



# Source Water Protection

## ... The Nova Scotian Experience

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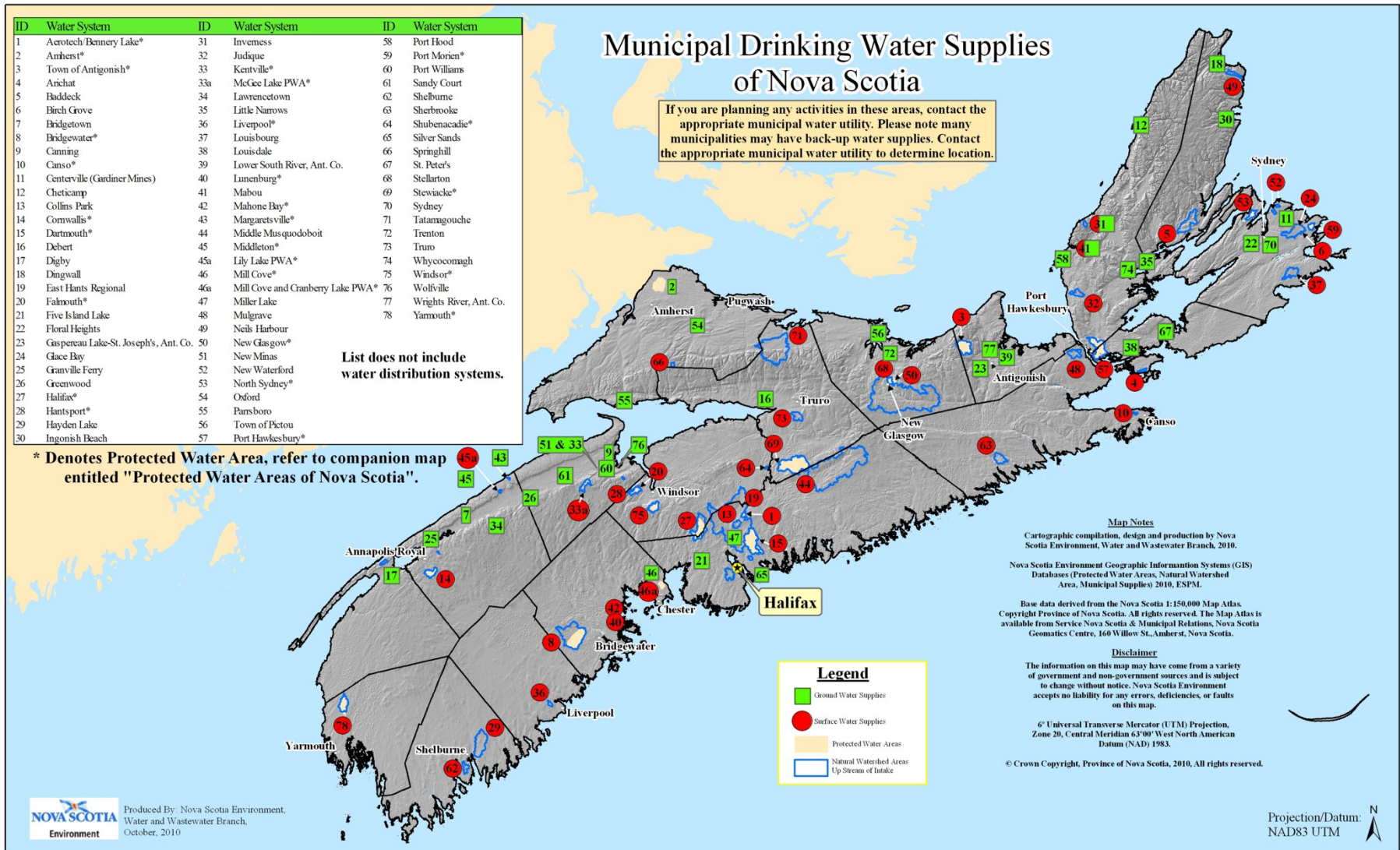
# Overview...

- The Nova Scotia Context
- Recommended Process
- Successes & Challenges

# Nova Scotia Water ~ The Numbers

- Population 940,000 +
  - 60% municipal water
  - 40% private systems  
(wells + other water sources)
- Approx. 76 Municipal drinking water supplies
- Approx. 1600 Registered public drinking water supplies  
(schools, restaurants, campgrounds)

# Municipal Water Supplies



# Municipal Source Water Protection

- Safe drinking water is essential for...
  - Public health
  - Economic well-being of communities
- Most cost-effective method to ensure the safety of the supply
- Part of the multiple barrier approach

# Source Water Protection in Nova Scotia

- 1960's
  - Approximately 9 Protected Water Areas under the *Water Act*
- Various local activities
- 2002 Drinking Water Strategy



# 2002 Drinking Water Strategy

- **Multi-barrier Approach**

- ✓ **Keeping Source Waters Clean**

- Source Water Protection Planning

- ✓ **Making Sure Water is Safe**

- Water Treatment

- Operator Certification

- ✓ **Proving Water is Safe**

- Monitoring

- **2003 Source Water Protection Plan (SWPP) Requirement in Approvals to Operate for municipal water utilities**

- One Plan per Supply
  - Recommended Guidance



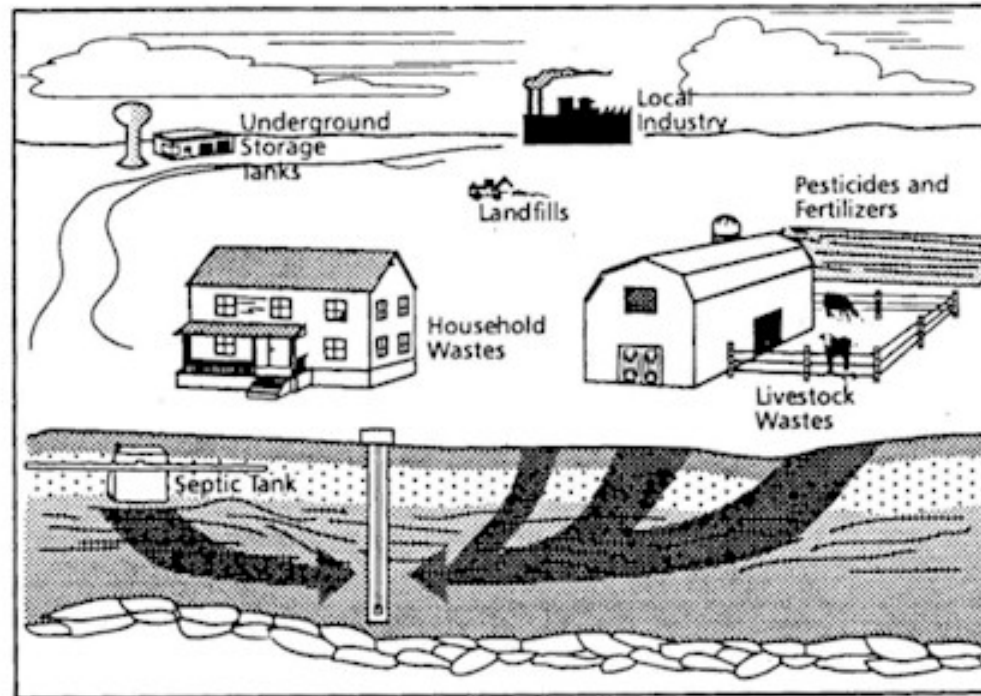
# Source Water Protection Guidance Material



<http://www.novascotia.ca/nse/water/sourcewater.asp>



# Developing A Source Water Protection Plan:



## Five Steps

# Developing A Source Water Protection Plan



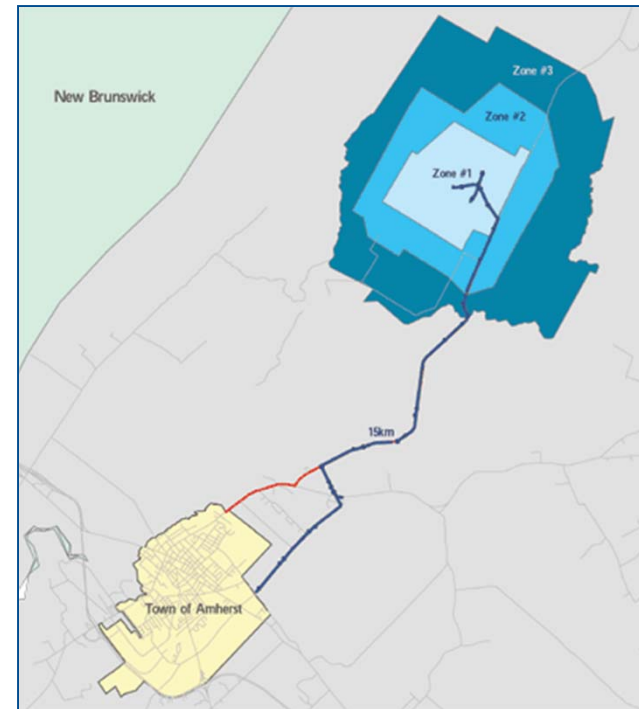
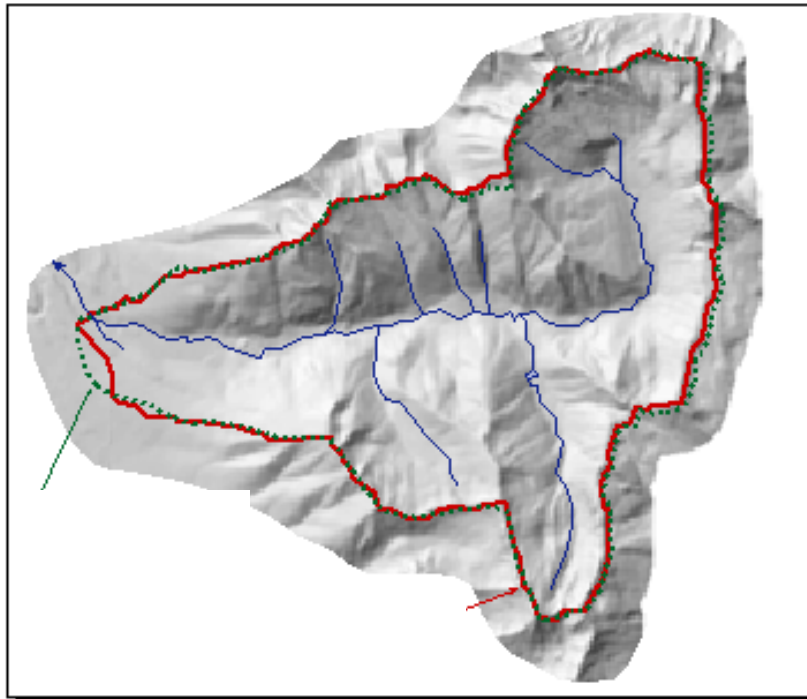
# Step 1 – Form A Source Water Protection Advisory Committee

- Establish goals and objectives
- Determine stakeholders
- Establish committee
- Draft terms of reference
- Consensus based approach



Building a successful partnership requires members with a common purpose and a commitment to achieving goals.

# Step 2 –Delineate Source Water Protection Area Boundary



# Step 3 – Identify Potential Contaminants & Assess Risks

- **Conduct an inventory**
  - Physical considerations  
eg. Geology
  - Land use  
eg. Recreation (OHVs, boating, etc.)
  - Existing and anticipated development  
eg. Roads, Houses, Commercial, Wind Turbines, Water Treatment Plant
  - Impacts from resource sector  
eg. Mining, Agriculture, Forestry
- **Seek public input**
- **Compile information and rank threats**
  - **Probability & Severity**



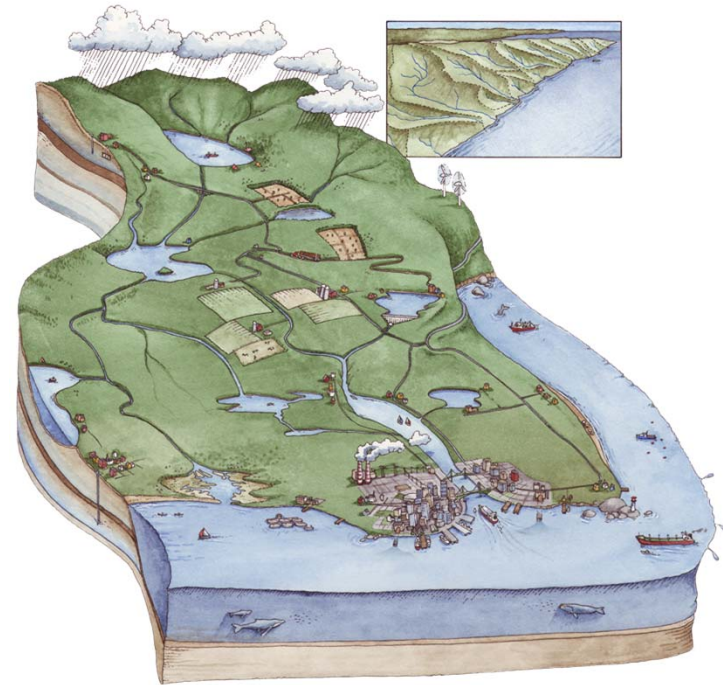
## Step 4 – Develop and Adopt A Source Water Protection Management Plan

- Establish goals and objectives for the management plan
  - To protect the source water for drinking
- The advisory committee will evaluate the various options to protect water quality
- Public input should be received before finalizing the plan



# Step 4 – The ABC's of Source Water Protection

- Evaluate management options
  - Acquisition of Land
  - Municipal land-use Bylaws
  - Best Management Practices
  - Contingency Planning
  - Designation
  - Education and Stewardship



# Management Options – Acquisition of Land

- Highest level of water quality protection
- Land ownership allows utilities to more control over activities and land uses which can impair water quality
- Purchasing land is a long-term investment to protect water supply for future generations

# Management Options – Municipal Land-Use Bylaws

- Zoning and land-use bylaws can be designed to protect water quality
- Options may include
  - Minimum lot size
  - Development setbacks
  - Buffer strip zones

# Management Options – Best Management Practices (BMPs)

- Common-sense actions to keep contaminants out of water sources
- BMPs have been developed for many activities
- BMPs can be an effective way to reduce risks
  - Fuel storage
  - Properly constructing roads and bridges

# Management Options – Contingency Plans

- Contingency planning involves preparing an action plan in the event of an emergency in the water supply
- Identifies personnel, testing equipment, procedures and materials to deal with emergencies



# Management Options – Designation

- Other management options may not protect a supply from all sources of contamination
- Under the *Environment Act* the Minister may designate a Protected Water Area (PWA)
- Designation involves the development of regulations specific to the water supply area
  - Control activities known to impair water quality





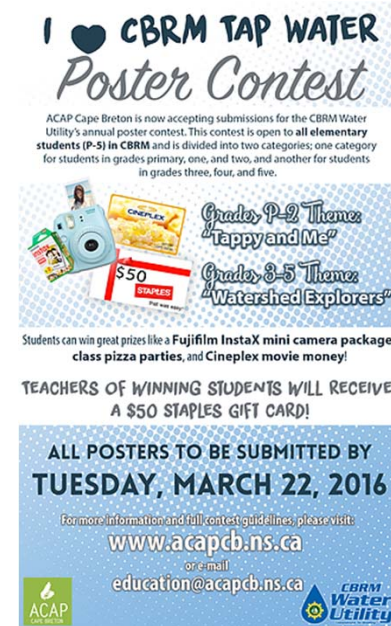
# Management Options – Designation

- Once designation occurs the operator of a water works is responsible for:
  - Posting signs to clearly identify the boundary
  - Enforcing the regulations
- Regulated Activity examples:
  - Removal of vegetation
  - Soil erosion control
  - Forestry
  - Manure piling
  - Boating



# Management Options – Education and Stewardship

- Promotes ideas and information related to source water protection
- Community involvement from the start is critical
- This approach may benefit from partnerships with community based environmental organizations and NGOs



**I ♥ CBRM TAP WATER  
Poster Contest**

ACAP Cape Breton is now accepting submissions for the CBRM Water Utility's annual poster contest. This contest is open to **all elementary students (P-5) in CBRM** and is divided into two categories: one category for students in grades primary, one, and two, and another for students in grades three, four, and five.

**Grades P-2 Theme  
"Tappy and Me"**

**Grades 3-5 Theme  
"Watershed Explorers"**

Students can win great prizes like a Fujifilm InstaX mini camera package, class pizza parties, and Cineplex movie money!

**TEACHERS OF WINNING STUDENTS WILL RECEIVE A \$50 STAPLES GIFT CARD!**

**ALL POSTERS TO BE SUBMITTED BY  
TUESDAY, MARCH 22, 2016**

For more information and full contest guidelines, please visit:  
[www.acapcb.ns.ca](http://www.acapcb.ns.ca)  
or e-mail  
[education@acapcb.ns.ca](mailto:education@acapcb.ns.ca)

ACAP Cape Breton logo and CBRM Water Utility logo are also present.



A screenshot of the ACAP Cape Breton website. The browser address bar shows [www.acapcb.ns.ca](http://www.acapcb.ns.ca). The website features a navigation menu with links for Home, What's New, Projects, Research & Resources, Teachers Portal, Products, and About Us. The main content area displays a video player for "From the Source to the Tap - Distribution" with a play button. To the right of the video is a cartoon water drop character. The ACAP Cape Breton logo is visible in the top left corner of the website.

# Step 5 – Monitor & Evaluate the Plan

- **Implement the plan**
  - e.g. purchase property, put up signs, presentations to recreation groups, develop BMPs, etc.
- **Develop a program to monitor and evaluate the results of the plan**
  - water quality and quantity sampling
  - visual monitoring of source water protection area
- **Update the plan** based on monitoring results and effectiveness of management options; identify changed risks in the area (e.g. new businesses in area or increased recreational use), changes to the water system infrastructure (e.g. a new well); have meetings of source water protection committee or stakeholders
  - Regular meeting of the committee to evaluate and adapt the SWP plan as needed
- **Communication** with residents and stakeholder groups to keep up-to-date on SWP plan progress

# Nova Scotia Challenges

- Participation
  - Landowners and Municipal
- Resources
  - Time
  - Money
  - Expertise
- Sustainability
  - Maintenance
  - Succession Planning or Continuity

# Nova Scotia Challenges

- Authority
- Communication
- Assumptions:
  - The assumption that land-use planning or designation is a source water protection plan
- GAP – Registered Public Drinking Water Supplies
- Time!

# Nova Scotia Successes

- Re-starting the process and building working relationships
  - Getting participants to realize everyone benefits from safe drinking water
- Some municipalities have started some land use planning
- Establishing memorandums of understanding regarding emergency response
  - Connecting Utilities with EMO



# Nova Scotia Successes

- Communication
- Landowner participation
  - Requesting that regulations be updated to include OHVs, not just snowmobiles
- 95 % of Source Water Protections Plans are either draft or complete for municipal water supplies

# Online Resources...

## Designated Protected Water Areas in Nova Scotia

In October 2002, the province released *A Drinking Water Strategy for Nova Scotia*. It describes the universally accepted multiple-barrier framework for managing municipal drinking water supplies that is used in Nova Scotia.

A Source Water Protection Plan (SWPP) is required by the province to address the first barrier – *Keeping Clean Water Clean*. While there are various management options, designating the water supply as a “Protected Water Area” under the Environment Act allows the water utility to regulate activities that may impair water quality within the source water supply area.

There are a number of steps in the designation process to be completed by a municipal water utility and its advisory committee, including mandatory public consultation. For more information on the designation process, please consult the guide *Developing a Source Water Protection Plan: A Guide for utilities and Municipalities – Designation of a Protected Water Area* available at [www.gov.ns.ca/nse/water/docs/ProtectedWaterAreaDesignation.pdf](http://www.gov.ns.ca/nse/water/docs/ProtectedWaterAreaDesignation.pdf). Regulations in effect for designated Protected Water Areas are also available for review at [www.gov.ns.ca/just/regulations/rxaa-l.htm#env](http://www.gov.ns.ca/just/regulations/rxaa-l.htm#env) (scroll to the section entitled “Protected Water Areas”).

The following table summarizes the activities that are regulated in designated Protected Water Areas in Nova Scotia as of October 2010. While every effort has been made to ensure the accuracy of the information contained in the table, the information should not be construed as legal advice; Nova Scotia Environment also accepts no liability for any errors or omissions herein.

For an up to date status of prohibited or regulated activities, please contact the appropriate water utility. If you are planning any activities in these areas, contact the appropriate water utility.

### Legend

- X Activities Prohibited
- R Activities Regulated

Year Designated		1986	2007	1983	2006	2006	2005	2003	2003	1968	1994	1992	1992	1992	1988	1986	1982	1982	1973	1972	1971	1967	1966	1966	
Year Updated		2010	2007	2007	2006	2006	2005	2003	2003	2002	1994	1992	1992	1992	1988	1986	1982	1982	1973	1972	1971	1967	1966	1966	
Water Supply Area		Lake Major Watershed (Dartmouth)	Oakland Lake Watershed (Malbone Bay)	French Mill Brook Watershed (Falmouth)	Lake George Watershed (Falmouth)	Hebb, Millisigate and Minardak Lake Watershed (Bridgewater)	McClell Lake Watershed (Kentville)	Forbes Lake Watershed (New Glasgow)	Bennery Lake Watershed (Aurorech Park- HRM)	Shubenacadie Watershed (Snides Lake)	Pockwook Lake Watershed (Halifax)	North Lynal Zone I (Annsbury)	North Lynal Zone II (Annsbury)	North Lynal Zone III (Annsbury)	James River Watershed (Antigonish)	Mill Lakes Watershed (Windsor)	Port Hawkesbury Watershed Zone A	Port Hawkesbury Watershed Zone B	Stewiacke Watershed (St. Andrews River)	Dares Lake (Lunenburg)	Pottle Lake Watershed (North Sydney)	Mill Cove Lake and Cranberry Lake	Margaretsville Watershed	Lunenburg Town Reservoir	Lily Lake (Middleton)
Activity																									
Industry	Pesticides	R	R	R	R	R	X	R	R	R	X	X	R	R	R	R	X	X	R		X				
	Forestry operations	R		R	R	R		R	R		R	R	R	R	R	R			R	R					
	Mine/pit/quarry operations	R		R	X	R	X	X	X			X	X	X		R									
	Aquaculture																								
Agriculture	Grazing livestock		R	X	R	R	R	R		X		X	R	R						X					
	Crops				R	R													R						
	Storage/accumulation of agricultural and farm wastes, including manure	R	X	R	R	R	R	R				X	R	R		R			R						
	Spreading of manure		R		R			R				X	R	R											
Waste/Dangerous Goods Management	Discharge/deposit of materials that impair water quality (e.g. gasoline, chemicals, sediment)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X					
	Disposal of wastes (landfill/waste disposal site)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	R	R	R	X	X				
	Discharge of domestic sanitary waste (e.g. on-site sewage disposal systems)	R	R		R	R	R	R	R			X	R	R	R				R						
	Home heating oil tanks		R		R		R	R							R										
	Storage/handling of petroleum products			R	R		R	R	R						R					R					
	Storage of wood processing waste	R		R												R			R						
Construction Activities/Development	Construction activity (e.g. home construction and home renovations)	R					R													X					
	Construction and maintenance of roads, railways, power and communication lines	R	R	R	R		R	R	R		R	R	R	R	R	R	R	R							
	Vegetation removal	R	R			R	R	R	R																
	Soil erosion/sedimentation	R	R	X	R	X	R	R	R		R	R	R	R	R	R									
	Stormwater management					R	R		R						R										
	Watercourse/wetland alterations	R	R	R	R			R	R		R	R	R	R	R										
	Alteration of land levels			R			R																		
Recreation	Fishing	R	R	XR	R			R	X	X	X				R	R		R		R	X				
	Washing, bathing, swimming	XR	R	X	R	X	X	X	X	X	X				X	X		X	X	R	X				
	Camping																			R	X				
	Picnicking																			R	X				
	Open fires (burning)	R			R			R	R	X	R	R	R	R	R						X				
	Skating			X	R					X								X							
	Hunting, trapping, carrying a firearm									X								X				X			

# Thank You For Your Time

## *Questions...*

### Contact Information

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