

7. Hazardous Waste Management

Agricultural Practices (A)	Development (D)	On-site Wastewater Systems (O)	Stormwater Runoff (SR)	Wastewater Treatment (WW)			
Drinking Water (DW)	Tourism and Other Economic Development (T)	Water Quality Standards (WQS)					
Water Quality (WQ)	Exotic species (ES)	Fertilizers and Pesticides (F)	Heavy metals (H)	Phosphorus and Nutrient Loading (N)	Organic compounds (OC)	Pathogens (P)	Sediment (S)
Comprehensive Planning (C)	Education (E)	Economic Revitalization & Sustainability (ER)	Infrastructure (I)				

Introduction

The *Cayuga Lake Preliminary Watershed Characterization* documented permitted above and below ground storage tanks, inactive hazardous waste sites, mines, wells, household hazardous waste and reported hazardous spills. While these need further attention there is also a need for inventory, clean up, and education for the many unpermitted and/or unenforced dumps, material storage facilities, abandoned agricultural areas, mining operations, wells, and unreported hazardous spills. Most of these took place before the advent of the permitting process, while others need follow-up to ensure that planned practices are being followed. The combination of these hazardous materials has threatened ground and surface water quality in the watershed.

Inactive and Unpermitted Landfills and Dumps

Unpermitted landfills and dumps include farm dumps, municipal/neighborhood dumps, and landfills sited before the advent of the permit process. The NYSDEC database show seven inactive hazardous waste sites and 25 municipal waste sites in the watershed. There is no data available on old farm and municipal dumps or unpermitted landfill sittings.

These sites pose a potential human health risk from exposure to toxic and pathogenic contaminants, including heavy metals, pathogens, nutrients and a wide variety of organic chemicals. While pathogens and nutrients are generally not considered a major threat from landfills, heavy metals and organic chemicals can remain toxic for years, having a lasting effect on both groundwater and surface water supplies.

In recent years, there has been a growing recognition by the public and elected officials that inactive landfills and dumps are a potential threat to human health and water quality. Since remediating a landfill is an expensive process and money available from federal and state sources is limited, it is necessary to rank these sites in the watershed to determine how best to allocate available funding.

Unpermitted Hazardous Material Storage

Hazardous material storage includes above and below ground storage tanks. Based on NYSDEC databases there are 14 permitted chemical bulk storage facilities with 31 active tanks in the watershed. These include storage terminals, retail sales, manufacturing, utility, municipal, school, and other facilities. Based on NYSDEC databases there are approximately 320 active and inactive petroleum bulk storage facilities with 441 tanks. These include storage terminal/petroleum distributor, retail, manufacturing, utility, trucking/transportation, apartment building, school, farm, private residence, and other facilities.

While regulations exist for hazardous material storage, in recent years there has been recognition that old, unpermitted, leaking, or inactive storage of hazardous material is effecting ground and surface water quality. In some cases groundwater usage in the watershed has been severely limited due to improper storage of hazardous material.

These sites pose a potential human health risk from exposure to toxic contaminants, including a wide variety of organic chemicals.

Mining Operations

Permitted mines are required to have reclamation plans and performance bonds. Operating permits include specifications for the protection of adjacent surface and groundwater. The NYSDEC permitted mines are in varying stages of excavation.

Many gravel pits in the watershed were operated and abandoned before the permit system was started. Such inactive, non-permitted and poorly regulated mines may pollute surface and groundwater. Unrestricted runoff from bare mine banks may carry significant sediment loading. Once bare, mine banks are difficult to revegetate and can remain a problem for decades.

Based on NYSDEC data, there are approximately 30 mines in the watershed. The vast majority of these (all but 3) are sand and gravel mines. Sand and gravel mining poses the greatest threat to water resources. Because of their relatively permeable nature, sand and gravel deposits are generally coincident with recharge areas. In order to mine these deposits, the topsoil is first removed, eliminating an important buffer zone between the ground surface and the underlying aquifer. Lowering the ground surface decreases the relative depth of the water table, thereby making it more susceptible to contamination from mining apparatus and vehicles. The loss of vegetation exposes sediment, making it more easily removable by wind and surface runoff.

Unpermitted pits will only be addressed by the NYSDEC Bureau of Minerals under two conditions: 1) if there is a contravention of New York State water quality standards or, 2) if a previously unpermitted pit is re-opened to mining in quantities of over one thousand cubic yards per year. Citizens living in the vicinity of these pits who wish to see them reclaimed should monitor activity in the mines. Documented surface water quality problems from runoff, renewed mining activity, or well-water test results indicating illegal dumping may trigger regulatory action.

Abandoned Agricultural Areas

With the large amount of agricultural land use in the watershed and recent trends in the agricultural industry, much previously productive agricultural lands are now abandoned. As an example, in the Six Mile Creek Watershed 38 Agricultural Environmental Management Surveys were conducted. Twelve of these surveys indicted inactive properties.

Spills

There are twelve categories of spills based on the NYSDEC reporting system. The are gasoline stations, vehicle, commercial vehicle, tank truck, private dwelling, vessel, railroad car, non major facility > 1,100 gallons spilled, major facility > 400,000 gallons

spilled, other commercial/industrial, other noncommercial/industrial, and unknown. Based on the NYSDEC reporting system there are five potential resources affected by reported spills. They are land, in sewer, groundwater, surface water, and air. Generally, surface water will ultimately be affected by all of these.

With hazardous spills, it is important to consider the resource affected and the type of spill. Of the approximately 550 reported hazardous spills in the watershed in the last 15 years, 360 were on land, 15 in sewers, 105 into groundwater, 60 directly into surface water, and 10 into the air. Of the total spills in the watershed approximately 30 were at gasoline stations, one was major facility related, 7 were non-major facility related, 140 were other commercial/industrial related, 105 other noncommercial/industrial related, 10 were passenger vehicle related, 50 were commercial vehicle related, 20 tank truck related, 105 were at private dwellings, 2 were vessel related, and 80 were unknown.

Wells for Oil and Gas and Solution Salt Mining Operations

NYSDEC lists over 330 wells in the watershed. These include dry wells, brine wells, stratigraphic wells, and gas development and extension wells. These wells are fairly well dispersed throughout the watershed, with a pronounced density of over 70% in the northeast portion in the Aurelius, Fleming, and Springport area. These are mainly active gas wells. Approximately 5% of the wells in the watershed are brine wells, almost all of which are in the Town of Lansing. Approximately 18% of the wells in the watershed are dry wells, approximately 25% of which are plugged and abandoned.

Household Hazardous Waste

Most residents of New York State generate waste in their homes which contains some of the same chemical components as the hazardous waste generated by industry. Often, this is stored for extended periods of time or is mixed with other solid waste intended for disposal. This waste is called household hazardous waste (HHW), and includes many household cleaners, paint and related products, automobile maintenance wastes, pesticides, batteries, hobby chemicals, and other items. Industrially-generated hazardous wastes are subject to stringent management and disposal standards that are designed to be protective of human health and the environment. However, all household waste, regardless of its hazardous characteristics, is excluded from the regulatory definition of hazardous waste and is currently exempt from all State and federal hazardous waste regulations.

Household hazardous waste is any household waste which would be regulated as a hazardous waste if it were not generated by a household and includes all waste pesticides from a household. Many products used in households with the words "CAUTION," "WARNING," "DANGER," or "POISON" on the label may meet this definition and eventually become HHW. It is conservatively estimated that of approximately 30 million tons of solid waste generated annually in New York State, about one half of one percent, or 150,000 tons, is HHW. The effects of improperly discarded HHW on the environment and human health are hard to quantify, but the potential effects should not be ignored.

The most environmentally sound method of disposal for many hazardous products is through a community HHW collection program. These programs collect and recycle the wastes or transport them to a hazardous waste treatment, storage, or disposal facility. HHW collection can be done in one of two ways: collection days or permitted facilities.

A collection day is a one-day program where residents can bring HHW to a central location where it is packaged by a contractor and transported off-site. Collected wastes can be stored on site for no more than three days. These programs are usually not available on a regular basis and may not meet the needs of all local residents. However, some municipalities conduct these days several times a year. A collection day plan must be approved in advance by the NYSDEC.

A permitted collection and storage facility, which receives a permit to store HHW, occupies a fixed site and is traditionally open on a regular schedule. Permitted facilities are regulated under 6 NYCRR Subparts 360 and 373-4, and often operate without the day-to-day involvement of a contractor.

Costs for a single day in 1999 ranged from \$10,000 to about \$55,000 depending on the location and scope of the event. These costs can be reduced by focusing program planning on the preferred waste management hierarchy: source reduction, reuse, recycling, treatment, or incineration, and land disposal as a last resort.

Goal

To minimize the impact of hazardous material on the water quality of the watershed and to alleviate and remove the threat to human health.

Existing Measures

A. Hazardous Substance Bulk Storage Regulations and Permitting Process - NYSDEC Regulations 6NYCRR, Part 596.

B. Mining

The New York State Mined Land Reclamation Law (Environmental Conservation Law §23-2703 et seq.) regulates mining operations which remove more than one thousand tons or 750 cubic yards (whichever is less) of minerals from the earth. Mines coming within this statute's regulation require approval by the New York State Department of Environmental Conservation (DEC). Smaller mines may be regulated by a local mining or zoning regulation. However, even though DEC regulates larger mines, a municipality may regulate the location of all mines through its zoning regulations.

Local authority - State law specifies the role of local governments in reviewing and regulating mining activity. Specifically, local governments enforce zoning laws and specify conditions relating to mine roads and haul roads. In addition, local ordinances

may regulate aspects of mining or mine reclamation that are not regulated by the state. Local governments are also empowered to enforce the special conditions and reclamation requirements listed in NYSDEC mining permits.

When a municipality permits state-regulated mining to occur within its borders through a special use permit process, conditions placed on the permit may pertain to entrances and exits to and from the mine on roads controlled by the municipality, routing of mineral transport vehicles on roads controlled by the municipality, enforcement of the reclamation conditions set forth in the NYSDEC mining permit, and certain other requirements specified in the state permit (ECL § 23-2703).

C. Spills

NYSDEC Manages the Spill Prevention and Response Program to respond to, investigate and remediate petroleum, chemical and hazardous spills, regulate petroleum and chemical bulk storage facilities; and regulate Underground Storage Tanks (UST) and Major Oil Storage Facilities (MOSF).

Local Emergency Management Agencies

D. Wells - NYSDEC Regulations 6NYCRR, Part 552 and permitting process.

E. Household Hazardous Waste

- Existing collection days in the Cayuga Lake Watershed (see Appendix O - Household Hazardous Waste Collection Days in the Cayuga Lake Watershed)
- Educational materials (see Appendix O)
- NYSDEC Household Hazardous Waste Web Site (for more information see <http://www.dec.state.ny.us/website/dshm/redrecy/hhw.htm>)
- The NYS Environmental Protection Act (Title 7 of Article 54 of the Environmental Conservation Law), enacted on August 4, 1993, authorized the NYSDEC to develop regulations to implement a program to reimburse municipalities up to fifty percent (50%) of the costs of HHW collection programs incurred after April 1, 1993.

No. 7	Hazardous Waste Management Recommendations	Related Issue(s)	Potential Responsible Org(s)	Measures/ Targets	Approx Cost
A	Inactive and Unpermitted Landfills, Dumps and Hazardous Material Storage				
A1	Conduct a preliminary study to determine the location of each site, its dates of operation, the type of materials disposed at each and the vulnerability of water resources.	DW, WQ, F, OC	USEPA, USGS, NYSDEC, IO	10 municipalities per year	\$50,000/year
A1a	Conduct designated surface and groundwater quality tests as needed based on A1 and B1 (second year based on preliminary study).	DW, WQ, F, OC	USEPA, USGS, NYSDEC, IO	5/year	\$110,000
A2	Identify public educational materials and develop workshops to describe landfill issues, such as the difference between old and new types of landfills, threats to public health and water quality, the need to ensure that sites are closed properly, hazardous material storage issues and the need to ensure that materials are stored or cleaned up properly, and abandoned agricultural properties issues, and the need to ensure that these properties are inactivated properly.	DW, WQ, F, OC, E	USEPA, NYSDEC, IO, CLWN	1/year	\$2,500
B	Abandoned and Active Agricultural Areas - Continue Agricultural Environmental Management (AEM) (see Appendix H - Agricultural Programs) Surveys for all subwatersheds in the Cayuga Lake Watershed. Inventory the number and location of inactive agricultural properties and the water quality characteristics of these properties due to hazardous material storage.	A, DW, WQ, F, OC	SWCD	Based on county AEM survey schedule	\$50,000
C	Wells - Education program focusing on abandoned wells and the need for proper capping	A, DW, WQ, E	USEPA, USGS, NYSDEC, IO, CLWN, CCE	Integrate with A2	
D	Household Hazardous Waste				
D1	Increase the number and area coverage of HHW collection days (Tompkins County has a permanent facility)	DW, WQ, OC	NYSDEC, C	One every 1 to 2 years where there is no facility	\$100,000/site
D2	Integrate educational material (see Appendix O) into existing and other watershed education programs in the Cayuga Lake Watershed	DW, WQ,	NYSDEC, C, IO, CLWN,	<i>See Watershed</i>	\$2,500

		OC, E	CCE	<i>Education</i>	
E	Spills - Distribute information throughout the watershed to various community groups, fire departments, chambers of commerce, citizens, municipalities with names and numbers of the agencies and staff in charge and who has appropriate jurisdiction in emergency situations.	DW, WQ, OC, E	NYSDEC, C, IO, CLWN	<i>See Watershed Education</i>	\$2,500
F	<p>Mining Operations</p> <ul style="list-style-type: none"> • Inventory unpermitted mines in the watershed; existing aerial photography can be used to assist in this process. • Prioritize and rank mines for potential to pollute surface or groundwater. • Share information on permitted mines with regulatory officials and IO • Contact owners of mines regarding reclamation. • Inform local governments of their right to regulate mines. This can be made part of existing local government training opportunities. 	SR, DW, WQ, S	IO	Within 2 years	\$25,000