligible for the program. Although some applicants go directly to the Conservation Authority that administers the program in their area, others may interact with several staff in the course of their application.

However, several respondents said staff with the EFP program and the ORCWP who conducted the home or farm visit strengthened the programs because of their knowledge and peer-to-peer approach.

Communication barriers included lack of information about the program. Instances were reported where residents were not aware of the septic grant and attempted unsuccessfully to secure a grant after the project was complete. Project guidelines were also easily misinterpreted. For example, respondents knowledgeable about the ORCWP were unclear about whether all residents were eligible for certain projects or whether only residents who had a farm registration number could apply or whether businesses were eligible for all or some of the projects. Many rural residents may not be aware of the ORCWP or the COFSP.

Some projects may not be pursued because of lack of potential market. For example, fewer dairy farms means less demand for milkhouse washwater projects. About one grant per year is approved for this project. Uptake of this grant may be low because proper milkhouse water management projects are often combined with manure management and costed as separate projects. In other cases, uptake may be low because the technology is not fully developed and the solutions need to be proven.

A few respondents said there were no barriers to the program.

When asked how the program could increase the uptake of the projects they had identified as the most valuable, respondents suggested several strategies:

- *Develop educational material and reach out to targeted the audiences.* For example, promotional materials could be delivered to residents where a subwatershed study identifies a specific issue that the ORCWP could help address. The program should be marketed more, and lever the relationship with community associations and established groups, asking them to advise their members about the program. The associations would be a conduit to their members and would serve as project leaders. Agriculture consultants, service providers, equipment dealers, and well and septic contractors could also be contacted regularly and provided with program updates. Workshops are also a good way to increase awareness and program uptake.
- *Increase the amount of the grant provided and the maximum percentage of the project that can be funded.* This is especially true for projects such as buffer strip planting that provide little or no private benefit but do provide public benefits, in terms of water quality.
- *Reduce the amount of paperwork, simplify the program and provide a faster response to applicants.* Several interviewees also spoke about the possibility of aligning the ORCWP more closely with the COFSP, such as having a single application process.

Some said the program should cap the amount of money for well and septic projects so that money is available for other types of projects. Others said the budget for well and septic should be increased to meet demand.

A few respondents said that uptake is not an issue, since all the projects are important and all the money is being spent.

Identify unintended affects

The respondents were asked whether there were any unintended effects resulting from the grants program. On the positive side, the program:

- Encourages applicants to go through the proper permitting process for their project;
- Moves applicants on towards other funding programs, especially the COFSP.

On the negative side, the program:

- Delays property owners from undertaking some projects such as septic repairs for a year or more, as the applicant waits on a waiting list, or waits in the hope that the grant level will increase
- Rewards poor maintenance practices for septic systems, by supporting septic replacements where the owner may have not pumped out the tank often enough
- Some project types provide grants for work that must be done by property owners for compliance with regulatory requirements
- Creates confusion and resultant irritation among residents who cannot access the program easily, or who learn about the program after their project is completed (and they are thus ineligible for funding), or who learn they are ineligible because they live in the urban area of the city.
- Discourages some property owners from hooking up to central services, where these are available.

Some implemented projects can also have unintended effects, both positive and negative. Grassed waterways that serve to reduce soil erosion also create new arable areas, for example, while fragile land retirement can promote weed growth.

One respondent commented on the need to recognize unintended effects similar to those arising from the EFP. In the program in effect from 2006 to 2009, 50% funding was available for tree planting, which led to problems with wildlife and stock and crop losses.

A few respondents said septic contractors may increase prices because of the grants or encourage replacement where a pump-out would do the job. However, some interviewees said this impact was mitigated because the review committees would be aware of inflated prices and could advise applicants about the costs and need for the quoted job.

Some respondents thought the program was increasing professionalism in the contractors, since the program required that a qualified contractor do the work. Contractors are learning more about RVCA regulations through their interactions with the Ottawa Septic System office.

Are the grants sufficient to motivate applicants?

The responses were varied. A few said the grants were sufficient because all the program money was spent each year and the program is over-subscribed. A few others said the grants were not sufficient to motivate applicants, without other factors coming into play. Grants act as the carrot to the government stick imbedded in new regulations. They do not motivate within the farm community, but could prompt a rural resident to upgrade a well. The grants are too small to interest some farmers, and applicants for the COFSP may not bother to apply for a ORCWP top-up, if their project is eligible.

Many respondents supported increasing the grant level or the percent of the project funded, to achieve program objectives, and they provided examples of how grants for specific projects could be increased. Reasons for considering increases included:

- The need to maintain grant levels relative to the increasing costs of projects.
- The ability to increase take-up of projects in high-risk areas (ie, close to watercourses or in areas where there was a high risk to the environment)
- The potential to increase take-up of projects such as well decommissioning that are well-defined, have an immediate effect, and quickly remedy the problem.

There was general agreement that the property owner should bear a share of the total cost, rather than receive 100% funding, because the owner benefits from the project and because owner commitment is needed. One respondent said if grants were too high, some residents would be tempted to put forward projects without real merit. Another said if they were too high, it might create a climate where people did not do any projects unless they received a grant. There was some consensus around funding 75% to 90% of the costs of projects that the program wanted to promote actively.

The \$150 per acre per year offered as a performance incentive was viewed as reasonable by several respondents, although one spoke to the need to increase the number of years it is available to 10 from the current 3 years.

What are the trends in agriculture and the rural community? How do you think they might affect the program?

The following trends were observed:

- Fewer small dairy farms and more cropping, especially soy beans and corn. Smaller farms are doing more crop farming, which provides a less steady income than dairy. Such a variable farm income makes it difficult for the small farmer to plan and complete projects. More row crops and less forage crops decreases the land cover and increases the potential for soil erosion and the need for buffer projects.
- The trend to increased farm size was interpreted in different ways. Some felt the large farms were more likely to seek grants and undertake projects, and their projects would potentially have widespread effects. Others said the large farms were operated by absentee landowners, who were less active stewards. This was thought to be especially true close to the urban boundary, where land is held for future development.
- More public interest in local food production and organic farming, leading to more media interest and more visitors to farms.
- Farmers are quick to adapt to new practices such as no till and precision farming. The incentive was good when it was introduced but these are common practices now, especially with the increased cost of fertilizer.
- More hobby farms with horses and other animals.
- Commercial firms increasingly do pesticide application and there is no need to store pesticides on-site, so the need for chemical storage projects may be decreasing. However, this trend may also indicate a need for more secure, safe transportation of these materials.
- The City (and other levels of government) has encouraged farmers to install manure storage systems and the Province has approved legislation and regulation in this regard. Many farmers are now finding that maintenance and management costs are higher than expected, and are looking for other methods.
- Government control is increasing and has become excessive.
- Farmers have become much more aware of environmental impacts of agriculture and there is a general willingness to improve management practices in the agricultural community.
- Country lot development has brought new residents to the rural area and there is a need for education about rural servicing. Large houses and swimming pools lead to

more water usage and generation of sewage, and well and sewage systems may have a shorter lifetime.

Other findings

A review of rural clean water programs in the US (Gale *et al.*, 1993) found that operators of large and successful farms were more likely to participate in environmental programs than were operators of smaller and less profitable farms or part-time farmers. The review recommended targeting the program to the smaller operators.

A study for the Christian Farmers Federation of Ontario (McCallum 2003) found that financial incentives for environmental initiatives are more important to secondary farmers—those earning less than half of their income from farming—than they are to primary farmers, who are more motivated more by environmental benefits. Prosperous farmers are more likely to participate than other farmers because they have the money to pay their share, but they won't change their practice unless it is profitable or compensation is provided.

The study also identified similar barriers as the interviews: a large number of disconnected grants and education programs were operated by a variety of agencies and groups, with conservation and agri-business working in different spheres. Barriers included paperwork and program complexity, the cost of the project to the farmer and the low level of grant, distrust of government, and lack of awareness of programs apart from the EFP.

The 2006 Census of Agriculture supports the finding that money is a barrier to participating in Rural Clean Water Program. Most farms in Ottawa (54%) reported gross farm receipts of less than \$25,000 in 2005. The average gross farm receipts were \$129,990 per farm but farm expenses cut the average net receipts to only \$17,735. Only 22 operations reported \$1 million or more in gross farm receipts.

The 2006 Census of Agriculture also lends support to the grant level provided on a per hectare basis for projects such as fragile land retirement. The census found that the net receipts per hectare of crop land are \$286 or \$118 per acre in Ottawa. This compares to a grant of \$150/acre/year for some projects funded by the Rural Clean Water Program.

The 2006 Census of Agriculture also found that the average age of farm operators in Ottawa was 54.7 years. The aging of Ottawa's farm operators is a potential barrier to participation in the ORCWP, since some studies suggest older farmers are less likely than younger farmers to start adopting best management practices (Wright, 2002).

4.3 Relationship with Other Programs

How will other incentive/grant programs such as incentives from a renewed Canada-Ontario Farm Stewardship Program (COFSP) or the Source Water Protection-Clean Water Act affect the Ottawa Rural Clean Water Program?

The Ottawa Rural Clean Water Program funds projects that are also funded by the COFSP. The ORCWP can top up the much larger grant from the COFSP, provided the two grants combined do not exceed the total percentage of the project cost eligible for program funding. Fifty percent of most projects' costs are eligible for ORCWP funding but a few (for example, livestock access restriction and private well decommissioning) are eligible for 75 per cent of costs.

Many respondents believed generally that the ORCWP and the COFSP were complementary, in that access to one program would lead to access to the other. Staff of both programs refer applicants to the other program or provide information on it. A few others said the programs are not coordinated or promoted together.

Respondents said applicants for the COFSP do not follow through with an application for the ORCWP if they have already secured from the COFSP the 50% of total project costs that form a ceiling for both COFSP and ORCWP funding, for most projects. Others said it is not worth the farmers' time to go through the ORCWP application process on top of the COFSP process and coordinate the timing of the project with approval of the grant application.

Several respondents said a one-window application process should be created for the COFSP and the ORCWP, although they differed on whether the one-window should occur through the ORCWP or the COFSP. They also commented that since the future of the COFSP is subject to renewal and change over time, the ORCWP should continue to fund a range of farm projects to ensure that grants are available for these projects if the senior program changes.

Other comments included:

- Grant rates for the two projects should be coordinated annually, so that together they do not provide 100% or more funding of certain projects;
- Applicants who are ineligible for the COFSP may think they are also ineligible for ORCWP or other grants and not apply. Some respondents were unclear on who could apply for ORCWP projects that were also funded by COFSP.

Other findings

The COSFP is described here to provide background to the proposal that one-window access to farm stewardship grants be created.

The Ontario Soil and Crop Improvement Association administers the COSFP as well as other environmental cost-share programs for farmers funded by the provincial government, agencies, or local authorities. In 2008, for example, OSCIA administered eight cost-share programs in addition to COSFP. Where programs such as the Ontario Drinking Water Stewardship Program also funds projects eligible for COSFP funding, OSCIA staff ensure that the grant programs are combined and for some projects, may receive up to 100% funding. OSCIA ensures that projects are not funded beyond 100% and that applications remain confidential.

Confidentiality is a key aspect of the Environmental Farm Plan and the COSFP administered by OSCIA. Both the Environmental Farm Plan and all details around any COSFP application or award are kept confidential.

OSCIA provided information on COFSP and the predecessor programs within the boundary of the former Carleton County between April 1, 2005 and March 31, 2008, which helps provide a basis for comparison between the two programs⁵. The following observations were made:

- Over the three-year period, the senior government (federal) provided a total of \$787,899 in cost-share contributions to Carleton County property owners, compared with \$391,100 through ORCWP to Ottawa residents in the same period.
- Comparisons between ORCWP and COFSP and the projects they fund are difficult because they use different project categories. The top five project types funded between 2005 and 2008 by the senior program were improved cropping systems, improved pest management, water well management, new wells for agriculture purposes, and manure storage. They accounted for 65% of the 205 completed projects and 80% of the funding.

COSFP is funded through the broader federal-provincial *Growing Forward* framework and the new five-year funding envelope announced in July 2008. All of the \$7 million in cost-share funds for the first year of the program (2009) in Ontario were committed by the following month.

Other stewardship programs

Several stewardship programs and services are available to Ottawa residents. Ottawa's Conservation Authorities offer information through the Landowner Resource Centre on forestry, agriculture, wildlife, water, soil and any land management issues. Owners of properties of 5 acres or more can request an on-site consultation on resource and land management through the Conservation Authorities Landowner Advisory Services Program.

⁵ The program was extended another 7 months in 2008, but only the figures for the first three years are shown here, since this period represents most of the projects and budget. Carleton County included most of the rural area outside the Greenbelt except for the former Township of Cumberland.

Other stewardship programs complementary to the ORCWP that are available to rural property owners include:

- Ottawa's Green Acres program, provided in cooperation with the Conservation Authorities, offers rural property owners with a minimum of 0.4 hectares (1 acre) of suitable land assistance to set up a tree planting plan, share cost of tree seedlings, site preparation, planting and tending.
- Shoreline Stewardship Pilot Program through the Rideau Valley Conservation Authority offers property owners a 75% incentive grant up to a maximum of \$1000 to plant shoreline buffers up to 30 meters wide. A site visit is included.
- The Federal Habitat Stewardship Program (HSP) provides grants to community groups, municipalities, conservation authorities and other organizations to undertake projects related to species at risk. One of the grants has been to conservation authorities to provide grants to landowners to implement best management practices along watercourses.
- Ontario Drinking Water Stewardship Program funds projects related to water quality within municipal wellhead protection areas or municipal water intake protection zones. Eligibility is restricted to property owners in defined areas adjacent to municipal wells providing water to Carp, Munster Hamlet, Vars and Kings Park in Richmond. Eligible projects include erosion control, nutrient management planning, riparian area management, and septic system inspection and upgrade. The program increases the amount of funding and the percentage of eligible project costs available for selected projects that are also eligible for COFSP funding.
- Ontario Species At Risk Stewardship Program provides grants to property owners, community groups and others who propose projects such as habitat improvement or protection projects, surveys, and education.
- Ontario Species At Risk Farm Incentive Program, administered by the Ontario Soil and Crop Improvement Association, provides up to 100% funding of eligible projects such as habitat management and erosion control structures that are also eligible for COFSP funding.
- Ontario Wetland Care Program is offered by Ducks Unlimited and the Ontario Ministry of Natural Resources to rural property owners and provides technical resources and grants of up to \$5000 to rural landowners to help them maintain, protect and enhance wetlands on their properties. Eligible projects include livestock fencing, wood duck boxes, tree planting and restoring a wetland.
- The Canadian Wildlife Federation provides funding to non-profit organizations and individuals to promote wildlife habitat such as the re-introduction of an endangered

species. Funding consists of repayable loans and partial financial contributions for projects of up to \$10,000.

Funds available through each program are limited and subject to change year-to-year.

5.0 Discussion and Conclusions

Research question #1 - Which projects have the greatest benefit to improving and protecting surface and groundwater quality?

Projects that lead to direct improvements in water quality provide the greatest benefits to surface and groundwater quality, compared with projects that mitigate a risk in the future. Projects that yield direct improvements include erosion control measures, grassed waterways, livestock restrictions, fragile land retirement, and precision farming. With the exception of precision farming, these are also among the projects that provide considerable public benefits rather than primarily private property benefits. Because these projects also benefit the public, rather than primarily the private owner, greater incentives may be needed to complete these projects. They feature largely in rural clean water programs in other jurisdictions, suggesting that property owners could support them.

Although well decommissioning mitigates a risk of contaminating groundwater and the project does not necessarily lead to a direct improvement of groundwater quality, many interviewed confirmed that it is a valued project with in the ORCWP.

Many of the projects that yield direct and public benefits are also agriculture best management projects. The evaluation underscores the importance of agricultural best management practices and projects, especially those related to reducing sediment flows to drains and natural channels. Farmland occupies half of the area of the city and farm stewardship results in overall water quality improvements. The ORCWP has succeeded in supporting a steady number of well decommissioning and other farm-related projects since 2000 and has benefited from the guidance and support of farm organizations on its program committee and application review committees.

Public education was flagged in both the interviews and in the City's subwatershed studies as leading to improved water quality. Workshops that help property owners take on new projects or that generally promote the ORCWP and its projects were mentioned in the interviews as examples. Subwatershed studies also recommend stewardship and community involvement in local water quality initiatives as a key measure in implementing subwatershed plans.

The City's Baseline Surface Water Quality Program has identified nine locations where water quality sampling has found notably poor results. These areas should be further investigated, to see whether targeted outreach would attract participation in ORCWP projects.

The evaluation also raised different perspectives on stewardship programs that are of interest. Themes that emerged during interviews included the following:

- The program should act as an incentive to property owners to undertake actions that they would not otherwise undertake.

- Many of the eligible projects serve to bring the property owner into conformity with legislation and regulations regarding agriculture practices and well maintenance.

Although compensation to owners of wetlands and other lands that provide ecological goods and services has been discussed in Ottawa in the past, few participants in the evaluation mentioned the ORCWP as having a role here. Projects on Alternate Land Use Services, that compensate farmers for the value of the ecological services they provide, are in progress in elsewhere in Canada and may be helpful in distinguishing between stewardship programs such as ORCWP and other programs designed to compensate property owners.

The City's role in providing grants for septic replacements and well upgrade and replacements needs to be reconsidered. Staff associated with the ORCWP saw septic systems as posing a widespread risk to water quality but others responsible for groundwater planning and policies believed that septic systems posed a low risk to surface water or groundwater contamination and the environmental impact is minimal or very localized. Septic systems do not figure generally as a threat to water quality in subwatershed studies and other studies in Ottawa, which focus instead on non-point sources of contamination of groundwater and loss of riparian vegetation, headland waters, and other such developments as contributing to poor surface water quality.

Grants for well and septic system replacements are raising other issues, as they are now available from ORCWP. These include:

- Waiting lists for grants for these projects contribute to poor water quality because some rural residents wait to undertake repairs, potentially putting their health at risk;
- Lack of mechanisms to ensure that septic systems replaced through the program are failing;
- Dissatisfaction among residents who are ineligible for the program, ie. urban residents and residents who were unaware of the program when they paid for septic replacements and well upgrades and replacements;
- Unequal awareness of the grant, in that the ORCWP is not promoting it because it is over-subscribed but private contractors are advising clients. In 2008, for example, the Ottawa Septic office issued 120 permits for septic systems, while the ORCWP provided grants to 40 property owners;
- Perceived inequity in terms of private system owners who receive grants compared with those who see their well and septic as their responsibility and maintain them at their own expense.

From a municipal perspective, Council's policy in the Official Plan is that construction and maintenance of privately-owned services are the responsibility of the owner. Protection of groundwater quality in the rural area and municipal funding of private well and septic systems are significant issues for the City and should be considered in a broader context than that of the ORCWP evaluation. With more than 30,000 private systems in the City, the cost implications are clear. As well there is the question of whether grants should be made available in the urban area or other areas where public services are to be provided.

Research Question #2 - Can the program be designed to increase uptake in the most beneficial projects?

In order to increase participation in the program, the ORCWP needs to remove barriers to Ottawa's rural community and consider whether a larger client group can be drawn into the program.

Time, money and distrust of government are all barriers that need to be addressed to increase project uptake. Access to the program can be improved by:

- simplifying the available program information and making it more clear what the program does and who is eligible to apply. The program may be perceived in the community as a farm program or as a well and septic program, thus turning away potential non-farm participants.
- Simplify the program offerings by featuring a few types of projects. Eliminate projects such as grassed waterway, chemical storage and leachate seepage that haven't had uptake since the beginning of the ORCWP.
- eliminating the requirement for a home visit wherever possible and completion of a Healthy Home Guide or documentation supporting an Environmental Farm Plan. The Healthy Home Guide has become a valuable community resource, but having to complete it is one more barrier to applicants, especially if it is not relevant to the proposed project;

The City and the Conservation Authorities should explore the advantages of creating a one-window approach to stewardship grants through the Ontario Soil and Crop Improvement Association, which administers the Canada-Ontario Environmental Farm Program and other environmental programs.⁶ Different levels of integration could be considered, from a single application form and unified intake process through to one-

⁶ The Canada-Ontario EFP program and the Canada-Ontario Farm Stewardship Program (COFSP) are administered by the Ontario Federation of Agriculture (OFA) acting on behalf of the Ontario Farm Environmental Coalition. OFA signed the contribution agreement with Agriculture and Agri-Food Canada, and in turn, enlisted the Ontario Soil and Crop Improvement Association (OSCIA) to deliver the programs to agricultural producers. Greencover Canada (GC) and Tier 1 of the Canada-Ontario Water Supply Expansion Program (COWSEP) are also delivered by OSCIA under separate agreements with AAFC.

window approval of projects that are eligible for funding from both programs. One approach could see the ORCWP providing a percentage top up or flat amount in addition to the senior grant, with approval of the project for the COFSP sufficient to meet the ORCWP requirements. Such a move could potentially reduce the “government face” of the ORCWP for participants and streamline access, while strengthening ties among the Conservation Authorities, the City and the OSCIA. This avenue, however, would only be open to farm operators who meet the requirements of the COFSP and who want to participate in that program.

The ORCWP has benefited from the partnership between the City and the Conservation Authorities in administering the program. The Conservation Authorities bring to the table their experience administering clean water programs throughout the watersheds and economies in administering the Ottawa program in conjunction with their own. The program review committees of rural organizations and residents add value to the review of ORCWP project proposals. The CAs are knowledgeable about water quality issues throughout the watershed and the stewardship programs offered by the CA and other parties. They are well-positioned to increase participation in the ORCWP through outreach and education.

Additional members of the rural community could be drawn into the ORCWP. Small farm operators, rural residents who have horses on their property, and owners of large non-farm properties potentially may be interested in projects such as well decommissioning, restriction of livestock access to water, manure storage, fragile land retirement, riparian planting and stream restoration. Most of these projects delivered to date through ORCWP were completed by property owners with an Environmental Farm Plan and it is unclear how non-farm property owners or others outside the EFP could access the ORCWP. Rural organizations may also be interested and qualified to sponsor events to educate the public on water quality issues. An initiative to draw new individuals and organizations into the program complements the proposal to increase public education on water quality, since public education could lead to more interest in completing ORCWP projects.

The valued role of the Program Representative could be revised so that the program representative plays a stronger role in advising property owners on environmental practices and specific projects that could be implemented on their properties. The resources could be shifted towards property owners who need advice on their projects and away from visits to all applicants for all projects, regardless of their need for advice or information. Non-farm property owners or others for whom the EFP is not suitable may benefit from the on-site visit, especially if they have few other sources for advice. Where a project is proposed only to the ORCWP, a site visit would continue to be required to support the applicant, as well as to ensure the proposed project is warranted and completed satisfactorily.

The need to ensure project over-sight, from the need for the proposed project through to its completion, is a critical issue. However, alternatives to a site visit and a simplified process should be considered. For example, grants for decommissioning private wells

could be paid on receipt of an invoice by a qualified contractor, without a site visit or project review. Similarly, if the ORCWP is coordinated with the COFSP, the procedures in place to administer the cost- share through the OSCIA representative may be sufficient to release the ORCWP grant as well. These procedures include an inspection of the completed project and verification of invoices and proof of payment before any senior government money is released.

Proposals have been made to extend ORCWP funding for well and septic projects to the urban area served by private well and septic systems, in the view that the environmental benefits of the program are the same regardless of where the private service is located. Extension of grants for well and septic replacement to the urban area will need to be considered as part of the decision on continuing such grants within the program. Since municipal services are planned for the whole of the urban area, there is additional concern that well and septic grants could delay extension of these services.

A lack of money to contribute towards environmental projects is also a barrier to project uptake. The interviews and the literature both suggest that owners of larger, more prosperous farms are more likely than other farmers to take up project grants, in part because they have the farm income to do so. Money is also the primary incentive that draws applicants to the program. The grant amount and the percentage of the project cost that is funded needs to be adjusted to increase the uptake of the most beneficial projects. The following should be considered:

- Grants from all sources should cover 75% to 90% of project costs, while requiring a contribution from property owners to ensure their commitment to the project;
- The total amount available for the grant should reflect current project costs;
- More money should be available for projects that benefit the public more than the individual, projects such as buffer strip planting, livestock restrictions, and fragile land retirement;
- The \$150 per acre per year now provided for fragile land retirement and buffer strips seems appropriate but the number of years the grant is available could be extended to 10 years or more, similar to the Rural Clean Water Program in the South Nation Conservation watershed outside of Ottawa.

Research Question #3 - How will other incentive/ grant programs such as the Canada-Ontario Environmental Farm Plan (EFP) or the Ontario Drinking Water Stewardship Program affect the ORCWP?

At present, program staff with the ORCWP and the COFSP advise applicants of both programs, but there is limited overlap in the grants provided. As previously discussed, the present cap in the ORCWP on funding more than 50% of project costs (for most projects) precludes applications from property owners who have already secured 50% funding from the senior program and are ineligible for more from ORCWP.

The ORCWP is smaller than the senior government programs and will need to adapt over time as these programs change. The ORCWP can manage its relationship with the senior programs by monitoring changes in these programs and anticipating how they might affect uptake of the ORCWP. Demand for ORCWP funding and the types of projects sought through the program will vary depending on funding limits and project requirements in other programs.

Ontario Drinking Water Stewardship Program funds projects related to water quality within municipal wellhead protection areas or municipal water intake protection zones. Eligibility is restricted to property owners in defined areas adjacent to municipal wells providing water to Carp, Munster Hamlet, Vars and Kings Park in Richmond. Eligible projects include erosion control, nutrient management planning, riparian area management, and septic system inspection and upgrade.

Although it is smaller than the senior government programs, the ORCWP provides a vehicle for Ottawa to fund projects according to its own priorities and to provide direct support to Ottawa residents for water quality projects. Grant rates and levels can be adjusted to increase take-up of priority projects, for example, and program requirements set to attract rural residents who are not participating—or who are not eligible to participate—in other programs. Rural property owners are the first stewards of their land, and the ORCWP enables Council to support their work.

Increasing cross-promotion and coordination with other senior government and Conservation Authority incentive programs will help residents understand what the ORCWP does and how to apply.

6.0 Program Recommendations

Funded projects

- Continue funding best management practices and projects in the rural area that provide benefits to the public, in terms of direct improvements to surface and groundwater quality. These projects, which also benefit the property owner, include erosion control, livestock restrictions and fragile land retirement.
- Continue with funding private well decommissioning, for the public benefits it provides.
- Continue with agricultural best management practices and projects such as manure storage, clean water diversion, milkhouse washwater treatment and nutrient management planning. These projects are central to surface water and groundwater quality in the City, given the extent of farmland and the role of farmers as stewards of their land.
- Increase participation in the ORCWP by reaching out to small farm operations; the non-farm community; horse owners; and other rural residents who are not now participating in stewardship programs.
- Partner with rural organizations to promote best practices and stewardship programs in the rural community.
- Consider targeting delivery of the ORCWP within specific areas where surface and ground water problems have been identified.
- Reconsider the City's role in funding other well and septic projects, especially septic replacement project, as part of the municipal role in private services and groundwater protection. If septic replacement continues in the program, consider linking it to a septic re-inspection program to ensure that the work is necessary.

Accessibility

- Simplify the program offerings and application process, and make it clear what the program does and who can apply for grants.
- Explore with the Ontario Soil and Crop Improvement Association whether the ORCWP could be delivered through a one-window in conjunction with other cost-share programs to the rural agriculture community.
- Streamline the administration of well decommissioning by considering a system whereby payments are made on receipt of an invoice for the eligible work from a licensed contractor.

- Build on the current role of the Program Representative and the value of the site visit by providing greater support and on-site assistance with project development and implementation, as requested by the property owner and as required to ensure the proposed project is sound. This service can replace requirements to complete the Environmental Farm Plan, especially on non-farm properties.
- Increase the value of the grant and the percentage of costs that it can cover, in order to reduce financial barriers to participating in the program.

Administration

- Continue with the current program through 2010 while the renewed program is developed in consultation with the Conservation Authorities, the ORCWP Program Committee, and others.
- Build on the role of the Program Committee as advisors on new directions within the ORCWP, especially regarding educational initiatives, marketing and rural outreach.
- Revise the Terms of Reference for the ORCWP at the end of 2010 to reflect the renewed program structure and directions.

The ongoing advice of rural and government agencies to the ORCWP has strengthened the program since its inception. With representatives from Environmental Farm Plan, Ottawa-Carleton Soil and Crop Improvement Association, the Ottawa Stewardship Council, Federation of Agriculture, and provincial ministries, the ORCWP Program Committee has helped keep the program grounded in the rural community and responsive to rural interests. The committee's advice on the program in the years ahead will be invaluable.

As a program delivered by the conservation authorities, the ORCWP is well positioned to be coordinated with other Conservation Authority activities and programs. The committee structure established by the Conservation Authorities within the watershed to review program applications has brought experienced and knowledgeable persons to the table to review applications, as well as provided some economies in terms of sharing administration costs. The South Nation Conservation Authority has administered the budget and issued cheques to program participants, and reported on the program's operation to the City and program stakeholders. These are significant responsibilities that cannot be undervalued. As the program goes forward, this administrative structure will help keep ORCWP on solid footing.

Annex 1 – Ottawa Rural Clean Water Program projects approved for funding between 2000 and 2008

Project Type	2008		2007		2006		2005		2004		2003		2002		2001		2000		Total	Total
	#	Grants \$	#	Grants \$	#	Grants \$	#	Grants \$	#	Grants \$	#	Grants \$	#	Grants \$	#	Grants \$	#	Grants \$	#	Grants \$
Chemical storage	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Clean water diversion	0	0.00	1	975.00	0	0.00	1	5,000.00	2	1,862.00	0	0.00	0	0.00	0	0.00	0	0.00	4	7,837.00
Education	0	0.00	0	0.00	2	3,238.00	0	0.00	1	2,318.40	0	0.00	2	2,598.71	0	0.00	2	8,900.61	7	14,457.01
Erosion	0	0.00	2	6,000.00	1	606.65	1	1,062.00	3	8,953.50	2	7,826.00	1	5,000.00	1	5,000.00	2	7,006.64	13	36,454.79
Fragile land/cropping/buffer	2	2,500.00	6	6,260.00	7	9,270.00	25	31,616.00	18	28,286.00	17	24,226.00	5	14,720.00	5	15,140.00	4	14,300.00	89	131,598.00
Fuel Storage	0	0.00	0	0.00	2	1,750.00	0	0.00	0	0.00	0	0.00	2	2,000.00	0	0.00	0	0.00	4	1,750.00
Grassed waterways	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Leachate seepage	0	0.00	1	5,000.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	5,000.00
Livestock access restriction	0	0.00	1	4,315.67	1	1,405.73	3	8,112.00	6	20,835.02	1	2,572.86	1	5,000.00	2	9,744.00	0	0.00	15	46,985.28
Manure storage	2	27,611.60	2	30,000.00	1	15,000.00	2	15,000.00	1	15,000.00	1	10,000.00	2	20,000.00	1	10,000.00	2	20,000.00	14	142,611.60
Milkhouse washwater	1	1,382.40	0	0.00	1	5,000.00	1	3,663.85	2	5,600.77	1	1,093.01	1	5,000.00	0	0.00	1	5,000.00	8	21,740.03
Nutrient Management Plan	1	1,000.00	0	0.00	2	1,677.00	2	1,765.05	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	5	4,442.05
Precision farming	0	0.00	1	300.00	2	1,000.00	5	2,375.00	5	2,375.00	3	1,375.00	4	2,000.00	4	2,000.00	4	2,000.00	28	11,425.00
Private well decommissioning	8	5,970.75	9	5,836.75	8	4,665.88	9	6,648.75	10	8,423.75	0	0.00	0	0.00	0	0.00	0	0.00	44	31,545.88
Private well replacement	4	7,120.98	2	4,000.00	4	7,200.00	5	8,725.00	2	3,000.00	0	0.00	0	0.00	0	0.00	0	0.00	17	30,045.98
Private well upgrading	29	13,490.35	51	23,541.71	57	25,787.11	47	22,293.48	31	16,622.55	0	0.00	0	0.00	0	0.00	0	0.00	215	101,735.20
Sewage system	40	79,269.46	37	71,987.00	22	42,000.00	8	8,000.00	5	4,492.50	1	500.00	5	2,500.00	2	1,000.00	4	2,000.00	124	209,248.96
Total	87	138,345.54	113	158,216.13	110	118,600.37	109	114,261.13	86	117,769.49	26	47,592.87	23	58,818.71	15	42,884.00	19	59,207.25	588	796,876.78

Ottawa Rural Clean Water Program – Summary of Grant Structure

Project Type	2000		2001		2002		2003		2004		2005		2006		2007		2008	
	Rate %	Grant \$	Rate %	Grant \$	Rate %	Grant \$	Rate %	Grant \$	Rate %	Grant \$	Rate %	Grant \$	Rate %	Grant \$	Rate %	Grant \$	Rate %	Grant \$
Septic system	50	500	50	500	50	500	50	500	50	1000	50	1000	50	2000	50	2000	50	2000
Fuel storage	50	1000	50	1000	50	1000	50	1000	50	1000	50	1000	50	1000	50	1000	50	1000
Chemical storage	50	2000	50	2000	50	2000	50	2000	50	2000	50	2000	50	2000	50	2000	50	2000
Well replacement	-	-	-	-	-	-	50	500	50	2000	50	2000	50	2000	50	2000	50	2000
Well upgrading	-	-	-	-	-	-	-	-	50	1000	50	500	50	500	50	500	50	500
Well decommissioning	-	-	-	-	-	-	-	-	75	1000/ well	75	1000/ well	75	1000/ well	75	1000/ well	75	1000/ well
Erosion control	50	5000	50	5000	50	5000	50	5000	50	5000	50	5000	50	3000	50	3000	50	3000
Fencing along watercourses (by contractor or self installed)	75 or 100	5000	75 or 100	5000	75 or 100	5000	75 or 100	5000	75 or 100	5000	75 or 100	5000	75 or 100	5000	75 or 100	5000	75 or 100	5000
Grassed waterways	50	5000	50	5000	50	5000	50	5000	50	5000	50	5000	50	5000	50	5000	50	5000
Fragile land retirement/buffers	75	6000	75	6000	75	6000	75	6000	75	6000	75	6000	75	6000	75	6000	75	6000
Nutrient management plan	50	1000	50	1000	50	1000	50	1000	50	1000	50	1000	50	1000	50	1000	50	1000
Wastewater/manure storages	50	10000	50	10000	50	10000	50	10000	50	15000	50	15000	50	15000	50	15000	50	15000
Clean water diversions	50	5000	50	5000	50	5000	50	5000	50	5000	50	5000	50	5000	50	5000	50	5000
Leachate seepage control	50	5000	50	5000	50	5000	50	5000	50	5000	50	5000	50	5000	50	5000	50	5000
Milkhouse wastewater	50	5000	50	5000	50	5000	50	5000	50	5000	50	5000	50	5000	50	5000	50	5000
Educational initiatives	50	5000	50	5000	50	5000	50	5000	75	5000	75	5000	75	5000	75	5000	75	5000
Cropping practices	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Precision farming	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	1000	50	1000

Summary of Performance Incentives

Project Type	2000	2001	2002	2003	2004	2005	2006	2007	2008
Grassed waterways	\$150/ac/yr	\$150/ac/yr	\$150/ac/yr	\$150/ac/yr	\$150/ac/yr	\$150/ac/yr	\$150/ac/yr	\$150/ac/yr	\$150/ac/yr
Fragile land retirement/buffers	\$150/ac/yr	\$150/ac/yr	\$150/ac/yr	\$150/ac/yr	\$150/ac/yr	\$150/ac/yr	\$150/ac/yr	\$150/ac/yr	\$150/ac/yr
Cropping practices	\$20/ac/yr	\$20/ac/yr	\$20/ac/yr	\$20/ac/yr	\$20/ac/yr	\$20/ac/yr	-	-	-
Precision farming	\$10/ac/yr	\$10/ac/yr	\$10/ac/yr	\$10/ac/yr	\$10/ac/yr	\$10/ac/yr	-	-	-

Summary of Grant Structure Changes

Year	Project Type	Change	Reason
2003	Septic	Increase grant max to \$1,000	Increased to reflect the total costs of implementing this project type
	Well Replacement	Added project type	Ground water component added to program; well decommissioning and upgrades were being funded through OFA with funding from Healthy Futures for Ontario Agriculture and therefore were not added to the ORCWP at this time
2004	Well Decommissioning	Added project type	OFA well program (as per above) ended, no other funding was available for this project type and it was added under the groundwater component
	Well Upgrades	Added project type	OFA well program (as per above) ended, no other funding was available for this project type and it was added under the groundwater component
	Manure	Increase grant max to %15,000	Increased to reflect the total costs of implementing this project type; EFP grants did not exist in 2004 at the same rates as the current program, ORCWP was main funding source for this project type.
	Educational Initiatives	Grant rate increased to 75%	Increased in an effort to promote uptake of this grant; potential applicants for education initiatives are not-for-profit groups and may not be able to match project funding to 50% (volunteer hours for this project type only were considered part of the applicants 25% contribution)
2005	Well Upgrades	Decreased grant max to \$500	Majority of projects submitted were for extension of well casing as the result of other maintenance being carried out on the well; Committee felt that these projects were a lower priority and funding should reflect this.
2006	Septic	Increase grant max to \$2,000	Increased to reflect the total costs of implementing this project type
	Erosion	Decreased grant max to \$3,000	Most applications for this project type did not meet guidelines or were a lower priority (erosion was minimal or proposed project was landscaping in nature), grant amount was reduced in an effort to target only the appropriate project types
	Cropping Practices	Phase out of performance incentive	Committee felt that residue management and no-till were common practices and the performance incentive was simply paying farmers for what they are already doing (no longer an incentive to switch cropping practices)
	Precision Farming	Phase out of performance incentive	Committee felt that once a farm was set up for precision farming, annual performance payments were not necessary to compensate the farmer for the change in practice (they were receiving benefits from reduce fertilizer costs, etc.)
2007	Precision Farming	Added a grant for precision farming to replace former performance incentive	Committee felt that the costs for setting up precision farming were a legitimate expense and added funding to the Program for landowners to make the switch to this practice, instead of an annual payment to continue using the practice.

Annex 2

Evaluation Framework

The evaluation was undertaken following the framework described in the “A Blueprint for Public Health Management – A Program Evaluation Tool kit” (Ottawa-Carleton Health Department – Porteous, Sheldrick and Stewart, 1997). This framework outlines five steps for an evaluation process; these steps reflect the essential elements of a typical evaluation.

The five steps are:

- Step 1 – Focus the Evaluation – Logic model development
- Step 2 – Select the Methods – Data collection
- Step 3 – Develop Tools – Questionnaires – what do we need – telephone survey, person-to-person
- Step 4 – Data Collection – pre-test, qualitative and/or quantitative analysis, validation
- Step 5 – Decision – Results and what are we recommending for the next stage of the program

Evaluation Questions

The evaluation focused on three key issues. Each issue corresponds to the activities, target groups and outcomes of the program.

1. Which projects have the greatest benefit to improving and protecting surface and groundwater quality?
 - a) What are the benefits of each project type?
 - b) To whom/ what do benefits accrue?
 - c) Which benefits are water quality environmental benefits?
 - d) What are some criteria to recommend ‘greatest’ environmental benefits?
 - e) What are other projects or new projects that are not funded?
2. Can the program be designed to increase uptake of the most beneficial projects?
 - a) Identify the incentives and barriers
 - b) Overcoming barriers
 - c) Increasing project attractiveness
 - d) Identify unintended affects

- e) What are the trends with ORCWP and other programs
 - f) Identify users
 - g) Identify projects
3. How will other incentive/grant programs such as incentives from a renewed Canada-Ontario Environmental Farm Plan or the Source Water Protection-Clean Water Act affect the Ottawa Rural Clean Water Program?
- a) Identify the other grant programs
 - b) What do they do?
 - c) Identify user groups/audience
 - d) Identify the overlaps and gaps
 - e) Identify the attractiveness of a program(s)
 - f) Identify the unattractiveness of a program(s)
 - g) Identify changes in programs

Methods

After determining the key questions for the evaluation, an evaluation framework was developed as shown in Exhibit 1. Using the key evaluation questions and their sub-issues as a guide, a series of interview questions were developed. The Evaluation Advisory Committee suggested documents to review and people to interview. Interviewees included members of the ORCW Program Committee, Program staff, government staff from the City of Ottawa, Conservation Authorities, OMAFRA, MOE, farming community representatives from OSCIA, farm consultants who specialize in crop management and precision farming, equipment suppliers, a representative of Farm Credit Canada, Rural Issues Advisory Committee member, member of the public, and staff from other stewardship programs. A complete list of interviewees is included in Annex 3.

Exhibit 1: Evaluation Framework

Key Evaluation Issues	Sub-Issues	Review Questions	Methods and Tools
1. Which projects have the greatest benefit to improving and protecting surface and groundwater quality?	a) What are the benefits of each project type?	Are there environmental benefits missing from Table 1? Are any over-emphasized?	File and document review: Documentation on Program OMAFRA BMP Booklets – OMFRA WEBS Project
	b) To whom/ what do benefits accrue?		Interviews: OSCIA OMAFRA Applicants 2007 and 2008 LandOwner Resource Centre Database – Inquiries
	c) Which benefits are water quality environmental benefits?		Interviews: OSCIA

Key Evaluation Issues	Sub-Issues	Review Questions	Methods and Tools
	d) What are some criteria to recommend 'greatest' environmental benefits?	How would you decide which project yields the most environmental benefit? Why?	OMAFRA OtherORCWP Two or three farm consultants
	e) What are other projects or new projects that are not funded?	Table 1 shows the projects we fund. Do you think there are other kinds of projects the program could potentially fund? Which projects would you recommend the City fund? Why?	For the validation of economics – Liability of lending – Why are they allowed to do the project or not? Trends in Farm Equipment purchases
2. Can the program be designed to increase uptake of the most beneficial projects?	a) Identify the incentives and barriers	What are the key incentives for applicants to undertake projects?	File and document review: RCWP database Demographics – farm vs non-farm statistics and analysis of applicants to ORCWP Literature Research Interviews with: Key Stakeholders Evaluation Advisory Committee Program Committee Conservation Authorities, LandOwner Resource Centre Farm Organization Representatives OFA, OSCIA EFP representative Cattlemen Associations Milk Committees Non-agricultural Organizations Stewardship Council Community Associations City of Ottawa Council and Committees Agriculture and Rural Affairs Committee (ARAC) Rural Issues Advisory Committee (RIAC) Township Advisory Committees Source Water Protection Committees Two or three farm consultant representatives Staff – Septic Office, RVCA, MOE Well and septic Contractors
	b) Overcoming barriers	What are key barriers to undertaking projects? How can these barriers be overcome?	
	c) Increasing project attractiveness	How can we increase the uptake of projects you have identified as the most important?	
	d) Identify unintended affects	Are there any unintended effects resulting from the grants program?	
	e) Identify users	Are the grant levels sufficient to motivate applicants?	
	f) What are the trends withORCWP and other programs	What trends do you see happening in agriculture and in the rural area? How do you think these trends have affected uptake of the program? Conversely, do you think the ORCWP has influenced any of these trends?	
	g) Identify projects		

Key Evaluation Issues	Sub-Issues	Review Questions	Methods and Tools
3. How will other incentive/grant programs such as incentives from a renewed Canada-Ontario Environmental Farm Plan or the Source Water Protection-Clean Water Act affect the Ottawa Rural Clean Water Program?	a) Identify the other grant programs	What is your annual budget? What is your geographic area? What is the total value of your grants? Generally, what is the balance of your budget spent on? What are your education activities? How much is spent on education?	<p>File and document review: websites and documentation of locally available grants programs i.e. Senes – Wetland and Drain Report</p> <p>Interviews with representatives of grants programs: Conservation Authorities - Trees – Green Acres Environmental Farm Plan Ducks Unlimited Stewardship Coordinator City of Ottawa – Trees, CEPGP Other ORCWP OMAF – Bio-digesters SARFIP MNR CFWIP Well Aware Two or three farm consultant representatives</p>
	b) What do they do?	Which projects receive the most grant funding? Which projects receive the greatest number of grants? Who are your target groups?	
	c) Identify user groups/audience	How does take-up of EFP projects in Ottawa compare with take-up where there is no ORCWP? Is the ORCWP an incentive for EFP participation? Can you provide literature references or data to support your conclusions? Has your program tried to increase the uptake of any target groups? If so, how?	
	d) Identify the overlaps and gaps	Are there opportunities for ORCWP to work with your grants program?	
	e) Identify the attractiveness of a program(s)		
	f) Identify the unattractiveness of a program(s)		
	g) Identify changes in programs	Has your program tried to increase the uptake of any target groups? If so, how? Has your program tried to increase the uptake of any specific projects? If so, how?	
		Do you have any further comments you wish to share?	

A table listing the project types, environmental, social and economic benefits and benefits to the applicant and program was created to accompany the key issue for the evaluation

of determining which projects have the greatest benefit to improving and protecting surface and groundwater quality. The table titled Benefits Analysis has been included in Exhibit 2.

A master questions list was created and columns with each interviewee group (Program Committee, Program staff, government staff, farming community representatives, equipment suppliers, Farm Credit Canada, Councillors and Rural Advisory Committees, other stewardship programs) were added to the table. This list has been included in Appendix C. This was to ensure that the questions could be tailored so that they were relevant for the interviewee. For example, asking about take-up of the EFP projects in Ottawa compared with where there is noORCWP, is not a question all the interviewees had the information or tools to answer.

A series of 34 interviews were conducted in February and March of 2009. City staff and Marbek Consultants conducted the interviews and collected the data. Interviews were conducted by telephone or via email. Detailed transcripts of these interviews were taken and are on file.

A review of projects funded by the program between 2000 and 2008 was conducted to determine trends and patterns in uptake of project types.

A review of available literature was conducted to determine which projects have the greatest benefit to improving and protecting surface and groundwater quality. A review of recently published journal articles was completed using an on-line search engine (Web of Science). Keyword searches included terms such as Best Management Practices, Rural Clean Water Program, agricultural water quality, etc. The benefit of the Web of Science search engine is that it provides hyperlinks to cited references as well as more recent articles that have referenced the viewed article.

A review of subwatershed studies and the City of Ottawa's Baseline Surface Water Quality Program was conducted to determine the issues with rural water quality, the sources of the problem and the suggested remedies.

A review of the project types offered by other Rural Clean Water Programs in Ontario was conducted to determine if the projects the programs fund are similar to Ottawa's program.

A review of project types offered by other stewardship programs was conducted to determine if there are opportunities for the ORCWP to work with other grants programs and whether there are gaps or overlaps in grants being provided to City of Ottawa residents.

A review of Ottawa's rural demographics based on reports prepared by the Planning and Growth Management Department and from the Census of Agriculture was conducted to determine who lives and what the land uses are in the rural area as well as how many farms and the type, income, size of farms.

A review of available reports was conducted to determine the most effective way of gaining broad participation from farmers in the best management practices. Several studies were reviewed, the most comprehensive was a report prepared by the Christian Farmers Federation of Ontario in 2002.

Annex 3 – Rural Clean Water Program Review – Benefits Analysis

PROJECT	PROJECT EFFECT	BENEFIT TO THE APPLICANT	BENEFIT TO THE PROGRAM PUBLIC BENEFIT	ECONOMIC, SOCIAL AND OTHER KEY BENEFITS
WELL AND SEPTIC				
Private Well Decommission	Mitigation of environmental risk	<ul style="list-style-type: none"> - Improved risk management by the elimination of contaminant pathway to groundwater - Potential elimination of contaminant to groundwater - Increased individual awareness 	<ul style="list-style-type: none"> - Improved risk management by elimination of contaminant pathway to groundwater - Increased public awareness 	<p>Safety, health benefits</p> <p>Economic – the grant helps applicant pay for project</p> <ul style="list-style-type: none"> - increased ability to farm land adjacent to location of well <p>Social – reduces restrictions for applicants land to sever or sell</p>
Private Well Replacement	Mitigation of environmental risk	<ul style="list-style-type: none"> - Improved risk management by the elimination of contaminant pathway to groundwater - Potential elimination of contaminant to groundwater - Risk of contamination of groundwater in aquifer is low - Increased individual awareness 	<ul style="list-style-type: none"> - Improved risk management by elimination of contaminant pathway to groundwater - Risk of contamination of groundwater in aquifer is low - Increased public awareness 	<p>Economic – the grant helps applicant pay for project</p> <p>Social – provides a secure source of drinking water</p> <ul style="list-style-type: none"> - reduces restrictions for applicants land to sever or sell - applicant meet the requirements of Ontario Regulation 903
Private Well Upgrading	Mitigation of environmental risk	<ul style="list-style-type: none"> - Improved risk management by the elimination of contaminant pathway to groundwater - Potential elimination of contaminant to groundwater - Increased individual awareness 	<ul style="list-style-type: none"> - Improved risk management by elimination of contaminant pathway to groundwater - Increased public awareness 	<p>Economic – the grant helps applicant pay for project</p> <p>Social – reduces restrictions for applicants land to sever or sell</p> <ul style="list-style-type: none"> - applicant meet the requirements of Ontario Regulation 903
Sewage System	Mitigation of environmental risk	<ul style="list-style-type: none"> - Improved risk management of contamination of groundwater and surface water - Increased individual awareness 	<ul style="list-style-type: none"> - Improved risk management of contamination of groundwater and surface water - Increased public awareness 	<p>Economic – the grant helps applicant pay for project</p> <p>Social – health benefits</p> <ul style="list-style-type: none"> - reduces restrictions for applicants land to sever or sell applicant meet requirements of Ontario Building

PROJECT	PROJECT EFFECT	BENEFIT TO THE APPLICANT	BENEFIT TO THE PROGRAM PUBLIC BENEFIT	ECONOMIC, SOCIAL AND OTHER KEY BENEFITS
				Code Part 8
CHEMICAL AND FUEL HANDLING				
Chemical Storage/ Handling	Mitigation of environmental risk	- Improved risk management of chemical contamination - Increased individual awareness	- Improved risk management of chemical contamination - Increased public awareness	Economic – the grant helps applicant pay for project - Potential to increase efficiency - Potential to reduce remediation costs by preventing spill Social - Increased compliance with regulatory requirements and increased security - firefighters know where the chemicals are all stored
Fuel Storage/ Handling	Mitigation of environmental risk	- Improved risk management of fuel contamination - Increased individual awareness	- Improved risk management of chemical contamination - Increased public awareness	Economic – the grant helps applicant pay for project - Potential to increase efficiency - Potential to reduce remediation costs by preventing spill Social - firefighters know where the chemicals are all stored
EROSION CONTROL				
Erosion Control Structures	Environmental Benefit	- Increased water quality protection by reducing sediment and nutrient loading - Increased individual awareness	- Increased water quality protection by reducing sediment and nutrient loading - Reduced eutrophication - Increased public awareness	Economic – the grant helps applicant pay for project - Potential to increase property value Social - improve recreational use of watercourse in some cases - Improved risk management due to protection of property
Fragile Land Retirement Buffers	Environmental Benefit	- Increased water quality protection by reducing sediment loading - The potential to control	- Increased water quality protection by reducing sediment and nutrient loading	Economic – the grant helps applicant pay for project - Future economic

PROJECT	PROJECT EFFECT	BENEFIT TO THE APPLICANT	BENEFIT TO THE PROGRAM PUBLIC BENEFIT	ECONOMIC, SOCIAL AND OTHER KEY BENEFITS
		<ul style="list-style-type: none"> invasive species, improve wildlife and aquatic habitat - Potential to reduce wind erosion - Increased individual awareness -<i>some</i>: disadvantage of lost arable land 	<ul style="list-style-type: none"> - Reduced eutrophication - Increased public awareness 	benefit possible depending on what's planted
Grassed Waterways	Environmental Benefit	<ul style="list-style-type: none"> - Increased water quality protection by reducing sediment loading - Potential to improve wildlife and aquatic habitat - Increased individual awareness 	<ul style="list-style-type: none"> - Increased water quality protection by reducing sediment and nutrient loading - Reduced eutrophication - Increased public awareness 	<p>Economic – the grant helps applicant pay for project</p> <ul style="list-style-type: none"> - Decreased maintenance costs
AGRICULTURAL BEST MANAGEMENT PRACTICES				
Livestock Access Restriction	Environmental Benefit	<ul style="list-style-type: none"> - Increased water quality protection by reducing sediment and nutrient loading - Potential to improve wildlife and aquatic habitat - Increased individual awareness 	<ul style="list-style-type: none"> - Increased water quality protection by reducing sediment and nutrient loading - Reduced eutrophication - maintain riparian buffer intact and filtering ability - Increased public awareness 	<p>Economic – the grant helps applicant pay for project</p> <ul style="list-style-type: none"> - Improved pasture management providing greater animal gains - Higher economic value of the land with better pastures <p>Social – Increase flood control</p> <ul style="list-style-type: none"> - meet the requirements of the Nutrient Management Act
Clean Water Diversion	Mitigation of environmental risk	<ul style="list-style-type: none"> - Improved risk management of contamination of surface water and groundwater - Increased individual awareness 	<ul style="list-style-type: none"> - Improved risk management of contamination of surface water and groundwater - Increased public awareness 	<p>Economic – the grant helps applicant pay for project</p> <ul style="list-style-type: none"> - Reduced operating costs, reduced waste volume and reduced storage needs - Improved herd health <p>Social – meet the requirements of the Nutrient Management Act</p>
Leachate Seepage Control	Mitigation of environmental risk	<ul style="list-style-type: none"> - Improved risk management of contamination of surface water and groundwater 	<ul style="list-style-type: none"> - Improved risk management of contamination of surface water and groundwater 	Economic – the grant helps applicant pay for project

PROJECT	PROJECT EFFECT	BENEFIT TO THE APPLICANT	BENEFIT TO THE PROGRAM PUBLIC BENEFIT	ECONOMIC, SOCIAL AND OTHER KEY BENEFITS
		- Increased individual awareness	- Increased public awareness	Social – meet the requirements of the Nutrient Management Act
Manure Storage	Mitigation of environmental risk	- Improved risk management of contamination of surface water and groundwater - Increased individual awareness	- Improved risk management of contamination of surface water and groundwater - Increased public awareness	Economic – the grant helps applicant pay for project Social – meet the requirements of the Nutrient Management Act
Milkhouse Washwater Treatment	Mitigation of environmental risk	- Improved risk management of contamination of surface water and groundwater - Increased individual awareness	- Improved risk management of contamination of surface water and groundwater - Increased public awareness	Economic – the grant helps applicant pay for project Economic – the grant helps applicant pay for project Social – meet the requirements of the Nutrient Management Act
Nutrient Management Plan/ Turf Management Plan	Mitigation of environmental risk	- Improved risk management of contamination of groundwater and surface water - Increased individual awareness	- Improved risk management of contamination of surface water and groundwater - Increased public awareness	Economic – the grant helps applicant pay for project - Increased efficiency and cost saving by reducing fertilizer costs Social – meet the requirements of the Nutrient Management Act
Precision Farming	Environmental Benefit	- Improved risk management of contamination of groundwater and surface water - Increased individual awareness	- Improved risk management of contamination of surface water and groundwater - Increased public awareness	Economic – the grant helps applicant pay for project - Increased efficiency and cost saving by reducing fertilizer costs Social – meet the requirements of the Nutrient Management Act
EDUCATION				
Educational Initiatives	Mitigation of environmental risk	- Increased individual awareness	-Increased public awareness	Social benefit – promotion of the applicant's group

* Environment Benefit – benefit to the environment, in this case a benefit or improvement to surface and groundwater by removing sediment or contaminants.

Mitigation of environmental risk – steps taken to reduce the risk of a negative impact on the surface water or groundwater, e.g. reducing the risk that sediments or contaminants enter the groundwater/surface water

Annex 4

Overview of other Rural Clean Water Programs – Watersheds Outside Ottawa

The following section is based on Table 1: Other Rural Clean Water Programs in Ontario. An internet research exercise focusing on the project categories offered by other Rural Clean Water Programs across Ontario provided the content of Table 1 and in turn, offers the following findings.

The 14 programs outside the Ottawa subwatersheds all support comparable agriculture best management practices. Ottawa is the only program to fund leachate seepage control and precision farming; three programs support cropping practices, discontinued in Ottawa; and tree planting, which is funded through other programs here. Four other programs offer fuel storage and chemical storage. Most other programs fund well upgrades (11 programs) and well decommissioning (11 programs) but few fund well replacements (2 programs) and septic replacements (5 programs).

Well and Septic

Septic System: 5 other programs (out of 14) offer this project category. 4 other programs offer a higher grant maximum, while 1 other offers a lower grant maximum.

Well Replacement: 2 other programs offer well replacements. 1 program offers a higher grant maximum and the other offers a lower grant maximum.

Well Upgrade: 11 other programs offer well upgrades. 8 of them offer higher grant maximums and 3 offer an equal grant maximum to Ottawa.

Well Decommissioning: 11 other programs offer well decommissions. 4 programs offer higher grant maximums, 2 programs offer lower grant maximums and 5 offer an equal grant maximum to Ottawa.

Chemical and Fuel Handling

Fuel Storage: 4 (out of 14) other programs offer fuel storage, with 3 offering higher grant maximums and 1 offering a lower grant maximum.

Chemical Storage: 4 other programs offer chemical storage, with all 4 offering lower grant maximums.

Agricultural Best Management Practices

Erosion Control: all 14 other programs offer the erosion control category. 9 programs offer higher grant maximums, 2 offer lower grant maximums and 3 offer an equal grant maximum to Ottawa.

Watercourse Fencing: 13 other programs offer the watercourse fencing category. 9 programs offer higher grant maximums, 2 offer lower grant maximums and 2 offer an equal grant maximum to Ottawa.

Grassed Waterways: 10 other programs offer this project category. 4 offer higher grant maximums, 2 offer lower grant maximums and 4 offer equal grant maximums to Ottawa

Fragile Land Retirement: 9 other programs offer this project category. 3 offer higher grant maximums, 4 offer lower grant maximums and 2 offer equal grant maximums to Ottawa

Nutrient Management Plans: 6 other programs offer this project category. 1 offers a higher grant maximum, 2 offer lower grant maximums and 3 offer equal grant maximums to Ottawa.

Waterwater/Manure Storage: 8 other programs offer this project category. None offer a higher grant maximum, 6 offer lower grant maximums and 2 offer equal grant maximums to Ottawa.

Clean Water Diversions: 12 other programs offer this project category. 1 offers a higher grant maximum, 9 offer lower grant maximums and 2 offer equal grant maximums to Ottawa.

Leachate seepage control: No other program offers this project category

Milkhouse wastewater: 8 other programs offer this project category. 2 offer higher grant maximums, 1 offers a lower grant maximum and 5 offer an equal grant maximum to Ottawa.

Precision Farming: No other program offers this project category

Cropping Practices: Ottawa does not offer this project category but 3 other programs do.

Tree Planting: Ottawa does not offer this project category but 11 other programs do.

Education Initiatives

One other program offers this project category

Other Projects:

Decommissioning of retired or unused tanks or storage facilities, offered by Huron County RWP. The grant rate is 50%, up to \$3,000.

Huron County RWP has initiated a pilot project “Payment for Environmental Goods and Services (PEGS)”, which is similar to Alternative Land Use System (ALUS). It involves

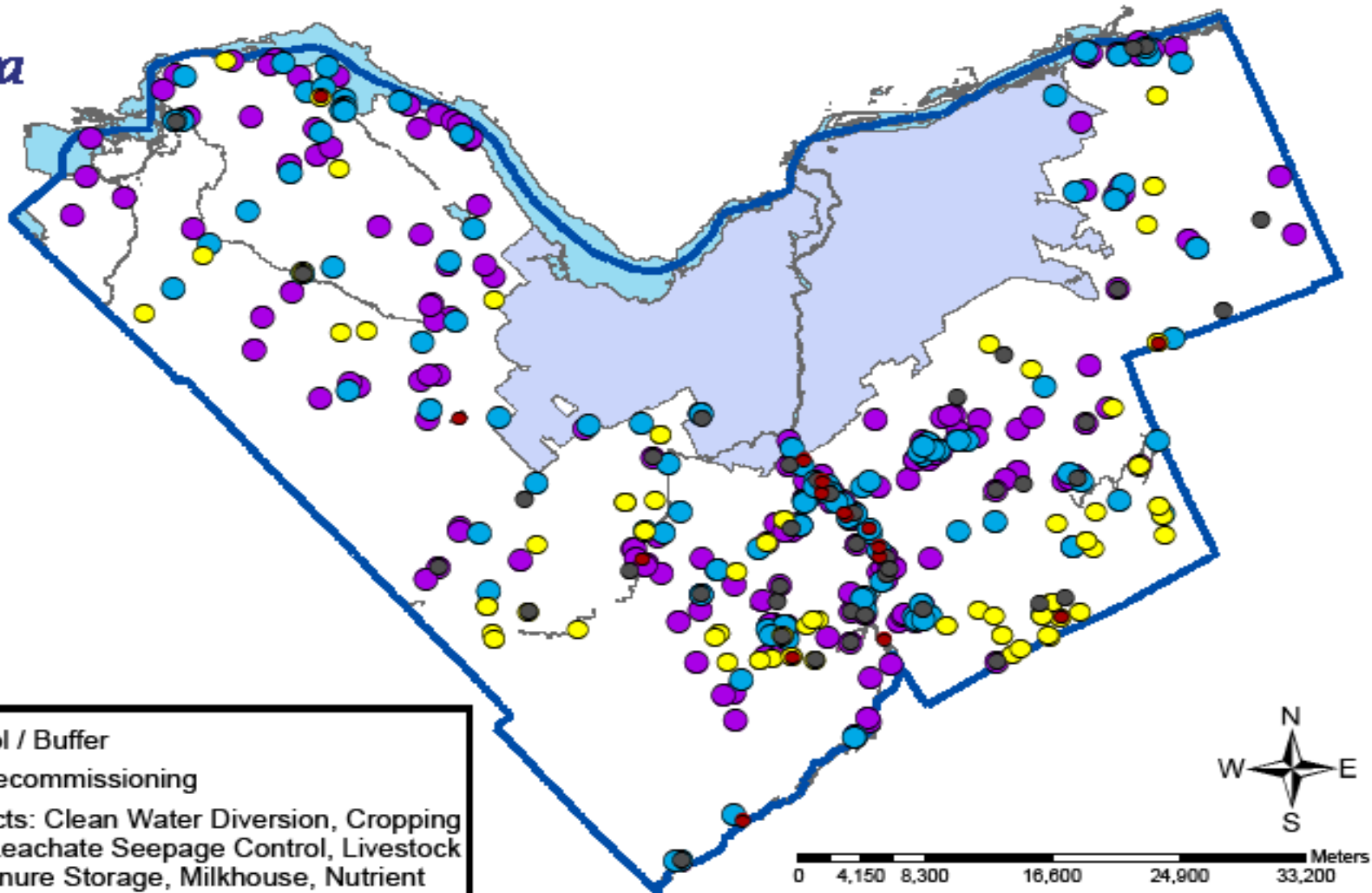
retiring riparian area previously in crops or pasture to create large buffers. Payment rate is \$250/acre/year for up to 10 acres. The land must be actively restored and CA provides planting plan.

Hamilton-Halton Watershed Stewardship Program is not included in Table 1 because it offers many more projects than most rural clean water programs, including extensive habitat improvement projects.

Other projects include:

- Ganaraska Conservation has an “Other” project (50%, \$2500)
- Waterloo and Wellington RCWPs have a dead stock composting project (both at 50%, \$2000)
- Waterloo and Wellington RCWPs, Niagara have a Machinery crossing improvements (Waterloo and Wellington both at 50%, 2000\$, Niagara 75%, \$10000)
- London, Stratford, Middlesex, Oxford, St. Mary’s, Perth and Niagara has a Wetland enhancement project (Oxford 50-70%, \$3000, Niagara 75%, \$10000)
- Huron County has a Manure storage decommissioning project (50%, \$3000)
- South Nation has Constructed Wetlands for Wastewater Treatment/Disposal (50%, \$5,000)
- Rideau Valley RCWP has Surface/Wastewater Treatment/Disposal (75%, \$5,000)

Rural Clean Water Program Projects 2003-2008



- Erosion Control / Buffer
- Private Well Decommissioning
- Farming Projects: Clean Water Diversion, Cropping Practices, Leachate Seepage Control, Livestock Access, Manure Storage, Milkhouse, Nutrient Management Plan, Precision Farming
- Sewage System
- Private Well Upgrading / Replacement

Note: Due to the large number of Private Well upgrading/Replacement and Sewage System projects completed in close proximity to the Rideau River some of the symbols for these projects are obscured on this map.
To simplify the map, the following completed projects have not been shown: Fuel Storage and Handling Facility (7), Educational Initiatives (4), Fragile Land Retirement (3)

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