A PRIMER

REGARDING CERTAIN PROVISIONS

OF THE

ILLINOIS GROUNDWATER PROTECTION ACT

Prepared by the

Illinois Environmental Protection Agency

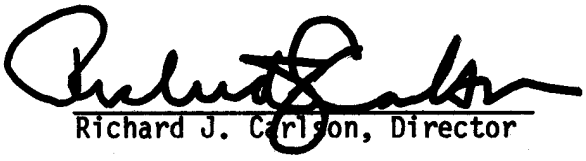
January, 1988

PREFACE

The Illinois EPA is pleased to present this Primer. This document has been developed to assist in the implementation of certain provisions of the Illinois Groundwater Protection Act (P.A. 85-0863). The Act represents the culmination of many years of effort devoted to the development of a groundwater protection program for Illinois.

The Act creates a comprehensive, protection-based policy focusing upon beneficial uses of groundwater and preventing degradation. The Act was partly based on recommendations from "A Plan for Protecting Illinois Groundwater" and responds to gaps in authorities and strengthens the role of local governments in these programs.

As Director and Chairman of the Interagency Coordinating Committee on Groundwater, I endorse this Primer and express my sincere gratitude to members of the Committee for their guidance and input. The final editing and preparation of this document has been the responsibility of the Illinois EPA.



Richard J. Carlson, Director

Table of Contents

I.	General Overview	1
II.	Groundwater Resources in Illinois	3
III.	Groundwater Contamination: A Growing Problem	9
	A. Volatile Organic Chemicals: A Major Concern	10
	B. Pesticides in Community Water Systems	12
	C. Changing Perspectives on Groundwater Protection	13
	D. The "Groundwater Gap" in Governmental Control	15
IV.	Groundwater Contamination Potential	17
V.	Phase-In of Siting Restrictions	21
VI.	Groundwater Contamination Prevention	25
	A. Minimum Setback Zones	25
	B. Maximum Setback Zones	29
VII.	Community Water Well Surveys	33
VIII.	Groundwater Protection Needs Assessment	35
IX.	Minimal Hazard Certification Process	37
X.	Glossary	41

GENERAL OVERVIEW

In September 1987, Governor Thompson signed legislation for protection of Illinois groundwater from contamination. The Illinois Groundwater Protection Act (P.A. 85-0863) responds to the pervasive need to manage groundwater quality by a prevention-oriented process. The Act is a comprehensive law which relies upon a State and local partnership. Although the Act is directed toward protection of groundwater as a natural and public resource, special provisions target drinking water wells.

The Act responds to the need to protect groundwater quality and establishes a unified groundwater protection program using the following provisions:

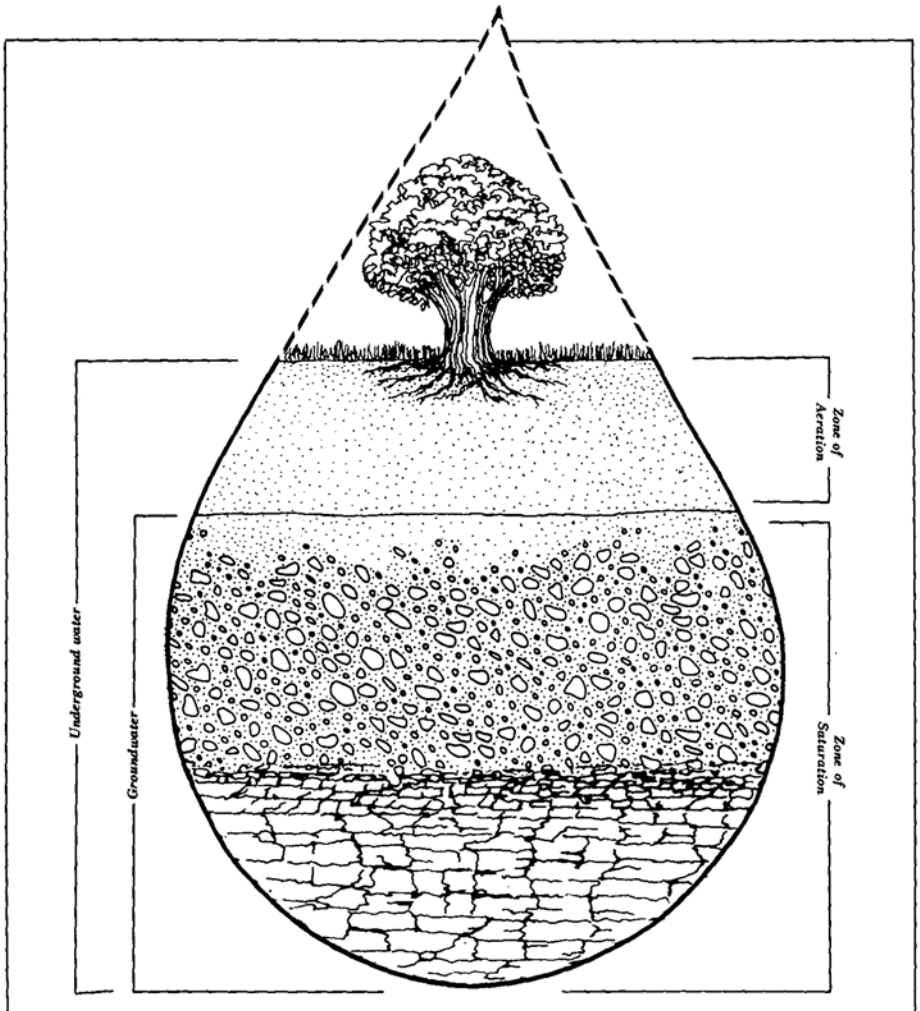
- Sets a groundwater protection policy
- Enhances cooperation
- Establishes water well protection zones
- Provides for surveys, mapping and assessments
- Establishes recharge area protection
- Requires new groundwater quality standards

This legislation establishes a general policy on groundwater, as follows:

> "It is the policy of the State of Illinois to restore, protect and enhance the groundwaters of the State, as a natural and public resource. The State recognizes the essential and pervasive role of groundwater in the social and economic well-being of the people of Illinois and its vital importance to general health, safety and welfare. It is further recognized as consistent with this policy that groundwater resources of the State be utilized for beneficial and legitimate purposes, waste and degradation of the resource be prevented, and underground water be managed to allow maximum benefit for people of the State of Illinois."

The groundwater policy sets the framework for management of this vital resource. The law focuses upon uses of the resource and establishes statewide protection measures directed toward potable water wells. In addition, local governments and citizens are provided an opportunity to perform an important role for groundwater protection in Illinois.

This primer is intended to help the reader better understand the Illinois Groundwater Protection Act. The reader is cautioned, however, to recognize that the explanations provided herein do not supercede the actual statutory language in any way. The primer is specially directed toward community water supplies since their protection is a dominant feature of the Act.



UNDERGROUND WATER IN ILLINOIS

GROUNDWATER RESOURCES IN ILLINOIS

Groundwater is water found beneath the surface of the earth. However, usable groundwater is limited to that which can be withdrawn in sufficient quantities to meet demands. In general, usable groundwater is found below the water table which is the surface between the zone of aeration and the zone of saturation. Communities often drill wells to greater depths to have sufficient water to meet demands. Public water supply wells usually obtain water from deposits of sand and gravel in the glacial drift or from the limestone, dolomite or sandstone formations of the underlying layered bedrock. The most favorable areas for groundwater withdrawal are shown in Figure 1.

These major water-bearing formations are termed aquifers, which are defined as geologic formations which can yield sufficient quantity of water to be withdrawn. Aquifers can be local or extend across the state and can vary in depth, thickness and quality. Due to these variables, groundwaters cannot be effectively managed by "aquifer types." General characteristics of an aquifer may be difference than those found at a particular well which is withdrawing water from that formation. In addition, a single well can tap or receive groundwater from multiple aquifers and blend different qualities of water.

Groundwater is generally categorized according to its source. In Illinois, groundwater for public water supplies is usually obtained from high yielding wells in unconsolidated materials, also known as drift wells, or from consolidated rock formations which may underly the drift deposits. The shallow water-bearing bedrock aquifers are limestone or dolomite and the deeper aquifers are sandstone. The high yielding sand and gravel deposits are usually found along modern or ancient river valleys. The limestone/dolomite aquifers are usually less than 500 feet deep while deeper wells may be drilled to 2,000 feet in sandstone.

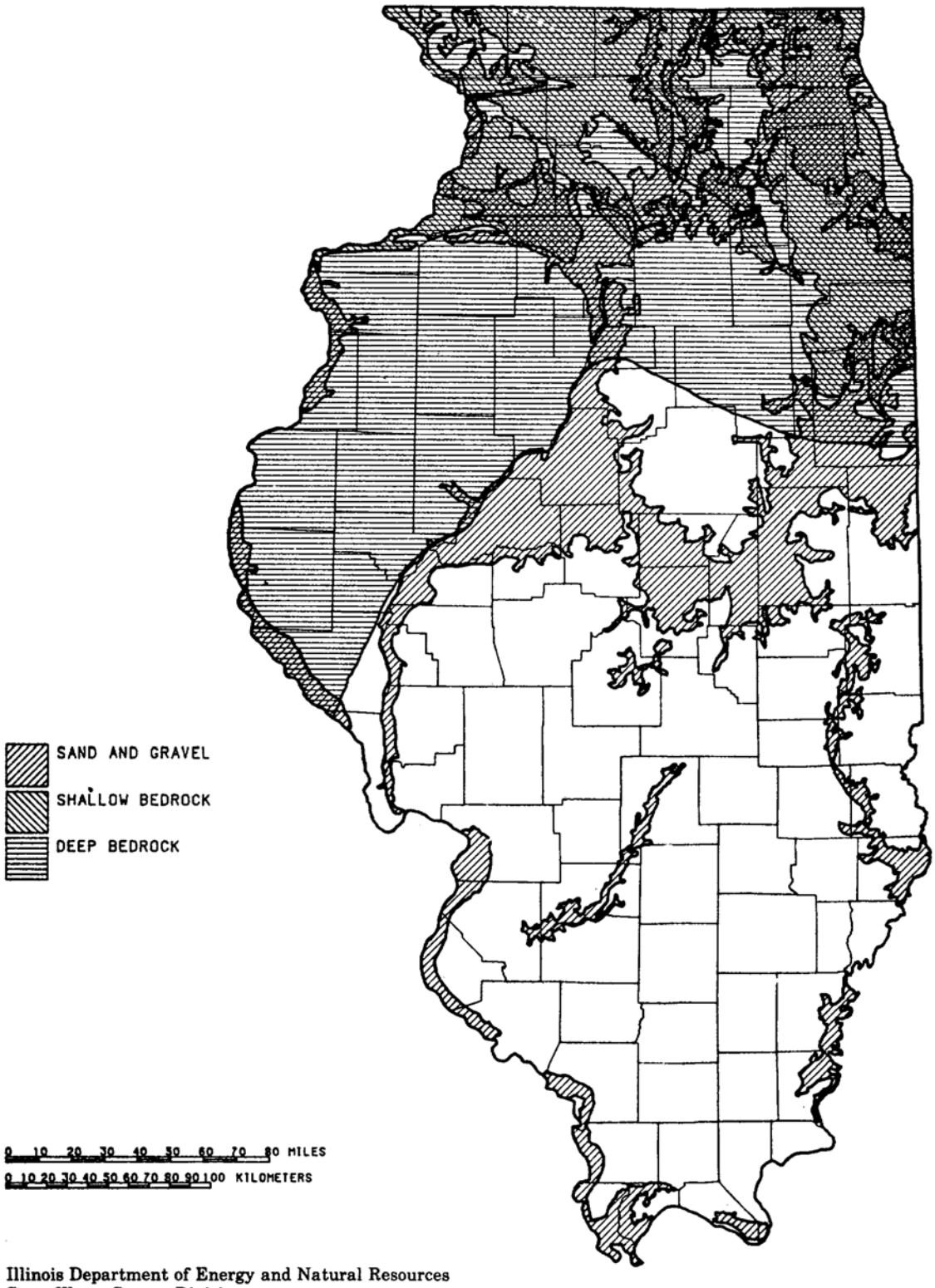


Figure 1 Principal Aquifers in Illinois

The State of Illinois is heavily dependent upon groundwater. The majority of public water supply systems rely upon groundwater to meet their water needs. Figures 2 and 3 illustrate the reliance of community water systems on groundwater. The resources also serve industry, business and agriculture.

- About 5.5 million people in Illinois rely upon groundwater for their drinking water. Thus, almost 50% of the population of the state utilizes groundwater.
- Industries which use groundwater from their own "self-supplied" source withdraw over 21% of the total groundwater used in the state.

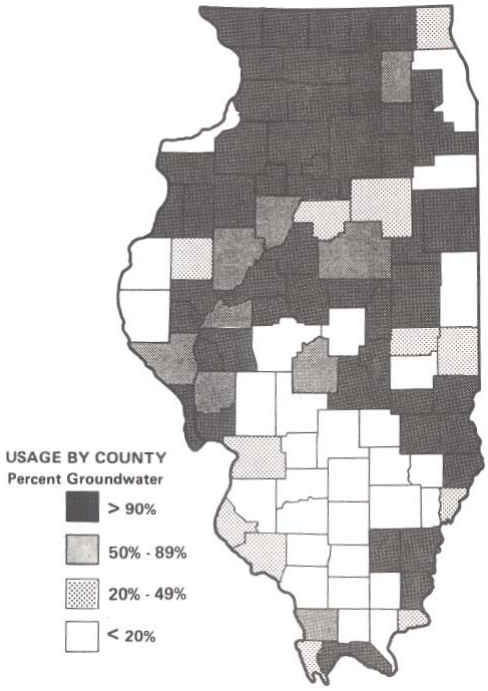


Figure 2. Community Water Supply from Groundwater
(Governor's Office, 1987)

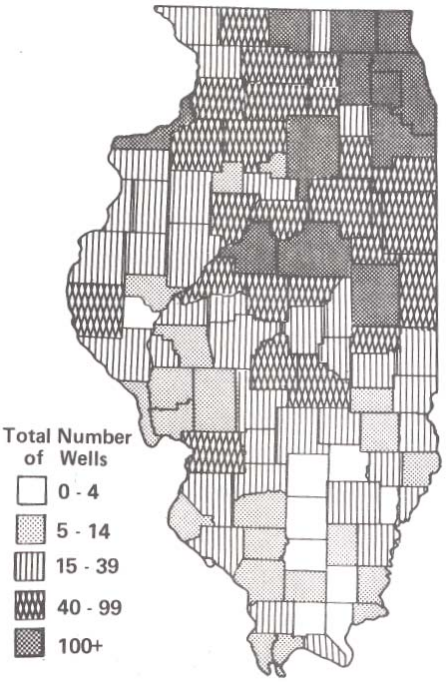


Figure 3. Distribution of Community Water Supply Wells
(Governor's Office, 1987)

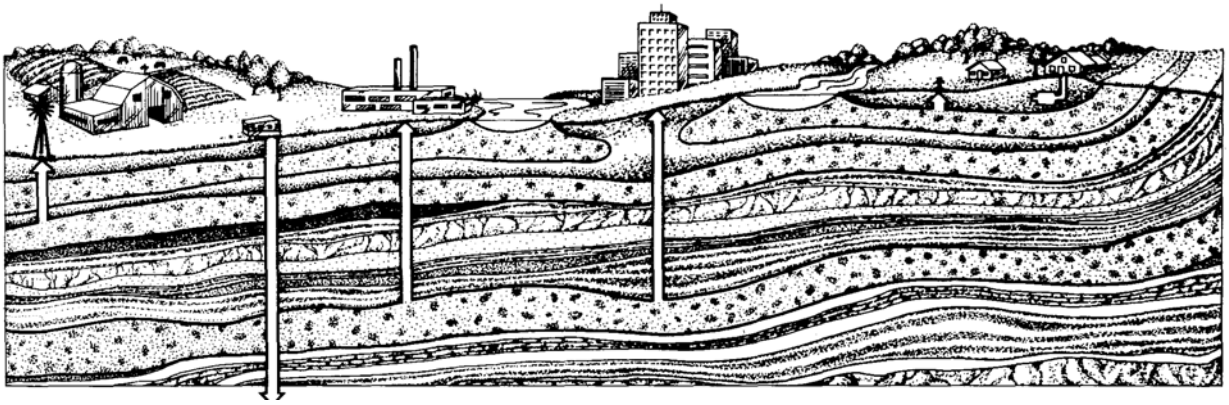
- 1453 community water systems use groundwater, which represents about 74% of the community systems in the state.
- Over 3, 000 wells routinely serve community water supplies, over 7,300 wells serve non-community supplies (schools, restaurants, etc.), and some 400,000 private wells are serving residences.

Groundwater also contributes a large portion to the surface water flows in Illinois through discharge to streams. Therefore, the groundwater input contributes to many surface water uses and is generally good quality water. The quantity of groundwater input is important in maintaining surface water flow, especially during low to normal precipitation periods.

General findings on groundwater can be summarized as follows:

- Usable groundwater is found below the water table in the saturated zone where most spaces in the soil and rock are filled with water.
- Small quantities of shallow groundwater suitable for individual supply are available statewide.
- Availability of large quantities are dependent upon geological water-bearing formations termed aquifers.
- Groundwater is replenished from water percolating through the unsaturated earth overlying the aquifer. The area replenishing the groundwater is called the recharge area.
- Nearly one-half of the groundwater withdrawal in Illinois is for public water supplies. Over half of this pumpage occurs in the northeastern part of the state.
- Most of the total pumpage (61%) of public water supplies is from wells which tap multiple aquifers.
- Groundwater may be returned to the surface by seeps, springs, well pumpage and stream baseflow.
- Aquifers can vary extensively in their water quality and quantity across the state and with increasing depth.
- Groundwater wells can be classified according to the formation being tapped and other factors of local significance.
- Groundwater quality can be generally characterized but is subject to local conditions.
- Certain portions of aquifers may be naturally unsuitable for drinking water (i.e., high degree of hardness).

Groundwater quality is affected by the activities occurring on or around the recharge areas which replenish the water. The rate of movement is often slow, since water must seep through various earth materials over long distances. The slow rate of movement also means that groundwater, once polluted, may require years or decades before it would flush or naturally cleanse itself. Therefore, groundwater quality is affected by the surrounding land uses and can be polluted if any contaminants migrate into the ground. The degree of pollution potential is measured by the susceptibility of the recharge area. In general, areas that are replenished at a high rate are more vulnerable to pollution.



GROUNDWATER CONTAMINATION: A GROWING PROBLEM

Several years ago, the Illinois EPA established a statewide groundwater monitoring network pursuant to legislative mandate. This network is composed of community water supply wells. Sampling and analyses, initiated in 1985, includes the first comprehensive testing for volatile organic chemicals (e.g., solvents) and inorganic compounds (e.g., heavy metals). By 1988, over two-thirds of the community wells have been sampled for these chemicals. In addition, the Agency has monitored for synthetic organic compounds such as pesticides. Upon request, the Illinois Department of Public Health (DPH) tests private water wells for nitrates and bacteria. The DPH also conducts tests at non-community water wells serving schools, restaurants, etc. Other tests are conducted in response to complaints and investigations.

The following information is indicative of the groundwater contamination problems which are being documented in Illinois.

- 82 community water wells have shown quantifiable levels of chemical contamination based upon sampling and analysis performed by the Illinois EPA over the past several years. This represents about 8% of the community water wells analyzed through 1986. Preliminary results for 1987 indicate the percentage of affected community water wells may be somewhat lower. Figure 4 presents the distribution of community water wells affected by chemical contamination. Figure 5 shows a graphical summary of the ranges of concentration of chemical substances for the affected wells.

Figure 4 Statewide Distribution of Wells Affected by Chemical Contamination

- About 25% of the 15,600 private water wells tested by the DPH in 1986 had bacterial contamination problems. Over 12% exceeded the drinking water standard for nitrates.
- Nearly 18% of the 3,200 non-community water wells tested by the DPH (e.g., parks, schools, restaurants, etc.) in 1986 had bacterial problems. About 4% showed nitrate contamination.

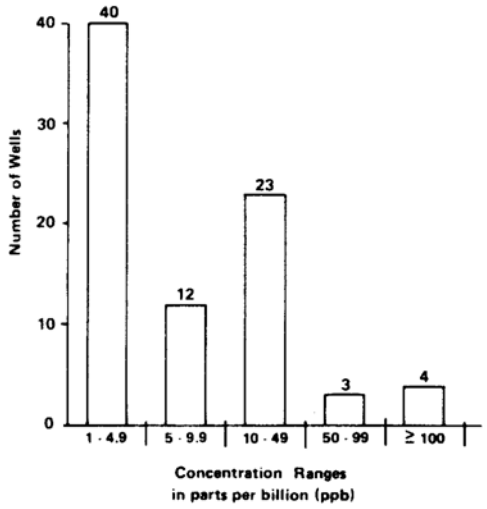
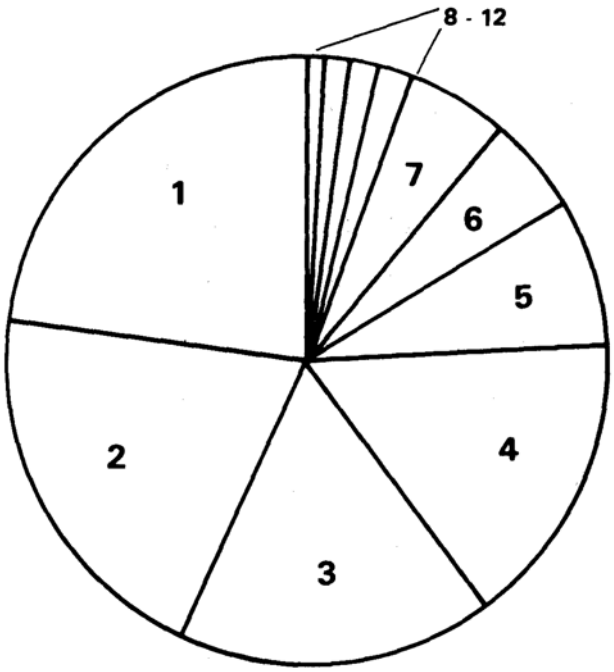


Figure 5 Number and Distribution of Contaminated Wells With One or More Volatile Organic Compounds

Volatile Organic Chemicals: A Major Concern

The extensive use of volatile organic compounds (VOCs) in industrial, chemical, commercial, and household applications has resulted in wide distribution of these compounds in the environment. Their occurrence in groundwater presents a serious problem for public water utilities, industries, and individual domestic well owners who rely on groundwater supplies.

Figure 6 illustrates the types and relative frequencies of volatile organic and volatile aromatic compounds discovered in public water supply wells sampled by the Agency in the statewide groundwater monitoring program pursuant to P.A. 83-1268. The chemicals found in public water supplies are often related to activities conducted near wells which handle, store or dispose of hazardous substances and wastes. For each chemical listed in Figure 6, there is also a description of its uses and health effects. It becomes apparent that a multitude of activities and facilities handle hazardous chemicals.



1 **TRICHLOROETHYLENE (TCE)** — A colorless, non-flammable solvent used mainly for degreasing metal parts; also used in dry cleaning, and as a disinfectant in veterinary surgery. It is also found in spot removers, rug cleaners, and air fresheners. TCE is a suspected carcinogen; it can be toxic to the liver, and kidneys at very high doses.

2 **1,1,1-TRICHLOROETHANE (METHYL CHLOROFORM)** — A colorless liquid used in many household and industrial products; the principal solvent in septic tank degreasers, cutting oils, inks, and shoe polishes; it is also used for metal degreasing, leather tanning, and dry cleaning. It is considered to be non-carcinogenic in humans; high levels can be toxic to the heart, and liver damage is possible.

3 **TRANS 1,2-DICHLOROETHYLENE-t,1,2-(DCE)** — Is used in the manufacture of nylon, rubber, and various plastics. It is a solvent for resins, asphalt, bitumen, rubber, and paint; an extracting agent for soybean oil and caffeine. It is commonly used as an anti-knock agent in gasoline, a fumigant, and a dry cleaning agent. It has also found use in photography, xerography, and water softening. A suspected human carcinogen. In acute doses it can cause unconsciousness, coma, circulatory collapse, and death. At subacute doses, it can cause liver, kidney, lung, heart, and gastrointestinal abnormalities.

4 **TETRACHLOROETHYLENE (PCE) PERCHLOROETHYLENE** — A clear colorless liquid used mainly in dry cleaning. PCE is also used in metal degreasing, textile processing (dyeing) and in various pesticides. PCE is a central nervous system depressant, and long-term exposure (in animals) has produced liver and kidney damage.

5 **1,1-DICHLOROETHANE — 1,1(EDC)** Is used as a solvent, cleaning, and degreasing agent; it is also used as an intermediate in organic chemical synthesis. It can cause central nervous system depression, drowsiness, unconsciousness, liver and kidney damage.

6 **1,1-DICHLOROETHYLENE (1,)-DCE** — A clear, colorless, volatile liquid used in cement latexes, film coating and in the production of certain fibers. A suspected human carcinogen, appears to be carcinogenic in mice and possibly rats. A central nervous system depressant that can cause liver and kidney damage in animals.

7 **1,2-DICHLOROETHANE (1,2-EDC) ETHYLENE DICHLORIDE** — EDC is used in the manufacture of nylon, rubber, and various plastics. It is a solvent for resins, asphalt, bitumen, rubber, and paint; an extracting agent for soybean oil and caffeine. It is commonly used as an anti-knock agent in gasoline, a fumigant, and a dry cleaning agent. It has also found use in photography, xerography, and water softening. A suspected human carcinogen. In acute doses it can cause unconsciousness, coma, circulatory collapse, and death. At subacute doses, it can cause liver, kidney, lung, heart, and gastrointestinal abnormalities.

8 **BENZENE** — A clear, colorless, highly flammable liquid with a characteristic "gasoline like" odor. A constituent in engine fuels, a solvent for fats, inks, oils, paints, plastics, and rubber. It is also used in the manufacture of explosives, detergents, pharmaceuticals, dyes, and insecticides. There is strong occupational evidence that it causes leukemia in humans. Most notably toxic to bone marrow.

9 **CHLOROBENZENE** — Used extensively in industry as a solvent and chemical intermediate. Acute exposures have caused mild-to-moderate respiratory effects with a cough, and mild gastrointestinal effects.

10 **XYLENES (TOTAL)** — Xylene is used as a solvent, as a constituent of paint, laquers, varnishes, inks, dyes, adhesives, cement, cleaning fluids and aviation fuels. Xylene is also used in the manufacture of quartz crystal oscillators, hydrogen peroxide, perfumes, insect repellants, epoxy resins, pharmaceuticals, and in the leather industry. Drinking a few milliliters may cause pulmonary edima, and hemmorrhage.

11 **CARBON TETRACHLORIDE** — A colorless liquid used in refrigerants, metal degreasing, agricultural fumigants, spot removers, and in the production of semi conductors. A known carcinogen.

12 **DICHLOROBENZENE (DCB)** — Used primarily as an insecticide (moth balls), and as an air deodorant. Human exposure to DCB is reported to cause anemia, and liver necrosis.

Figure 6 Rank and Percent of VOC Type Found in Public Water Supply Wells

Pesticides in Community Water Systems

Special pesticide surveys have also been conducted by the Illinois EPA to determine the presence of pesticides in selected public water supply wells. The original pesticide monitoring network of 240 shallow wells was selected for sampling based on vulnerability to contamination and other relevant factors. Additional sample sites were selected to represent deeper aquifers and targeted areas. Figure 7 illustrates community water wells with pesticide contamination.

- Several confirmed incidents of pesticide contamination of community water supply wells appear to be related to nearby commercial operations (50 to 700 foot range). Nearly 450 community wells have been tested for pesticides. (See Figure 7) Several more sites are now under investigation.
- Since 1984 seven complaint investigations involving EPA personnel have documented chemical contamination of private water wells on or adjacent to agrichemical retail outlets.

Figure 7 Public Water Supply Pesticide Subnetwork

Pesticides detected in community water wells appear related to localized source(s) of contamination, such as agricultural chemical facilities.

Eighty percent of Illinois' total area is farmland and approximately 65 million pounds (active ingredient) of pesticides are applied in the state annually. There is a great potential for groundwater contamination from the application of pesticides. Contamination can also result from storage leaks, spills, backsiphongae or backflow during chemigation, disposal, manufacturing and distribution of pesticides.

Changing Perspectives on Groundwater Protection

There has been a marked shift in the perceived definition of an "unsafe" water supply. Historically, an "unsafe" water supply was thought of as one which would not protect the consumer from water-borne disease organisms, some naturally occurring inorganic chemicals or, at most, a few common industrial chemicals. Detecting and correcting these threats has become relatively easy and inexpensive. Based on routine application of current technology, such problems are generally under control in Illinois.

Today's concerns about the safety of water supplies center on protecting the consumer from the possibility of exposure to very low levels of a wide variety of toxic chemicals, such as VOC's, of which thousands are in daily use. Figures 8 and 9 illustrate the small amounts of trichloroethylene (TCE) and benzene required to contaminate a water supply. In many cases, the health effects of such exposures are delayed and uncertain. These chemicals are often colorless, odorless, and tasteless even when present in water at levels which could be harmful. They can often be detected only by sophisticated and expensive tests.

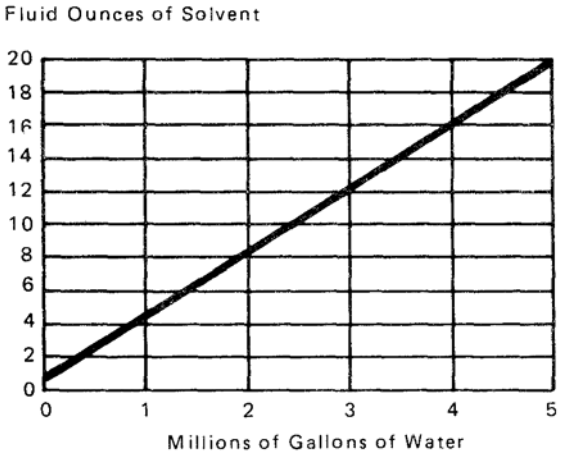


Figure 8 Ounces of TCE Required to Contaminate Groundwater at a Level of 50 PPB

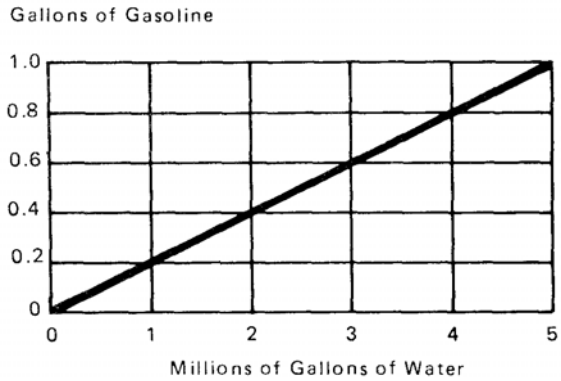
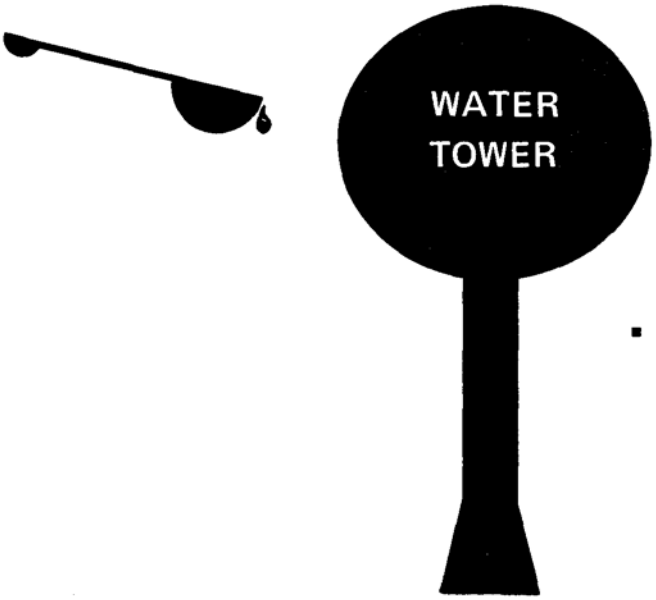


Figure 9 Amount of Benzene from Gasoline to Contaminate at 5 PPB

Lyle S. Raymond, Jr., 'Leak and Spill Prevention', (Ithaca, NY, Cooperative Extension, Cornell Univ.) 6.7.



- 1 Tablespoon of TCE could contaminate an average size water storage tower at a level ten times the standard. The drinking water standard for TCE is 5.0 parts per billion (ppb).

This shift of focus from the traditional public health concerns to "second generation" problems changes the perspective on groundwater management. In the past, environmental legislation in Illinois has often tended to place the implementing agencies in the position of reacting to groundwater contamination. With contaminants that are short-lived and easily detected or corrected, this has been an acceptable strategy. However, with contaminants that are persistent, difficult to detect and hazardous at low levels, preventing groundwater contamination is both preferable and cheaper than correcting contamination. Because typical groundwater movement is slow, groundwater contaminated by such chemicals can remain hazardous for an indefinite period.

The "Groundwater Gap" in Governmental Control

Laws, regulations and governmental planning efforts for protecting groundwaters were disjointed and not comprehensive prior to the Illinois Groundwater Protection Act (IGPA). Diverse state, federal and local agencies which regulate various surface and subsurface activities did not have a common framework or unified governmental goal regarding groundwaters. Furthermore, existing laws failed to adequately distinguish between ground and surface waters which obscured their important dissimilarities.

Certain activities were not previously considered important sources of groundwater contamination. Most regulatory controls were focused upon landfills and hazardous waste operations. Experience, however, has shown that many other environmentally unregulated activities pose serious threats to groundwater, such as hazardous substance storage, petroleum production and storage and pesticide storage and handling. These activities have caused groundwater contamination and include many small commercial and business enterprises. In addition, groundwater contamination can occur because of unused water wells and sand and gravel quarries which act as pollution pathways. The Groundwater Protection Act addresses these gaps in regulation of potential contamination sources and routes.

GROUNDWATER CONTAMINATION POTENTIAL

The Illinois Groundwater Protection Act is designed to regulate many things which have the potential to contaminate groundwater. Under the IGPA, these are categorized as either "potential routes", "potential primary sources" or "potential secondary sources." The first term is used to provide coverage for certain structures or operations which can serve as a conduit or pathway for contaminants to reach groundwater contamination of groundwater. More specifically, this term includes abandoned and improperly plugged wells, drainage wells, all injection wells, and mining operations for stone, sand or gravel. The second and third terms are used to provide coverage for certain structures of operations serving as points of origin for contaminants which could have an adverse affect on groundwater. A distinction is provided between the most significant potential problems, primary sources, and the less threatening secondary sources.

Proper description of potential sources has proven to be a fairly complex task. First, it was necessary to distinguish such sources from the terms "facility" and "site", both of which usually imply a larger scope of regulatory concern. Thus, the concept of a "unit" was used to define potential sources. Within a particular site or facility, one could find one or more potential sources. It was also necessary to clarify that once a facility or site becomes the subject of a cleanup effort (remedial action) then, by definition, any units therein would not be considered potential sources. This clarification keeps the preventive aspects of the IGPA from prohibiting a necessary cleanup project.

Potential primary sources are units used for handling hazardous or special wastes, landfilling of municipal wastes and storage of large amounts of hazardous substances, either above or below ground. Potential secondary sources are units used for handling (excluding piling) of other on-site wastes, storage of smaller amounts of hazardous substances, either above or below ground; storage of specified amounts of petroleum, either above or below ground; storage of pesticides, fertilizers, road oils or de-icing agents under certain circumstances; handling livestock waste; or treating domestic wastewater other than private sewage disposal systems.

Some potential contaminating sources are not covered under the concept of potential sources. These exclusions include the more common sources of sanitary pollution such as privies, septic tank, cesspools, sewers (storm, sanitary, combined and sewer service connections), subsurface seepage-disposal lines, pits or ponds receiving fluids such as surface waters, oils, and grease, and flood waters. Other existing regulatory programs are thought to adequately cover these common sources of sanitary pollution.

Statutory Definitions

> "'Potential route' means abandoned and improperly plugged wells of all kinds, drainage wells, all injection wells, including closed loop heat pump wells, and any excavation for the discovery, development or production of stone, sand or gravel.
>
> 'Potential primary source' means any unit at a facility or site not currently subject to a removal or remedial action which:
>
> (1) is utilized for the treatment, storage, or disposal of any hazardous or special waste not generated at the site; or
>
> (2) is utilized for the disposal of municipal waste not generated at the site, other than landscape waste and construction and demolition debris; or

(3) is utilized for the landfilling, land treating, surface impounding or piling of any hazardous or special waste that is generated on the site or at other sites owned, controlled or operated by the same person; or

(4) stores or accumulates at any time more than 75,000 pounds above ground, or more than 7,500 pounds below ground, of any hazardous substances.

'Potential secondary source' means any unit at a facility or a site not currently subject to a removal or remedial action, other than a potential primary source, which:

(1) is utilized for the landfilling, land treating, or surface impounding of waste that is generated on the site or at other sties owned, controlled or operated by the same person, other than livestock and landscape waste, and construction and demolition debris; or

(2) stores or accumulates at any time more than 25,000 but not more than 75,000 pounds above ground, or more than 2,500 but not more than 7,500 pounds below ground, of any hazardous substances; or

(3) stores or accumulates at any time more than 25,000 gallons above ground, or more than 500 gallons below ground, of petroleum, including crude oil or any fraction thereof which is not otherwise specifically listed or designated as a hazardous substance; or

(4) stores or accumulates pesticides, fertilizers, or road oils for purposes of commercial application or for distribution to retail sales outlets; or

(5) stores or accumulates at any time more than 50,000 pounds of any de-icing agent; or

(6) is utilized for handling livestock waste or for treating domestic wastewaters other than private sewage disposal systems as defined in the "Private Sewage Disposal Licensing Act".

'Unit' means any device, mechanism, equipment, or area (exclusive of land utilized only for agricultural production)."

PHASE-IN OF SITING RESTRICTIONS

Under the IGPA, there are provisions for a staged and timely phase-in of siting restrictions applicable to community water supply wells and potential routes and sources. Such provisions are necessary to ensure an orderly and equitable transition for implementation of this new program. To achieve the phase-in, IGPA distinguishes "new" wells and "new" potential routes and sources from those already in existence, as follows:

- A community water supply well is "new" if it was constructed after September 24, 1987;

- A potential route is "new" if it is not in existence or construction has not commenced as of January 1, 1988, or if certain lateral expansion takes place;

- A potential primary source is "new" if it is not in existence or construction has not commenced as of July 1, 1988, or if certain lateral expansion or major reconstruction takes place; and

- A potential secondary source is "new" if it is not in existence or construction has not commenced as of July 1, 1988, or if certain lateral expansion or major reconstruction takes place.

The IGPA also provides for a specific description of the circumstances in which construction is considered "commenced". First, all pertinent governmental approvals must have

been obtained. Second, actual work at the site must have been initiated. And finally, such site work must proceed in a, more or less, continuous manner until the project is completed.

Statutory Definitions

A new potential route is:

"(1) a potential route which is not in existence or for which construction has not commenced at its location as of January 1, 1988; or

(2) a potential route which expands laterally beyond the currently permitted boundary or, if the potential route is not permitted, the boundary in existence as of January 1, 1988.

Construction shall be deemed commenced when all necessary federal, State and local approvals have been obtained, and work at the site has been initiated and proceeds in a reasonably continuous manner to completion.

A new potential route, which is an excavation for stone, sand or gravel and which becomes active on lands which were acquired or were being held as mineral reserves prior to effective date of the IGPA, shall only be subject to the setback requirements of subsections (a) and (d) of Section 14.2 with respect to any community water supply well, non-community water system well, or semi-private water system well in existence prior to January 1, 1988."

A new potential primary source is:

"(i) a potential primary source which is not in existence or for which construction has not commenced at its location as of January 1, 1988; or

(ii) a potential primary source which expands laterally beyond the currently permitted boundary or, if the primary source is not permitted, the boundary in existence as of January 1, 1988; or

(iii) a potential primary source which is part of a facility that undergoes major reconstruction. Such reconstruction shall be deemed to have taken place where the fixed capital cost of the new components constructed within a 2-year period exceed 50% of the fixed capital cost of a comparable entirely new facility.

Construction shall be deemed commenced when all necessary federal, State, and local approvals have been obtained, and work at the site has been initiated and proceeds in a reasonably continuous manner to completion."

A new potential secondary source is:

"(i) a potential secondary source which is not in existence or for which construction has not commenced at its location as of January 1, 1988; or

(ii) a potential secondary source which expands laterally beyond the currently permitted boundary or, if the secondary source is not permitted, the boundary in existence as of January 1, 1988, other than an expansion for handling of livestock waste or for treating domestic wastewaters; or

(iii) a potential secondary source which is part of a facility that undergoes major reconstruction. Such reconstruction shall be deemed to have taken place where the fixed capital cost of the new components constructed within a 2-year period exceed 50% of the fixed capital cost of a comparable entirely new facility.

Construction shall be deemed commenced when all necessary federal, State, and local approvals have been obtained, and work at the site has been initiated and proceeds in a reasonably continuous manner to completion."

GROUNDWATER CONTAMINATION PREVENTION

In the long run, groundwater protection needs to be more prevention-oriented to be truly effective since full restoration of groundwater quality can be very difficult and costly once contamination occurs. Under the IGPA, drinking water supplies (public and private) receive protection from potential routes and sources of groundwater contamination by use of setback zones. Such protection regulates the spatial relationship between water supplies and potential contamination routes and sources. In all cases, existing water supply wells are protected from encroachment by new potential routes or sources of contamination. In a like manner, new water supply wells may not be located so as to create a threatening situation with respect to existing potential routes and sources. This approach ensures a baseline program that will prevent or greatly lessen the likelihood of well contamination by the most direct means.

The use of setback zones for wellhead protection is comparable to programs initiated in other states, such as Florida. The minimum setbacks referenced in the IGPA were determined by professional judgment and are standardized statewide to maintain uniformity, consistency and equity. The setback zones were designed to influence siting and location of potential sources relative to a community water supply designated for protection. In many respects, such groundwater protection measures and siting requirements are similar to community zoning ordinances.

Minimum Setback Zones

The first level of protection involves the use of a minimum setback zone for community and private water supply wells and potential sources and routes. The minimum zone is 200 feet in radius for any type of water supply well or potential sources or routes. The setback zones

determine the allowable distances between potential sources and routes and drinking water supply

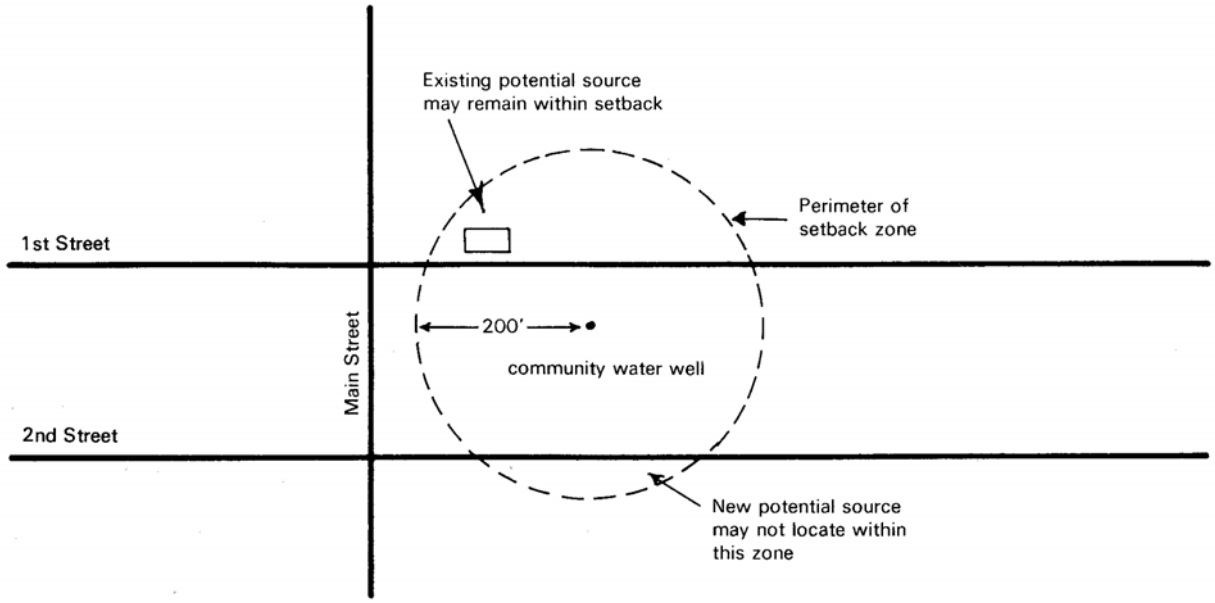


Figure 10 Minimum Setback Zone Around Community Water Supply Well

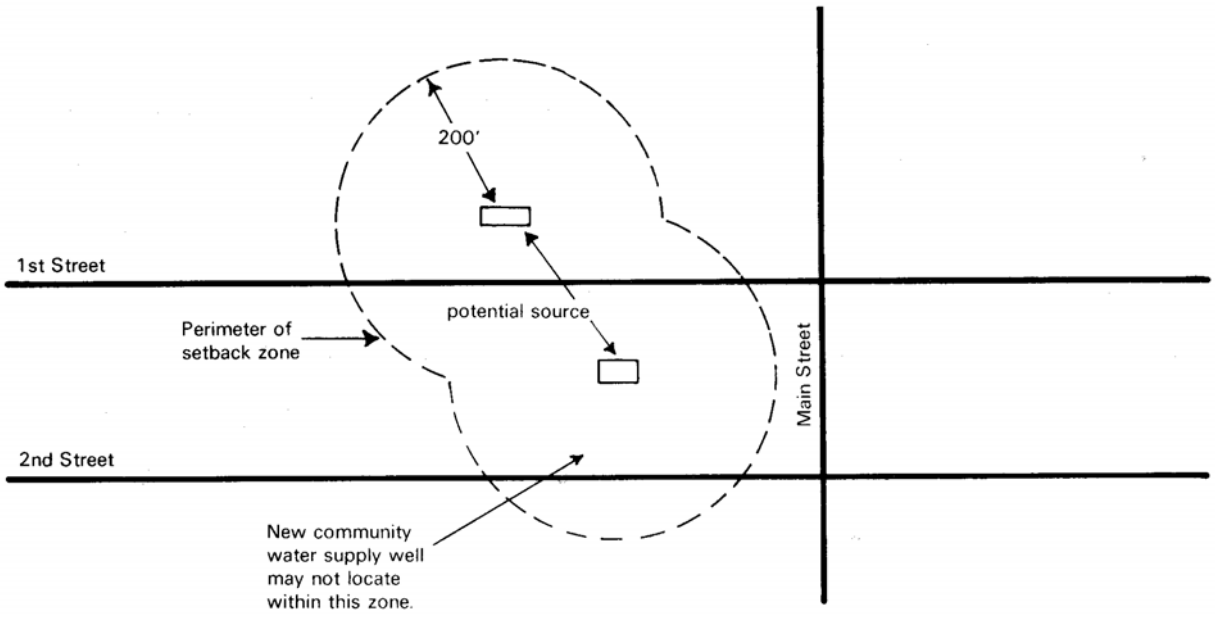


Figure 11 Minimum Setback Zone Around Two Potential Sources of Contamination

wells. However, for community water supply wells tapping certain vulnerable geologic formations, the minimum zone is expanded to 400 feet in radius. The setbacks are applied as lateral distances on the land surface and are measure between a potable water supply well and a potential source or a potential route. Figures 10 and 11 illustrate the setbacks or separation of potential sources and routes from community water wells.

The 200 or 400 foot minimum setbacks are in effect for all new sitings unless any of the following apply:

- A waiver has been provided by a well owner.
- An exception has been granted by the Pollution Control Board pursuant to Section 14.2(c) of the Act.
- Certain new potential routes, such as excavating for stone, sand or gravel relative to water wells, in existence prior to January 1, 1988 (Section 14.2(h)).
- New common sources of sanitary pollution (e.g. septic systems, sewer lines, etc) shall follow regulations in effect (Section 14.2(e)).
- Certification which confirms a minimal hazard to groundwater by potential primary and secondary sources (Section 14.5).

The Illinois EPA has notified all community water supply owners, using water wells, of these setback zones. A preliminary notice was followed by a final notice. With respect to the 400 foot setback, the Illinois EPA is required by the IGPA to notify, no later than January 1, 1988, the owner and operator of each existing well which is afforded this setback protection. A directory of all such community water supply wells must also be maintained by the Illinois EPA.

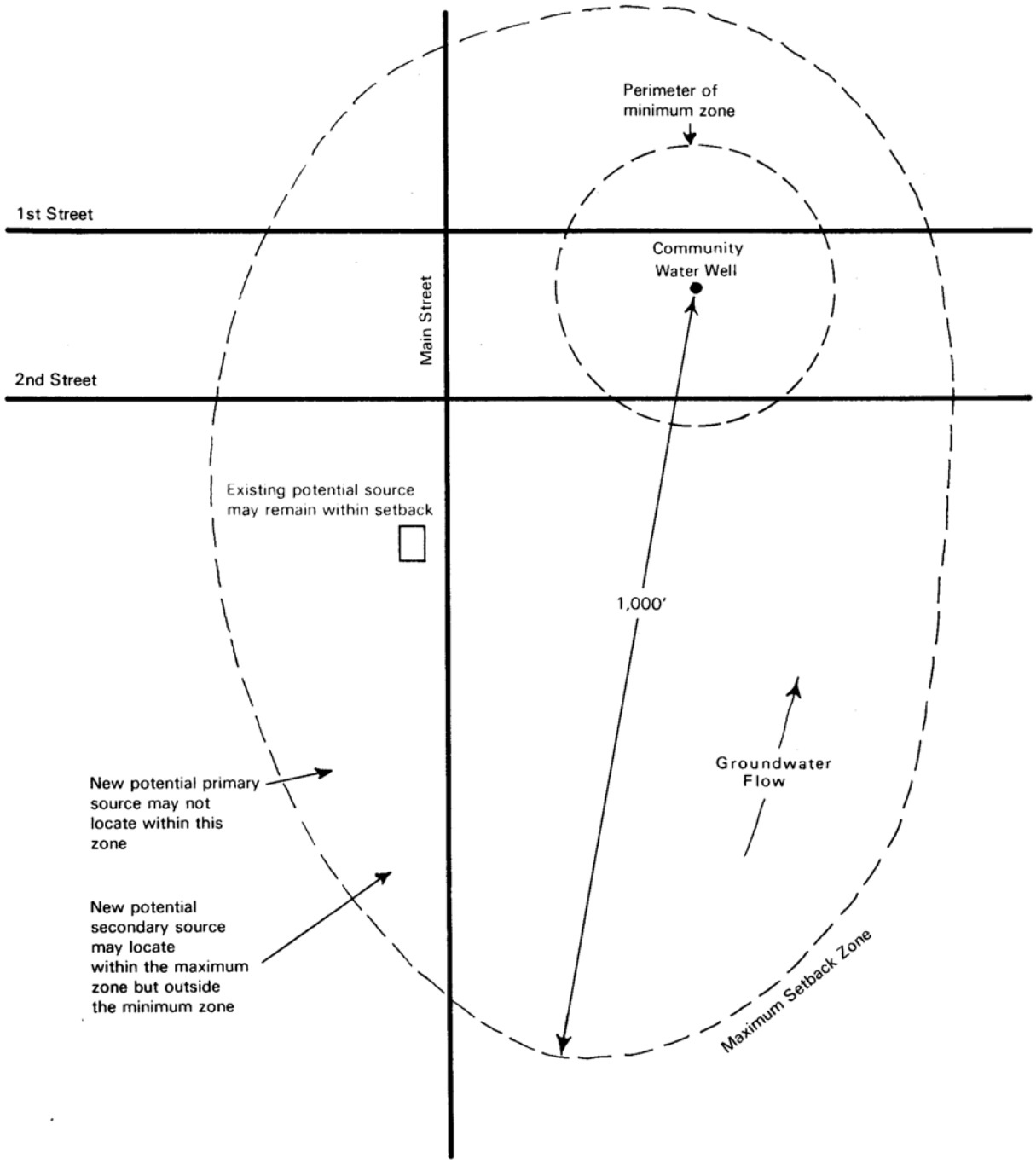


Figure 12 Maximum Setback Zone Around a Community Water Supply Well

Maximum Setback Zone

The second level of protection involves the use of a maximum setback zone for community water supply wells. This maximum zone may be up to 1,000 feet from the wellhead of a community water supply well. Based upon well drawdown characteristics, counties and municipalities may, by ordinance, establish a maximum setback zone. After July 1, 1989, the Illinois EPA may also initiate rulemaking before the Pollution Control Board to establish such a zone.

This extra protection is only available for community water supply wells and is based upon pumping test and estimation techniques adopted by the Illinois EPA. A request to determine technical adequacy must be submitted to the Illinois EPA by a county or municipality and, upon confirmation, enables them to adopt an ordinance which establishes a maximum setback zone and incorporates the minimum zone as well. Thus, for local governments the establishment of a maximum zone remains a voluntary process.

Once a maximum setback zone is established, no new potential primary source may be located within this protected area (see figure 12). For example, no new landfills could be placed within such a zone. However, for certain potential primary sources, the Board may grant an exception to this restriction if various criteria are met. For certain other potential sources, the certification provisions would also be applicable. Potential secondary sources are not affected by the maximum setback.

Statutory Definitions/Provisions

> "'Setback zone' means a geographic area, designated pursuant to this Act, containing a potable water supply well or a potential source or potential route, having a continuous boundary, and within which certain prohibitions or regulations are applicable in order to protect groundwaters."

A minimum setback zone is established for the location of each new community water supply well as follows:

"(a) No new community water supply well may be located within 200 feet of any potential primary or potential secondary source or any potential route.

(b) No new community water supply well deriving water from fractured or highly permeable bedrock or from an unconsolidated and unconfined sand and gravel formation may be located within 400 feet of any potential primary or potential secondary source or any potential route. Such 400 foot setback is not applicable to any new community water supply well where the potential primary or potential secondary source is located within a site for which certification is currently in effect pursuant to Section 14.5"

A minimum setback zone is established for the location of each new potential source or new potential route as follows:

"(a) Except as provided in subsections (b), (c) and (h) of this Section, no new potential route or potential primary source or potential secondary source may be placed within 200 feet of any existing or permitted community water supply well or other potable water supply well.

(b) Except as provided in subsections (c) and (h) of this Section and Section 14.5, no new potential route or potential primary source or potential secondary source may be placed within 400 feet of any existing or permitted community water supply well deriving water from an unconfined shallow fractured or highly permeable bedrock formation or from an unconsolidated and unconfined sand and gravel formation."

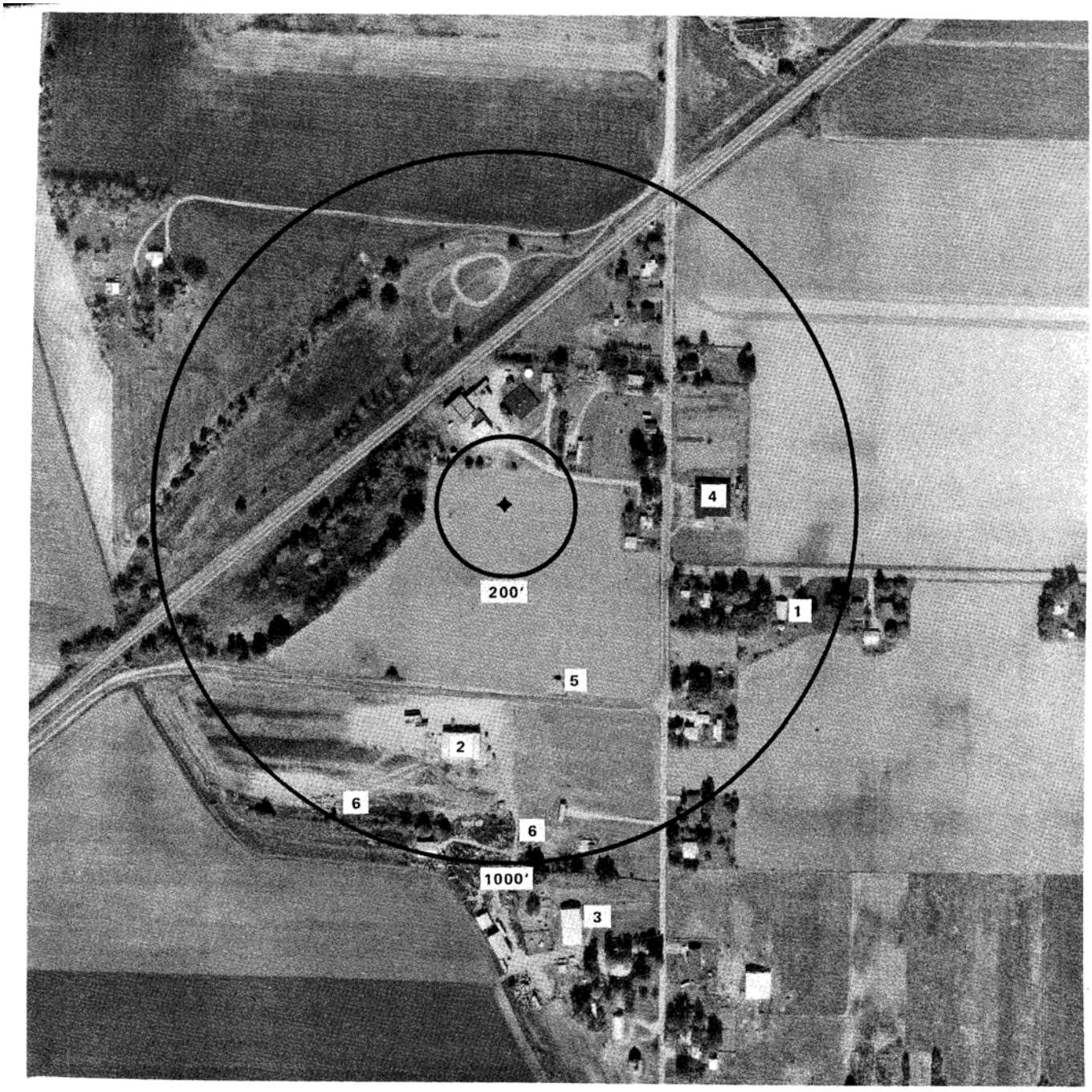
A maximum setback zone may be established for a community water supply well as follows:

"(a) Owners of community water supplies which utilize any water well, or any country or municipality served by any community water supply well, may determine the lateral area of influence of the well under normal operational conditions. The Agency shall adopt procedures by which such determinations may be made including, where appropriate, pumping tests and estimation techniques.

(b) Where the results of any determination made pursuant to subsection (a) of this Section disclose that the distance from the well to the outermost boundary of the lateral area of influence of the well under normal operational conditions exceeds the radius of the minimum setback zone established for that well pursuant to Section 14.2, any county or municipality served by such water supply may in writing request the Agency to review and confirm the technical adequacy of

such determination. The Agency shall, within 90 days of the request, notify the county or municipality whether the determination is technically adequate for describing the outer boundary of drawdown of the affected groundwater by the well under normal operational conditions. Any action by the Agency hereunder shall be in writing and shall constitute a final determination of the Agency.

(c) Upon receipt of Agency confirmation of the technical adequacy of such determination, the county or municipality may, after notice and opportunity for comment, adopt an ordinance setting forth the location of each affected well and specifying the boundaries of a maximum setback zone, which boundaries may be irregular. In no event, however, shall any portion of such a boundary be in excess of 1,000 feet from the wellhead. Such ordinance shall include the area within the applicable minimum setback zone and shall incorporate requirements which are consistent with but not more stringent than the prohibitions of this Act and the regulations promulgated by the Board under Section 14.4. Upon adoption, the county or municipality shall provide a copy of the ordinance to the Agency. Any county or municipality which fails to adopt such an ordinance within 2 years may not proceed under the authority of this Section without obtaining a new confirmation of the technical adequacy pursuant to subsection (b) of this Section."



LEGEND

1 Above ground fuel storage tanks
2 Above ground fuel storage tank
3 Below ground fuel storage tank
4 Wood working shop
5 Gas pump site (pipelines)
6 Misc. debris, barrels, etc.
✦ Community water supply well

200' minimum setback zone
1000' survey area

Figure 13 Community Water Well Surveys

SCALE
N
0 200 400 800
FEET

COMMUNITY WATER WELL SURVEYS

The IGPA establishes a community well site survey program to be conducted by Illinois EPA. Well site surveys will provide an inventory of potential sources, routes and other activities within established minimum setback zones. The inventory will be used to determine if existing potential sources or routes pose threats or if additional protection is warranted. In addition, survey maps (e.g., aerial photo's, topographic maps, etc.) will also locate other activities and facilities from the minimum setback out to a distance of 1,000 feet from the wellhead. Each potential source and route will be categorized and inventoried relative to the community water well. The locations provided by the map will be supplemented by attachments to provide additional information on units and associated facilities to the greatest degree of availability. Each unit, or in some cases facilities or sites, will be described according to legal definitions of potential primary and secondary sources and routes. Descriptive examples could include:

- type of waste landfilled, and treated or surface impounded
- type, phase and amount of substances stored at a facility or site
- origin of generated waste

Units or facilities located between the minimum setback and a 1,000 foot setback (outside the regulated area) will also be described but will not be categorized as potential primary or potential secondary sources or potential routes. Figure 12 is an aerial photo with delineations for the minimum setback zone, 1,000 foot fixed radius area and sources/routes within the survey area.

The IGPA authorizes the Illinois EPA to issue an "advisory of groundwater contamination" whenever existing potential sources and routes are found to represent a significant hazard to the public health or the environment. In such instances, the Illinois EPA is

required to publish a notice of such finding to alert the public regarding this potential threat.

These provisions are intended to give more utility to the survey program.

Statutory Provisions

Each well site survey shall consist of the following at a minimum:

"(1) Summary description of the geographic area within a 1,000 foot radius around the wellhead;

(2) Topographic or other map of suitable scale of each well site denoting the location of the wellhead, the 1,000 foot radius around the wellhead, and the location of potential sources and potential routes of contamination within this zone;

(3) A summary listing of each potential source or potential route of contamination, including the name or identity and address of the facility, and a brief description of the nature of the facility; and

(4) A general geologic profile of the 1,000 foot radius around the wellhead, including depth and age of the well, construction of the casing, formations penetrated by the well and approximate thickness and extent of these formations.

(g) The Agency may issue an advisory of groundwater contamination hazard to a county or municipality which has not prepared a groundwater protection needs assessment and for which the Agency has conducted a well site survey. Such advisory may only be issued where the Agency determines that existing potential primary sources, potential secondary sources or potential routes identified in the survey represent a significant hazard to the public health or the environment. The Agency shall publish notice of such advisory in a newspaper of general circulation within the county or municipality and shall furnish a copy of such advisory to any applicable regional planning committee."

GROUNDWATER PROTECTION NEEDS ASSESSMENT

Counties and municipalities are authorized to conduct a more comprehensive evaluation, termed a "groundwater protection needs assessment." Such action, while not mandatory, is encouraged because it represents an important step in establishing sound programs coordinating water supply protection needs with community development. Investor owned community water supplies can prepare assessments on behalf of local governments. Technical assistance from the Illinois EPA and the Illinois Department of Energy and Natural Resources is available in conducting assessments. In addition, a survey by the Illinois EPA of water well sites may be used as a basis for hazard assessments for smaller sized governmental units.

The intent of these provisions is to determine the need for protection beyond the baseline provided by the statewide application of minimum setback zones. This process begins to focus attention upon the broader recharge area which supplies water to a community well. For larger communities, this effort will likely extend beyond the applicable maximum setback zone as well. For smaller communities, however, a well site survey, as conducted by the Agency, is accepted as providing sufficient coverage of potential problems.

Statutory Provisions

Groundwater Protection Needs Assessment shall consist of the following at a minimum:

"(1) Evaluation of the adequacy of protection afforded to resource groundwater by the minimum setback zone and, if applicable, the maximum setback zone;

(2) Delineation, to the extent practicable, of the recharge area outside of any applicable setback zones but contained within any area over which the county or municipality has jurisdiction or control;

(3) Identification and location of potential primary and potential secondary sources and potential routes within, and if appropriate, in proximity to the delineated recharge area for each such well;

(4) Evaluation of the hazard associated with identified potential primary and potential secondary sources and potential routes contained within the recharge area specified according to subparagraph (a) (2) of Section 17.1, taking into account the characteristics of such potential sources and potential routes, the nature and efficacy of containment measures and devices in use, the attenuative qualities of site soils in relation to the substances involved, the proximity of potential sources and potential routes and the nature, rate of flow, direction of flow and proximity of the uppermost geologic formation containing groundwater utilized by the well;

(5) Evaluation of the extent to which existing local controls provide, either directly or indirectly, some measure of groundwater protection; and

(6) Identification of practicable contingency measure, including provision or alternative drinking water supplies, which could be implemented in the event of contamination of the water supply."

Community request for assessment assistance:

"(h) Any county or municipality subject to subsection (a) Section 17.1, but having a population of less than 25,000 or 5,000 persons, respectively, may request, upon receipt of a well site survey report, the Agency to identify those potential primary sources, potential secondary sources and potential routes which represent a hazard to the continued availability of groundwaters for public use, given the susceptibility of the groundwater recharge area to contamination. Such Agency action may serve in lieu of the groundwater protection needs assessment specified in subsection (a) of this Section. The Agency shall also inform any applicable regional planning committee regarding the findings made pursuant to this subsection."

MINIMAL HAZARD CERTIFICATION PROCESS

The Illinois EPA is authorized by the IGPA to develop and administer a certification system for certain potential primary and secondary sources. Under this system, the owner of a site may, after January 1, 1988, provide a certification of minimal hazard to the Illinois EPA in lieu of being restricted by the 400 foot minimum setback or affected by certain technology regulations to be adopted by the Pollution Control Board. However, minimum hazard certifications will only be granted to sites meeting specific criteria for a particular time period. The minimal hazard certification system is designed to protect community water wells while allowing small commercial operations and business to achieve compliance in a reasonable fashion. The Illinois EPA will develop guidelines for the procedure and begin operation after January 1, 1988.

The IGPA specifies time periods for certification and a decertification procedure. Once a site has been certified, the owner must recertify periodically according to the adopted time periods, and maintain compliance with conditions necessary for certification (Subsection d, Section 14.5). Failure to maintain compliance may result in decertification and subjection to regulatory performance standards. Any county or municipality may enter into a written delegation agreement with the Illinois EPA to administer the provisions of the minimal hazard certification. The local governmental unit must adopt an ordinance if delegation is requested.

Statutory Provisions

> "Sec. 14.5. The Agency shall administer a certification system for sites which represent a minimal hazard with respect to contamination of groundwaters by potential primary or potential secondary sources.

No later than January 1, 988, the Agency shall develop and make available a minimal hazard certification form and guidelines for the use and management of containers and above ground tanks, and for the piling of waste.

(b) After January 1, 1988, the owner of any site which would otherwise be subject to the provisions of subsection (d) of Section 14.2 or Section 14.4 and regulations adopted thereunder may provide a certification of minimal hazard to the Agency if the following conditions are:

(1) no on-site landfilling, land treating, or surface impounding of waste, other than landscape waste or construction and demolition debris, has taken place and such circumstance will continue;

(2) no on-site piles of special or hazardous waste are present and such circumstance will continue, and any piling of other wastes which could cause contamination of groundwater will be consistent with guidelines developed by the Agency;

(3) no underground storage tanks are present on the site and such circumstances will continue;

(4) use and management of containers and above ground tanks will be consistent with guidelines developed by the Agency;

(5) no on-site release of any hazardous substance or petroleum has taken place which was of sufficient magnitude to contaminate groundwaters;

(6) no more than 100 gallons of either pesticides or organic solvents, or 10,000 gallons of any hazardous substances, or 30,000 gallons of petroleum, will be present at any time; and

(7) notice has been given to the owner of each community water supply well within 1,000 feet of the site.

(c) Upon receipt of a certification pursuant to subsection (b) of this Section, the Agency shall, within 90 days, take one of the following actions:

(1) notify the owner of the site in writing that the certification is complete and adequate;

(2) notify the owner of the site in writing that the certification is not adequate, including a statement of the reasons therefor;

(3) notify the owner of the site in writing that a site inspection will be held within 120 days, and that following such inspection but still within the 120 day period further action will be taken pursuant to item (1) or (2) of this subsection; or

(4) notify in writing the owner of the site that pursuant to Section 17.1 a county or municipality is conducting a groundwater protection needs assessment or the Agency is conducting a well site survey which encompasses the site for which certification is being processed, and specify a time period, not to exceed a total of 180 days from the date of the notice, for consideration of the findings from such assessment or survey and by which further action will be taken pursuant to item (1) or (2) of this subsection.

A certification is not adequate if it fails to address each of the conditions required to be met by subsection (b) of this Section, or if the Agency possesses information which reasonably suggests that any statement made in the certification is inaccurate or incomplete. Action under item (1) or (2) of this subsection shall constitute a final determination of the Agency.

(d) When a certification has been provided with respect to which the Agency has made a finding of adequacy as has failed to act in a timely manner pursuant to subsection (c) of this Section, the site shall not be subject to the provisions of subsection (d) of Section 14.2 or Section 14.4 and regulations adopted thereunder for the following time periods:

(1) one year, if the Agency has failed to act in a timely manner pursuant to subsection (c) of this Section, during which time the owner must recertify to continue such status;

(2) three years, if the site is located within a minimum or maximum setback zone, during which time the owner must recertify to continue such status;

(3) five years, if the site is located within a regulated recharge area, during which time the owner must recertify to continue such status; or

(4) 90 days past the time when a change of ownership takes place, during which time the new owner must recertify to continue such status.

(e) During the effective period of a certification, the owner of the site shall maintain compliance with the conditions specified in subsection (b) of this Section. Any failure by the owner to maintain such compliance shall be just cause for decertification by the Agency. Such action may only be taken after the Agency has provided the owner with a written notice which identifies the noncompliance and specifies a 30 day period during which a written response may be provided by the owner. Such response may describe any actions taken by the owner which relate to the conditions of certification. If such response is deficient or untimely, the Agency shall serve notice upon the owner that the site has been decertified and is subject to the applicable provisions of subsection (d) of Section 14.2 or Section 14.4 and regulations adopted thereunder. Such notification shall constitute a final determination of the Agency.

(1) The Agency shall maintain a master listing, indexed by county, of those sites for which certifications are in effect. Upon the establishment of a regional planning committee pursuant to Section 17.2, the Agency shall provide a copy of the pertinent portions of such listing to such committee on a quarterly basis. The Agency shall also make copies of such listing available to units of local government and the public upon request.

(g) The Agency may enter into a written delegation agreement with any county or municipality, which has adopted an ordinance consistent with Section 14.2 or 14.3, to administer the provisions of this Section. Such delegation agreements shall require that the work to be performed thereunder shall be in accordance with criteria established by the Agency, be subject to periodic review by the Agency, and shall include such financial and program auditing by the Agency as may be necessary."

GLOSSARY

ILLINOIS ENVIRONMENTAL PROTECTION ACT
ILLINOIS GROUNDWATER PROTECTION ACT

"Agency" means the Illinois Environmental Protection Agency.

"Aquifer" means saturated (with groundwater) soils and geologic materials which are sufficiently permeable to readily yield economically useful quantities of water to wells, springs, or streams under ordinary hydraulic gradients.

"Board" means the Illinois Pollution Control Board

"Committee" means the Interagency Coordinating Committee on Groundwater.

"Community water system" means a public water supply which serves or is intended to serve at least 15 service connections used by residents of regularly serves at least 25 residents.

"Construction" means all acts necessary to obtaining groundwater by any method, for human consumption including without limitation the location of and the excavation for the well, but not including prospecting, surveying or other acts preparatory thereto, nor the installation of pumps and pumping equipment.

"Contamination" or "Contaminate", when used in connection with groundwater, means water pollution of such groundwater.

"Contaminant" means any physical, chemical, biological, or radiological substance or matter in water.

"Disposal" means the discharge, deposit, injection, dumping, spilling, leaking or placing of any waste or hazardous waste into or on any land or water or into any well so that such waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including groundwaters.

"Council" means the Groundwater Advisory Council.

The term "facility" means:

(a) any building, structure, installation, equipment, pipe or pipeline including but not limited to any pipe into a sewer or publicly owned treatment works, well, pit, pond, lagoon, impoundment, ditch, landfill, storage container, motor vehicle, rolling stock, or aircraft; or

(b) any site or area where a hazardous substance has been deposited, stored, disposed of, or placed, or otherwise come to be located.

"Owner or Operator" means:

(a) any person owning or operating a vessel or facility; or

(b) in the case of an abandoned facility, any person owning or operating the abandoned facility or any person who owned, operated, or otherwise controlled activities at the abandoned facility immediately prior to such abandonment.

"Garbage" is waste resulting from the handling, processing, preparation, cooking, and consumption of food, and wastes from the handling, processing, storage, and sale of produce.

"Generator" when used in connection with hazardous waste means any person whose act or process produces a hazardous water.

"Groundwater" means underground water which occurs within the saturated zone and geologic materials where the fluid pressure in the pore space is equal to or greater than atmospheric pressure.

"Hazardous Substance" means (A) any substance designated pursuant to Section 311(b)(2)(A) on the Federal Water Pollution Control Act (P.L. 92-500), as amended, (B) any element, compound mixture, solution, or substance designated pursuant to Section 102 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (P.L. 96-510), as amended, (C) any hazardous waste, (D) any toxic pollutant listed under Section 307(a) of the Federal Water Pollution Control Act (P.L. 92-500), as amended, (E) any hazardous air pollutant listed under Section 112 of the Clean Air Act (P.L. 95-95), as amended, (F) any imminently hazardous chemical substance or mixture with respect to which the Administrator of the U.S. Environmental Protection Agency has taken action pursuant to Section 7 of the Toxic Substances Control Act (P.L. 94-469), as amended. The term does not include petroleum, including crude oil or any fraction thereof which is not otherwise specifically listed or designated as a hazardous substance under subparagraphs (A) through (F) of this paragraph, and the term does not include natural gas, natural gas liquids, liquefied natural gas, or synthetic gas useable for fuel or mixture of natural gas and such synthetic gas.

"Hazardous Hospital Wastes" means waste generated in connection with patient care that is contaminated with or may be contaminated with an infectious agent that has the potential of inducing an infection and has note been rendered innocuous by sterilization or incineration.

"Hazardous Waste" means a waste, or contamination of wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause or significantly contribute to an increase in mortality or an increase in serious, irreversible, or incapacitating reversible, illness; or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed, and which has been identified, by characteristics or listing, as hazardous pursuant to Section 3001 of the Resource Conservation and Recover Act of 1976, P.L. 94-580, or pursuant to Board regulations.

"Hazardous Waste Disposal Site" is a site at which hazardous waste is disposed.

"Industrial Process Waste" means any liquid, solid, semi-solid, or gaseous waste generated as a direct or indirect result of the manufacture of a product or the performance of a service. Any such waste which would pose a present or potential threat to human health or to the environment or with inherent properties which make the disposal of such waste in a landfill difficult to manage by normal means is an industrial process waste. "Industrial Process Waste" includes but is not limited to spent pickling liquors, cutting oils, chemical catalysts, distillation bottoms, etching acids, equipment cleanings, paint sludges, incinerator ashes, core sands, metallic dust sweepings, asbestos dust, hospital pathological wastes and off-specification, contaminated or recalled wholesale or retail products. Specifically excluded are uncontaminated packaging materials, uncontaminated machinery components, general household waste, landscape waste and construction or demolition debris.

"Landscape Waste" means all accumulations of grass or shrubbery cuttings, leaves, tree limbs and other materials accumulated as the result of the care of lawns, shrubbery, vines and trees.

"Modification" means any change, replacement or other alteration of any water well which shall be contrary to the rules and regulations regarding the construction of a well.

"Municipal Waste" means garbage, general household and commercial waste, landscape waste and construction or demolition debris.

"Municipality" means any city, village or incorporated town.

"Non-community water system" means a public water supply that is not a community water supply.

"Pollution Control Waste" means any liquid, solid, semi-solid or gaseous waste generated as a direct or indirect result of the removal of contaminants from the air, water or land, and which pose a present or potential threat to human health or to the environment or with inherent properties which make the disposal of such waste in a landfill difficult to manage by normal mean. "Pollution Control Waste" includes but is not limited to water and wastewater treatment plant sludges, baghouse dusts, scrubber sludges and chemical spill cleanings.

"Potable" means generally fit for human consumption in accordance with accepted water supply principles and practices.

"Potential route" means abandoned and improperly plugged wells of all kinds, drainage wells, all injection wells, including closed loop heat pump wells, and any excavation for the discovery, development or production of stone, sand or gravel.

A new potential route is:

(1) a potential route which is not in existence or for which construction has not commenced at its location as of January 1, 1988, or

(2) a potential route which expands laterally beyond the currently permitted boundary or, if the potential route is not permitted, the boundary in existence as of January 1, 1988.

Construction shall be deemed commenced when all necessary federal, State and local approvals have been obtained, and work at the site has been initiated and proceeds in a reasonably continuous manner to completion.

"Potential primary source" means any unit at a facility or site not currently subject to a removal or remedial action which:

(1) is utilized for the treatment, storage, or disposal of any hazardous or special waste not generated at the site; or

(2) is utilized for the disposal of municipal waste not generated at the site, other than landscape waste and construction and demolition debris; or

(3) is utilized for the landfilling, land treating, surface impounding or piling of any hazardous or special waste that is generated on the site or at other sites owned, controlled or operated by the same person; or

(4) stores or accumulates at any time more than 75,000 pounds above ground, or more than 7,500 pounds below ground, of any hazardous substances.

A new potential primary source is:

(i) a potential primary source which is not in existence or for which construction has not commenced at its location as of January 1, 19888; or

(ii) a potential primary source which expands laterally beyond the currently permitted boundary, or if the primary source is not permitted, the boundary in existence as of January 1, 1988; or

(iii) a potential primary source which is part of a facility that undergoes major reconstruction. Such reconstruction shall be deemed to have taken place where the fixed capital cost of the new components constructed within a 2-year period exceed 50% of the fixed capital cost of a comparable entirely new facility.

Construction shall be deemed commenced when all necessary federal, State and local approvals have been obtained, and work at the site has been initiated and proceeds in a reasonably continuous manner to completion.

"Potential secondary source" means any unit at a facility or a site not currently subject to a removal or remedial action, other than a potential primary source which:

(1) is utilized for the landfilling, land treating, or surface impounding of waste that is generated on the site or at other sites owned, controlled or operated by the same person, other than livestock and landscape waste, and construction and demolition debris; or

(2) stores or accumulates at any time more than 25,000 but not more than 75,000 pounds above ground, or more than 2,500 but not more than 7,500 pounds below ground, of any hazardous substances; or

(3) stores or accumulates at any time more than 25,000 gallons above ground, or more than 500 gallons below ground, of petroleum, including crude oil or any fraction thereof which is not otherwise specifically listed or designated as a hazardous substance; or

(4) stores or accumulates pesticides, fertilizers, or road oils for purposes of commercial application or for distribution to retail sales outlets; or

(5) stores or accumulates at any time more than 50,000 pounds of any de-icing agents; or

(6) is utilized for handling livestock waste or for treating domestic wastewaters other than private sewage disposal systems as defined in the "Private Sewage Disposal Licensing Act".

A new potential secondary source is:

(i) a potential secondary source which is not in existence or for which construction has not commenced at its location as of July 1, 1988; or

(ii) a potential secondary source which expands laterally beyond the currently permitted boundary or, if the secondary source is not permitted, the boundary in existence as of July 1, 1988, other than an expansion for handling of livestock waste or for treating domestic wastewaters; or

(iii) a potential secondary source which is part of a facility that undergoes major reconstruction. Such reconstruction shall be deemed to have taken place where the fixed capital cost of the new components constructed within a 2-year period exceed 50% of the fixed capital cost of a comparable entirely new facility.

Construction shall be deemed commenced when all necessary federal, State and local approvals have been obtained, and work at the site has been initiated and proceeds in a reasonably continuous manner to completion.

"Private waste system" means any supply which provides water for drinking, culinary, and sanitary purposes and serves an owner-occupied single family dwelling.

"Public water system" means all mains, pipes and structures through which water is obtained and distributed to the public, including wells and well structures, intakes and cribs, pumping stations, treatment plants, reservoirs, storage tanks and appurtenances, collectively or severally, actually used or intended for use for the purpose of furnishing water for drinking or general domestic use and which serve at least 15 service connections or which regularly serve at least 25 persons at least 60 days per year. A public water supply is either a "community water supply" or a "non-community water supply".

"Regulated recharge area" means a compact geographic area, as determined by the Board, the geology of which renders a potable resource groundwater particularly susceptible to contamination.

"Release" means any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment, but excludes (a) any release which results in exposure to persons solely within a workplace, with respect to a claim which such persons may assert against the employer of such persons; (b) emissions from the engine exhaust of a motor vehicle, rolling stock, aircraft, vessel, or pipeline pumping station engine; (c) release of source, byproduct, or special nuclear material from a nuclear incident, as those terms are defined in the Atomic Energy Act of 1954, if such release is subject to requirements with respect to financial protection established by the Nuclear Regulatory Commission under Section 170 of such Act; and (d) the normal application of fertilizer.

"Resource groundwater" means groundwater that is presently being or in the future capable of being put to beneficial use by reason of being of suitable quality.

"Sanitary landfill" means a facility permitted by the Agency for the disposal of waste on land meeting the requirements of the Resource Conservation and Recovery Act, P.L. 94-580, all regulations thereunder, and without creating nuisances or hazards to public health or safety, confining the refuse to the smallest practical volume and covering it with layer of earth at the conclusion of each day's operation, or by such other methods at intervals as the Board may provide by regulation.

"Semi-private water system" means a water supply which is not a public water system, yet which serves a segment of the public other than an owner-occupied single family dwelling.

"Setback zone" means a geographic area, designated pursuant to this Act, containing a potable water supply well or a potential source or potential route, having a continuous boundary, and within which certain prohibitions or regulations are applicable in order to protect groundwaters.

"Sewage works" means individually or collectively those constructions or devices used for collecting, pumping, treating, and disposing of waste, industrial waste or other wastes or for the recovery of by-products from such wastes.

"Site" means any location, place, tract of land, facilities, including but not limited to buildings, improvements used for purposes subject to regulation control by this Act or regulations thereunder.

"Sludge" means any solid, semi-solid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility or any other special waste having similar characteristics and effects.

"Special waste" means any industrial process waste, pollution control waste or hazardous waste.

"Storage" when used in connection with hazardous waste, means the containment of hazardous waste, means the containment of hazardous waste, either on a temporary basis or for a period of years, in such manner as not to constitute disposal of such hazardous waste.

"Storage site" is a site at which hazardous waste is stored.

"Supplier of water" means any person who owns or operates a water system.

"Treatment" when used in connection with hazardous waste means any method, technique of process, including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste or so as to render such waste nonhazardous, safer for transport, amenable for recovery, amenable for storage, or reduced in volume. Such term includes any activity or processing designed to change the physical form or chemical composition of hazardous waste so as to render it nonhazardous.

"Underground injection" means the subsurface emplacement of fluids by well injection.

"Underground water" means all water beneath the land surface.

"Unit" means any device, mechanism, equipment, or area (exclusive of land utilized only for agricultural production).

"Waste" means any garbage, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility or other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining and agricultural operations, and from community activities, but does not include solid or dissolved material in domestic sewage, or solid or dissolved materials in irrigation return flows or industrial discharges which are point sources subject to permits under Section 402 of the Clean Water Act or source, special nuclear, or by-product materials as defined by the Atomic Energy Act of 1954, as amended (68 Stat. 921) or any solid or dissolved material from any facility subject to the Federal Surface Mining Control and Reclamation Act of 1977 (P.L. 95-87) or the rules and regulations thereunder or any law or rule or regulation adopted by the State of Illinois pursuant thereto.

"Waste disposal site" is a site on which solid waste is disposed.

"Water well" means any excavation that is drilled, cored, bored, washed, driven, dug, jetted or otherwise constructed when the intended use of such excavation is for the location, diversion, artificial recharge, or acquisition of groundwater, but such term does not include an excavation

made for the purpose of obtaining or prospecting for oil, natural gas, minerals or products of mining or quarrying or for inserting media to repressure oil or natural gas bearing formation or for storing petroleum, natural gas or other products or for observation or any other purpose in connection with the development or operation of a gas storage.