Agriculture and Agri-Food Canada | Agriculture et Agroalimentaire Canada

Replacement Class Screening Report

for

Small Scale Farm Infrastructure Projects

July 25, 2005

Agriculture and Agri-Food Canada-
Prairie Farm Rehabilitation Administration

Canada

ACKNOWLEDGEMENTS

The development of national Class Screening Reports requires a concerted effort by a large team of people. It is my pleasure to recognize the contributions made, not only by my AAFC colleagues, but also by our partners in other federal agencies, provincial agencies, and non-government agricultural organizations. In addition to the following RCSR for Small Scale Farm Infrastructure Projects, AAFC has undertaken to prepare three other Class Screening Reports:

- Soil Conservation/Erosion Control Model Class Screening Report;
- Water Well Construction and Decommissioning Replacement Class Screening Report;
- Farm Water Infrastructure Model Class Screening Report.

First among those to be acknowledged for her role as lead author is Tamara Horechko, Environmental Analyst, AAFC-PFRA, Prairies East. As lead author, Tamara has shouldered the primary responsibility for report research and writing. In carrying out her role, Tamara has demonstrated leadership, dedication, and perseverance. Tamara, along with the lead authors and their advisors for the other three AAFC Class Screening Reports, have worked as a cohesive team to ensure that AAFC exercises a consistent and high quality national approach to the assessment of small scale farm infrastructure projects and other environmentally sustainable agricultural projects supported by AAFC. It is also important to thank all other members of the Environmental Planning Unit, AAFC-PFRA, who contributed to the technical understanding of the projects and to the class screening content. The lead author is appreciative of their contributions, guidance and support throughout this process.

From the conceptual stage through to declaration and implementation, Robyn-Lynne Virtue, Class Screening Advisor, Canadian Environmental Assessment Agency has been our constant advisor, supporter, and companion. She has indeed set the standard for client service. As a result of her years of experience with the Agency and knowledge acquired through working with other Responsible Authorities in the development of their Class Screenings, Robyn very capably guided us through the process and contributed greatly to the organization of the Class Screening Reports. AAFC is grateful to the Agency for the substantial financial support which was provided to assist in covering incremental costs of producing the class screening reports.

Regional factors and differences which are inherent within Canadian agriculture have been considered by AAFC in the development of this and other national class screening reports. To ensure that the report reflects technical aspects of small scale farm infrastructure projects across our country, a Technical Review Team was established to review and comment on the draft report. AAFC acknowledges and thanks Team members, as listed below, for broadening our geographic perspectives

from the prairies to include other regions of Canada. The review process was facilitated by Ryerson Christie, XIE & Associates Ltd.

- Niels Holbek, BC Agricultural Council, Black Creek, BC
- Glen Brandt, AAFC-PFRA, Red Deer, AB
- Bill Henley, Sask Agriculture, Food and Rural Revitalization, Saskatoon, SK
- Dale Timmerman, AAFC-PFRA, Morden, MB
- Scott Duff, ON Ministry of Agriculture and Food, Guelph, ON
- Isabelle Breune/Stéfanie Larouche-Boutin, AAFC, Montreal/Quebec, QC
- Bonnie Robertson, NB Agriculture, Fisheries, and Aquaculture, Fredericton, NB
- Steven Tattrie, NS Department of Agriculture and Fisheries, Truro, NS
- Russell Campbell, PEI Department of Agriculture, Fisheries, and Aquaculture, Charlottetown, PEI

AAFC appreciates the cooperation received from Environment Canada, Fisheries and Oceans Canada, and Transport Canada in the review of the draft report to ensure that their concerns as federal authorities have been addressed.

In addition to the lead authors and members of the Technical Review Team, numerous other AAFC staff have contributed to the development of the Class Screenings. I am particularly grateful to Jennifer Edwards for her leadership in developing the proposals and laying the foundation for work to follow and for coordinating translation. A final acknowledgement goes to all members of the national AAFC –PFRA Environmental Planning Unit for helping to ensure that the report is relevant and applicable to the provinces/region for which they are responsible.

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1.0 Introduction

Agriculture and Agri-Food Canada (AAFC), has long been involved in small scale farm infrastructure projects, either by providing funding, acting as the proponent, or by providing an interest in land. Small scale farm infrastructure projects could involve the construction, operation, modification, decommissioning, or abandonment of physical works for containment of equipment, tools, chemicals, fertilizer, pesticides, nutrients, and waste water streams from milkhouses, fruit and vegetable washing facilities, and greenhouses. The majority of small scale farm infrastructure projects are routine, repetitive projects with predictable and mitigable environmental effects. For these projects, AAFC is a Responsible Authority (RA) under the *Canadian Environmental Assessment Act* (the Act), and is required to undertake an environmental assessment as early as practicable in the planning stages of the project and before irrevocable decisions are made.

Under the Agricultural Policy Framework (APF), AAFC has recently developed several multi-year national funding programs designed to enhance the overall environmental performance of agricultural operations, and improve economic viability of the sector in Canada. The need for this Replacement Class Screening Report (RCSR) results primarily from a very large increase in the number of small scale farm infrastructure projects funded under the current APF national programs. The RCSR will, however, also apply to similar future AAFC funding programs and to projects in which AAFC is involved either as a proponent or in cases where AAFC grants an interest in land.

Use of this RCSR will enable AAFC to streamline the environmental assessment process while maintaining a uniform high quality approach and ensuring compliance with relevant federal and provincial/territorial acts and regulations. It will also allow environmental practitioners to direct resources towards projects likely to have more substantial environmental effects. AAFC will be responsible for all reporting and federal coordination requirements under the Act and this RCSR.

1.1 Development of the Class Screening

Prior to beginning the Class Screening development process, AAFC estimated the number and type of environmental assessments that might be required under the APF funding programs. Based on this information, the types of projects best suited for assessment using a class screening were determined. Small scale farm infrastructure projects were found to be an ideal candidate for use of a class screening in that they are routine, repetitive projects with predictable and mitigable environmental effects, and where the net environmental effect will be positive.

The following provides a brief overview of the major steps that were followed to develop this RCSR.

Step 1: Definition of the Project Class

Once small scale farm infrastructure projects were chosen to be assessed using a replacement class screening, the types of projects best suited for this category were established. Those projects, and the activities associated with their implementation, were identified and categorized into five main sub-classes. Within these sub-classes, projects were described and the type and scope of projects defined.

This description ensures that only those projects suitable for assessment using a replacement class screening are carried through the process. Criteria such as size, distance, purpose, involved works and the need for provincial/territorial environmental assessment were some of the parameters used to determine when a replacement class screening would be appropriately applied.

Step 2: Description of the Environmental Effects

The second step in the process was to identify and describe the potential environmental effects that may result from projects covered by this RCSR. The typical environmental setting for each type of project was described and the typical activities associated with project implementation were determined. All of the potential effects that may arise from the interaction of these components were identified, evaluated, and summarized.

Step 3: Identification of Best Practices and Mitigation Measures

Once potential environmental effects were established for each project activity, mitigation measures to reduce or eliminate those effects were identified in the third step. These measures were developed by AAFC and further refined through consultation with technical review team members and other Federal Authorities (FAs). This process included the following:

- Identification of potential environmental effects that may result from the project and its associated activities;
- Assessment of the potential effects of the environment on the project;
- Identification of appropriate best practices to mitigate the environmental effects that were considered likely to occur;
- Assessment of the potential environmental effects from accidents and malfunctions;
- Consideration of the potential for cumulative environmental effects; and
- Identification of potential residual adverse environmental effects and their likely significance.

Step 4 - Preparation of the Replacement Class Screening Report

In this step, the results of all of the previous steps were brought together to form the complete RCSR. The RCSR documents all aspects of the development and application of the class screening process including: project and environment

descriptions; the identification of environmental effects and mitigation; and procedures for amending the RCSR.

Step 5 - Submission to the Canadian Environmental Assessment Agency (the Agency) for review and Declaration

The RCSR was submitted to the Agency for declaration in accordance with the requirements of the Act. As part of its 30 day public consultation process, the Agency directly notified potentially interested organizations and individuals of the public consultation period. It also posted notices on the Agency's website and the Canadian Environmental Assessment Registry (CEAR). The Agency ensured that all of the relevant comments received were adequately addressed by AAFC within the RCSR. The RCSR was declared once the Agency determined that the issues raised in the public comments were adequately addressed, and that the RCSR met the requirements of the Act. An official notice of declaration was then published in the *Canada Gazette*.

1.2 Class Screening and the Canadian Environmental Assessment Act

The Act and its regulations set out the legislative basis for federal environmental assessments. The legislation ensures that the environmental effects of projects involving the federal government are carefully considered early in project planning. The Act applies to projects which require an FA to make a decision or take an action, whether as a proponent, land administrator, source of funding or regulator (issuance of a permit or license). The FA then becomes an RA and is required to ensure that an environmental assessment of the project is carried out prior to making its decision or taking action which would allow the project to proceed.

Most projects are assessed under a screening type of environmental assessment. A screening systematically documents the anticipated environmental effects of a proposed project, and determines the need to modify the project plan or recommend further mitigation to eliminate or minimize the significance of these effects. Screenings are conducted for projects which are not on the *Exclusion List Regulations* or the *Comprehensive Study List Regulations* and have not been identified as requiring mediation or an assessment by a review panel.

The screening of some routine projects may be streamlined through the use of a class screening report (CSR). This kind of report presents the accumulated knowledge of the environmental effects of a given type of project and identifies measures that are known to reduce or eliminate the likely adverse environmental effects. The Agency may declare such a report appropriate for use as a class screening after taking into account comments received during a 30 day period of public consultation.

An RCSR consists of a single report that defines the class of projects and describes the associated environmental effects, design standards and mitigation measures for projects assessed within the report. It includes a conclusion of significance of

environmental effects for all projects assessed by the RCSR. Once the Agency declares an RCSR, no further site specific information, or environmental assessment and decision regarding the significance of the environmental effects, are required for projects within the class, provided that design standards and mitigation measures described in the report are implemented. RAs must ensure RCSRs are only used once it is ensured that design standards and mitigation measures described in the RCSR are implemented for each project.

1.3 Rationale for Replacement Class Screening Report

The applicability of the RCSR to these projects is based upon the following six criteria:

Well Defined Class of Projects: Small scale farm infrastructure as a class of projects is based on several common characteristics. They are well defined in terms of the design function and purpose, how and where the works are undertaken, and the likely constraints on their implementation, such as seasonal or weather related timing restrictions. They involve a number of common physical works and activities and share many similarities such as equipment used, intention to prevent pollution, and how activities are undertaken and regulated. They have predictable and mitigable environmental impacts, and are all triggered under the Act in the same manner.

Well Understood Environmental Setting: All projects shall be undertaken on land that currently supports agricultural operations (i.e. yard sites) and/or agricultural activities (i.e. livestock, cropping, greenhouses); the land must have been previously disturbed in some form; and the project will not conflict with adjacent land use. Projects involving storage and management facilities are typically located near farm properties used for pasture/cropping/production, adjacent to other farm infrastructure or headquarters, or otherwise strategically placed to ease agricultural operations. Projects involving waste waters are typically located near the location of effluent, for example alongside the greenhouses or milk houses. The typical environmental settings and interactions among Valued Ecosystem Components (VECs) are well understood and not likely to vary between projects.

Unlikely to Cause Significant Adverse Effects, Taking into Account Mitigation: The projects assessed in this RCSR are similar to numerous other projects that have been screened in accordance with the Act by AAFC. Based on previous experience of the projects, AAFC anticipates these projects will result in a positive impact to the environment. Project construction and operation will include implementation of beneficial construction and management practices, proven mitigation measures, and compliance with provincial/territorial guidelines and regulations. Adverse environmental effects that could take place as a result of the project are known, predictable, and mitigable.

No Project Specific Follow-Up Measures Required: Small scale farm infrastructure projects fall within the category of standard agricultural practices. They are tried and tested solutions to routine issues; they do not involve new or unproven technology.

No project specific follow-up programs are required as there are no expected variations in predictions or effects to be monitored.

Effective and Efficient Planning and Decision Making Process: The physical works and activities associated with small scale farm infrastructure projects to be assessed using this RCSR are straightforward and routine in nature. AAFC is the only RA involved in these assessments. Project engineers and technicians are specialized and highly experienced in the design and construction of such projects, therefore planning and decision making processes are straightforward. From AAFC's experience in preparing individual project screenings, and in using class screenings, it is anticipated that greater efficiency, consistency, and certainty of the environmental assessment process can be achieved through the use of this RCSR.

Public Concern is Unlikely: For numerous years, AAFC, together with provincial/territorial departments, have assessed and supported projects similar to those assessed in this class of projects. To date, there have been no, or very few, public concerns regarding these projects. It is, therefore, reasonable to expect that projects covered by this RCSR are unlikely to result in public concerns.

As the project class meets the necessary six criteria, this RCSR is applicable. Projects that do not meet the above criteria must be environmentally assessed outside of this RCSR (i.e. individual screening).

1.4 Consultation

During the development of this RCSR, consultation was undertaken with representatives from AAFC's seven regional offices, three of the key funding programs, the various departmental teams, and the department's Agri-environmental Policy Bureau to ensure the RCSR would meet the needs of the department, programs, and requirements of the Act.

Through the establishment of a Technical Review Team comprised of representatives from AAFC, provincial partners, and representatives from the agricultural sector, environmental issues associated with the construction, expansion, installation, modification or abandonment of small scale farm infrastructure projects were identified. The Technical Review Team also provided input which ensured that all the required mitigation measures, best management practices and design standards were captured in the RCSR. Members of the Technical Review Team are identified in the Acknowledgements.

Consultations were also undertaken with other federal departments including Fisheries and Oceans Canada and Environment Canada. The draft RCSR was reviewed by and discussed with these departments prior to submission of the final draft to the Agency.

Following its submission, the Agency conducted a 30-day public consultation on the RCSR. All comments received were taken into consideration and incorporated into the RCSR, as appropriate, before its declaration.

1.5 Canadian Environmental Assessment Registry

The purpose of the Canadian Environmental Assessment Registry (the Registry) is to facilitate public access to records relating to environmental assessments and to provide notice in a timely manner of assessments. The Registry consists of two components – an Internet site and a project file.

The Internet site is administered by the Agency. The RA and the Agency are required to post specific records to the Internet site in relation to an RCSR.

Upon declaration of the RCSR, the Agency requires RAs to post on the Internet site of the Registry, at least every three months, a statement of projects for which an RCSR was used. The statement should be in the form of a list of projects, and will include:

- the title of each project for which the RCSR was used;
- the location of each project;
- the date of the decision:
- contact name or number.

The RA must also provide annual confirmation of cumulative effects assessment conditions to ensure no new projects cause any significant adverse environmental effects.

The project file component is a file maintained by the RA during an environmental assessment. The project file must include all records produced, collected or submitted with respect to the environmental assessment of projects and all records included on the Internet site. The RA must maintain the file, ensure convenient public access, and respond to information requests in a timely manner.

Further information regarding the Registry can be found in “The Canadian Environmental Assessment Registry”, prepared by the Agency.

2.0 Projects Subject to the Class Screening

The candidate class for this RCSR is small scale farm infrastructure, which could involve the construction, installation, operation, modification, decommissioning or abandonment of physical works for storage and containment of equipment, tools, nutrients, chemicals, fertilizer, pesticides, and waste water and run-off from agricultural systems such as milkhouses, fruit and vegetable washing facilities, and greenhouses. The physical works involved in these projects could include impermeable pads for storage space or secondary containment; roofs over new or existing pads; storage sheds/buildings on new or existing pads; and agricultural waste water systems including septic and other holding tanks, leaching/tile beds, adsorption trenches, and associated pumps and piping. Agricultural production systems employ and manage potentially hazardous products and waste that, if not properly stored, handled, and disposed of, could lead to environmental degradation. Small scale farm infrastructure helps manage these associated risks by reducing the potential for contamination of environmental resources and improving farm input efficiencies through nutrient recycling. Complete detailed descriptions for each project sub-class can be found in *Section 3.0: Project Class Descriptions.*

For application of this RCSR, projects must be undertaken solely on land that currently supports agricultural operations (i.e. yard sites) and/or agricultural activities (i.e. livestock, cropping, greenhouses); the land must have been previously disturbed in some form; and the project will not conflict with adjacent land use. The physical works cannot be carried out in a water body or contribute to the direct deposit of materials or sediments into them. Farm machinery is routinely used on or around this land, throughout the year. Given this present land use, wildlife present in the area will be accustomed to normal agricultural activities, including the sounds and movement of farm machinery present in such a setting. It is, therefore, unlikely that wildlife will be adversely affected by proposed projects under this RCSR. All provincial/territorial and local set back distances prescribed in regulations and guidelines must be observed.

Construction can occur in any season, however typically occurs when the ground is not frozen. All works will be constructed according to local (municipal and/or provincial) design guidelines, and in certain circumstances, follow national building codes. A combination of hand machinery/tools and heavy equipment may be involved in the construction, modification, operation, abandonment, and/or decommissioning of the project. Disturbed areas may be left to re-vegetate naturally or be re-vegetated by seeding, post construction. No evidence of construction, other than the physical work itself would be evident upon project completion.

Small scale farm infrastructure projects are carried out by the project proponent or a contractor working on their behalf. The proponent is responsible for the routine inspection and maintenance of the project.

2.1 Projects Subject to the Canadian Environmental Assessment Act

Small scale farm infrastructure projects are projects under the Act because they are undertakings in relation to a physical work. AAFC would "trigger" or initiate the need for an environmental assessment before it could exercise any duties, powers, or functions in relation to a project, as defined by the Act, under *Section 5(1)a* the proponent of a project, *5(1)b* the provision of financial assistance to a project, or *5(1)c* the administration of federal lands.

Projects are exempted from environmental assessment if they meet all the criteria set out in a section of the *Exclusion List Regulations*. Small scale farm infrastructure projects may have several components. If all components of the project are described in the *Exclusion List Regulations*, the project is exempted from environmental assessment. If any component of the project is not described in the *Exclusion List Regulations*, an environmental assessment of the project including all the components is required.

2.2 Projects Subject to Replacement Class Screening Report

The projects subject to this RCSR include those projects that are defined as projects under the Act because they are undertakings in relation to a physical work. Five sub-classes of small scale farm infrastructure works are identified and described in the table below. The full scopes of the projects have been captured within each sub-class description.

Table 2.1 Description of Projects Subject to the Replacement Class Screening Report

Name of Sub-Class	Description of Sub-Class Project Components
Chemical Storage Facilities	Construction, modification, operation, abandonment, or decommissioning of a storage facility for the containment of agricultural chemicals to be used on-farm (i.e. not for commercial purposes). These facilities can include sheds, buildings, secondary containment components, temporary outdoor systems, and other free-standing facilities. They may contain worker safety areas, disposal areas, machine access, and drainage or ventilation systems. These buildings help minimize potential risks associated with agricultural chemicals, including human and animal safety and the environmental protection of groundwater, surface waters, and other natural areas.
Non-Hazardous Material Storage Facility	Construction, modification, operation, abandonment, or decommissioning of a storage facility for the containment of non-hazardous agricultural materials. These facilities

	can include sheds, buildings, barns and other free-standing facilities. They may contain equipment, tools, other agricultural utilities, and farm products and resources. These buildings help increase the safety associated with agricultural utilities and resources, as well as the security of agricultural products and capital.
Impermeable Pads	Construction, modification, operation, abandonment or decommissioning of impermeable pads, which are used as a base or foundation for certain storage structures or as a storage system for a variety of farm products and resources. This RCSR does not cover their use for manure. Impermeable pads consist of concrete, asphalt or other similarly impermeable surface, and act to control seepage and prevent contaminated run-off. They help minimize risks associated with the storage of many agricultural products and resources.
Roofs	Construction, modification, operation, abandonment, or decommissioning of a roof or other covering system. Roofs can be used to cover various agricultural systems, and potential sources of contamination, pollution or odour problems, such as solid manure storage pads or livestock confinement facilities. Roofs permit rainfall isolation and minimize excess liquid incorporation into materials or areas. This re-directed rainfall could also be diverted and/or contained for re-use. Roofs can be composed of materials such as tar and gravel, metal, steel, aluminium or wood products. For purposes of this RCSR, roofs can include tarps and other covering systems functioning similarly to roofs.
Agricultural Waste Water Systems	Construction, modification, operation, abandonment or decommissioning of various holding systems (i.e. septic tanks), treatment beds (i.e. leaching/tile beds, adsorption trenches), and all associated pumps and piping, to create catchment areas for agricultural waste waters. These waste waters can be from production facilities such as greenhouses, milkhouses, and vegetable washing facilities, and are nutrient rich with the potential to pollute surface water, groundwater, and soils. In a waste water recovery system, waste waters and run-off are 'caught' and disposed of into holding systems. Liquid from holding systems can then be directed into treatment beds for infiltration, and treated, re-cycled, or otherwise disposed of. These systems facilitate disposal and recycling of agricultural waste waters, minimizing associated pollution risks. This RCSR does not cover systems used for manure related projects or those within 30m of a water body.

2.3 Projects Not Subject to the Replacement Class Screening Report

Projects not subject to the RCSR include those which:

- Do not fall into the subclasses of projects listed in Table 2.1;
- Are listed in Table 2.1, but will not implement the relevant mitigation stated in this RCSR, as requested by AAFC;
- Require a referral from a federal department, other than AAFC;
- Require a permit, approval or authorization from another federal department (i.e. RA other than AAFC);
- Require assessment under the Act by another Federal/Responsible Authority;
- Require an assessment under provincial/territorial environmental assessment legislation;
- Are located on First Nations land, or in Migratory Bird Sanctuaries, National Wildlife Areas, or National Parks;
- Are likely to have an effect on known species at risk or their habitat;
    - Species at risk include:
        - Species that have been recognized as “at risk” by provincial or territorial authorities
        - Species identified on the List of Wildlife Species at Risk set out in *Schedule 1* of the *Species at Risk Act* (SARA), and including the critical habitat or the residences of individuals of that species, as those terms are defined in *sub-section 2(1)* of SARA
- Are Agricultural Waste Water Systems located within 30 meters of a water body;
- Are Chemical Storage Facilities to be used for commercial purposes, retail wholesaling or large scale warehousing; or
- Are Chemical Storage Facilities large enough to be subject to the requirements of the *Canadian Environmental Protection Act- Environmental Emergency Regulation*.

Small scale farm infrastructure projects that meet any of the above criteria are not addressed by this RCSR, and therefore require individual environmental assessments.

3.0 Project Class Descriptions

For purposes of this RCSR, small scale farm infrastructure will include farm buildings, farm structures and agricultural waste water systems. 'Farm buildings' is an umbrella term for enclosure facilities found or built on a farm. The intent of farm buildings is to contain and store certain farm materials, which if not contained properly, have the potential to damage the environment or pose a threat to human, animal or environmental safety. For purposes of this RCSR, 'farm buildings' will include small scale storage facilities and roofs over various agricultural systems. They also include barns or sheds for the storage of pesticides, fertilizers, equipment and farm utilities. 'Farm structures' are storages that are not considered buildings, such as impermeable pads. 'Agricultural Waste Water Systems' will include nutrient recovery technologies that exist to collect, treat, percolate, and in some cases re-use, nutrient rich agricultural waste water and run-off. These liquids have potential for nutrient enrichment of soils, and surface and groundwater supplies. This effluent comes from agricultural production facilities such as greenhouses, dairy milkhouses, and vegetable washing facilities. Components include: holding systems, treatment beds (i.e. adsorbtion trenches, leaching or tile beds), and all associated piping and pumps. These small farm infrastructures are found exclusively on land that currently supports agricultural operations and/or agricultural activities, and any associated lands. They help manage the associated risks of agriculture, reduce soil and water contamination potential, and improve farm input efficiencies through nutrient recycling. These works involve a variety of physical activities, accessory projects, supplementary projects, equipment, materials and labour. The end result is a step towards ensuring the long term sustainability of modern agricultural operations and promoting due diligence.

Small scale farm infrastructure projects have been split into 5 sub-classes. These sub-classes are: A- chemical storage facilities, B- non-hazardous material storage facilities, C- impermeable pads, D- roofs, and E- agricultural waste water systems. Agricultural waste water systems are further divided into their 2 related physical works: E1- holding systems, and E2- treatment beds. All of these sub-classes were divided based on the similarities and differences of their main components.

The physical works and activities associated with the various phases of small scale farm infrastructure projects are summarized in the following table (Table 3.1). This Table can later be used to ascertain relevant mitigation, as provided in *Section 4.0*.

Table 3.1 Physical Works and Activities for Small Scale Farm Infrastructure Projects

Physical Works and Activities	Project Sub-Class*					
	A	***B***	***C***	***D***	***E1***	***E2***
Construction						
Project planning	✓	✓	✓	✓	✓	✓
Vegetation clearing and grubbing	✓	✓	✓	✓	✓	✓
Earthworks	✓	✓	✓	✓	✓	✓
Construction of a building	✓	✓		✓		
Construction of a structure			✓			
Installation of a holding system					✓	
Installation of infiltration fields						✓
Piping works					✓	✓
Vegetation Establishment	✓	✓	✓	✓	✓	✓
Operation of heavy equipment and vehicles	✓	✓	✓	✓	✓	✓
Operation of hand machinery	✓	✓	✓	✓	✓	✓
Operation and Maintenance						
Chemical storage, management and handling	✓					
Non-hazardous material storage, management and handling		✓				
Protection of contained materials	✓	✓		✓		
Farm bi-product storage, management and handling			✓		✓	✓
Removal of accumulated solids					✓	
Recirculation and use of wastewater					✓	
Infiltration of wastewater						✓
General maintenance and cleaning	✓	✓	✓	✓	✓	✓
Containing and cleaning a chemical/bi-product spill	✓		✓		✓	✓
Operation of heavy equipment and vehicles	✓	✓	✓	✓	✓	✓
Operation of hand machinery	✓	✓	✓	✓	✓	✓
Decommissioning and Abandonment						
Vegetation clearing and grubbing	✓	✓	✓	✓	✓	✓
Decommissioning of physical works	✓	✓	✓	✓	✓	✓
Vegetation Establishment	✓	✓	✓	✓	✓	✓
Operation of heavy equipment and vehicles	✓	✓	✓	✓	✓	✓
Operation of hand machinery	✓	✓	✓	✓	✓	✓

**Note: Sub-Class A: Chemical Storage Facilities*
Sub-Class B: Non-Hazardous Material Storage Facilities
Sub-Class C: Impermeable Pads
Sub-Class D: Roofs
Sub-Class E1: Agricultural Waste Water Systems- Holding Systems
Sub-Class E2: Agricultural Waste Water Systems- Treatment Beds

Sub-Class A: Chemical Storage Facilities

Modern agricultural production systems employ and manage potentially hazardous products that, if not properly stored, handled and disposed of, could lead to an increased risk to the environment. This section will deal with buildings, sheds and other free-standing facilities, used in the storage of agricultural pesticides, fertilizers and any other general agricultural chemicals for on-farm use. Storages used for commercial purposes, retail wholesaling or large scale warehousing are not covered by this sub-class. This RCSR is not meant to cover storage facilities large enough to be subject to the requirements of the *Canadian Environmental Protection Act-Environmental Emergency Regulation*. The chemicals these facilities are to contain may include various forms of pesticides and fertilizers, chemicals used in waste and effluent treatment processes, and small amounts of grease and lubricants.

The intent of a proper storage system, which includes the storage facility and appropriate handling and management practices, is to help minimize the potential risks associated with increasingly necessary and popular chemicals related to agricultural production. Reasons for employing sound technical systems include: human, livestock, and wildlife safety; security of products and capital; fire safety; liabilities; clean up costs; and environmental protection. These chemicals have the potential to affect ground and surface waters and soils, which could then have a ripple effect onto other environmental components.

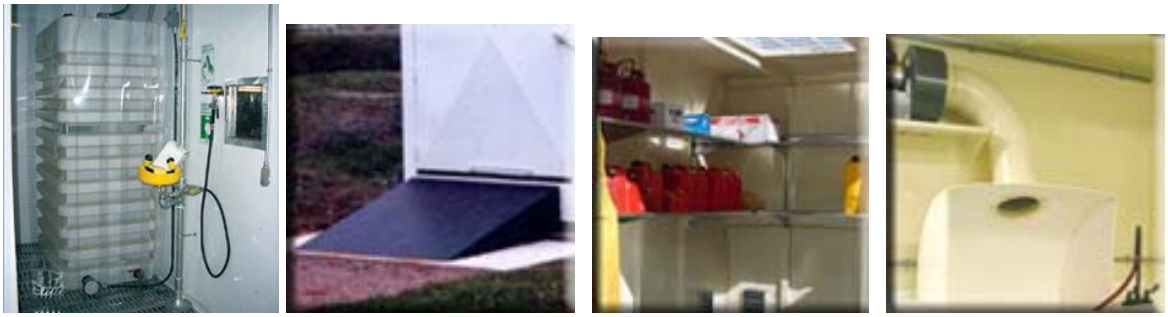
Chemical storage facilities are typically located on agricultural land, near headquarter buildings or application equipment. They are usually strategically placed to ease agricultural operations. In the case of this RCSR, all reasonable efforts will be made to site and design these projects to avoid contamination, pollution, and known areas of high waters or floods.

Chemical storage buildings involve project planning, site clearing, and earthwork activities in the preparation stages. After appropriate project planning, activities move into construction of the physical work and facilities themselves. This involves the roofs, floors, walls, doors, and electrical, plumbing, and ventilation systems, and all associated works. The facilities can be built on new or existing impermeable pads (i.e. reinforced concrete floors), which most often are built with curbs. Completed facilities may be protectively coated or painted. During construction and maintenance there is potential to construct or include many supporting features which may or may not be a part of each individual project, including: loading ramp areas, floor drains and associated holding features, evaporation pits, rinsate/treatment systems and areas, safety and/or security systems, heating and insulation, collection basins, roofing accessories (i.e. eaves troughs, gutters, soffits), and approved disposal areas. See Figure 3.1 for some photographs of these optional components.

Fences are often used in conjunction with chemical storage facilities, to enclose, separate, protect, or control access to the facilities. A variety of fencing materials are available and choice will depend on personal preference as well as materials/funds

available. Fence types include: page wire, barbed wire, suspension, electric or wood rail.

Figure 3.1 Photographs of optional components of chemical storage buildings (emergency eye wash, loading ramp, modular shelving and ventilation systems)



During the operation of such structures, producers will store farm chemicals, engage in the washing and decontaminating of equipment, transport chemicals and dispose of containers, waste materials and wash/rinse water, all while adhering to relevant legislation regarding chemicals. The chemicals will be used for mixing and used on various components of agricultural production systems. Maintenance will involve regular building inspections, and repair and maintenance for damage, leaks and structural failures. Buildings of this type are rarely abandoned, and occasionally are decommissioned. This would involve the removing or demolition of the structures, and all related components, in a manner safe to all surroundings, as well as finding alternate storage for chemicals and disposing of all related wastes. All phases of storage facility works may involve the use of heavy equipment, vehicles and hand machinery.

The size of these buildings is usually proportional to the size of the corresponding agricultural operation, their reliance on and storage of chemicals, and total available land.

Adherence to local, provincial/territorial and national legislation, guidelines, and codes, and obtaining necessary approvals, licenses, and permits may be required to proceed with these projects. Compliance is a requirement of funding programs.

Table 3.1 identifies the various physical works and activities that may be undertaken during the various project phases of chemical storage facilities. *Section 3.3* describes these works and activities in greater detail.

Sub-Class B: Non-Hazardous Material Storage Facilities

Agricultural production systems employ and manage non-hazardous products, which may include farm utilities, such as equipment and tools, and farm products, such as bales or seed bags. These materials are stored in facilities which can include buildings, sheds or any other free-standing structures. The intent of a proper storage system, which includes the storage facility and appropriate handling and management practices, is to help minimize associated risks and protect materials. Reasons for employing sound technical storage systems include: human, livestock and wildlife safety, security of products and capital, and fire safety.

Non-hazardous material storage buildings are located on agricultural land, typically near headquarter buildings, fuel tanks, chemical storages or production fields. They are usually strategically placed to ease agricultural operations. In the case of this RCSR, all reasonable efforts will be made to site and design these projects to avoid contamination, pollution, and known areas of high waters or floods.

Non-hazardous material storage facilities involve project planning, site clearing and earthwork activities in the preparation stages. After project planning, activities move into construction, which involves the roofs, walls and other associated works. The storage facilities may be built on new or existing impermeable pads, with or without curbs, or could be situated directly on the ground. Completed facilities may be protectively coated or painted. During construction and maintenance there is potential to include many supporting features, which may or may not be a part of each individual project, including: electrical, plumbing and ventilation systems; safety and/or security systems; roofing accessories (i.e. eaves troughs, gutters, soffits); doors or associated enclosure components; approved disposal areas and machine access ways. See Figure 3.2 for illustrations of possible non-hazardous material storage facilities.

Fences are often used in conjunction with non-hazardous storage facilities, to enclose, separate, protect, or otherwise exclude an area. A variety of fencing materials is available and choice will depend on personal preference as well as materials/funds available. Fence types include: page wire, barbed wire, suspension, electric, or wood rail.

Figure 3.2 Photograph examples of possible farm utility storage sheds

During operation of these facilities, producers will store farm equipment, tools and machines, other farm utilities, and farm products (i.e. seed, bales, produce). Other common potential activities include: machine idling, washing and cleaning equipment and machines, and the disposal of non-hazardous wastes. Maintenance will involve regular building inspections, and repair and maintenance for damage or structural failures, as well as equipment and machinery inspections and servicing. Buildings of this type are often abandoned or decommissioned. These phases would involve finding alternate storage for materials. Abandonment would also involve ensuring the building was forsaken securely, so as to not impose upon the safety of the surroundings and environment. Decommissioning would involve removing or demolishing the structures, and all related components, in a manner safe to surroundings, as well as the disposal of waste materials. All phases of storage facility works may involve the use of heavy equipment, vehicles and hand machinery.

The size of these buildings is usually proportional to the size of the corresponding agricultural operation, materials to be stored, and total available land.

Adherence to local, provincial/territorial and national legislation, guidelines and codes, and obtaining necessary approvals, licenses and permits may be required to proceed with these projects. Compliance is a requirement of funding programs.

Table 3.1 identifies the various physical works and activities that may be undertaken during the various project phases of non-hazardous material storage facilities. *Section 3.3* describes these works and activities in greater detail.

Sub-Class C: Impermeable Pads

Impermeable pads are structures built to collect liquid effluents, control and/or prevent seepage and run-off, facilitate excess liquid collection, and minimize leaching losses from stored materials, all helping to prevent soil and water contamination. Associated run-off might then be diverted, via dikes or other catchment structures, into earthen ponds, sedimentation basins, or other holding facilities, and released with less potential to contaminate, or re-used for activities such as irrigation. When

impermeable pads or other storage structures are not constructed, maintained and operated appropriately, contaminants may be released to surface/ground waters and soil, odour problems can be created, and other pollutants can be introduced to the environment.

Impermeable pads can be used as storage for items including, but not limited to, hay bales, compost, fruit and vegetable waste material, wood waste, or seed bags. They can also be used as a base for secondary or tertiary containment underneath aboveground petroleum storage tanks. This RCSR does not include impermeable pads used for storing manure. Surfaces are considered impermeable if they have a low level of hydraulic conductivity. Concrete, compacted clays, and/or synthetic liners are a few examples of impermeable surfaces. See Figure 3.3 for photographs of potential impermeable pad storages.

Figure 3.3 Photograph example of a storage pad constructed for hay bales

Figure 3.4 Photograph of the compaction of an impermeable pad during construction

Impermeable pads are typically located on agricultural land, near livestock facilities, agricultural fields, or in other areas where their location and presence eases agricultural operations. In the case of this RCSR, all reasonable efforts will be made to site and design these projects to avoid contamination, pollution, and known areas of high waters or floods.

Impermeable pads involve project planning, site clearing, and soil grading activities in the preparation stages. After project planning, actions move into construction of the physical works themselves, which includes the moulding, pouring, and compaction of foundation materials and impermeable surfaces. Often this involves a detention component to control or manage run-off (i.e. a curbed side-wall), depending on the uses of the pad being constructed. See Figure 3.4 for a photograph during construction. These structures can be accompanied by roofs, dikes, other run-off/catchment storage systems (i.e. collection gutter), sumps to collect and store leachate, and/or leachate treatment systems.

Fences are often used in conjunction with impermeable pad projects to enclose, separate, protect, or exclude animals from an area. A variety of fencing materials is available and choice will depend on personal preference as well as materials/funds available. Fence types include: page wire, barbed wire, suspension, electric, or wood rail.

During operation of such structures, common potential activities include: the storage and protection of farm products and resources, the use of the stored resources/products in agricultural activities, disposal and removal of stored materials, material transport, and leachate use. Maintenance will involve regular inspections and repairs of cracks, leaks and other structural failures. Operation and maintenance also involves the necessary control and management of all stored materials and associated runoff. Impermeable pads are rarely decommissioned; however their abandonment occurs occasionally. These phases would involve removing the pad and associated components, in a manner safe to all surroundings, as well as finding alternate storage for resources, and disposing of structural wastes. All phases of impermeable pad work may involve the use of heavy equipment, vehicles and/or hand machinery.

The size of these pads is usually proportional to what is being stored, the size of the corresponding agricultural operation, anticipated storage amounts, and total available land.

Adherence to local, provincial/territorial and national legislation, guidelines and codes, and obtaining necessary approvals, licenses and permits may be required to proceed with these projects. Compliance is a requirement of funding programs.

Table 3.1 identifies the various physical works and activities that may be undertaken during the various project phases of impermeable pads. *Section 3.3* describes these works and activities in greater detail.

Sub-Class D: Roofs

Roofs can be used as a means of protection and isolation for certain farm resources which, if improperly stored or left uncovered, have the potential to pollute water and soil, create odour problems, and introduce other pollutants to the environment. It follows then that the covering of farm resources and nutrient storages is recommended in an attempt to alleviate these potentially significant point sources of contamination. Covered storage facilities permit rainfall isolation and less incorporation of liquid into stored materials and areas. Roofs should be considered in the design of new operations, especially in higher rainfall areas. For purposes of this RCSR, roofs will also include any covers which function similarly to those described herein. They may be used to cover areas such as solid manure storage pads or livestock confinement facilities, and other agricultural storages and facilities.

Roofs, as related to this RCSR, will be located on agricultural lands as coverings for various types of storage and containment facilities. In the case of this RCSR, all

reasonable efforts will be made to site and design these projects to avoid contamination or pollution, and known areas of high waters or floods. The sizing of the roof is usually proportional to the dimensions of the facility or structure the roof will be covering.

Roof works involve project planning, and some site clearing and earthwork activities to ensure room for support structures and construction access. After project planning, activities move into construction and installation of the roof and necessary support structures. Roofs may be composed of materials such as tar and gravel, metal, steel, glass, plastic, aluminium, fabric, canvas, fibreglass, wood products, or other suitable roofing materials, and may be protectively coated or painted after construction and during maintenance activities. Support structures may be composed of concrete, wood, or metals. Works involved with roofs can include concrete piles, support structures, related roofing structures (i.e. overhangs), the installation of drainage or catchment systems (i.e. roof gutters, downspouts, eaves troughs, gravel drainage ditches), and doors or similar works. See Figure 3.5 and 3.6 for illustrations of the potential uses for roofs.

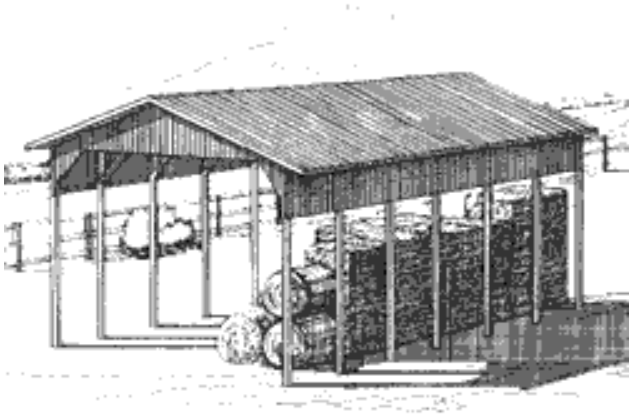


Figure 3.5
Example of a pole frame hay storage roof

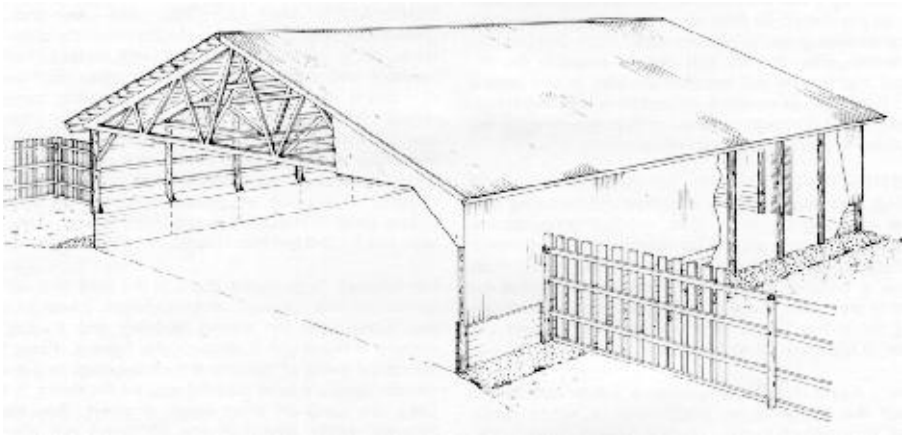


Figure 3.6 Example of an open end pole barn, roof and support system

Fences are often used in conjunction with roof projects to enclose, separate, protect, or otherwise exclude an area. A variety of fencing materials is available and choice will depend on personal preference as well as materials/funds available. Fence types include: page wire, barbed wire, suspension, electric or wood rail.

Roofs will help to protect agricultural materials and resources, in regards to weather and security. Maintenance will involve regular inspections and repairs of cracks, leaks and other structural failures. Roofs are rarely abandoned or decommissioned on their own; these activities are more likely to occur in conjunction with an associated building or facility. The activities involved would include removing and dismantling the structures, and all related components, in a manner safe to surroundings, as well as finding alternate storage for covered resources, and disposing of all wastes. All phases of roofing works can involve the use of heavy equipment, vehicles and/or hand machinery.

Adherence to local, provincial/territorial and national legislation, guidelines and codes, and obtaining necessary approvals, licenses and permits may be required to proceed with these projects. Compliance is a requirement of funding programs.

Table 3.1 identifies the various physical works and activities that may be undertaken during the various project phases of roofs. *Section 3.3* describes these works and activities in greater detail.

Sub-Class E: Agricultural Waste Water Systems

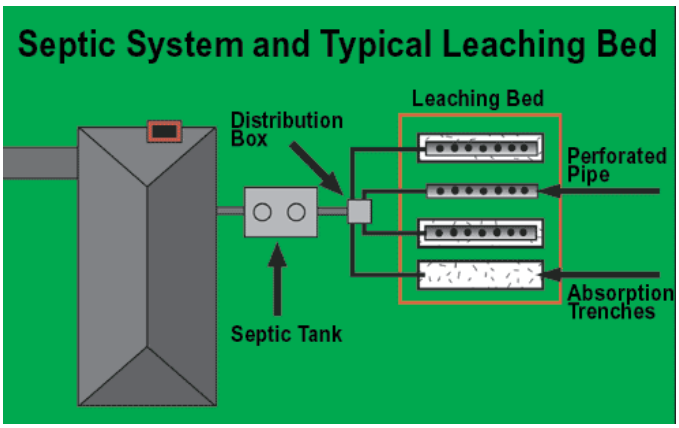
Agricultural waste water systems are nutrient recovery systems that provide the means to collect, treat, re-use, and dispose of agricultural waste water. They facilitate the disposal and recycling of waste waters, reduce contamination risks, improve water conservation, and allow for a more efficient use of farm inputs. The agricultural waste waters associated with agricultural systems (i.e. greenhouses, milkhouses, vegetable washing facilities) are nutrient rich and have the potential to pollute and contaminate soil, and surface and ground waters. This effluent comes from chemical treatments, rinsing and cleaning of facilities and their contents, general run-off, and liquid waste collection, and can include fertilizer, microorganisms, milk, pesticides, pathogens, and industrial cleaning products. This RCSR does not cover systems used for manure related projects or those within 30m of a water body.

Rather than directly releasing agricultural waste waters into surface waters, waste water and run-off can be contained and/or disposed of into sewage systems and/or treatment beds, or stored and reused in a recycling system. In greenhouse production systems, the effluent leaching waters are more often contained, treated, and re-cycled, rather than being put through a type of septic system. Agricultural waste waters can also move on to settling ponds, constructed wetlands, waste treatment lagoons, grassed waterways, liquid manure storages or other similar treatment areas, via lateral infrastructure. It is important to note, however, that these types of storages

are not a part of this RCSR. There are many risks associated with agricultural waste water systems, so compliance with all local, provincial/territorial and federal legislation, and obtaining all relevant and necessary approvals, licenses and permits are essential activities related to all agricultural waste water systems covered by this RCSR.

The waste water treatment and recovery infrastructures covered in this RCSR involve holding systems, treatment beds, associated pumps, piping, tile, drains, and other related works. Based on these components and their similarities and differences, this sub-class was split into 2 sub-sections, E1: Holding Systems and E2: Treatment Beds. See Figure 3.7 for an illustration of the general appearance of septic systems.

Figure 3.7 Example of a septic system



Holding systems collect and hold waste water, run-off and other effluents, and can include septic, holding, sediment, or any other non-earthen tank or catchment system. These holding and storage areas collect liquids wastes, and help separate out larger particles and floating materials, to prevent them from entering further into the system. Holding systems will be of a certain volume, varying with size of operation, amount and type of waste water, and local regulations and codes. Accumulation amounts will also vary depending on size of operation, solid type, type of holding structure, and local regulations and codes. These liquids may then be distributed into treatment beds for treatment and percolation.

Treatment beds distribute the liquid from the holding area over a larger area to allow it to infiltrate into soil. Bacteria in treatment beds help remove, trap and degrade contaminants in the effluent. Treatment beds can include: weeping, leaching or tile beds, adsorbtion trenches, and any other form of percolation or treatment trenches. These beds may include re-circulating sand filters, intermittent sand filters, or another type of filter designed to alleviate associated problems with certain bed types or location restrictions. Together, all installed trenches form leaching, tile or adsorption fields for the permeation of liquid effluents. These systems are connected to holding systems through pumps, piping, perforated tile, and other lateral infrastructure. The treatment beds included in this RCSR do not include tile drainage systems, which can be used to move water and clean run-off from fields.

Agricultural waste water systems are typically located on agricultural land, near greenhouses, milkhouses, or any other source of agricultural run-off or waste water.

They are usually strategically placed to ease collection, treatment, percolation and re-use operations. In the case of this RCSR, all reasonable efforts will be made to site and design these projects to avoid contamination, pollution, and known areas of high waters or floods. The waste water treatment infrastructures covered in this RCSR will not be located within 30m of a water body.

Agricultural waste water systems involve project planning, site clearing, trenching and other earthwork activities in the preparation stages. After project planning, activities can move into construction and installation of the physical works themselves. These can involve: holding tanks, leaching/tile beds and fields, distribution boxes, adsorption trenches, associated pumps, impermeable liners, tile and piping, and other related components. See Figures 3.8 to 3.10 for treatment bed installation photos. The construction of an agricultural waste water system often involves other supporting components, depending on individual project needs, including, for example: reception pits; concrete floor catch basins; sub-irrigation systems such as flooded floors, ebb and flow benches, or trough benches; greenhouse collection systems; run-off diversions and drainage systems (i.e. curbs or yard run-off drains; pressure distribution systems; treatment, disinfection, bio-filtration, or blending systems; aeration systems; waste water storage pits (i.e. belowground pits, storage ponds); curtain drain installation; sediment basins; stock tanks for treated effluents; and monitoring systems. It is important to know where discharge is going, as well as the project site's potential to appropriately manage the requirements of individual systems.

Fences are often used in conjunction with agricultural waste water system projects to enclose, separate, protect, or otherwise exclude the area. A variety of fencing materials are available and choice will depend on personal preference as well as materials/funds available. Fence types include: page wire, barbed wire, suspension, electric, or wood rail.

Figure 3.8 Photograph of trench and drainage lines

Figure 3.9 Photograph of the filling in of a drainage trench

Figure 3.10 Photograph of the completion of treatment bed installation

During the operation of agricultural waste water systems (refer back to Figure 3.7), leached waters, waste water, and other types of run-off are directed, via diversion or drainage structures and piping works, into holding and permeation areas. Contained liquids can then take various paths. Liquid effluent captured for eventual release will then go through a distribution/header system and be evenly directed through treatment beds, for treatment, percolation and infiltration. Liquid effluent captured for recycling and re-use can be stored in the containment/catchment tanks, which could be attached to an irrigation system for re-use and re-circulation. These recyclable effluents may first go through a variety of treatments (i.e. settling out, UV, filtration, chemical) that will prepare them for re-use in agricultural watering practices. Effluent to be recycled can also be re-directed for irrigation. Outdoor use invokes less disease and contamination concerns, and so is often left un-treated. Any associated solid and filtered out effluents can be composted, applied to land, or disposed of in another acceptable manner.

Maintenance will involve regular inspections, and repair and maintenance for damage, leaks and structural failures. Facilities of this type are rarely abandoned; however, their decommissioning occurs occasionally. This would involve uninstalling and/or removing all associated components in a manner safe to all surroundings, as well as finding alternate storage for wastewater and treated effluents. All stages of these projects involve the use of heavy equipment, vehicles, and hand machinery.

Adherence to local, provincial/territorial and national legislation, guidelines, and codes, and obtaining necessary approvals may be required to proceed with these projects. Compliance is a requirement of funding programs.

Table 3.1 identifies the various physical works and activities that may be undertaken during the various project phases of agricultural waste water systems. *Section 3.3* describes these works and activities in greater detail.

3.1 Seasonal Scheduling and Duration of Small Scale Farm Infrastructure Projects

Small scale farm infrastructure projects can occur at any time of the year, however are typically constructed when the ground is not frozen and soil moisture conditions permit access and movement of heavy equipment. Project completion in late spring or early fall allows newly seeded vegetation to become established.

Site preparation and construction activities typically last from less than one day to several months, depending on the scale of the project. Site restoration and re-establishment of vegetative cover takes upwards of three months. Modification, maintenance, or repair activities are generally shorter in duration unless a major change is required. In the latter case, the project may take as long as the original construction to complete. Decommissioning and abandonment activities may take as long as the original construction to complete, and depend on the desired land use at the end of the project.

Operation of the farm buildings can occur year round. Operation of nutrient recovery systems can occur year round, however will experience seasonal fluctuations. Peak and low seasons may be present, depending on the nature of the agricultural operation and its associated region. For example, in regions where deep freeze-thaw levels occur, trenches and permeation fields may not perform well during these times, and outdoor run-off will be minimal and/or frozen during deep freezes. Wastewater systems from some production facilities will be un-affected by seasonal changes, and will continue to operate year round.

3.2 Effects of the Environment on the Project

Under the Act, an environmental assessment must consider potential effects the environment may have on projects. Increased weather extremes and number of extreme events may affect permanent structures; following standards and ensuring protection against these effects are increasingly important. Small scale farm infrastructure projects are vulnerable to a variety of environmental effects such as:

- Extreme weather-related effects (i.e. temperature, precipitation) can damage the physical integrity of projects, and/or cause unpredictable run-off, erosion or sedimentation during the construction phase and/or cause problems for machinery operation during construction or abandonment.
- Sinking or settling of soils, ground subsidence and ground surface movement could also damage physical integrity of projects, potentially leading to structural failures and/or a reduced quality of end products.
- Landscape features, surficial geology, and physical characteristics of project location (i.e. soil structure, depth of aquifer) could alter materials used in construction, cause project re-location (i.e. use of an impermeable membrane under storage structures in coarse textured areas, relocating an impermeable pad from a flood prone area), or impede the installation of underground structures.
- Normal ‘wear and tear’ brought on by weather-related effects and forces (i.e. deterioration due to sun exposure, wind, freeze/thaw cycles).

The effects that have been identified are considered mitigable and avoidable through design and siting, the use of accepted construction practices, and the use of standard operating, maintenance and repair procedures. These specific mitigations are covered in *Section 4.0* of this RCSR.

3.3 Description of Project Activities

The proposed construction, operation, maintenance, abandonment and decommissioning of small scale farm infrastructure projects involve a number of common physical works and activities. They represent the manner in which small scale farm infrastructure is typically implemented throughout the development phases.

Mitigation measures may be required to ensure no significant adverse environmental effects occur, and are identified in *Section 4.0* of this RCSR.

3.3.1 Construction

Project Planning

Project planning involves: identification of relevant local, provincial, and federal legislation that must be complied with; identification of relevant guidelines and best construction practices for siting and construction; attainment of necessary approvals, authorizations, and permits, according to relevant local, provincial, and federal authorities; consultation with technical experts and obtaining engineering advice or drawings, where appropriate; selection of project site; project design; completion of necessary environmental assessments; determination of work schedule; and obtaining materials and labour.

Vegetation Clearing and Grubbing

Depending on the condition of the project site, some vegetation removal may be required to provide sufficient open space to construct the project and/or provide access to the project site. This may involve: cutting, clearing, and grubbing of the area using heavy equipment, vehicles, or hand machinery. Specific activities depend on vegetation type, size, and site accessibility.

Earthworks

Earthwork activities may include: trenching; digging; soil stripping, stockpiling of soil; removal and handling of topsoil; excavation and disposal of unsuitable soils and surficial materials; re-loading and filling of trenches; grading and sloping. Operation of a combination of heavy equipment, vehicles, and hand machinery may be required.

Construction of a Building

Construction of a building may involve: installing lumber or woody debris; installing floor drains and associated sump systems; placing gravel/rip rap; pouring concrete foundations, footings, curbs, and pads; construction of a floor and attachment to foundation or cribbing; assembly of walls and roof structure; working with tar, gravel, metal, steel, wood, fibreglass, asphalt, or aluminium roofing materials; installing support structures for roofs; installing eaves troughs and associated drainage systems; installing windows and doors; installation of heating, ventilation, plumbing, and/or electrical systems and fixtures; erecting fences; removing waste; and providing for treatment of accidental spills. For chemical handling and storage buildings, construction may also include the installation of shelving, cabinets, containment

systems and works, a concrete apron, holding tank, and carbon filtration system. Construction of certain storage buildings may require health, safety and ventilation features and systems, which will be included, as per code (i.e. hazardous material storages should be labelled according to recognized standards). Finished buildings may involve the use of paints or other coatings, solvents, asphalt or concrete for finishing/protective characteristics. Fence construction may include: auguring holes, installation of brace assemblies, posts, and horizontal braces, and stringing wire or wood among these components. Operation of a combination of heavy equipment, vehicles, and hand machinery may be required.

Construction of a Structure

Construction of a structure may involve: installing lumber and/or asphalt, concrete or other impermeable surfaces; pouring concrete foundations or other hard surfacing; constructing and installing curbs, and/or side walls; placing gravel/rip rap; installation of heating, ventilation, plumbing, and/or electrical systems and fixtures; erecting fences; removing waste; and providing for treatment of accidental spills. Finished structures may involve the use of paints or other coatings, solvents, asphalt or concrete for finishing/protective characteristics. Fence construction may include: auguring holes, installation of brace assemblies, posts, and horizontal braces, and stringing wire or wood among these components. Operation of a combination of heavy equipment, vehicles, and hand machinery may be required.

Installation of a Holding System

Holding system installation may include: placing rip-rap/gravel; laying landscape fabric; installing an impermeable liner to prevent infiltration; placing and installing pre-fabricated septic and/or other holding tanks (i.e. sedimentation, clarification, activated sludge tanks); installing casements to permit boring under structures; connecting to piping and associated infrastructure; connecting to associated components; installation of a distribution box; installing screening devices; and disposing of wastes. Operation of a combination of heavy equipment, vehicles, and hand machinery may be required.

Installation of Infiltration Fields

Installation of infiltration fields may involve the excavation, installation, and construction of adsorption trenches, leaching/tile beds, or any other trenched areas for permeation. Activities may include: digging trenches to an appropriate depth; laying landscape fabric; placing gravel/rip rap; importing fill; installing an impermeable liner to prevent infiltration; installing trench breakers and sub-drains; installing channels; surge rock and liners; placing and installing conduit, piping, laterals and associated infrastructure; connecting to piping, treatment facilities and/or holding tanks; installing

screening devices; and disposing of wastes. Operation of a combination of heavy equipment, vehicles, and hand machinery may be required.

Piping Works

Piping works activities may involve: placing gravel/rip rap; installing an impermeable clay liner or other acceptable materials to prevent infiltration; installing channels, surge rock and liner; installing casements to permit boring under structures; placing and installing piping, perforated pipe, conduit, other laterals, and associated infrastructure (i.e. valves); construction of pump stations; connecting piping to treatment systems, floor drains, permeation beds, holding tanks or other catchment areas; installing sewer lines, lift stations, and associated infrastructure; installing screening devices; and disposal of wastes. Operation of a combination of heavy equipment, vehicles, and hand machinery may be required.

Vegetation Establishment

Vegetation establishment may involve: re-vegetation of disturbed areas using pre-existing or other suitable vegetation; final site grading; direct or broadcast seeding; sodding; transplanting; fertilizer and/or chemical application; irrigation; weeding; placement of erosion control blankets; establishment control; and site monitoring. Operation of a combination of heavy equipment, vehicles, and hand machinery may be required.

Operation of Heavy Equipment and Vehicles

A variety of heavy equipment and machinery may be used during a project. Heavy equipment and machinery may include track vehicles (i.e. track hoes, trenchers, bull dozers, scrapers, packers, track loaders, and directional boring units), rubber tire vehicles (i.e. graders, farm tractors, grain and dump trucks, drill rigs, wheel loaders, and skid steers), and seeding and spraying equipment. Various vehicles may be used during a project, particularly to access the project site and possibly to complete the project. Light duty trucks, trailers and All Terrain Vehicles (ATVs) may also be used. Re-fuelling and storage of fuel may be required at or near the project site.

Operation of Hand Machinery

Hand machinery may be used during a project. Hand machinery may include items such as weed whips, chain saws, shovels, pumps, pressure hose, generators, cement mixers, hand tools, and seeding and spraying equipment. Fuel is used by certain hand machinery. Re-fuelling and storage of fuel may be required at or near the project site.

3.3.2 Operation and Maintenance

Chemical Storage, Management, and Handling

Storage, management, and handling of chemicals may involve: storage of chemicals; implementing inventory, organizational, and management systems; maintaining necessary spill prevention, containment, and security/safety measures; developing a contingency plan for accidents and spills; pouring, mixing and disposing of chemical solutions; following label directions; implementing necessary safety features; and taking precautions to avoid spills, leaks or any other threats to environment, health and safety (i.e. keeping chemicals in their original containers); adhering to Workplace Hazardous Materials Information System (WHMIS); product transfers; disposing of wastes; and following all relevant local and provincial/territorial regulations regarding chemical storage, management, handing and disposal (i.e. rinsing.disposing, and recycling containers). Operation of a combination of heavy equipment, vehicles, and hand machinery may be required.

Non-Hazardous Material Storage, Management and Handling

Non-hazardous material storage, management and handling may involve: storage of non-hazardous materials; implementation of inventory, organizational and management systems; maintenance of necessary spill prevention, containment and security/safety measures; taking precautions to avoid spills or leaks that could lead to a threat to environment, health or safety; vegetation and access way maintenance; product transfers; disposal of wastes; movement and operation of heavy equipment, vehicles, and/or hand machinery; and vehicle servicing. Operation of a combination of heavy equipment, vehicles, and hand machinery may be required.

Protection of Contained Materials

The protection of contained materials refers to the activities related to covering or roofing structures. Related activities can include: providing a covering to guard from weather, including harsh weather; wear and tear protection; security from theft; and preservation.

Farm Bi-product Storage, Management, and Handling

Farm bi-product storage, management, and handling may include: storage of effluent waste water, treated effluent, run-off, or other similar bi-products; implementation of a storage, management, and handling system; bi-product transport; effluent and/or treated effluent handling; disposal of sludge and wastes by provincially/territorially permitted activities such as land spreading, disposal in landfills, or composting; and following all relevant local and provincial/territorial regulations regarding relevant bi-

product storage, management, handling, and disposal. Operation of a combination of heavy equipment, vehicles, and hand machinery may be required.

Removal of Accumulated Solids

Removal of accumulated solids may involve: solid/liquid separation; regular extraction of solids and/or liquids; and regular disposal of sludge by provincially/territorially permitted activities (i.e. land spreading, disposal in landfills, composting). Operation of a combination of heavy equipment, vehicles, and hand machinery may be required.

Recirculation and Use of Wastewater

The re-circulation and use of wastewater may include: transferring liquids to a treatment area, stock tank, or irrigation system; valve and pump controlling; and the use of treated waters for irrigation, mixing, or other agricultural applications.

Infiltration of Wastewater

Infiltration of wastewater will involve the movement of wastewater through tile/leaching systems and pipes, rip rap/gravel areas, soil layers, and eventually to ground water. Other activities may include: distribution and flow through perforated piping or lines; management of septic or other holding tank outlet materials; removal of particulate, soluble pollutant sediment, phosphorus, nitrogen, trace metals, coliforms, and organic matter through adsorption by soil particles and biological/chemical conversions in the soil; and the trapping of particulates.

General Maintenance and Cleaning

General maintenance and cleaning may involve: routine cleaning of the facility and associated components; clearing of inlets to prevent clogging; flushing of lines; rinsing and washing of infrastructure; regular inspections for wear, breaks, damage, leaks, or other malfunctions; regular small scale repairs on wear, breaks, leaks, or damage; replacing broken or damaged lines; upgrading and replacing lining of pipes; repair or replacement of pumps; cleaning roof gutters; draining exterior holding tanks of chemical storage buildings; prevention of incompatible substances from entering into the sewer pipe system; use of chemicals; maintaining right-of-ways; and vegetation and site maintenance. Operation of a combination of heavy equipment, vehicles, and hand machinery may be required.

Containing and Cleaning a Chemical/Bi-product Spill

Containing and cleaning a spill may involve: the use of chemicals and adsorbtion materials; use of rubber gloves and other protective clothing; proper disposal of spilled materials, according to provincial/territorial legislation and guidelines; site remediation; and adhering to pre-developed contingency plans for accidents and spills. Operation of a combination of heavy equipment, vehicles, and hand machinery may be required.

Operation of Heavy Equipment and Vehicles

A variety of heavy equipment and machinery may be used during a project. Heavy equipment and machinery may include track vehicles (i.e. track hoes, trenchers, bull dozers, scrapers, packers, track loaders, directional boring units), rubber tire vehicles (i.e. graders, farm tractors, grain and dump trucks, drill rigs, wheel loaders, skid steers), and seeding and spraying equipment. Light duty trucks, trailers and ATVs may also be used. Re-fuelling and storage of fuel may be required at the project site.

Operation of Hand Machinery

Hand machinery may be used during a project. Hand machinery may include items such as weed whips, chain saws, shovels, pumps, pressure hose, generators, cement mixers, power tools, and seeding and spraying equipment. Fuel is used by certain hand machinery. Re-fuelling and storage of fuel may therefore be required at the project site.

3.3.3 Decommissioning and Abandonment

Vegetation Clearing and Grubbing

Depending on the condition of the project site, some vegetation removal may be required to provide sufficient open space to construct the project and/or provide access to the project site. This may involve cutting, clearing, and grubbing of the area using equipment, vehicles, and/or hand machinery. Specific activities depend on vegetation type, size, and site accessibility.

Decommissioning of Physical Works

Decommissioning and abandonment may involve: removing contents; disconnecting heating, ventilation, plumbing, and electrical systems and fixtures; removal of gravel, rip rap, bolts, poured concrete foundations, curbs and pads, floors, roofs, drainage collection and sump systems, support structures, siding, windows, doors, installed lumber or woody debris, and erected fences; general demolition; finding alternate safe

storage; disposal and/or storage of cleared and excavated structures, vegetation, and soils; disposing of waste materials; stockpiling, composting, or burning vegetation; spreading or stockpiling soils; and providing for treatment of accidental spills. If abandonment is occurring, securing the abandoned structure to ensure safety of surrounding living and non-living area will also occur. All disposal will occur according to all existing and relevant local and/or provincial/territorial standards. Operation of a combination of heavy equipment, vehicles, and hand machinery may be required.

Vegetation Establishment

Vegetation establishment may involve: re-vegetation of disturbed areas using pre-existing or other suitable vegetation; final site grading; direct or broadcast seeding; sodding; transplanting; fertilizer and/or chemical application; irrigation; weeding; placement of erosion control blankets; establishment control; and site monitoring. Operation of a combination of heavy equipment and hand machinery may be required.

Operation of Heavy Equipment and Vehicles

A variety of heavy equipment and machinery may be used during a project, such as track vehicles (i.e. track hoes, trenchers, bull dozers, scrapers, packers, track loaders, directional boring units), rubber tire vehicles (i.e. graders, farm tractors, grain and dump trucks, drill rigs, wheel loaders, skid steers), and seeding and spraying equipment. A variety of vehicles may be used during a project, particularly to access the project site and possibly to complete the project. Light duty trucks, trailers and ATVs may also be used. Re-fuelling and storage of fuel may, therefore, be required at or near the project site.

Operation of Hand Machinery

Hand machinery may be used during a project. Hand machinery may include items such as weed whips, chain saws, shovels, pumps, pressure hose, generators, cement mixers, power tools, and seeding and spraying equipment. Re-fuelling and storage of fuel may, therefore, be required at or near the project site.

3.3.4 Accidents and Malfunctions

Project activities that could result in accidents and malfunctions largely relate to the operation and maintenance of machinery, structural failure and human error. The likelihood of accidents or malfunctions occurring and causing negative environmental impacts due to project activities and physical works is minimal, as small scale farm infrastructure projects are routine and their effects are predictable, therefore mitigable. Potential accidents and malfunctions include:

- vehicle collisions
- fuel spill from equipment operated on site
- fires during all phases of the project
- structural failures
- spills or leaks (from paint, chemicals, nutrients, wastes, other stored materials)
- vandalism

All accidents and malfunctions have potential to cause personal injuries for workers and the public. Accidents and malfunctions will be avoided through cautious and thorough worker behaviour, following established industry standards during all phases of the projects, contingency planning, and conducting regular inspections of infrastructure and associated equipment to ensure they are operating properly, as well as ensuring a safe work environment at all times. Compliance with mitigation measures listed in *Section 4.0* of this RCSR will also help minimize risks of accidents and malfunctions. Vehicles will be regularly serviced to avoid malfunctions.

4.0 Environmental Review

This section outlines the methodology used to ensure that the effects of project activities on the environment are consistently addressed from project to project regardless of location. To accomplish this, Valued Ecosystem Components (VECs) have been identified. VECs are those ecosystem components most likely to be affected by a project, and those features thought to be most important, thereby warranting further analysis. Potential environmental effects on selected VECs, which include cumulative and residual effects, are identified and the rationale for their analysis is explained. Accidents and malfunctions, including the effects of the environment on the project, are also considered. The process for selecting mitigation measures to address and alleviate these effects on each VEC is discussed. A rating system is applied to establish the significance of residual environmental effects (i.e. effects remaining after the application of mitigation measures), based on the magnitude, geographic extent, duration, frequency, and permanence of the effect.

4.1 Environmental Assessment Boundaries

An important aspect of the environmental assessment process is the determination of study boundaries. Study boundaries serve to focus the scope of the work such that a meaningful analysis of potential effects arising from the proposed project can be made. Study boundaries may be influenced by restrictions imposed by project scheduling and the varying degree to which environmental effects can be quantified and objectively evaluated (i.e. the point at which an environmental effect can no longer be measured, noticed or observed).

A boundary is a function of the extent and duration of potential interaction between a proposed project and VECs. Generally, these boundaries are defined by the temporal and spatial characteristics encompassing those periods and areas, during and within which, the VECs are likely to interact with, or be influenced by, the project. The environmental assessment boundary for small scale farm infrastructure projects is defined by the spatial and temporal extent of the similar physical characteristics of the project location. The projects covered under this RCSR are regularly conducted, routine projects. Project boundaries may vary slightly for individual project sub-classes.

Temporal boundaries include all project phases; from site preparation through to decommissioning. Project activities for small scale farm infrastructure projects continue on a year round basis, however, most are initiated in spring, summer, or fall seasons. They can last from less than one day to several months, depending on work specifics. The temporal boundaries are dependent on the particular project phase and time of year it is undertaken. This has been considered in the assessment and addressed for each VEC; specific details are provided in *Section 4.3: Issues Scoping and Valued Ecosystem Components*.

The spatial boundary encompassing the potential effects of a project is generally expected to be limited to the immediate project area. The majority of potential effects are not expected to occur beyond this spatial extent; however some effects may extend beyond the limits of the project area for certain VECs. Spatial boundaries have been considered in the assessment and addressed for each VEC. Specific details are provided in *Section 4.3*.

Administrative boundaries have also been considered during the development of the RCSR. Both federal and provincial/territorial provisions have been considered and addressed.

In assessing and comparing the nature and limited affected areas of proposed projects versus the defining scales of ecological and socioeconomic boundaries, it is felt that temporal, spatial, and administrative boundaries alone properly identify potential environmental effects of defined projects. Accordingly, ecological and socioeconomic boundaries were not considered further, as this would not add to the quality of the RCSR and would only replicate previously identified effects.

As project use of new technology or technology with uncertain effects is unlikely, technical boundaries were not considered.

4.2 Environmental Setting

Since the projects subject to this RCSR are well defined, mitigation measures are well established, and potential environmental effects are well understood; detailed descriptions of environmental settings for projects subject to the RCSR have not been provided. However, general descriptions of environmental settings are provided in *Section 3.0: Project Class Descriptions*

For application of this RCSR, projects must be undertaken solely on land that currently supports agricultural operations (i.e. yard sites) and/or agricultural activities (i.e. livestock, cropping, greenhouses); the land must have been previously disturbed in some form, and the project must not conflict with adjacent land use. The physical works cannot be carried out in a water body or contribute to the direct deposit of materials or sediments into them. Farm machinery is routinely used on or around this land, throughout the year. Given this present land use, wildlife present in the area will be accustomed to normal agricultural activities, including the sounds and movement of farm machinery, present in such a setting. It is, therefore, unlikely that wildlife will be adversely affected by proposed projects under this RCSR.

4.3 Issues Scoping and Valued Ecosystem Components

Using their experience in project assessment, planning and implementation, AAFC conducted an issues scoping process to:

- Identify all project activities associated with each small scale farm infrastructure project;
- Identify VECs for small scale farm infrastructure projects;
- Establish a matrix of potential interactions between identified project activities and VECs.

Various other expert authorities were consulted as part of this process, including: provincial/territorial agricultural, wildlife, and fisheries departments; Environment Canada; Fisheries and Oceans Canada; and the Canadian Environmental Assessment Agency.

The matrix describing potential interactions between project activities and VECs is shown in Table 4.1.

Table 4.1 Potential Interactions between Project Activities and VECs

Project Phase	Physical Works and Project Activities	VECs[1]												
		Air Quality	Terrain and Topography	Soils	Surface Water Hydrology	Surface Water Quality	Groundwater Quantity	Groundwater Quality	Aquatic Habitat and Species	Terrestrial Habitat and Species	Land and Resource Use	Socio-Economic Conditions	Cultural and Heritage Resources
Construction	Project planning												
	Vegetation clearing and grubbing			•		•			•	•			•
	Earthworks			•		•		•	•	•			•
	Vegetation Establishment			•		•				•			
	Construction of a building			AB	AB				•	AB			AB
	Construction of a structure			C	CD				•	C			CD
	Installation of a holding system			E1	E1			E1					E1
	Installation of infiltration fields			E2	E2			E2		E2			E2
	Piping works			E				E	•				E
	Operation of heavy equipment and vehicles			•		•		•	•	•			
	Operation of hand machinery			•					•	•			
Operation and Maintenance	Chemical storage, management and handling					A		A	•	A			
	Non-hazardous material storage, management, and handling												
	Protection of contained materials												
	Farm bi-products storage, management and handling					CE		CE	•				
	Removal of accumulated solids					E1		E1					
	Recirculation and use of wastewater			E1		E1		E1		E1			

[1] A – Applies to Sub-class A: Chemical Storage Facilities, B – Applies to Subclass B: Non-Hazardous Material Storage Facilities, C-Applies to Subclass C: Impermeable Pads, D- Applies to Subclass D: Roofs, E1- Applies to Subclass E1: Holding System, E2- Applies to Subclass E2: Leaching/Tile Bed, E3- Applies to Subclass E3: Adsorption Trenches, E- Applies to all Subclass E components: Nutrient Recovery Systems, • – Applies to all classes

Project Phase	Physical Works and Project Activities	VECs[1]												
		Air Quality	Terrain and Topography	Soils	Surface Water Hydrology	Surface Water Quality	Groundwater Quantity	Groundwater Quality	Aquatic Habitat and Species	Terrestrial Habitat and Species	Land and Resource Use	Socio-Economic Conditions	Cultural and Heritage Resources
Operation and Maintenance	Infiltration of wastewater			E2				E2		E2			
	General maintenance and cleaning												
	Containing and cleaning a chemical/bi-product spill			ACE		ACE		ACE		ACE			
	Operation of heavy equipment and vehicles			•		•		•	•	•			
	Operation of hand machinery			•					•	•			
Decommissioning and Abandonment	Vegetation clearing and grubbing			•		•			•	•			
	Vegetation Establishment			•		•				•			
	Decommissioning of physical works			•					•	•			
	Operation of heavy equipment and vehicles			•		•		•	•	•			
	Operation of hand machinery			•					•	•			

[1] A – Applies to Sub-class A: Chemical Storage Facilities, B – Applies to Sub-class B: Non-Hazardous Material Storage Facilities, C-Applies to Sub-class C: Impermeable Pads, D- Applies to Sub-class D: Roofs, E1- Applies to Sub-class E1: Holding Systems, E2- Applies to Sub-class E2: Treatment Beds, E- Applies to Sub-class E1 and E2, • – Applies to all classes.

It has been determined that there will not be measurable adverse environmental effects on the following VECs, based on the limited duration, frequency, and spatial extent of the potential interactions outlined in Table 4.1:

- Air Quality
- Terrain and Topography
- Groundwater Quantity
- Land and Resource Use
- Socio-Economic Conditions

These components will not be carried forward through the RCSR for further detailed analysis. In the unlikely events that these VECs are indirectly affected, it is presumed that the mitigation developed for the RCSR will serve to address any potential environmental effects.

4.3.5 Valued Ecosystem Components Descriptions

The following VECs have been identified as potentially susceptible to significant adverse environmental effects due to project activities. The value of each VEC and possible interactions with project activities are described.

Soils

Soils are important as they are the basis of agricultural productivity and therefore the economic sustainability of the industry. Healthy soils support biological diversity and promote agricultural quality. Well-managed soils have high moisture-absorbing capacities, which can reduce the intensity of runoff and thus reduce potential erosion and loss of soil resources. Project activities and improper management have the potential to result in a number of environmental effects, including: erosion or slope instability due to increased soil exposure and disturbance, reduced soil capability through soil compaction and mixing, and soil contamination through unsafe handling, storage or the accidental spills of stored materials.

The spatial boundary for this VEC is set to the project site. The effects of the project activities will be felt for the length of time required to complete all project activities and in some case the length of time that the project is in operation. In certain instances, effects will be felt for the length of time it takes for project site to be restored to pre-construction conditions, as disturbed areas will continue to be affected until appropriate restoration takes place. The generally minor effects felt by the introduction of contaminants are likely to be rare and small in magnitude. If they occur, they will affect only the immediate surface area, and will be appropriately removed and disposed of.

Surface Water Hydrology

Surface water hydrology is valued because it relates to water resources such as lakes, rivers, streams, riparian areas, and wetlands which play a critical role in a healthy environment, and provide water sources for domestic and agricultural purposes. Additionally, it describes the relationship between precipitation and run-off, by reflecting the effects of a project's alteration of the natural state of the surrounding environment. Project activities could negatively affect surface water hydrology through alteration of surface drainage patterns, and rate and volume of runoff.

The spatial boundary for this VEC is set to the project site and adjacent water bodies and riparian areas. Direct effects of the project's activities on surface water hydrology involving permanent installations may be felt indefinitely; whereas direct effects of the projects activities on surface water hydrology as a result of temporary changes to the surrounding environment will be felt for the length of time it takes for the project site to be restored to a state equivalent to pre-construction condition.

Surface Water Quality

Surface water quality is valued as it influences the health of humans, fish, wildlife, livestock, and the environment as a whole. It is frequently relied upon as a water source, often in satisfying water requirements during agricultural operations. Surface water quality has the potential to be reduced by project activities, through an increase in sediment loads, or by the accidental introduction of contaminants such as oil, grease, or fuel spills from construction vehicles or equipment, directly or indirectly into surface water bodies.

The spatial boundary for this VEC is set to the project site and any adjacent water bodies. Effects to surface water quality will not extend past the length of time it takes to restore the project site to pre-construction conditions. The generally minor effects felt by the introduction of contaminants will be limited to the length of time and reach it takes for introduced sediments to fall out of suspension, and natural dispersion and dilution to resolve concentrations to acceptable levels.

Groundwater Quality

Water is critical to the success of an agricultural operation. Groundwater is a valued source of water and is frequently relied upon as a source of drinking water and often used to satisfy water requirements during agricultural operations. Groundwater aquifers are not always isolated entities; shallow aquifers can be linked with other surface water sources such as lakes, rivers and streams through discharging and recharging areas.. Groundwater quality is valued as it influences the quality of linked water sources and the health of humans, fish, wildlife, livestock, and the environment as a whole. Projects could

negatively affect groundwater quality through the accidental introduction of contaminants to the associated aquifer.

The spatial boundary for this VEC is set to the project site and the associated aquifer. Any direct effects of project activities on groundwater quality will be felt indefinitely. Since the quantity of contaminant that may potentially reach the aquifer following a spill or machinery malfunction would be relatively very small, after implemented mitigation, active remediation techniques would likely not be employed. Return to a pre-contamination state would be reflective of the natural assimilative ability of the individual site as it would be left to natural attenuation.

Aquatic Habitat and Species

Aquatic habitat and species are valued as they are natural indicators of surface water quality conditions and are key components for biological diversity. Special value is given to rare or uncommon species, since loss of individuals of such species has the greatest potential to affect the ecological integrity of an area thereby decreasing the habitat value of the water body. Projects could negatively affect aquatic habitat and species through the disturbance or destruction of vegetation and fish.

The spatial boundary for this VEC is set to the project site. The effects of the project activities will be felt temporarily, until suitable re-vegetation/vegetation establishment and natural recovery have taken place, and visual evidence of all activities fades. Thus, identified effects of project activities will be felt until the project site is restored to a state equivalent to pre-construction conditions.

Terrestrial Habitat and Species

Terrestrial habitat and species are valued as individuals, habitat, and key components of biological diversity. Special value is given to rare or uncommon species since loss of individuals of such species has the greatest potential to affect the ecological integrity of an area. Projects could negatively affect terrestrial habitat and species by the disturbance or destruction of vegetation and habitat, the introduction of non-native species and opportunistic species, or the disruption to wildlife nesting and rearing.

The spatial boundary for this VEC is set to the project site. The effects of the project activities will be felt temporarily, until suitable natural recovery and re-vegetation has taken place, and visual evidence of all activities fade. Thus, identified effects of project activities will be felt until the project site is restored to a state equivalent to preconstruction conditions.

Cultural and Heritage Resources

Cultural and heritage resources include cultural landscapes, archaeological and paleontological sites, structures, engineering works and artifacts, and any other associated records assigned important historic value. Cultural resources are valued for their association with aspects of human history and their contribution to the understanding of past events. Project activities have potential to damage surface and below ground cultural resources, and affect cultural and heritage resources through loss and/or disruption.

The spatial boundary for this VEC is set to the project site. Depending on the nature of the cultural and heritage resource, the effects of project activities will be felt temporarily until the resource can be appropriately restored, or indefinitely in the unlikely event that a resource is destroyed before or during project construction.

4.4 Potential Environmental Effects

The environmental assessment focuses on the evaluation of potential environmental effects resulting from interactions between the various project activities and the VECs for each project phase. While many of these projects will result in an overall net-positive result, only potential adverse environmental effects are identified.

The environmental effects resulting from project-environment interactions will for the most part, take place during the construction phase; however, effects can still occur during all phases of the project, for example, during operation and maintenance activities. The spatial and temporal environmental effect will be limited to the boundaries identified in *Section 4.3.1: VEC Descriptions*. The nature of these effects are related to: Soils, Surface Water Hydrology, Surface Water Quality, Aquatic Habitat and Species, Terrestrial Habitat and Species, and Cultural and Heritage Resources.

Each type of project in the five sub-classes considered within this RCSR was analyzed on a sub-class basis. Tables 4.3 to 4.8 identify the potential adverse environmental effects for the VECs deemed relevant in *Section 4.3 Issues Scoping and Valued Ecosystem Components*.

4.5 Mitigation

Mitigation includes those measures identified as a means of eliminating, reducing, or controlling adverse environmental effects resulting from project activities, and are components of proper project planning, site preparation, construction, and restoration practices.

Small scale farm infrastructure projects which fall within this RCSR involve routine projects with predictable environmental effects that can be avoided or minimized using proven mitigation.

Tables 4.3 to 4.8 identify the mitigation measures that should be enlisted to eliminate, reduce, or control potential adverse environmental effects on identified VECs, as a result of project activities. This includes the effects of related accidents and malfunctions. The mitigation measures listed in Table 4.3 apply to all projects falling within this RCSR; mitigation measures listed in Tables 4.4 to 4.8 apply solely to their particular sub-class. If all applicable mitigation identified in Tables 4.3 to 4.8 are employed, small scale farm infrastructure projects are not likely to cause significant adverse residual environmental effects.

In order to ensure that conditions of funding, including mitigation, provided to the proponent have been successfully completed, AAFC will provide technical advice to selected projects during project planning, and may, upon completion of the project, conduct either telephone interviews or site visits of selected projects. Such visits will also provide AAFC staff with greater understanding of the on the ground nature and benefits of the projects. AAFC staff will conduct site visits to all completed projects for which they are the proponent or grant an interest in land.

4.6 Analysis and Prediction of Significance of Residual Environmental Effects

Analysis and prediction of the significance of residual environmental effects is based on several criteria. These criteria consider a project's magnitude, geographic extent, duration, frequency of occurrence, and permanence. Table 4.2 summarizes the rating system used to determine the significance of residual environmental effects following the application of mitigation measures.

Table 4.2 Rating System Used to Determine Significance of Residual Environmental Effects Following the Application of Mitigation Measures.

Criterion	Criteria Ratings		
	Low (L)	Moderate (M)	High (H)
Magnitude	Effect is evident only at or nominally above baseline conditions	Effect is likely to be measurable over baseline conditions however is less than regulatory criteria, a published guideline value, or a level that might measurably affect the quality, quantity, value or use of a VEC	Effect may exceed a regulatory criteria, a published guideline value, or a level that might measurably affect the quality, quantity, value or use of a VEC
Geographic	Effect is most likely to	Effect is likely to extend	Effect is likely to extend

Extent	be limited to the project site/footprint	into areas adjacent to the project site/footprint boundary	into areas beyond those adjacent to the project site/footprint boundary
Duration	Effect is most likely to be evident only during one of the following phases of the project: site preparation, construction or decommissioning	Effect is likely to be evident during construction, decommissioning and/or operations phase of the project	Effect is likely to be evident beyond the life of the project
Frequency	Conditions or phenomena causing the effect occur only once	Conditions or phenomena causing the effect may occur more than once, but infrequently	Conditions or phenomena causing the effect are likely to occur at regular or frequent intervals
Permanence	Effect is likely to be reversible over a short period of time (e.g., within several days or months) after the completion of the activity causing the effect	Effect is likely to be reversible over an extended period of time (e.g., a growing season, following a freshet)	Effect is likely to be permanent

After the application of these definitions, an environmental effect is assessed to be either a negligible effect, a minor adverse effect or a significant adverse effect, according to the following definitions:

a) **Negligible Effect (NEG) (Not Significant)** are those environmental effects which, after taking into consideration applicable mitigation measures, have been assessed to have a “low” rating for the majority (i.e. at least 3 out of 5) of the criteria described above and the effect cannot have been assessed to be “moderate” or “high” for either the “magnitude” or “permanence” criteria. Overall, these effects are not likely to be measurable or noticeable beyond the project site/footprint boundary, are only evident during the site preparation, construction, or decommissioning phases of the project, or occur only once. These effects are generally completely reversible, within a short period of time.

b) **Minor Adverse / Mitigable Effects (MIN) (Not Significant)** are those environmental effects which, after taking into consideration mitigation measures, have been assessed to have a “low” or “moderate” rating for the majority of the criteria described above. Any effect that has been assessed as “moderate” or “high” for either the “magnitude” or “permanence” criteria (but not both) is considered to be a minor adverse effect (not significant).

c) **Significant Adverse Effects (SIG)** are those environmental effects which, after taking into consideration mitigation measures, have a magnitude that is approaching a legal regulatory limit (i.e. moderate) or exceeds a legal limit (i.e. high), and exhibit any or all of the following:

- effect extends into areas beyond those adjacent to the project site/footprint boundary;
- effect is evident beyond the life of the project;
- conditions or phenomena causing the effect occur at regular or frequent intervals; and
- effect is permanent.

The significance rating established represents the residual significance of each environmental effect, including accidents and malfunctions, following the application of mitigation measures. Tables 4.3 to 4.8 identify applicable VECs, associated environmental effects, necessary mitigation measures, and the predicted significance of residual adverse environmental effects, for projects covered by this RCSR.

Table 4.3 Potential Environmental Effects and Mitigation Strategies for All Sub-Classes

VEC	Potential Environmental Effects	Mitigation	*Magnitude*	*Extent*	*Duration*	*Frequency*	*Permanence*	Significance of Adverse Effect
	Note: The proponent is responsible for observing and abiding by all applicable municipal, provincial/territorial, and federal legislation relating to public health and safety, protection of the environment and wildlife habitat, labour codes, land use, and zoning regulations, along with acquiring forthwith and prior to commencement of any work, all necessary rights, licenses, approvals, and authorizations. This will help mitigate environmental effects associated with any environmental component affected by these projects.							
Soils	• Increased soil exposure resulting in erosion or slope instability.	• Keep site clearing to a minimum to maintain vegetative cover and wind breaks. • Stabilize slopes as appropriate for local site conditions. • Avoid activities on areas with steep and/or sensitive slopes. • Install erosion controls prior to work and maintained until the site has been stabilized. • Phase work to minimize duration of exposure of disturbed areas. • Divert runoff and overland flow away from working areas and areas of exposed or susceptible soils, where feasible. • Avoid work during excessively wet site conditions. • Restore disturbed areas as soon as possible, to minimize duration of soil exposure.	L	L	L	L	L	**NEG**
	• Reduced soil capability/productivity through compaction, and topsoil and subsoil mixing.	• Restore disturbed areas as soon as possible, to minimize duration of soil exposure. • Conserve topsoil by removal and stockpiling prior to construction. • Avoid stripping of topsoil in frozen conditions, where feasible. • Maintain a 1 meter separation distance between stockpiled topsoil, subsoil, and overburden to minimize mixing and replace them in a manner that ensures replacement with like materials. • Salvage the topsoil stripped and disturbed during project and replace as quickly as possible to allow natural re-vegetation. • Avoid work during excessively wet site conditions.	L	L	L	L	L	**NEG**

VEC	Potential Environmental Effects	Mitigation	*Magnitude*	*Extent*	*Duration*	*Frequency*	*Permanence*	Significance of Adverse Effect
	Note: The proponent is responsible for observing and abiding by all applicable municipal, provincial/territorial, and federal legislation relating to public health and safety, protection of the environment and wildlife habitat, labour codes, land use, and zoning regulations, along with acquiring forthwith and prior to commencement of any work, all necessary rights, licenses, approvals, and authorizations. This will help mitigate environmental effects associated with any environmental component affected by these projects.							
Surface Water Hydrology	• Changes to surface drainage patterns, and rate and volume of runoff.	• Site facilities where they are unlikely to be impacted by high waters or floods, and in compliance with municipal, provincial/territorial and federal requirements. • Ensure earthworks do not exacerbate flood hazards or create undesirable obstructions to drainage into natural water bodies. • Restore riparian areas to pre-construction conditions to the extent possible. • Minimize disturbance to ground surface and vegetation that affect infiltration and runoff characteristics.	L	L	L	L	L	**NEG**
Surface Water Quality	• Reduced water quality due to increased sediment loads.	• Avoid work during excessively wet site conditions. • Stabilize slopes as appropriate for local site conditions. • Install effective long-term erosion and sediment controls prior to work and maintain until the site has been stabilized. • Remove accumulated sediments prior to removal of controls, where feasible. • Restore or re-vegetate work site to pre-construction conditions, to the extent possible. • Divert runoff and overland flow away from working areas and areas of exposed or susceptible soils, where feasible.	L	L	L	L	L	**NEG**

VEC	Potential Environmental Effects	Mitigation	*Magnitude*	*Extent*	*Duration*	*Frequency*	*Permanence*	Significance of Adverse Effect
	Note: The proponent is responsible for observing and abiding by all applicable municipal, provincial/territorial, and federal legislation relating to public health and safety, protection of the environment and wildlife habitat, labour codes, land use, and zoning regulations, along with acquiring forthwith and prior to commencement of any work, all necessary rights, licenses, approvals, and authorizations. This will help mitigate environmental effects associated with any environmental component affected by these projects.							
	• Reduced water quality due to introduction of contaminants.	• Maintain construction equipment to prevent leaks and spills of fuels, lubricants, hydraulic fluids, or coolants. • Store, handle and dispose of fuel, wastes and hazardous waste materials properly and in accordance with all relevant municipal, provincial, and federal legislation. • Re-fuel and/or service mobile construction equipment and store hazardous materials at a construction site at a distance greater than 100m from a water body. • Undertake fuelling and/or servicing of immobile construction equipment within 100m of a water body in a manner such that any spillage will not enter the water body. • Capture, contain, and clean up spills and leaks immediately. • Ensure that contractor has spill clean up materials on site (e.g. 25 kg of suitable commercial sorbent, 30 m^2 of 6 mil polyethylene, a shovel and an empty fuel barrel for spill collection and disposal (CPWCC, 1999)). • Notify appropriate provincial/territorial authorities in the event of any reportable spills of petroleum products or hazardous materials. Ensure emergency contact numbers are available on site.	L	L	L	L	L	**NEG**
Aquatic Habitat and Species	• Disturbance or destruction of vegetation and fish.	• Minimize disturbance to the ground surface and vegetation that affect infiltration and runoff characteristics. • Restore or re-vegetate riparian areas to pre-construction conditions to the extent possible. • Minimize the extent and duration of work within channel and bank area. • Schedule activities to avoid disturbance to fish and fish habitat during sensitive periods (i.e. spawning). Comply with applicable “no construction” timing windows. • Keep any disturbance to the approach to any watercourse related to the project and associated activities to a minimum, and immediately stabilizedand reclaim approaches to pre-construction conditions. • IEnsure that if riprap is used, the riprap is clean, free of fine materials, and of sufficient size to resist displacement during peak flood events. • Ensure earthworks do not exacerbate flood hazards or create undesired obstructions to drainage into natural water bodies.	L	L	L	L	L	**NEG**

VEC	Potential Environmental Effects	Mitigation	*Magnitude*	*Extent*	*Duration*	*Frequency*	*Permanence*	Significance of Adverse Effect
	Note: The proponent is responsible for observing and abiding by all applicable municipal, provincial/territorial, and federal legislation relating to public health and safety, protection of the environment and wildlife habitat, labour codes, land use, and zoning regulations, along with acquiring forthwith and prior to commencement of any work, all necessary rights, licenses, approvals, and authorizations. This will help mitigate environmental effects associated with any environmental component affected by these projects.							
Terrestrial Habitat and Species	• Disturbance or destruction of vegetation and habitat.	• Keep site clearing to a minimum to maintain vegetative cover and windbreaks. • Use existing roads and trails for site access. • Re-vegetate disturbed areas and exposed soils with species that existed prior to construction or suitable native species. • Salvabe the topsoil stripped and disturbed during the project and replace it as quickly as possible to allow natural re-vegetation. • Avoid vegetation clearing during the sensitive breeding and nesting periods until fledglings have left parental territories, to minimize impacts on migratory birds and help comply with the Migratory Birds Convention Act.	L	L	L	L	L	**NEG**
	• Introduction of non-native species and opportunistic species.	• Clean all machinery and equipment prior to transport to new construction areas. • Re-vegetate disturbed areas and exposed soils with species that existed prior to construction or suitable native species.	L	L	L	L	L	**NEG**
	• Disruption to wildlife nesting and rearing.	• Survey area for nests or dens prior to clearing. Avoid disturbing any active nests or dens. • ,Avoid construction activities during sensitive nesting/rearing periods if migratory birds or other wildlife are found in project area.	L	L	L	L	L	**NEG**
Cultural & Heritage Resources	• Loss or disruption to cultural or heritage resources.	• Cease construction in the event that any cultural or heritage resources are discovered, and notify the appropriate provincial/territorial authority immediately. If this occurs, construction will occur as directed by the appropriate provincial/territorial authority.	L	L	L	L	L	**NEG**

Table 4.4 Potential Environmental Effects and Mitigation Strategies for Sub-Class A- Chemical Storage Facilities

VEC	Potential Environmental Effects	Mitigation	*Magnitude*	*Extent*	*Duration*	*Frequency*	*Permanence*	**Significance of Adverse Effect**
Soils	• Soil contamination through unsafe handling, storage, disposal or accidental spills of stored materials.	• Follow all applicable legislation pertaining to chemical and/or container storage, handling, application, disposal, and accidental release.	L	L	L	L	L	**NEG**
Surface Water Quality	• Reduced water quality due to introduction of contaminants.	• Follow all applicable legislation pertaining to chemical and/or container storage, handling, application, disposal, and accidental release. • Follow manufacturer's instructions carefully on all stored chemicals. • Monitor structure regularly to ensure safe, efficient, and effective operation.	L	L	L	L	L	**NEG**
Groundwater Quality	• Reduced water quality due to introduction of contaminants.	• Follow all applicable legislation pertaining to chemical and/or container storage, handling, application, disposal, and accidental release. • Ensure facility is sited and constructed in accordance with municipal, provincial/territorial, and federal legislation. • Ensure the floor of the facility is above the normal water table and at least 1 metre above bedrock. • Follow manufacturer's instructions carefully on all stored chemicals. • Monitor structure regularly to ensure safe, efficient, and effective operation.	L	L	L	L	L	**NEG**

Table 4.5 Potential Environmental Effects and Mitigation Strategies for Sub-Class C- Impermeable Pads

VEC	Potential Environmental Effects	Mitigation	*Magnitude*	*Extent*	*Duration*	*Frequency*	*Permanence*	Significance of Adverse Effect
Soils	• Soil contamination through unsafe handling, storage, disposal or accidental spills of stored materials.	• Follow all applicable legislation pertaining to any related hazardous material and/or container storage, handling, disposal, and accidental releases.	L	L	L	L	L	**NEG**
Surface Water Quality	• Reduced water quality due to introduction of contaminants.	• Monitor structure regularly to ensure safe, efficient, and effective operation.	L	L	L	L	L	**NEG**
Groundwater Quality	• Reduced water quality due to introduction of contaminants.	• Ensure facility is sited and constructed in accordance with municipal, provincial/territorial and federal legislation. • Ensure the pad is above the normal water table and at least 1 metre above bedrock. • Monitor structure regularly to ensure safe, efficient, and effective operation.	L	L	L	L	L	**NEG**

Table 4.6 Potential Environmental Effects and Mitigation Strategies for Sub-Class D- Roofs

VEC	Potential Environmental Effects	Mitigation	*Magnitude*	*Extent*	*Duration*	*Frequency*	*Permanence*	Significance of Adverse Effect
Surface Water	• Reduced water quality due to increased sediment loads.	• Consider installing surface drains, and/or drainage and catchment systems (i.e. eaves troughs, downspouts) on the structure, to catch	L	L	L	L	L	**NEG**

VEC	Potential Environmental Effects	Mitigation	*Magnitude*	*Extent*	*Duration*	*Frequency*	*Permanence*	**Significance of Adverse Effect**
Quality		and/or slow roof runoff and control related damages. • Monitor structure regularly to ensure safe, efficient and effective operation.						

Table 4.7 Potential Environmental Effects and Mitigation Strategies for Sub-Class E1- Agricultural Waste Water Systems: Holding Systems

VEC	Potential Environmental Effects	Mitigation	*Magnitude*	*Extent*	*Duration*	*Frequency*	*Permanence*	**Significance of Adverse Effect**

VEC	Potential Environmental Effects	Mitigation	*Magnitude*	*Extent*	*Duration*	*Frequency*	*Permanence*	**Significance of Adverse Effect**
Soils	• Soil contamination through unsafe handling, storage, disposal or accidental spills of stored materials.	• Comply with all municipal, provincial/territorial and federal legislation regarding the siting, construction and operation of agricultural waste water systems, and the discharge, disposal and accidental release of contained materials. • Ensure project area contains well drained soils not subject to regular flooding (i.e. spring runoff), and does not contain poorly drained, shallow, or extremely porous soils. • Design system to have sufficient capacity to contain projected quantities during regular use and to prevent overflow during any extreme or unexpected events. • Design an appropriately sized secondary containment system to deal with any system failures or over loads. • Avoid discharging liquids from the system unless they meet all relevant water quality parameters. • Ensure the first rinse cycle from milkhouse washwater, accidental milk spills, waste milk, milk from treated cows, and waste colostrum is not put through the system, or that the system is designed to handle such effluents via a primary treatment system (i.e. vegetative surface ditches). • Avoid using the system for anything other than what it was intended for in design and planning.	L	L	L	L	L	**NEG**

VEC	Potential Environmental Effects	Mitigation	*Magnitude*	*Extent*	*Duration*	*Frequency*	*Permanence*	**Significance of Adverse Effect**
Surface Water Quality	• Reduced water quality due to introduction of contaminants.	• Comply with all municipal, provincial/territorial, and federal legislation regarding the siting, construction ,and operation of agricultural waste water systems, and the discharge, disposal, and accidental release of contained materials. • Locate the system at least 30 metres of horizontal distance from any waterbodies. • Ensure project area contains well drained soils not subject to regular flooding (i.e. spring runoff), and does not contain poorly drained, shallow, or extremely porous soils. • Design system to have sufficient capacity to contain projected quantities during regular use and to prevent overflow during any extreme or unexpected events. • Design an appropriately sized secondary containment system to deal with any system failures or over loads. • Avoid discharging liquids fom the system unless they meet all relevant water quality parameters. • Avoid using the system for anything other than what it was intended for in design and planning. • Monitor system regularly to ensure safe, efficient and effective operation.	L	L	L	L	L	**NEG**

VEC	Potential Environmental Effects	Mitigation	*Magnitude*	*Extent*	*Duration*	*Frequency*	*Permanence*	**Significance of Adverse Effect**
Groundwater Quality	• Reduced water quality due to introduction of contaminants.	• Comply with all municipal, provincial/territorial and federal legislation regarding the siting, construction ,and operation of agricultural waste water systems, and the discharge, disposal, and accidental release of contained materials. • Ensure project area contains well drained soils not subject to regular flooding (i.e. spring runoff), and does not contain poorly drained, shallow, or extremely porous soils. • Design system to have sufficient capacity to contain projected quantities during regular use and to prevent overflow during any extreme or unexpected events. • Design an appropriately sized secondary containment system to deal with any system failures or over loads. • Avoid discharging liquids from the system unless they meet all relevant water quality parameters. • Minimize or avoid excavation depths and cuts near wells, shallow aquifers, and other sensitive areas. • Locate the system, where possible, at a down gradient of nearby wells and other water sources. • Separate system from the water table, bedrock, and other tile systems by necessary and appropriate distances, as enforced locally, to avoid contamination. • Ensure the first rinse cycle from milkhouse washwater, accidental milk spills, waste milk, milk from treated cows, and waste colostrum are not put through the system, or that the system is designed to handle such effluents via a primary treatment system (i.e. vegetative surface ditches). • Avoid using the system for anything other than what it was intended for in design and planning. • Monitor system regularly to ensure safe, efficient and effective operation.	L	L	L	L	L	**NEG**

Table 4.8 Potential Environmental Effects and Mitigation Strategies for Sub-Class E2- Agricultural Waste Water Systems: Treatment Beds

VEC	Potential Environmental Effects	Mitigation	*Magnitude*	*Extent*	*Duration*	*Frequency*	*Permanence*	**Significance of Adverse Effect**
Soils	• Soil contamination through unsafe handling, storage, disposal, or accidental spills of stored materials.	• Comply with all municipal, provincial/territorial and federal legislation regarding the siting, construction and operation of agricultural waste water systems, and the discharge, disposal and accidental release of contained materials. • Ensure project area and any imported materials have adequate soil permeability and percolation rates, drainage characteristics, and hydraulic loading rates to handle system requirements. • Ensure project area contains well drained soils not subject to regular flooding (i.e. spring runoff), and does not contain poorly drained, shallow, or extremely porous soils. • Ensure the first rinse cycle from milkhouse washwater, accidental milk spills, waste milk, milk from treated cows, and waste colostrum arenot put through the system, or that the system is designed to handle such effluents via a primary treatment system (i.e. vegetative surface ditches). • Avoid using system for anything other than what it was intended for in design and planning.	L	L	L	L	L	**NEG**
Surface Water Quality	• Reduced water quality due to introduction of contaminants.	• Comply with all municipal, provincial/territorial, and federal legislation regarding the siting, construction and operation of agricultural waste water systems, and the discharge, disposal, and accidental release of contained materials. • Locate the system at least 30 metres of horizontal distance from any waterbodies. • Ensure project area and any imported materials have adequate soil permeability and percolation rates, drainage characteristics, and hydraulic loading rates to handle system requirements. • Ensure project area contains well drained soils not subject to regular flooding (i.e. spring runoff), and does not contain poorly drained, shallow, or extremely porous soils. • Design system to have sufficient capacity to contain projected quantities during regular use and to prevent overflow during any extreme or unexpected events. • Consider mounding the beds to ensure surface runoff does not collect	L	L	L	L	L	**NEG**

VEC	Potential Environmental Effects	Mitigation	*Magnitude*	*Extent*	*Duration*	*Frequency*	*Permanence*	**Significance of Adverse Effect**
		and/or effect system operation. • Do not use system for anything other than what it was intended for in design and planning. • Monitor system regularly to ensure safe, efficient and effective operation.						
Groundwater Quality	• Reduced water quality due to introduction of contaminants.	• Comply with all municipal, provincial/territorial and federal legislation regarding the siting, construction and operation of agricultural waste water systems, and the discharge, disposal and accidental release of contained materials. • Ensure project area and any imported materials have adequate soil permeability and percolation rates, drainage characteristics, and hydraulic loading rates to handle system requirements. • Ensure project area contains well drained soils not subject to regular flooding (i.e. spring runoff), and does not contain poorly drained, shallow, or extremely porous soils. • Locate the system, where possible, at a down gradient of nearby wells and other water sources. • Design system to have sufficient capacity to contain projected quantities during regular use and to prevent overflow during any extreme or unexpected events. • Minimize or avoid excavation depths and cuts near wells, shallow aquifers, and other sensitive areas. • Separate system from the water table, bedrock, and other tile systems by necessary and appropriate distances, as enforced locally, to avoid contamination. • Ensure the first rinse cycle from milkhouse washwater, accidental milk spills, waste milk, milk from treated cows, and waste colostrum are not put through the system, or that the system is designed to handle such effluents via a primary treatment system (i.e. vegetative surface ditches). • Avoid using system for anything other than what it was intended for in design and planning. • Monitor system regularly to ensure safe, efficient and effective operation.	L	L	L	L	L	**NEG**

4.7 Potential Accidents and Malfunctions

The likelihood of accidents and malfunctions occurring, that would cause negative environmental effects, during small scale farm infrastructure projects, is minimal, after the implementation of mitigation. Table 4.9 identifies the potential accidents and malfunctions of each phase of the project.

Table 4.9 Potential Accidents and Malfunctions during Small Scale Farm Infrastructure Projects

Project Phase	Physical Works and Project Activities	Accidents and Malfunctions[1]						
		Fuel Spills	Vehicle Collisions and Damage	Fires (i.e machinery, facilities)	Structural Failures	Hazardous Material or Waste	Leaks from Structures or Equipment	Vandalism
Construction	Project planning							
	Vegetation clearing and grubbing	●	●	●				
	Earthworks	●	●	●				
	Vegetation establishment	●	●	●				
	Construction of a building	AB	AB	AB	AB	AB		AB
	Construction of a structure	CD	CD	CD	CD	CD		CD
	Installation of a holding system	E1	E1	E1	E1			E1
	Installation of infiltration fields	E2	E2	E2	E2			E2
	Piping works	E	E	E				E
	Operation of heavy equipment and vehicles	●	●	●			●	●
	Operation of hand machinery	●		●				●
Operation and Maintenance	Chemical storage, management and handling			A	A	A	A	A
	Non-hazardous material storage, management and handling	B	B	B	B		B	B
	Protection of contained materials			ABD	ABD		ABD	ABD
	Farm bi-product storage, management and handling					CE	CE	CE
	Removal of accumulated solids	E1	E1	E1	E1	E1	E1	E1
	Recirculation and use of wastewater					E	E	E
	Infiltration of wastewater					E	E	E

Project Phase	Physical Works and Project Activities	Accidents and Malfunctions[1]						
		Fuel Spills	Vehicle Collisions and Damage	Fires (i.e machinery, facilities)	Structural Failures	Hazardous Material or Waste	Leaks from Structures or Equipment	Vandalism
	General maintenance and Cleaning	•	•	•		•		•
	Containing and cleaning a chemical/bi-product spill	•				ACE	ACE	ACE
	Operation of heavy equipment and vehicles	•	•	•			•	
	Operation of hand machinery	•		•				
Decommissioning and Abandonment	Vegetation clearing and grubbing	•	•	•				
	Vegetation Establishment	•	•	•				
	Decommissioning of physical works	•	•	•	•	•	•	•
	Operation of heavy equipment and vehicles	•	•	•			•	•
	Operation of hand machinery	•		•				•

[1] A – Applies to Sub-class A: Chemical Storage Facilities, B – Applies to Sub-class B: Non-Hazardous Material Storage Facilities, C-Applies to Sub-class C: Impermeable Pads, D- Applies to Sub-class D: Roofs, E1- Applies to Sub-class E1: Holding Systems, E2- Applies to Sub-class E2: Treatment Beds, E- Applies to Subclasses E1 and E2, • – Applies to all classes.

4.8 Cumulative Effects

Cumulative effects may result when VECs are affected by interactions among multiple projects. Therefore, it is necessary to consider past, present, and likely future projects to determine the full extent of potential environmental effects associated with each project activity.

The need for this RCSR was heightened as a result of the National Farm Stewardship Program, a program under the APF, which provides technical and financial assistance to individuals to implement environmentally sound farming practices.

Cumulative effects assessment must consider the potential cumulative effects resulting from interactions between all activities and projects flowing from farm operations, as well as between projects and activities outside the farm site. Small scale farm infrastructure projects have the potential to interact with: 1) other projects addressed by this RCSR; 2) other farm operational activities: and 3) projects and activities occurring outside the site boundaries.

Interactions between small scale farm infrastructure projects

The small scale farm infrastructure projects described under this RCSR encourage environmentally sustainable farming practices. The projects, on their own or in combination with others, will result in positive net environmental gains, both immediately and in the long term.

The environmental effects associated with small scale farm infrastructure projects, as defined by this RCSR, have been found to be negligible and limited to the immediate project area. Considering these factors, individual small scale farm infrastructure projects are not likely to interact with each other and contribute to cumulative effects.

Interactions between small scale farm infrastructure projects and farm operational activities

Interactions between small scale farm infrastructure projects and farm operational activities must be factored into the consideration of cumulative effects.

Generally, farm operational activities within the project area have been taking place for extended periods of time, and the immediate environment has been routinely exposed to these activities prior to any undertakings related to small scale farm infrastructure projects. In the case of small scale farm infrastructure projects, such projects would be located in proximity to farmsteads and building sites and would serve to enhance the environmental sustainability of the operation of such facilities in general. Given that projects under the Class will enhance environmental operations and that the area of potential disturbance during construction is in proximity to other farm buildings, it is unlikely that small scale farm infrastructure projects will interact with other farm operational activities and contribute to cumulative adverse environmental effects.

Interactions between small scale farm infrastructure projects and projects/activities outside site boundaries

Interactions between small scale farm infrastructure projects and projects/activities outside site boundaries must be considered during cumulative effects assessment.

Small scale farm infrastructure projects will be located within existing farmyards or building sites. Taking mitigation measures into account, potential adverse environmental effects would be limited to the project site. Outside the immediate project area potential adverse cumulative environmental effects are considered insignificant.

Based on knowledge of potential environmental effects and past experience, it is possible to predict the cumulative environmental effects that might result from a combination of projects or activities known at the time of declaration of this RCSR. Proper project planning and design will take into account surrounding infrastructure, other farm operations, and projects or activities outside of project boundaries which have potential to place a cumulative demand on affected VECs. All residual environmental effects following the application of recommended mitigation measures were found to be negligible, insignificant, and limited to the immediate project area. Therefore, the potential for any cumulative effects to occur as a result of project

interactions with other small scale farm infrastructure projects, farm operational activities or projects, and activities outside the sites' boundaries, is unlikely and generates low concern. Projects associated with this RCSR and their affected VECs have been considered and deemed to have a low significant effect on cumulative effects.

Although potential exists for short term environmental effects during construction, the implementation of recommended mitigation measures will result in insignificant impacts. AAFC considers it unlikely that projects under this RCSR will contribute to significant adverse cumulative environmental effects.

5.0 Roles and Responsibilities

The following section discusses, in general terms, the federal and provincial/territorial regulatory requirements and coordination mechanisms for small scale farm infrastructure projects.

5.1 Federal Coordination

This section summarizes the involvement of responsible and federal authorities in this RCSR process.

This RCSR does not exempt a proponent from the requirement to obey all other relevant federal legislation, such as the *Fisheries Act.* This RCSR is not designed to compensate for any other federal requirements. If a project involves any other RAs, the RCSR will not apply.

5.1.1 Responsible Authorities

AAFC is the only RA involved in the environmental assessment process of small scale farm infrastructure projects covered by this RCSR, therefore will assume the lead role in the environmental assessment process. No federal authorizations, permits, or approvals are required for these projects; no other federal departments are expected to be involved in the environmental assessment process. If another RA is involved in any of these projects, for example via a funding trigger, this RCSR will not apply.

5.1.2 Federal Authorities

No other FAs have been identified which are likely to require an environmental assessment of these projects under *Section 5* of the Act, or to possess specialist or expert information or knowledge that is necessary to conduct the environmental assessment of the projects covered by this RCSR. No other federal departments are expected to be involved in the environmental assessment process. Any projects which require an assessment by or a referral to another FA, will not be included in the class.

Two other FAs have indicated an interest in projects subject to the RCSR: Fisheries and Oceans Canada and Environment Canada. These FAs have reviewed the RCSR and identification of potential environmental effects, mitigation measures, and other comments have been considered and incorporated into the RCSR, as appropriate, such that specific referrals to these FAs is not required.

5.2 Provincial/Territorial Coordination

The Act allows the Minister of the Environment to enter into agreements with provincial and territorial governments relating to the environmental assessments of projects where both governments have an interest. These bilateral agreements provide guidelines for the roles and responsibilities of each government in the environmental assessment of such projects. Several bilateral agreements have been signed and others are currently under negotiation. FAs and provincial/territorial agencies must adhere to the bilateral agreements where they are in place.

In some provinces/territories, certain small scale farm infrastructure projects will trigger the provincial/territorial environmental assessment legislation, but only projects exempted from the provincial/territorial environmental assessment process will be covered by this RCSR. This RCSR is not designed to compensate for provincial/territorial requirements nor do they eliminate the need for project specific provincial/territorial approvals where required. This RCSR does not exempt a proponent from the requirement to obey all other relevant provincial/territorial legislation.

Provincial/territorial regulatory requirements for small scale farm infrastructure projects vary by province/territory. Standard practices or guidelines relating to project siting, construction, operation, and/or abandonment may exist in conjunction with, or independently of, provincial/territorial regulations and building codes. Some projects may require an authorization, permit, approval, or licence from a provincial/territorial government agency or authority. Municipal building permits will be required for some projects. Generally, small scale farm infrastructure projects may require provincial/territorial approval for the storage, handling, or disposal of chemicals and waste products. They may also need to conform to the *National Building Code of Canada* and/or the *National Farm Building Code of Canada*. Local authorities, regional documents, and technical experts should be helpful in identifying any project relevant legislation, regulations, standards, and guidelines, along with key agencies or authorities. This will vary across Canada.

Projects involving work in provincially/territorially designated sites of special concern (i.e. areas of natural and scientific interest, environmentally significant areas, etc.) potentially affecting provincial/territorial species at risk or of special concern, or affecting heritage resources, will warrant consultation with the provincial/territorial authorities responsible for natural resource management (e.g., Provincial Ministries of Environment, Provincial Ministries of Natural Resources, Conservation Authorities).

5.3 The Proponent

Project proponents are responsible for providing project specific information to AAFC, and ensuring that design standards and mitigation measures described in the RCSR are implemented. Proponents are also responsible for obtaining all relevant licenses, permits, and authorizations and ensuring that the project meets all federal,

provincial/territorial, and municipal legislative requirements. All relevant licenses, permits, approvals, or authorizations must be made available to AAFC upon request.

6.0 Procedures for Amending the Replacement Class Screening Report

The purpose of an amending procedure is to allow the modification of the RCSR after experience has been gained with its operation and effectiveness. The reasons for such modification may include:

- clarification of ambiguous areas of document and procedures;
- streamlining or modifying the planning process in areas where problems may have arisen;
- minor modifications and revisions to the scope of assessment to reflect new or changed regulatory requirements, policies or standards; and
- new procedures and environmental mitigation practices that have been developed over time.

The RA will notify the Agency in writing of its interest to amend the RCSR. It will discuss the proposed amendments with the Agency and affected federal government departments and may invite comment from stakeholders and the public on the proposed changes. The RA will then submit the amended RCSR to the Agency, along with a request that the Agency amend the RCSR and a statement providing a rationale for the amendment.

The Agency may amend the RCSR without changing the declaration period if the changes:

- are minor;
- represent editorial changes intended to clarify or improve the screening process;
- do not materially alter either the scope of the projects subject to the RCSR or the scope of the assessment required for these projects; and
- do not reflect new or changed regulatory requirements, policies or standards.

The Agency may initiate a new declaration for the RCSR for the remaining balance of the original declaration period or for a new declaration period if the changes:

- are considered to be substantial; or
- represent modifications to the scope of the projects subject to the class or the scope of the assessment required for these projects.

6.1 Term of Application

This RCSR will be in effect for a period of five years, from the date of declaration.

7.0 References

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Glossary of Technical Terms

Abandonment
The long term or permanent cessation of an operation and the discontinued service of a physical work.

Agricultural Chemicals
Agricultural chemicals refer to synthetic substances which are used on-farm. They can include various forms of pesticides, chemicals used in waste and effluent treatment processes, and plant fertilizers.

Agricultural Land
Improved and unimproved land which is used primarily in support of the primary production of crops and livestock, such as cultivated land, forages, pasture (native and non-native), orchards, shelterbelts and other treed areas, farmsteads and building sites, and associated access routes.

Agricultural Waste Water Systems
Agricultural Waste Water Systems include nutrient recovery technologies that exist to collect, treat, infiltrate, and/or re-use nutrient rich agricultural waste water and run-off. They help manage associated risks of agriculture, reduce contamination potential, and improve farm input efficiencies. Components of these systems can include: holding systems, treatment beds, piping, and pumps.

Aquifer
A porous and permeable geological formation which stores, transmits, and yields significant and usable amounts of water to various sources.

Building (Farm)
An enclosure and/or storage facility found or built on agricultural land. Intent is to contain and store various materials. For purposes of this RCSR buildings will include storage facilities and roofs. Building will refer to any built structure in a fixed location, having a roof, but not necessarily walls or a floor.

Canadian Environmental Assessment Registry (CEAR)
An electronic internet listing of all environmental assessments conducted by all RAs under the CEAA. The listing is called the Canadian Environmental Assessment Registry (CEAR) and is available to the public through the Agency's internet site (http://www.ceaa-acee.gc.ca/050/index_e.cfm).

Cumulative Environmental Effects
The effect on the environment which results from effects of a project when combined with those of other past, existing,and imminent projects and activities. These may occur over an extended period of time and distance.

Decommissioning
The sealing, dismantling, and/or removal of a physical work where the operation or use has permanently ceased and service has been discontinued; decommissioning is often regulated or carried out in accordance with standards or pre-defined conditions designed to ensure safety and security and to mitigate potential environmental effects.

Environment
The components of the Earth, including
a) land, water, air, including all layers of the atmosphere,
b) all organic and inorganic matter and living organisms, and
c) the interacting natural systems that include components referred to in (a) and (b).

Environmental Effect
a) any change that the project may cause in the environment, including any change it may cause to a listed wildlife species, its critical habitat or the residences of individuals of that species, as defined in the Species at Risk Act,
b) any activity of the project that changes the health and socio-economic conditions, physical and cultural heritage, the current use of lands and resources for traditional purposes by aboriginal persons or any structure, site or thing that is of historical, archaeological, paleontological or architectural significance, and
b) any change to the project that may be caused by the environment.

Farm
Any operation involved in the primary production of agricultural crops or livestock. For the purposes of applying CEAA, greenhouse operations and intensive livestock operations are included in the definition of farm.

Farm Bi-Products
Farm bi-products refer to those products related to agricultural waste water systems, their associated effluents, and waste.

Farm Building
An enclosure and/or storage facility found or built on agricultural land. Intent is to contain and store various materials. For purposes of this RCSR buildings will include storage facilities and roofs. Building will refer to any built structure in a fixed location, having a roof, but not necessarily walls or a floor.

Federal Authority
Federal authority is Minister of the Crown, an agency or body accountable in right of Canada. Federal Authorities may provide expert advice to the Responsible Authorities for environmental assessments.

Fish Habitat
Under the federal *Fisheries Act*, “fish habitats” are defined as those parts of the environment “on which fish depend, directly or indirectly, in order to carry out their “life

processes" (feeding, spawning, migrating, overwintering). The *Fisheries Act* also defined "fish" to include all the life stages of "fish, shellfish, crustaceans, marine animals and marine plants".

Fixed Structure
In the context of the Act, means the electrical, heating, fire-prevention, plumbing, or security structure of an existing building, but does not include a structure that is intended to produce goods or energy.

Follow-up program
A program for verifying the accuracy of the environmental assessment of a project; and/or determining the effectiveness of any mitigation measures that have been implemented.

Footprint
The area of land occupied by a building or structure at ground level.

Groundwater
Water which is found in the saturated subsurface zone where water completely fills all the soil or rock pores.

Holding Systems
Holding systems exist to collect and contain effluents. For purposes of this RCSR they can include septic, sediment, or any other non-earthen tank or catchment system. Together with treatment beds and lateral connection infrastructure, holding systems form agricultural waste water systems, which exist for the collection and infiltration of liquid effluents.

Impermeable
A property referring to a material's inhibition to the permeation, saturation, or movement of fluids through it. Impermeable can be considered in reference to hydraulic conductivity, a measure of the rate at which a fluid passes through a material. An impermeable material would have low to negligible hydraulic conductivity to fluids; a reference figure to associate with low hydraulic conductivity, used in certain contexts and at specific and appropriate thicknesses, is 10^{-7} cm/sec. Concrete and compacted clays are examples of impermeable materials.

Migratory Bird Sanctuary
Federal lands that are protected under the Migratory Bird Sanctuary Regulations.

Mitigation
Mitigation refers to activities that eliminate, reduce, or control the adverse environmental effects of the project, and includes restitution for any damage by replacing, restoring, or compensating habitat, or any other means.

Modification

An alteration to a physical work that introduces a new structure or eliminates an existing structure and does not alter the purpose or function of the work, but does not include an expansion.

Physical Work
Human-made structures/equipment/materials set in a fixed location. Physical works do not include constructed items that are portable (i.e. table, tractor).

Polluting Substance
A substance that, if added to a water body, is likely to degrade or alter or form part of a process of degradation or alteration of the physical, chemical or biological conditions of the water body to an extent that is detrimental to its use by human beings, animals, fish or plants.

Previously Disturbed Land
This refers to land that is no longer in its original, native state. This can include native prairies used for pasture, and land that has been broken at any time in the past.

Project
• In relation to a physical work, any proposed construction, operation, modification, decommissioning, abandonment, or other undertaking in relation to that physical work; or
• Any proposed physical activity not relating to a physical work that is prescribed in the CEAA regulations.

Residual Environmental Effects
Residual Environmental Effects are found when a project still has significant adverse effects even after mitigation is applied. Thus, residual effects are the effects leftover after mitigation.

Responsible Authority
A federal authority that is required to ensure that an environmental assessment is conducted for a project which has a CEAA trigger.

Right-of-Way
With respect to the Exclusion List Regulations, land that is subject to a right-of-way and that is developed for an electrical transmission line, pipeline, road, or other similar linear feature.

Scope of Project or Assessment
Both the scope of the project and assessment need to be delineated in the environmental assessment. Scoping refers to determining the spatial and temporal boundaries (i.e., what area is affected and for how long). Scope of the project refers to what activities or works are triggered by *CEAA*. Scope of the assessment refers to the area and duration of environmental effects considered within the assessment.

Sensitive Area
A region of the landscape with a higher risk of its environmental components (i.e. soil or water) being impacted. Examples of potential impacts are: leaching, erosion, or runoff. Examples of potentially sensitive areas are: eroded knolls, rapidly permeable areas, and depressions.

Significant Adverse Environmental Effects
For the environmental assessment, adverse effects are judged as to whether they are likely and significant. Adverse effects occur if the project degrades the quality of the environment. Significance is determined by evaluating severity of impacts based on the duration and frequency, and the area affected by the project, including cumulative effects.

Species at Risk
The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) defines Species at Risk as either extinct (a species that no longer exists), extirpated (a species no longer existing in Canada but occurring elsewhere), endangered (species facing imminent extirpation or extinction), threatened (a species likely to become endangered if limiting factors are not reversed), and special concern (a species is of special concern because of characteristics that make it particularly sensitive to human activities or natural events).

Structure
Structure refers to any permanent structure that is not a building, as defined by the Act, or does not have a fixed roof. For purposes of this RCSR structures will include impermeable pads.

Treatment Beds
Treatment beds exist for the permeation/treatment of fluid effluents. Treatment beds can include weeping, leaching, or tile trenches. Together with holding systems and lateral connection infrastructure, treatment beds form agricultural waste water systems, which exist for the collection and infiltration of liquid effluents.

Water Body
For purposes of applying the *Exclusion List Regulations*, a water body means a water body, including a canal, ocean, and wetland, up to the high-water mark, but does not include a sewage or waste treatment lagoon or a mine tailings pond.

Water Table
The level separating the static surface of groundwater, or the saturated zone, from a zone where water in the pores of soil or rock is held up by capillary tension and the unsaturated soil-water zone above.

Wetland
A swamp, marsh, bog, fen or other land that is covered by water during at least three consecutive months of the year. For more clarity, wetlands can be defined in terms of

the presence of wetland vegetation [i.e., land that has the water table at, near, or above the surface or which is saturated for a long enough period to promote wetland processes that are indicated by the presence of wetland vegetation (e.g., reeds, rushes, cattails, and sedges)].

Wildlife Area
An area of public lands, administered by the Minister of the Environment, and described in Schedule I of the Wildlife Area Regulations. Note: these lands are referred to as National Wildlife Areas and involve federal lands.

Valued Ecosystem Component (VEC)
Any part of the environment that is considered important by the proponent, public, scientists, and government agencies involved in the assessment process. Importance may be determined on the basis of cultural values or scientific concern.

List of Acronyms

AAFC	Agriculture and Agri-Food Canada
APF	Agricultural Policy Framework
Agency	Canadian Environmental Assessment Agency (the Agency)
BMP	Beneficial Management Practice
CEAA	Canadian Environmental Assessment Act (the Act)
CEAR	Canadian Environmental Assessment Registry (the Registry)
CEPA	Canadian Environmental Protection Act
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CSR	Class Screening Report
CSPR	Class Screening Project Report
DFO	Department of Fisheries and Oceans
EA	Environmental Assessment
EC	Environment Canada
FA	Federal Authority
HADD	Harmful Alteration, Disruption, or Destruction (of fish habitat)
INAC	Indian and Northern Affairs Canada
MBCA	Migratory Birds Convention Act
MCSR	Model Class Screening Report
NWPA	Navigable Waters Protection Act
PFRA	Prairie Farm Rehabilitation Administration
RA	Responsible Authority
RCSR	Replacement Class Screening Report
SARA	Species at Risk Act
TC	Transport Canada
The Act	The Canadian Environmental Assessment Act
The Agency	The Canadian Environmental Assessment Agency
UV	Ultraviolet
VEC	Valued Ecosystem Component
WHMIS	Workplace Hazardous Materials Information System

Appendix A Contract Mitigation

1. Proponents are responsible for obtaining and complying with all applicable licenses, permits, approvals and authorizations, and for meeting all legislative requirements associated with projects.

Note: The mitigation stated below apply to most, but not necessarily all, projects. General mitigation (Part 1) have potential to apply to all small scale farm infrastructure projects. Sub-class specific mitigation (Part 2 to 8) have potential to apply only to projects in their respective sub-classes. Proponents are responsible for applying appropriate mitigation.

Part 1- General Mitigation (apply to all sub-classes)

Equipment and the Prevention of Contamination

2. Maintain construction equipment properly to prevent leaks and spills of fuels, lubricants, hydraulic fluids, or coolants.
3. Store, handle and dispose of fuel, wastes and hazardous waste materials properly and in accordance with all relevant municipal, provincial, and federal legislation.
4. Avoid fuelling and/or servicing of mobile construction equipment and storing of fuel and hazardous materials within 100m of a water body. Fuelling and/or servicing of immobile construction equipment within 100m of a water body is to be undertaken in a manner to ensure spillage will not enter the water body.
5. Ensure that the contractor has spill clean up materials on site (e.g. 25 kg of suitable commercial absorbent, 30 m^2 of 6 mil polyethylene, a shovel and an empty fuel barrel for spill collection and disposal (CPWCC, 1999)). In the event of any reportable petroleum product or hazardous material spills, appropriate provincial/territorial authorities must be notified. Ensure emergency contact numbers are available on site.
6. Clean all machinery and equipment prior to transport to new construction areas.

Land and Water Protection

7. Use existing roads and trails for site access.
8. Avoid work during excessively wet site conditions.
9. Avoid activities on areas with steep and/or sensitive slopes.
10. Stabilize slopes as appropriate for local site conditions.
11. Phase work to minimize duration of exposure of disturbed areas.
12. Minimize the extent and duration of work within channel and bank area.
13. Keep site clearing to a minimum and minimize disturbance to ground surface and vegetation, especially affecting infiltration and runoff characteristics.
14. Avoid stripping of topsoil in frozen conditions, where feasible.

15. Conserve topsoil by removing, salvaging and stockpiling prior to construction. Topsoil should be replaced as quickly as possible, to help conserve and allow natural re-vegetation.
16. Separate stockpiled topsoil, subsoil and overburden with a 1 meter separation distance to minimize mixing, and replace in a manner that ensures replacement with like materials.
17. Install effective short and long-term erosion and sediment controls prior to work and maintain until the site has been stabilized. Remove accumulated sediments prior to removal of controls, where feasible.
18. Divert runoff and overland flow away from working areas and areas of exposed or susceptible soils, where feasible.
19. Restore or re-vegetate all disturbed areas, including riparian areas, to pre-construction conditions, as soon as possible and to the extent possible. All re-vegetation should be done with species that existed prior to construction or suitable native species.
20. Ensure that riprap is clean, free of fine materials, and of sufficient size to resist displacement during peak flood events.

Other

21. Monitor system regularly to ensure safe, efficient and effective operation.
22. Site facilities where unlikely to be impacted by high waters or floods, and in compliance with municipal, provincial/territorial and federal requirements. Ensure earthworks do not intensify flood hazards or create undesirable obstructions to drainage into natural water bodies.
23. Minimize disturbance to fish and wildlife by avoiding sensitive periods (i.e. spawning, nesting) and areas (i.e. residences, spawning beds). Comply with any applicable “no construction” timing windows.
24. Cease construction and notify the appropriate provincial/territorial authority immediately if any cultural or heritage resources are discovered. If this occurs, construction will occur as directed by the appropriate provincial/territorial authority.

<u>Part 2- Additional Mitigation for Chemical Storage Facilities</u>

25. Follow all applicable municipal, provincial/territorial and federal legislation pertaining to facility siting and construction, as well as those related to chemicals and other stored hazardous materials (i.e. container storage, handling, disposal, accidental releases).
26. Ensure the floor of the facility is above the normal water table and at least 1 metre above bedrock.
27. Follow manufacturer’s instructions carefully on all stored chemicals.

<u>Part 3- Additional Mitigation for Impermeable Pads</u>

28. Follow all applicable municipal, provincial/territorial and federal legislation pertaining to facility siting and construction, as well as those related to any stored hazardous materials (i.e. container storage, handling, disposal, accidental releases).
29. Ensure the pad is above the normal water table and at least 1 metre above bedrock.

Part 4- Additional Mitigation for Roofs

30. Consider installing drainage and catchment systems (i.e. eavestroghs, downspouts) on the structure, to catch and/or slow roof runoff, and control related damages.

Part 5- Additional Mitigation for a Roof and Pad Combination Projects

31. Follow all applicable municipal, provincial/territorial and federal legislation pertaining to facility siting and construction, as well as those related to any stored hazardous materials (i.e. container storage, handling, disposal, accidental releases).
32. Ensure the pad is above the normal water table and at least 1 metre above bedrock.
33. Consider installing drainage and catchment systems (i.e. eaves troughs, downspouts) on the structure, to catch and/or slow roof runoff, and control related damages.

Part 6- Additional Mitigation for Agricultural Waste Water Systems: Holding Systems

34. Comply with all municipal, provincial/territorial and federal legislation regarding the siting, construction and operation of agricultural waste water systems, and the discharge, disposal and accidental release of contained materials.
35. Separate system from the water table, bedrock and other tile systems by necessary and appropriate distances, as enforced locally, to avoid contamination. Locate the system at least 30 metres of horizontal distance from any waterbodies.
36. Avoid discharging liquids from the system unless they meet all relevant water quality parameters.
37. Design system to have sufficient capacity to contain projected quantities during regular use and to prevent overflow during any extreme or unexpected events.
38. Design an appropriately sized secondary containment system to deal with any system failures or over loads.
39. Avoid using system for anything other than what it was intended for in design/planning.
40. Ensure project area contains well drained soils not subject to regular flooding (i.e. spring runoff) and does not contain poorly drained, shallow, or extremely porous soils.
41. Locate the system, where possible, at a down gradient of nearby wells and water sources, and to minimize or avoid excavation near sensitive areas (i.e. wells, shallow aquifers).

42. Ensure the first rinse cycle from milkhouse washwater, accidental milk spills, waste milk, milk from treated cows, and waste colostrum are not put through the system, or that the system is designed to handle such effluents via primary treatment systems (i.e. vegetative surface ditches).

Part 7- Additional Mitigation for Agricultural Waste Water Systems: Treatment Beds

43. Comply with all municipal, provincial/territorial and federal legislation regarding the siting, construction and operation of agricultural waste water systems, and the discharge, disposal and accidental release of contained materials.
44. Separate system from the water table, bedrock and other tile systems by necessary and appropriate distances, as enforced locally, to avoid contamination. Locate the system at least 30 metres of horizontal distance from any waterbodies.
45. Design system to have sufficient capacity to contain projected quantities during regular use and to prevent overflow during any extreme or unexpected events.
46. Avoid using system for anything other than what it was intended for in design/planning.
47. Ensure project area contains well drained soils not subject to regular flooding (i.e. spring runoff) and does not contain poorly drained, shallow, or extremely porous soils. Ensure project area and any imported materials have adequate soil permeability and percolation rates, drainage characteristics, and hydraulic loading rates to handle system requirements.
48. Locate the system, where possible, at a down gradient of nearby wells and water sources, and to minimize or avoid excavation near sensitive areas (i.e. wells, shallow aquifers).
49. Ensure the first rinse cycle from milkhouse washwater, accidental milk spills, waste milk, milk from treated cows, and waste colostrum are not put through the system, or that the system is designed to handle such effluents via a primary treatment system (i.e. vegetative surface ditches).
50. Consider mounding the beds to ensure surface runoff does not collect and/or effect system operation.

Part 8- Additional Mitigation for Agricultural Waste Water Systems: Holding Tank and Treatment Bed Combination Projects

51. Comply with all municipal, provincial/territorial and federal legislation regarding the siting, construction and operation of agricultural waste water systems, and the discharge, disposal and accidental release of contained materials.
52. Separate system from the water table, bedrock and other tile systems by necessary and appropriate distances, as enforced locally, to avoid contamination. Locate the system at least 30 metres of horizontal distance from any waterbodies.
53. No liquids are to be discharged from the system unless they meet all relevant water quality parameters.

54. Design system to have sufficient capacity to contain projected quantities during regular use and to prevent overflow during any extreme or unexpected events.
55. Design an appropriately sized secondary containment system to deal with any system failures or over loads.
56. Do not use system for anything other than what it was intended for in design/planning.
57. Ensure project area contains well drained soils not subject to regular flooding (i.e. spring runoff) and does not contain poorly drained, shallow, or extremely porous soils. Ensure project area and any imported materials have adequate soil permeability and percolation rates, drainage characteristics, and hydraulic loading rates to handle system requirements.
58. Locate the system, where possible, at a down gradient of nearby wells and water sources, and to minimize or avoid excavation near sensitive areas (i.e. wells, shallow aquifers).
59. Ensure the first rinse cycle from milkhouse washwater, accidental milk spills, waste milk, milk from treated cows, and waste colostrum are not put through the system, or that the system is designed to handle such effluents via primary treatment systems (i.e. vegetative surface ditches).
60. Consider mounding the beds to ensure surface runoff does not collect and/or effect system operation.