ILLINOIS POLLUTION CONTROL BOARD
November 7, 1991

IN THE MATTER OF:	)	
	)	
GROUNDWATER QUALITY STANDARDS	)	R89-14(B)
(35 ILL. ADM. CODE 620)	)	(Rulemaking)

ADOPTED RULE. FINAL ORDER.

OPINION AND ORDER OF THE BOARD (by R.C. Flemal):

This matter comes before the Board pursuant to Section 8 of the Illinois Groundwater Protection Act ("IGPA"), Ill. Rev. Stat. 1989, ch. 111½, pars. 7451 et seq. Section 8 mandates inter alia that the Board promulgate "regulations establishing comprehensive water quality standards which are specifically for the protection of groundwater" (IGPA at Section 8(a)). The purpose of today's action is make final adoption of these groundwater quality standards and the associated basic framework.

PROCEDURAL HISTORY

The Agency filed its original proposal on September 21, 1989.

On January 31, 1990 the Department of Energy and Natural Resources ("DENR") filed the Economic Impact Statement ("EcIS"), which pursuant to the IGPA was prepared concurrently with development of the Agency's proposal.

On March 26, 1990 an alternative proposal was filed by the McHenry County Defenders, Citizens for a Better Environment, and the Illinois Chapter of the Sierra Club (collectively as "Defenders").

On June 1, 1990 the Agency filed its second proposal within Public Comment ("PC") #16.

Hearings on the various proposals and the EcIS were held on December 12 and 13, 1989, and February 14, March 29, and May 7, 1990[1].

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[1] Transcripts of the December 1989 to May 1990 hearings, which are numbered consecutively, are herein cited in the form "R1 at ____".

The Board wishes to acknowledge the special contribution made by Michelle C. Dresdow, who has served as Hearing Officer throughout these proceedings.

Based on the cumulative record then available, the Board on September 27, 1990 advanced its own proposed rule, which was published for First Notice on November 2, 1990[2]. Hearings were held on this proposal on December 4 and 5, 1990[3].

On February 19, 1991 the Agency filed its third amended proposal, which the Board on February 28, 1991 proposed for First Notice as Docket B[4]. Hearing was held on the Docket B proposal on May 30, 1991[5]. At hearing the Agency offered further amendments to its proposal based on renewed discussions, conferences, and negotiation sessions with interested persons. The text of these amendments, which was entered as Exhibit T[6], had been distributed to interested persons prior to the May 30, 1991 hearing.

On July 25, 1991 the Board proposed the Docket B regulations, with modifications, for Second Notice[7]. Given the magnitude of the changes, the Board withheld filing of the Second Notice proposal with the Joint Committee on Administrative Rules ("JCAR") to allow for an additional comment period of 15 days. No comments filed during this period persuaded the Board to recede from its July 25 action, and the proposal was accordingly filed with JCAR.

On October 22, 1991 JCAR issued a certificate of no objection to the proposed rules. Prior to the issuance of the certificate, JCAR staff alerted the Board to several non-substantive grammatical and typographical errors. In addition,

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[2] 14 Ill. Reg. 17822, November 2, 1990.

[3] Transcripts of the December 1990 hearings are herein cited in the form "R2 at _____".

[4] Publication occurred at 15 Ill. Reg. 4234, March 22, 1991.

[5] The transcript of the May 1991 hearing is herein cited in the form "R3 at _____".

[6] The text of the proposed amendments entered as Exhibit T are often referred to in the transcript of the May 30, 1991 hearing as the "May 15 proposal", based upon the date contained on that document.

[7] By the same Order the Board Closed Docket A and withdrew its provisions from further consideration, save for the amendment to 35 Ill. Adm. Code.Part 303 which was transferred to Docket B.

JCAR staff recommended seven other changes involving sections 620.110, 620.250(a)(2), 620.302(b)(1), 620.450(b)(3)(A)(ii), 620.510(b)(1), 620.601(b) and 620.Appendix A(c)(1)(iii). These changes are discussed below in appropriate parts of this opinion and are incorporated into today's order.

The Board is pleased with the high quality perspective that has been brought to bear on this matter, both in hearing testimony and public comments. The Board expresses its appreciation to the many persons who have contributed in one form or another.

STATUTORY FRAMEWORK

The IGPA was enacted by the Illinois General Assembly as an outgrowth of long-standing concern by the General Assembly and the citizens of the State that the State's rich and valued groundwater resources be protected. The IGPA is a multi-faceted policy and program statement designed to provide that protection and to assure the continued viability of the State's groundwater resources. The policy statement of the IGPA is found at Section 2(b) (Ill. Rev. Stat. 1989, ch. 111½, ¶7452(b)), and reads:

> ... 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 the general health, safety, and welfare. It is further recognized as consistent with this policy that the groundwater resources of the State be utilized for beneficial and legitimate purposes; that waste and degradation of the resources be prevented; and that the underground water resources be managed to allow for maximum benefit of the people of the State of Illinois.

The particular mandate of the IGPA pertinent to today's action occurs at Section 8 (Ill. Rev. Stat. 1989, ch. 111½, ¶7458). Section 8 reads:

> a. The Agency, after consultation with the Committee and the Council, shall propose regulations establishing comprehensive water quality standards which are specifically for the protection of groundwater. In preparing such regulations, the Agency shall address, to the extent feasible, those contaminants which have been found in the groundwaters of the State and which are known to cause, or suspected of causing, cancer, birth defects, or any other adverse effect on human health according to nationally accepted

guidelines. Such regulations shall be submitted to the Board by July 1, 1989.

b. Within 2 years after the date upon which the Agency files the proposed regulations, the Board shall promulgate the water quality standards for groundwater. In promulgating these regulations, the Board shall, in addition to the factors set forth in Title VII of the Environmental Protection Act, consider the following:

1. recognition that groundwaters differ in many important respects from surface waters, including water quality, rate of movement, direction of flow, accessibility, susceptibility to pollution, and use;

2. classification of groundwaters on an appropriate basis, such as their utility as a resource or susceptibility to contamination;

3. preference for numerical water quality standards, where possible, over narrative standards, especially where specific contaminants have been commonly detected in groundwaters or where federal drinking water levels or advisories are available;

4. application of nondegradation provisions for appropriate groundwaters, including notification limitations to trigger preventive response activities;

5. relevant experiences from other states where groundwater protection programs have been implemented; and

6. existing methods of detecting and quantifying contaminants with reasonable analytical certainty.

c. To provide a process to expedite promulgation of groundwater quality standards, the provisions of this Section shall be exempt from the requirements of subsection (b) of Section 27 of the "Environmental Protection Act", approved June 29, 1970, as amended; and shall be exempt from the provisions of Sections 4 and 5 of "An Act in relation to natural resources, research, data collection and environmental studies", approved July 1, 1978, as amended.

d. The Department of Energy and Natural Resources, with the cooperation of the Committee and the Agency, shall conduct a study of the economic impact of the regulations developed pursuant to this Section. The study shall include, but need not be limited to, consideration of the criteria established in subsection (a) of Section 4 of "An Act in relation to natural resources, research, data collection and environmental studies", approved July 1, 1978, as amended. This study shall be conducted concurrently with the development of the regulations developed pursuant to this Section. Work on this study shall commence as soon as is administratively practicable after the Agency begins development of the regulations. The study shall be submitted to the Board no later than 60 days after the proposed regulations are filed with the Board.

   The Department shall consult with the Economic Technical Advisory Committee during the development of the regulations and the economic impact study required in this Section and shall consider the comments of the Committee in the study.

e. The Board may combine public hearings on the economic impact study conducted by the Department with any hearings required under Board rules.

In the following sections of this Opinion the Board discusses the various provisions that comprise today's adopted rules.

PART 303
CONFORMING AMENDMENT

Although the principal regulations adopted today consist of new Part 620, the promulgation of Part 620 requires a conforming amendment to 35 Ill. Adm. Code: Subtitle C, Part 303. Since the proposed amendments to Part 303 were published in the Illinois Register on November 2, 1990, more than one year ago, the Board is required to return to first notice on the Part 303 amendments only. Therefore, under separate Opinion and Order, the Board opens a docket C in this proceeding and again sends the Part 303 amendments to first notice.

PART 620
SUBPART A: GENERAL PROVISIONS

New 35 Ill. Adm. Code. Part 620 is designed to contain the principal provisions of today's action. It consists of six

Subparts plus two appendices. Subpart A sets out the general provisions applicable to the entire Part 620.

Except for generally non-substantive changes within the definitions and incorporations sections made in response to post-First Notice public comments[8], Subpart A remains essentially as proposed by the Agency in its third amended proposal.

Purpose -- Section 620.105

Section 620.105 sets forth the purpose of the Part. The Defenders had suggested insertion within this Section of the phrase "to assure that the groundwater resources of the State be utilized for beneficial and legitimate purposes, that waste and degradation of the resources be prevented, and that the underground water resource be managed to allow for maximum benefit of the people of the State of Illinois" (Def. Exh. 7 at proposed Section 620.101). This language comes from the policy statement found at Section 2(b) of the IGPA. While the Board fully stands behind this policy statement, the Board believes that today's Section 620.105 language is a better descriptor of the contents of the Part 620 rules, and therefore opts to use this version. The Board believes that this narrow purpose statement more clearly alerts the public to what is being regulated.

Definitions -- Section 620.110

Section 620.110 contains definitions applicable to Part 620. The intent is to present those definitions necessary for a reading of Part 620, including both definitions that are particular to the Part and those that are statutory; statutory definitions are capitalized, pursuant to standard form.

At second notice, JCAR recommended deletion of the phrase "unless otherwise provided" from the introductory statement at the beginning of this definitions section. The Board agrees to make this change.

General Prohibitions -- Section 620.115

Section 620.115 contains a general prohibition against threatening, causing or allowing a violation of the Illinois Environmental Protection Act, IGPA, or Board regulations, including this Part.

Incorporations by Reference -- Section 620.125

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[8] See discussion at p. 5-8 of Second Notice Opinion, July 25, 1991.

Section 620.125 sets forth incorporations by reference as used within Part 620.

Exemptions from Subtitle C Standards -- Section 620.130

Section 620.130 exempts groundwaters from the General Use Standards or Public and Food Processing Standards of Subparts B and C of 35 Ill. Adm. Code 302. This change, in combination with amendment to Section 303.203 (see above), clarifies the relationship between 35 Ill. Adm. Code.Subtitle C and today's rules.

Exclusion for Underground Water in Certain Man-Made Conduits -- Section 620.135

Section 620.135 explicitly excludes any underground waters that occur in certain man-made conduits from the application of today's regulations. The man-made conduits included are subsurface drains, tunnels, reservoirs, storm sewers, tiles, and sewers[9]. Waters in such conduits do not have the conventional characteristics and properties of groundwater, and it is therefore inappropriate to apply to them water quality standards that are based upon groundwater characteristics and properties.

It is perhaps arguable that Section 620.135 is not necessary since the definition of groundwater itself would seemingly exclude water in most, if not all, of the man-made conduits listed. Thus, if these waters are not groundwaters, groundwater standards would not apply to them. However, the record attests that there is sufficient confusion on this matter (see Agency Statement of Reasons, p. 11; PC #9; PC #10; PC #13) to warrant a definitive exclusion for water in man-made conduits.

It should be recognized that water in man-made conduits is not excused from all water quality standards. To the extent that such waters are "Waters of the State", they would be subject to the water quality standards of Subtitle C. As well, if such waters are discharged to the surface, they would be subject to water quality standards applicable to surface waters. The Illinois Department of Agriculture notes this conclusion with respect to drainage from agricultural field tiles:

> It is inappropriate to apply any numbers or standards to water in a drainage tile except surface water standards at the point of discharge to a surface water,

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[9] Specifically not included are waters within wells or other structures designed to tap groundwater.

at which point one also must consider the effects of mixing. PC #9 at p. 1.

PART 620
SUBPART B: GROUNDWATER CLASSIFICATION

Subpart B sets out today's general groundwater classification system, criteria for classifying specific groundwaters, the concept of management zones, and procedures for amending the classification of any specific groundwater.

Groundwater classification is a well-recognized tool for the optimizing of groundwater protection efforts. Among its many utilities are the opportunity of recognizing the different values, uses, and vulnerabilities of groundwaters (Defenders Exh. 6). Today's rules specifically accord with the mandate of the IGPA at Section 8(b)(2) that the Board consider "classification of groundwaters on an appropriate basis, such as their utility as a resource or susceptibility to contamination".

List of Groundwater Classes -- Section 620.201

Section 620.201 establishes that there are four classes of groundwater. In addition, it establishes that some groundwaters may fall into groundwater management zones, pursuant to Section 620.201. Every groundwater in the State belongs to one of the four classes or to the waters in a groundwater management zone.

The four classes of groundwater derive from concepts presented over the full history of this proceeding, beginning with the Agency's original proposal and the Defenders' counter proposal, and culminating in the Agency's third amended proposal (Docket B). Perhaps no other facet of this proceeding has focused as much effort as has determining how best to classify the State's groundwaters.

Basic to the groundwater classification effort is the concept that groundwater constitutes a valued resource. This principle is articulated in the opening sentence of the State's Groundwater Protection Policy:

> . . . 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. IGPA, Section 2(b).

It is recognized, however, that not all groundwaters constitute the same level of resource; some groundwaters have greater resource value by virtue of their higher quality, quantity, accessibility, etc. Moreover, it is generally agreed that the degree of protection required is in some measure a function of the nature of the particular groundwater resource. This concept constitutes one of the bases for groundwater classification, and the application of different water quality standards, monitoring and remedial requirements, etc., to the different classes.

It is to be further recognized that potability[10] generally constitutes the "highest" use to which groundwaters are put. Potability, as a further generality, requires the highest degree of protection, including the most stringent standards, to maintain the use. Potable-use also is by far the largest use to which groundwaters in Illinois are put, and will be put in any foreseeable future. Given these circumstances, it is apparent that any successful program of groundwater management must give special focus to potable groundwaters. Emphasis on potable groundwaters is recognized in the declaration that the first class of Illinois groundwaters consists of the potable resource groundwaters.

Potable Groundwaters Class -- Section 620.210

Section 620.210 establishes the definition of a Class I: Potable Resource Groundwater. Included are all groundwaters that are located 10 feet or more below the land surface and that, by any one of several tests, produce groundwater in quantities sufficient to sustain a potable use. In addition, Section 620.210 specifically identifies that the Board may add groundwaters to Class I via the adjusted standards procedures spelled out at 620.260.

The tests used to determine potable quantities include demonstrated use, thicknesses associated with aquifers found in various rock types, or suitable hydrogeologic parameters. The latter include water in strata capable of a sustained yield of at least 150 gallons per day in a borehole of reasonable size and over a typical collection thickness[11].

Class I groundwaters clearly include a very broad range of groundwaters. This is fully intended. Moreover, it should be noted that Class I groundwaters include groundwaters of potential potable use as well as groundwaters currently experiencing potable use. A recurrent question regarding the resource-protection concept of groundwater protection has been whether potentially usable groundwaters should be afforded like

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[10] "Potable" is defined at in the IGPA as meaning "generally fit for human consumption in accordance with accepted water supply principles and practices" (Ill. Rev. Stat. 1989, ch. 111 1/2, par. 7453(h)).

[11] The 150 gallons per day limit is that limit which the USEPA defines as a yield sufficient for a groundwater to serve as water source for a household unit (Defender's Exh. 6, p. 39, 45; PC #16 at p. 12-16). The qualifications regarding sustainability of yield and size of borehole plus the hydraulic conductivity condition were first proposed and discussed by the Agency at the May 30, 1991 hearing (R3 at 18-23; Exh. T).

protection to groundwaters actually being used (e.g., R1 at 26, 968-9; PC #6 and #8). The Board previously addressed this issue in R86-8[12]. It there noted:

> Resource groundwaters are, at the minimum, those groundwaters which are presently being put to conventional use by reason of being of suitable quality, having local demand, and having been actually developed. Much of the record also shows that resource groundwaters ought also to include those groundwaters which have the potential for being put to conventional use. This perspective is straightforward, in that it suggests that potential resources should be protected against the eventuality that at least some of them will find use in the future. The Board believes that this is a wholly correct perspective, and accordingly concludes that resource groundwaters should include groundwaters of potential use. (Id. at II-3)

The Board believes that this perspective remains correct today, and accordingly it is incorporated into today's rules. Moreover, the Board believes that the General Assembly also endorsed this perspective by defining in the IGPA that a "'resource groundwater' means a groundwater that is presently being or in the future capable of being put to beneficial use" (IGPA at Section 3(j), Ill. Rev. Stat. 1989, ch. 111 1/2, par. 7453(j); emphasis added). That is, the Board believes that among the most necessary facets of the State's groundwater protection program is the need to protect all drinkable water at a drinkable level. Similarly, the Board does not believe that current actual use should be the sole control of whether potable groundwater is afforded the protection necessary to maintain potability; we simply cannot allow the sullying of a resource that future generations may need. For the same reason the term "Potable Resource Groundwater", rather than "Potable Use Groundwater", is employed in the title of this class.

The Board also notes that today's rules do not attempt to limit the definition of potability by qualifiers relating to time of travel to existing wells or stratigraphic position, as have some earlier proposals. This is in keeping with the position that all naturally potable groundwaters should be recognized as such, irrespective of whether they are currently experiencing use as a potable water supply.

Among the concepts not adopted today is the proposition espoused by the Defenders that to Class I groundwaters should be added all groundwaters hydrologically connected to and upgradient of potable resource groundwaters (R2 at 523; R3 at 269-70); under

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[12] In the Matter of: A Plan for Protecting Illinois Groundwater, R86-8, Report of the Board, August 28, 1986.

the instant rules most such groundwaters would be Class II groundwaters. The Defender's concept is not adopted because it offers little additional groundwater protection at a substantial increase in the regulatory burden.

Lastly, the Board notes that the 10-foot rule arises from the need to recognize that many surface activities can impact very shallow underground water without also impacting the great bulk of potable groundwaters. For example, the agricultural community has expressed substantial concern that establishing standards for groundwater would critically impact agriculture by disallowing the chemical alteration of all subsurface waters, including disallowing use of agricultural chemicals that operate through roots. To assure that this erroneous interpretation is not fostered, and to assure that legitimate use of agricultural chemicals or other legitimate activities are not proscribed, it was proposed at the December 4, 1990 hearing that the potable resource (Class I) groundwater standards specifically apply only to groundwaters below a depth of 10 feet, irrespective of whether these waters would otherwise qualify as potable waters; groundwaters shallower than 10 feet would always be Class II, III, or IV, depending upon the local circumstances.

The Board today endorses the "10-foot" rule as a reasonable compromise between the need to protect potable groundwaters and the need to carry on legitimate surface activities, of which agriculture is but one.

As a further observation on the "10-foot" rule, the Board notes that question has been raised whether potable groundwaters found below 10 feet, but located in a geologic unit that meets one of the thickness criteria only because a part of the unit is at a depth less than 10 feet, would still be considered a Class I water (R3 at 300). The Board intends that the answer to this question be "yes". Simply, if the water is below 10 feet and is naturally potable, it should be supported as a potable water resource. Prior to Second Notice a Board Note to this effect was added to Section 620.210 upon the recommendation of the Agency (PC #58 ¶4).

The General Resource (Default) Class -- Section 620.220

Class II: General Resource Groundwater is, by definition at Section 620.220, the default groundwater class. That is, Class II consists of those groundwaters that are not Class I, III, or IV. For example, a groundwater occurring in a thin shale unit that is not actually producing potable groundwater and that has a hydraulic conductivity less than 1×10^{-4} cm/sec would fall into Class II unless one of the special conditions of Class III or IV should apply. In general, a groundwater would fall into Class II if it is not potable by virtue of quantity or quality limitations, if it has not been otherwise specially classified

according to Class III procedures, or if it is not otherwise limited pursuant to Class IV qualifications.

The Board anticipates that groundwaters in "tight" hydrogeologic units will constitute one of the most common occurrences of Class II groundwaters. These are groundwaters that are unavailable in quantities sufficient for most uses. Another common occurrence is likely to be groundwaters that are not so saline as to warrant classification as Class IV: Other Groundwater, but that nevertheless are too saline to be potable without treatment.

Given the several ways that a groundwater may be classified as a Class II groundwater, in the long term it may be advisable to either subdivide Class II or split out additional classes from Class II. However, the Board believes that this endeavor, should it be undertaken, best awaits some experience with the more general classification adopted here.

Special Resource Groundwater -- Section 620.230

Section 620.230, Class III: Special Resource Groundwater, is derived in concept from the Defenders' proposal, which in turn is based on the United States Environmental Protection Agency's ("USEPA") groundwater classification strategies[13]. The Defenders contend that in certain circumstances a groundwater may take on an ecologically vital role, as for example when its discharge supports a vital wetland (R1 at 969-971). Other examples might include caves, lakes, ponds, streams, and perhaps even the more moist varieties of prairies and forests. In general, the Board believes that the concept of special treatment of unique or ecologically vital groundwaters via more stringent standards is a meritorious concept.

In its First-Notice form Section 620.230 provided for the placement of a groundwater in Class III only though the formal action of the Board pursuant to Section 620.250. At the May 30, 1991 hearing, with the support of the Illinois Nature Preserves Commission (PC #50) and the Illinois Department of Conservation (PC #52), the Agency proposed that groundwaters that contribute to a dedicated nature preserve, as listed by the Agency, also be designated as Class III groundwaters via an alternate, more expeditious route found at subsection (b) (R3 at 24-7). As the Agency notes:

> This will provide a more expedited process to list sites that have already been designated by the Nature Preserve Commission, and also will allow for a review

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[13] See Guidelines for Ground-Water Classification under the EPA Ground-Water Protection Strategy, USEPA Office of Ground-Water Protection, November 1986: Defender's Exh. 6.

> of these sites on a case-by-case basis. Sixty sites have been identified by the Commission as nature preserves that may have an important relationship to groundwaters. The review of this information on a case-by-case basis is important to help determine what relation groundwater has to these sites. (R3 at 26)

The Board notes that any person who feels aggrieved by an Agency decision under subsection (b) would still have recourse to bring the action before the Board pursuant to subsection (a). Moreover, as the Defenders correctly observe, the listing process would "only resolve the question of which nature preserves would be designated as containing Class III groundwater; there may still need to be a Board proceeding to determine the appropriate groundwater standards to apply" (PC #57 at p. 6).

Other Groundwater -- Section 620.240

Section 620.240 sets out criteria for classifying Class IV: Other Groundwater. The purpose of the class is to accommodate certain waters that, due to particular practices or natural conditions, are limited in their resource potential. Included are groundwaters that are naturally saline, groundwaters that occur in the zone of attenuation surrounding a landfill, groundwaters in mining-disturbed areas, and affected groundwaters associated with potential primary or secondary sources, as defined in the IGPA. The class also would contain any groundwater designated by the Board as an exempt aquifer.

Several modifications of Section 620.240 were made in response to First Notice comments. The interested person is direction to the Second Notice Opinion of July 25, 1991 at p. 13-15 for a description and discussion of these modifications.

Groundwater Management Zones -- Section 620.250

Section 620.250 provides for establishment of a management zone within each class of groundwater. A management zone is identified by the Agency for groundwaters that have become impaired due to contamination. In any management zone the goal is remediation, if practicable, of the groundwater to the level of the standards applicable to that class of groundwater (R3 at 32).

Unlike most of the other provisions of today's rules, the concept of a management zone was first introduced into this proceeding in the Agency's Docket B proposal. Previously the various proposals had entertained a "Remedial Groundwater" class into which various "substandard" but potentially remediable groundwaters were to reside temporarily or permanently (e.g., see Section 620.230 of the Board's Docket A proposal, September 27, 1990). As the Agency observes, a persistent problem with a remedial class of groundwater concerns the class to which

remedial groundwaters return after remediation (R3 at 32). As an alternative to a separate remedial class, the Agency turned to the groundwater management zone (Id.). Moreover, the management zone concept also provides a better coupling with RCRA and CERCLA regulations (Id. at 33).

At second notice, JCAR recommended that the form required for the confirmation of an adequate corrective action pursuant to 35 Ill. Adm. Code 620.250(a)(2) be made an appendix to the rule. The Board has agreed to do so, and the form is placed at Appendix D in today's order.

Adjusted Standards -- Section 620.260

Section 620.260 specifies that reclassification of any groundwater can occur as a result of an adjusted standard proceeding before the Board, in accord with the adjusted standard provisions of the Illinois Environmental Protection Act. The Section also specifies the level of justification required of a petitioner and other information to allow the Board to determine the adjusted standard, pursuant to Section 28.1 of the Act.

The Board notes that, in addition to an adjusted standard, recourse to reclassification of a particular groundwater also would be available via the site-specific rulemaking process. Since, there are differences in proofs, conduct of hearings, etc., between adjusted standards proceedings and rulemaking proceedings, any interested person would be advised to consider both before choosing a course of action.

PART 620
SUBPART C: NONDEGRADATION AND PREVENTIVE NOTIFICATION/RESPONSE

Subpart C contains nondegradation provisions and general preventive notification and response actions. These, in part, set the framework for the remainder of Part 620.

Nondegradation -- Section 620.301

Section 620.301 states the basic nondegradation provision of today's rules. Its essence is a prohibition against impairment of any existing or potential use of groundwaters.

A principal area of contention in this proceeding has been whether nondegradation ought to encompass some more stringent prohibition. Alternate proposals have included a prohibition against causing or allowing a statistically significant alteration in groundwater chemistry, or of causing or allowing any change in groundwater chemistry.

The Board today declines to generally extend nondegradation beyond the prohibition against loss of use[14]. The Board does this with some reluctance. Perhaps at some time in the future this step can be taken. However, today we simply do not have the information base, or resources necessary to obtain the information base, upon which to found universal judgments of no (statistical) change in groundwater chemistry.

It has sometimes been said that casting the nondegradation provision as it is today is equivalent to allowing pollution up to the standard. The Board believes that this characterization is too simplistic. Among other matters, the whole preventive notification and response program (see following) is directed toward an early alert to, and staving off, of any increase in contamination in the most sensitive groundwater/potential source situations. Moreover, in other regulations, such as the Board's landfill regulations at 35 Ill. Adm. Code 810-815 and the groundwater regulations at 35 Ill. Adm. Code 615 and 616[15], additional proscriptions against allowing of groundwater quality modifications also occur.

The Board believes that the proper way to characterize today's nondegradation provision is that it consists of the baseline, rule-of-general-applicability. In specific circumstances dictated both by today's rule and by other regulations license to alter the State's groundwaters is significantly more proscribed. Moreover, the Board also would anticipate, as we gain better understanding of the many dynamics of groundwater and sources of groundwater pollution, that these proscriptions also will expand. In fact, at subsection (d) the Board emphasizes its intention of providing for such different nondegradation provisions, including more stringent provisions, applicable under specific circumstances.

Applicability of Preventive Notification/Response -- Section 620.302

Section 620.302 sets forth the circumstance under which preventive notification and preventive response is applicable; the section is a prelude to the preventive notification and response provisions found in Section 620.305 and 620.310. In

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[14] There is one area in which the Board has previously determined that no statistical increase in groundwater contaminants is allowable. That is at the bounds of the zone of attenuation associated with landfills. The Board intends that nothing in today's action overturn this prior determination.

[15] In the Matter of: Groundwater Protection: Regulations for Existing and New Activities Within Setback Zones and Regulated Recharge Areas, (35 Ill. Adm. Code 601, 615, 616, and 617), R89-5, currently in Second Notice.

general, preventive notification and response is applicable only to persons who conduct groundwater monitoring pursuant to some other State or Federal program (R3 at 39). In addition, preventive notification and response is associated only with the high-quality, high-use groundwaters, Class I and Class III groundwaters.

At the recommendation of JCAR, the Board has agreed to insert the appropriate citations after the phrase "state or Federal law or regulation" at 620.302(b)(1).

Preventive Notification Procedures -- Section 620.305

Preventive notification consists of (a) confirmation of results and (b) notification of interested persons. If it is the owner or operator who is required to monitor, the appropriate regulatory agency must be notified of the results. If it is a government agency that is required to monitor, it is the owner or operator who must be notified.

The preventive notification procedures for Class I groundwaters are triggered when numerical limits associated with either of two classes of contaminants is exceeded. These are the contaminants found at Section 620.310(a)(3)(A), which consist of the toxic heavy metals and the more common organic and petrochemical contaminants, and the contaminants identified as carcinogens at Section 620.410(b). For Class III groundwaters the preventive notification trigger is the detection of a contaminant for which there is a standard pursuant to Section 620.430.

It is important to note that these preventive notification triggers are generally much lower than the water quality standard for the same constituents. This is in keeping with the philosophy of becoming alert and reacting to potential problems in high-value groundwaters before these problems can grow to an unmanageable scale. It is further in keeping with the principle that in general it is much more expensive, including public expense, to remediate contaminated groundwater than it is to prevent the occurrence of groundwater contamination.

Preventive Response Activities and Levels -- Section 620.310

Section 620.310 describes preventive response activities that are required upon receipt of a preventive notification. The Section also specifies the preventive response levels[16] used to determine if a detected concentration requires a preventive response. In either case, the purpose of this Section to is to

[16] Prior to the submission of the Docket B proposal, these limits were called "corrective action levels" (e.g., R1 at 114-129).

provide a nexus between the body of today's rules and existing and future regulatory programs that need triggers for corrective action. No new corrective action program is today adopted.

The preventive response levels are set with several conditions in mind (R3 at 43). Among these are that all levels are at or above the practical quantitation limit (PQL); carcinogens, which have potable resources standards set at PQLs (see Section 620.410), are not listed because there is no basis for establishing a preventive response level below a PQL (PC #47 at p. 15). Exceedence[17] of background is employed for metals and the non-carcinogenic organic constituents.

PART 620
SUBPART D: GROUNDWATER QUALITY STANDARDS

Subpart D constitutes the focus of the instant regulations. Within it are contained the actual groundwater standards as mandated by the IGPA. Since the groundwater standards are closely tied to the groundwater classification system of Subpart B, the form of Subpart D parallels that of Subpart B.

Introduction -- Sections 620.401 and 620.405

Section 620.401 establishes the connection between the groundwater classification system presented in Subpart B and the groundwater standards of Subpart D, which is that all groundwater must meet the standards specified for the class to which the groundwater belongs. Section 620.405 provides a narrative standard that prohibits violation of the numeric standards of this Subpart.

Standards for Potable Resource Groundwater -- Section 620.410

Section 620.410 contains the groundwater standards applicable to the Potable Resource Groundwater found in Class I (see discussion of Section 620.210, above). In general, the standards found in this Section are equal to the USEPA's Maximum Concentration Levels ("MCLs)" applicable "at-the-tap" pursuant to the Safe Drinking Water Act ("SDWA"). The MCL levels are specified as water quality standards under the principle that groundwaters that are naturally potable should be available for drinking water supply without treatment.

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[17] The Board notes that within Section 620.310 and several subsequent sections of the First Notice proposal, the word *exceedence* was incorrectly spelled as exceedance. *Exceedence* is derived from the verb *exceed*, which in turn is derived from the Latin *excedere* via the Middle French *exceder* and the Middle English *exceden*; Latin infinitives ending in "ere" generate English nouns ending in "ence".

An historical difficulty with incorporation of numeric standards within regulations is the need to constantly revise the numbers as new information is developed. This difficulty has a particular presence in the instant matter because the USEPA is in the process of a major MCL promulgation effort. Even over the short course of this proceeding the Agency has had to several times revise its standards recommendations in keeping with USEPA's action on MCLs (e.g., PC #47 at p. 17-9; R3 at 49-50; Exh. T; PC #52 at p. 25, 27); it is to be expected that the current MCL list will continue to experience changes within the coming years.

At the First Notice of Docket A the Board proposed to address the matter of changing standards/MCLs of Section 620.410 in what it considered a novel and advantageous method. The Board noted:

> Ordinarily [the USEPA promulgation of new standards/MCLs] would imply that Part 620 regulations would have to be regularly reopened and updated to accommodate new MCLs. However, the Board today proposes a stratagem that both forestalls the need to constantly update the MCL list at Section [620.410] and also assures that the MCLs of Section [620.410] remain current. The stratagem consists of identifying the groundwater standards that apply to Potable Resource Groundwaters as being identical with the MCLs found at 35 Ill. Adm. Code 611.Subpart F. 35 Ill. Adm. Code 611.Subpart F contains the "identical in substance" MCLs promulgated pursuant to the SDWA and the Act. As such, 611.Subpart F is subject to updates every six months, pursuant to the Board's SDWA "identical in substance" update program. (Docket A, Opinion p. 17)

At Second Notice of the instant rules the Board receded from this stratagem in the interest of moving this proceeding forward. However, the Board there noted and here continues to note that it expects from the Agency regular[18] updates of the groundwater standards, parallel to those undertaken for the Public Water Supply Standards at 611.Subpart F.

General Resource Groundwater Standards -- Section 620.420

Section 620.420 establishes standards for Class II: General Resource Groundwaters. Because groundwaters are placed in Class II because they are quality-limited, quantity-limited, or both (see Subpart B discussion above), it is necessary that the

[18] The Board notes that the Defenders urge a regular (perhaps every three years) review of both the Class I and Class II standards (e.g., R3 at 257).

standards that apply to these waters reflect this range of possible attributes. Among the factors considered in determining the Class II numbers are the capabilities of treatment technologies to bring Class II waters to qualities suitable for potable use (R3 at 75). Thus, many Class II standards are based on MCLs as modified to reflect treatment capabilities. For some parameters the Class II standards are based on support of a use other than potability (e.g., livestock watering, irrigation, industrial use) where the different use requires a more stringent standard (R3 at 114-8).

Standards Applicable to Special Resource Groundwaters -- Section 620.430

Section 620.430 specifies that the standards applicable to Class III: Special Resource Groundwater are the same standards applicable to Class I groundwater, except as may be provided by the Board in a proceeding pursuant to Section 620.260. Accordingly, the default values of the standards are the Class I standards, with more stringent standards possible if a justification is made for them.

Standards Applicable to Other Groundwater -- Section 620.440

The existing concentration is the basic standard to be applicable to Class IV Groundwater. It is also provided that specific exceptions apply to groundwaters within a zone of attenuation of a landfill, as defined pursuant to 35 Ill. Adm. Code 811 and 814, and within a previously mined area as defined at Section 620.110. Within a zone of attenuation existing concentrations are not to be exceeded except as caused by leachate. Within a previously mined area existing concentrations are not to be exceeded except for pH, total dissolved solids, and those major ions (chloride, iron, manganese, and sulfate), which are typically disturbed as a result of coal mining.

Alternate Groundwater Standards -- Section 620.450

Section 620.450 recognizes that special groundwater standards are necessarily associated with certain activities, as contrasted to native types of groundwater. These activities today are identified to include sites undergoing corrective action or equivalent corrective processes and sites for surface and underground coal mining activities.

At the recommendation of JCAR, the Board agreed to cite the appropriate citation to 62 Ill. Adm. Code 1780.21(f) and (g) at 620.450(b)(3)(A)(ii).

PART 620
SUBPART E: GROUNDWATER MONITORING AND ANALYTICAL PROCEDURES

Subpart E sets out some minimal conditions associated with groundwater monitoring and analytical procedures. These constitute rules-of-general-applicability; in other regulations further conditions and proscriptions may be added to these. It is to be particularly noted that today's rules contain no new required monitoring program.

An important part of Subpart E is found in the Compliance Procedures of Section 620.505. This Section specifies where compliance determinations may be made. As the Agency notes, this Section "recognizes the practical limitations associated with groundwater monitoring and cleanup under a building, landfill, or tank" (PC #47 at p. 23). Also specified in Section 620.505 are the conditions necessary for a water or monitoring well to serve as a compliance point.

For Section 620.510(b)(1), at the recommendation of JCAR, the Board inserted the word "regulatory" after the word "appropriate", to make it clear that what is referred to is the appropriate regulatory agency.

PART 620
SUBPART F: HEALTH ADVISORIES

Subpart F establishes procedures for developing and issuing a Health Advisory. A Health Advisory is a means for the Agency to establish a guidance level for a chemical substance or a mixture of chemical substances for which a standard has not yet been set under Subpart D. This advisory process is intended to mirror the procedure used by USEPA to account for substances detected in groundwater that do not have a promulgated standard. Also, the Agency notes that this Subpart would codify existing practice by the Agency (Statement of Reasons, p. 28-36).

Because the Health Advisory provision and its attendant Appendices have been presented to the Board without apparent controversy, and because the Board has not itself proposed substantive amendment to the Agency's version, the Board will not here discuss these matters further. The interested person is directed to the Agency's Statement of Reasons, p. 28-36, for more discussion and explanation.

Two changes to the Health Advisory material were recommended by JCAR and accepted by the Board. These are to update certain phraseology and citations connected with the change in public water supply regulations cited in Section 620.601(b); and to delete the term "approximately" and add the terms "at least 5%" in Section 620.Appendix A(c)(1)(iii).

ECONOMIC IMPACT

EcIS Document

On January 31, 1990, DENR filed the EcIS in this matter, titled: "Economic Impact Study for Proposed Groundwater Quality Standards, 35 IL. Admin. Code 620" (DENR Exh. 5). The EcIS was prepared by Camp Dresser & McKee, Inc. The study evaluated groundwater remediation costs using historical data on groundwater contamination in the State and also examined benefits consisting of reduced health risks through decreased exposure to contaminants in groundwater. Pursuant to Section 8 of the IGPA and in an effort to expedite the promulgation of the regulations, the EcIS was conducted concurrently with the development of the regulations. Therefore, the EcIS document focused on various options under consideration during the development of the original Agency proposal, over two years prior to today's action.

Cost Analysis

The EcIS investigators determined that the most significant costs of the regulations can be expected to be groundwater remediation costs; i.e., those costs associated with returning contaminated groundwater to compliance with the standards.

To estimate remediation costs, the EcIS investigators used historical data on groundwater contamination in the State. The analysis focused on costs for prototypical remediation of six parameters representing organic, inorganic, and pesticide contaminants. Cleanup cost estimates ranged from $8.83-$8.85 million for the organic contaminants, $12.84-$13.64 million for the pesticides, and $9.10 million for the inorganic contaminants, per incident over a 20 year period. To derive statewide cleanup costs, the estimated per facility costs were multiplied by an estimated number of sites of contamination (24 volatile organic compound incidents and four pesticide incidents). The estimated costs for these remedial actions would range from $263-$267 million.

By using data on existing incidence of groundwater contamination, the EcIS investigators further assumed that costs could be higher for three reasons. These are that although the Agency did not report an incidence for inorganic contamination of public water supply facilities, it is highly probable that the incidence would be greater than zero. Also, since the regulations could include a greater number of VOC's than the Safe Drinking Water Act MCLs, a greater incidence of contamination can be expected. Lastly, the EcIS investigators believe that the actual number of cleanups required would more likely be closer to the number of facilities that exceed the detection limit than the number that exceed an MCL. The statement is based on their belief that once a contaminant is detected, groundwater

contamination is already likely to exceed enforcement or potable use standards somewhere at the site[19].

Given these considerations, and based upon estimates derived from existing contamination incidences, the EcIS investigators reported estimated costs of $1,141 million for VOC remediation, $238 million for pesticide remediation, and $610 million for inorganic remediation, leading to a total estimated state-wide cleanup cost of $1.99 billion. This was calculated only for sites within 3000 feet of community water supply wells, since the proposed Class I standards at the time of EcIS development were proposed to be applied only within the 3000-foot distance.

In its most recent comments, DENR estimates that the costs under today's version of the rules could be higher since Class I has been expanded to include a larger volume of the State's groundwaters. The EcIS investigators estimated costs 50% higher should Class I (as defined sometime before the completion of the EcIS in January 1990) include all groundwaters rather than the 3000-foot zone. Therefore DENR states that costs for the entire State would be $3.1 billion. DENR recognizes that the addition of provisions for groundwater management zones and adjusted standards options could offset the increase (PC #55).

Benefits Analysis

The EcIS investigators report that the primary benefit of groundwater standards is "reduced health risks through decreased exposure to contaminants in groundwater". They explain the benefits thusly:

> These benefits can be expressed as decreased health care expenses, lower health insurance premiums, reduction in pain and suffering, and a better quality of life for Illinois citizens. Reductions in excess cancer risks . . . [and a]lthough not examined quantitatively, a corresponding decrease in non-carcinogenic health risks also can be anticipated as a result of the proposed regulations.
>
> A second major benefit of the proposed regulations is preservation of groundwater as a resource for future generations. By preventing contamination where possible through preventive management practices and by

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[19] For the same reasons, the EcIS investigators believe that the economic impact of trigger limits which would be somewhere between detection levels and potable use standards would not result in cost savings due to early detection of contamination. That is, they believe that once there is detection, there would most likely already be contamination above potable use standards somewhere on the site, which would require remediation.

> addressing existing contamination through groundwater remediation, the value of the resource is preserved and the availability of groundwater for future use is greatly enhanced.
>
> Other non-quantifiable benefits include avoided decreases in property values proximal to sites of groundwater contamination, avoided restrictions in siting for private and community potable wells, and avoided negative impact on wildlife and ecology of areas served by groundwater base flow. Additionally, the aesthetic value of the state's groundwater reserves will be enhanced by the proposed regulations. Finally, . . . a major portion of the costs of cleanups can actually be considered benefits for engineering firms, construction firms, water utilities, and other parties involved in groundwater remediation.
>
> (EcIS at 6-8 to 6-10)

In Appendix D to the EcIS the EcIS investigators listed information on the toxicological effects of substances to be regulated. Section 5.2.4 of the EcIS discusses calculations of carcinogenic risk factors based on USEPA risk levels defined in terms of excess cancer risks.

Discussion and Comments

One of the major points brought out in comments surrounding and at the March 29, 1990 EcIS hearing is that the EcIS authors did not base analysis upon what was then the Agency's proposal (R. 697-702; PC #16, R89-14 Board First Notice Opinion and Order, September 27, 1990). This was mainly because the EcIS was statutorially required to be conducted concurrently with the development of the proposal. This was done in an effort to inject economic analysis into the process at an early stage. However, it did not anticipate that the proposal would undergo a series of major revisions after completion of the EcIS. Thus, even had the EcIS been conducted on the Agency's proposal as it stood in March 1990, the EcIS could not have addressed the changes in subsequent proposals, including the rules today adopted. Therefore, any examination of economic impact that includes the EcIS must consider the context in which the study was developed and the lack of availability to the EcIS investigators of subsequent revisions.

With that preface, the Board recognizes that if remediation to the level of today's standards is subsequently required through other programs, costs of remediation of groundwater could be substantial. It is important to remember, however, that these are groundwater quality standards, not cleanup standards or requirements. As the EcIS authors realized, site specific considerations can and most likely will determine the nature of

required remediation and what actual cost is to be borne by any particular entity, industry, or government[20]. As stated concerning the concurrent R89-5 proceeding, there is difficulty in applying economic analysis to a rule of general applicability. This is especially true where there are as many varied conditions and unknown circumstances as are likely to be encountered here. It also must be borne in mind that exception procedures associated with adjusted standards and features such as the groundwater management zones must temper any attempt to broadly cast cost estimates.

Another factor in consideration of the EcIS' cost estimates is that the instant regulations do not create or require any new corrective action program; all such programs are part of other regulations already in place or proposed (e.g., RCRA, CERCLA, LUST, waterwell setback regulations, etc.). It is accordingly not appropriate to attribute to today's regulations the cost of corrective actions that are not prompted by today's regulations. The EcIS investigators recognized that the remedial costs properly associated with the instant rules should be "incremental costs over and above the costs associated with the currently applicable regulations for water quality standards and cleanup criteria", but further stated that they did not consider the costs of these other programs because of "the limited number of remediations brought under the current regulatory scheme" (EcIS at ii).

The fact that the EcIS investigators attributed to today's groundwater quality standards all the costs of any potential future remedial action is a serious flaw in the EcIS analysis. Cleanup of contaminants to the levels stated in these rules as required by an appropriate agency during remediation does not mean that all the costs of cleanup should be attributed to adoption of today's rules. The remediation programs already require cleanup of most of the parameters listed in the instant regulations[21], in some cases to levels more stringent than in today's rules. That to date there have been few such cleanups in Illinois does not make the cost of all further cleanups attributable to today's rules.

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[20] Much discussion at hearing and in subsequent comments concerned different treatment techniques and their costs (See generally, R1 at 889-97, 760-1; PC #5).

[21] Some of the parameters in the instant regulations, including iron, total dissolved solids, and boron, are not regulated under RCRA and CERCLA. However, the EcIS investigators observe that it would be unlikely that these parameters could be exceeded without a simultaneous exceedence of one or more parameters which are regulated under RCRA and CERCLA (R1 at 759).

A comprehensive list of benefits was included in the EcIS, though the EcIS investigators did not attempt to quantify them, save for the carcinogenic health risks. Additional benefits identified at hearing include reduced expenses to obtain alternate water supplies necessary to replace contaminated current supplies, and reduced expenses for treatment of water at well heads to render it potable or suitable for industrial use (R1 at 820, 830-2). It is important to note that although the benefits currently cannot be quantified, they are thereby no less real or substantial; it is only that they cannot be identified in terms of reliable, specific dollar figures.

ORDER

The Clerk of the Board is directed to submit the text of the following amendments to the Secretary of State for final notice pursuant to Section 6 of the Illinois Administrative Procedures Act.

TITLE 35: ENVIRONMENTAL PROTECTION
SUBTITLE F: PUBLIC WATER SUPPLIES
CHAPTER I: POLLUTION CONTROL BOARD

PART 620
GROUNDWATER QUALITY

SUBPART A: GENERAL

SUBPART B: GROUNDWATER CLASSIFICATION

SUBPART C: NONDEGRADATION PROVISIONS FOR APPROPRIATE GROUNDWATERS

SUBPART D: GROUNDWATER QUALITY STANDARDS

SUBPART E: GROUNDWATER MONITORING AND ANALYTICAL PROCEDURES

SUBPART F: HEALTH ADVISORIES

AUTHORITY: Implementing and authorized by Section 8 of the Illinois Groundwater Protection Act (Ill. Rev. Stat. 1989, ch. 111 1/2, par. 7458).

SOURCE: Adopted in R89-14(B) at ____ Ill. Reg., _____, effective _____.

NOTE: Capitalization denotes statutory language.

SUBPART A: GENERAL

Section 620.105 Purpose

This Part prescribes various aspects of groundwater quality, including method of classification of groundwaters, nondegradation provisions, standards for quality of groundwaters, and various procedures and protocols for the management and protection of groundwaters.

Section 620.110 Definitions

The definitions of the Environmental Protection Act (Ill. Rev. Stat. 1989, ch. 111 1/2, par. 1001 et seq.) and the Groundwater Protection Act (Ill. Rev. Stat. 1989, ch. 111 1/2, pars. 7451 et seq.) apply to this Part. The following definitions also apply to this Part.

"Act" means the Environmental Protection Act (Ill. Rev. Stat. 1989, ch. 111 1/2, pars. 1001 et seq.).

"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. (Section 3(b) of the IGPA)

"BETX" means the sum of the concentrations of benzene, ethylbenzene, toluene, and xylenes.

"Board" means the Illinois Pollution Control Board.

"Carcinogen" means a chemical, or complex mixture of closely related chemicals, which has been listed or classified in the Integrated Risk Information System or as specified in a final rule adopted by USEPA in accordance with USEPA Guidelines for Carcinogenic Risk Assessment, incorporated by reference at Section 620.125, to be a group A, B_1, or B_2 carcinogen.

"COMMUNITY WATER SUPPLY" MEANS A PUBLIC SUPPLY WHICH SERVES OR IS INTENDED TO SERVE AT LEAST 15 SERVICE CONNECTIONS USED BY RESIDENTS OR REGULARLY SERVES AT LEAST 25 RESIDENTS. (Section 3.05 of the Act)

"CONTAMINANT" MEANS ANY SOLID, LIQUID, OR GASEOUS MATTER, ANY ODOR, OR ANY FORM OF ENERGY, FROM WHATEVER SOURCE. (Section 3.06 of the Act)

"Corrective action process" means those procedures and practices that may be imposed by a regulatory agency when a determination has been made that contamination of groundwater has taken place, and are necessary to address a potential or existing violation of the standards set forth in Subpart D.

"Cumulative impact area" means the area, including the coal mine area permitted under the Surface Coal Mining Land Conservation Act (Ill. Rev. Stat. 1989, ch. 96 1/2, pars. 7901.01 et seq., as amended) and 62 Ill. Adm. Code 1700 through 1850, within which impacts resulting from the proposed operation may interact with the impacts of all anticipated mining on surface water and groundwater systems.

"Detection" means the identification of a contaminant in a sample at a value equal to or greater than the:

> "Method Detection Limit" or "MDL" which means the minimum concentration of a substance that can be measured as reported with 99 percent confidence that the true value is greater than zero, pursuant to 56 Fed. Reg. 3526-3597, incorporated by reference at Section 620.125; or
>
> "Method Quantitation Limit" or "MQL" which means the minimum concentration of a substance that can be measured and reported pursuant to "Test Methods for Evaluating Solid Wastes, Physical/ Chemical Methods", incorporated by reference at Section 620.125.

"Department" means the Illinois Department of Energy and Natural Resources.

"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. (Section 3.64 of the Act)

"Hydrologic balance" means the relationship between the quality and quantity of water inflow to, water outflow from, and water storage in a hydrologic unit such as a drainage basin, aquifer, soil zone, lake, or reservoir. It encompasses the dynamic relationships among precipitation, runoff, evaporation, and changes in ground and surface water storage.

"IGPA" means the Illinois Groundwater Protection Act. (Ill. Rev. Stat. 1989, ch. 111 1/2, pars. 7451 et seq.)

"LOAEL" or "Lowest observable adverse effect level" means the lowest tested concentration of a chemical or substance which produces a statistically significant increase in frequency or severity of non-overt adverse effects between the exposed population and its appropriate control. LOAEL may be determined for a human population (LOAEL-H) or an animal population (LOAEL-A).

"NOAEL" or "No observable adverse effect level" means the highest tested concentration of a chemical or substance which does not produce a statistically significant increase in frequency or severity of non-overt adverse effects between the exposed population and its appropriate control. NOAEL may be determined for a human population (NOAEL-H) or an animal population (NOAEL-A)

"NON-COMMUNITY WATER SUPPLY" MEANS A PUBLIC WATER SUPPLY THAT IS NOT A COMMUNITY WATER SUPPLY. (Section 3.05)

"Off-site" means not on-site.

"On-site" means on the same or geographically contiguous property which may be divided by public or private right-of-way, provided the entrance and exit between properties is at a crossroads intersection and access is by crossing as opposed to going along the right-of-way. Noncontiguous properties owned by the same person but connected by a right-of-way which he controls and to which the public does not have access is also considered on-site property.

"Operator" means the person responsible for the operation of a site, facility or unit.

"Owner" means the person who owns a site, facility or unit or part of a site, facility or unit, or who owns the land on which the site, facility or unit is located.

"POTABLE" MEANS GENERALLY FIT FOR HUMAN CONSUMPTION IN ACCORDANCE WITH ACCEPTED WATER SUPPLY PRINCIPLES AND PRACTICES. (Section 3.65 of the Act)

"POTENTIAL PRIMARY SOURCE" MEANS ANY UNIT AT A FACILITY OR SITE NOT CURRENTLY SUBJECT TO A REMOVAL OR REMEDIAL ACTION WHICH:

> IS UTILIZED FOR THE TREATMENT, STORAGE, OR DISPOSAL OF ANY HAZARDOUS OR SPECIAL WASTE NOT GENERATED AT THE SITE; OR

IS UTILIZED FOR THE DISPOSAL OF MUNICIPAL WASTE NOT GENERATED AT THE SITE, OTHER THAN LANDSCAPE WASTE AND CONSTRUCTION AND DEMOLITION DEBRIS; OR

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

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. (Section 3.59 of the Act)

"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. (Section 3.58 of the Act)

"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:

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

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

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

STORES OR ACCUMULATES PESTICIDES, FERTILIZERS, OR ROAD OILS FOR PURPOSES OF COMMERCIAL APPLICATION OR FOR DISTRIBUTION TO RETAIL SALES OUTLETS; OR

STORES OR ACCUMULATES AT ANY TIME MORE THAN 50,000 POUNDS OF ANY DE-ICING AGENT; OR

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, Ill. Rev. Stat. 1989, ch. 111 1/2, par. 116.301 et seq. (Section 3.60 of the Act)

"Practical Quantitation Limit" or "PQL" means the lowest concentration or level that can be reliably measured within specified limits of precision and accuracy during routine laboratory operating conditions in accordance with "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods", EPA Publication No. SW-846, incorporated by reference at Section 620.125.

"Previously mined area" means land disturbed or affected by coal mining operations prior to February 1, 1983.

(Board Note: February 1, 1983, is the effective date of the Illinois permanent program regulations implementing the Surface Coal Mining Land Conservation and Reclamation Act (Ill. Rev. Stat. 1989, ch. 96 1/2, pars. 7901.1 et seq., as amended) as codified in 62 Ill. Adm. Code 1700 through 1850.)

"Property class" means the class assigned by a tax assessor to real property for purposes of real estate taxes.

(Board Note: The property class [rural property, residential vacant land, residential with dwelling, commercial residence, commercial business, commercial office, or industrial] is identified on the property record card maintained by the tax assessor in accordance with the Illinois Real Property Appraisal Manual [February 1987], published by the Illinois Department of Revenue, Property Tax Administration Bureau.)

"PUBLIC WATER SUPPLY" 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". (Section 3.28 of the Act)

"Regulated entity" means a facility or unit regulated for groundwater protection by any state or federal agency.

"Regulatory agency" means the Illinois Environmental Protection Agency, Department of Public Health, Department of Agriculture, Department of Mines and Minerals, and the Office of State Fire Marshal.

"REGULATED RECHARGE AREA" MEANS A COMPACT GEOGRAPHIC AREA, AS DETERMINED BY THE BOARD pursuant to Section 17.4 of the Act, THE GEOLOGY OF WHICH RENDERS A POTABLE RESOURCE GROUNDWATER PARTICULARLY SUSCEPTIBLE TO CONTAMINATION. (Section 3.67 of the Act)

"RESOURCE GROUNDWATER" MEANS GROUNDWATER THAT IS PRESENTLY BEING, OR IN THE FUTURE IS CAPABLE OF BEING, PUT TO BENEFICIAL USE BY REASON OF BEING OF SUITABLE QUALITY. (Section 3.66 of the Act)

"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. (Section 3.61 of the Act)

"Site" MEANS ANY LOCATION, PLACE, TRACT OF LAND, AND FACILITIES, INCLUDING BUT NOT LIMITED TO, BUILDINGS AND IMPROVEMENTS USED FOR PURPOSES SUBJECT TO REGULATION OR CONTROL BY the ACT OR REGULATIONS THEREUNDER. (Section 3.43 of the Act)

"Spring" means a natural surface discharge of an aquifer from rock or soil.

"Threshold dose" means the lowest dose of a chemical at which a specified measurable effect is observed and below which it is not observed.

"Treatment" means the technology, treatment techniques, or other procedures for compliance with 35 Ill. Adm. Code: Subtitle F.

"UNIT" MEANS ANY DEVICE, MECHANISM, EQUIPMENT, OR AREA (EXCLUSIVE OF LAND UTILIZED ONLY FOR AGRICULTURAL PRODUCTION). (Section 3.62) of the Act)

"USEPA" or "U.S. EPA" means the United States Environmental Protection Agency.

Section 620.115 Prohibition

No person shall cause, threaten or allow a violation of the Act, the IGPA or regulations adopted by the Board thereunder, including but not limited to this Part.

Section 620.125 Incorporations by Reference

a) The Board incorporates the following material by reference:

ASTM. American Society for Testing and Materials, 1976 Race Street, Philadelphia, Pa. 19103 (215) 299-5585

"Standard Practice for Description and Identification of Soils (Visual Manual Procedure)" D2488-84

GPO. Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20401, (202) 783-3238):

Maximum Contaminant Level Goals and National Primary Drinking Water Regulations for Lead and Copper; Final Rule, 56 Fed. Reg. 26460-26564 (June 7, 1991).

National Primary Drinking Water Regulations, Final Rule, 56 Fed. Reg. 3526-3597 (January 30, 1991).

USEPA Guidelines for Carcinogenic Risk Assessment, 51 Fed. Reg. 33992-34003 (September 24, 1986).

NCRP. National Council on Radiation Protection, 7910 Woodmont Ave., Bethesda, MD (301) 657-6252

"Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure", NCRP Report Number 22, June 5, 1959.

NTIS. National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161 (703) 487-4600.

"Methods for Chemical Analysis of Water and Wastes," EPA Publication No. EPA-600/4-79-020, (March 1983), Doc. No. PB 84-128677

"Methods for the Determination of Organic Compounds in Drinking Water", EPA, EMSL, EPA-600/4-88/039 (Dec. 1988), Doc. No. PB 89-220461

"Practical Guide for Ground-Water Sampling", EPA Publication No. EPA/600/2-85/104 (September 1985), Doc. No. PB 86-137304

"Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods", EPA Publication No. SW-846 (Third Edition, 1986, as amended by Revision I (December 1987), Doc. No. PB 89-148076

USGS. United States Geological Survey, 1961 Stout St., Denver, CO 80294 (303) 844-4169

"Techniques of Water Resources Investigations of the United States Geological Survey, Guidelines for Collection and Field Analysis of Ground-Water Samples for Selected Unstable Constituents", Book I, Chapter D2 (1981).

b) This Section incorporates no later editions or amendments.

Section 620.130 Exemption from General Use Standards and Public and Food Processing Water Supply Standards

Groundwater is not required to meet the general use standards and public and food processing water supply standards of 35 Ill. Adm. Code 302.Subparts B and C.

Section 620.135 Exclusion for Underground Waters in Certain Man-Made Conduits

This Part does not apply to underground waters contained in man-made subsurface drains, tunnels, reservoirs, storm sewers, tiles or sewers.

SUBPART B: GROUNDWATER CLASSIFICATION

Section 620.201 Groundwater Designations

All groundwaters of the State are designated as:

a) One of the following four classes of groundwater in accordance with Sections 620.210 through 620.240:

1) Class I: Potable Resource Groundwater

2) Class II: General Resource Groundwater;

3) Class III: Special Resource Groundwater;

4) Class IV: Other Groundwater; or

b) A groundwater management zone in accordance with Section 620.250.

Section 620.210 Class I: Potable Resource Groundwater

Except as provided in Sections 620.230, 620.240, or 620.250, Potable Resource Groundwater is:

a) Groundwater located 10 feet or more below the land surface and within:

1) The minimum setback zone of a well which serves as a potable water supply and to the bottom of such well;

2) Unconsolidated sand, gravel or sand and gravel which is 5 feet or more in thickness and that contains 12 percent or less of fines (i.e. fines which pass through a No. 200 sieve tested according to ASTM Standard Practice D2488-84, incorporated by reference at Section 620.125);

3) Sandstone which is 10 feet or more in thickness, or fractured carbonate which is 15 feet of more in thickness; or

4) Any geologic material which is capable of a:

A) Sustained groundwater yield, from up to a 12 inch borehole, of 150 gallons per day or more from a thickness of 15 feet or less; or

B) Hydraulic conductivity of 1×10^{-4} cm/sec or greater using one of the following test methods or its equivalent:

i) Permeameter;

ii) Slug test; or

iii) Pump test.

b) Any groundwater which is determined by the Board pursuant to petition procedures set forth in Section 620.260, to be capable of potable use.

(Board Note: Any portion of the thickness associated with the geologic materials as described in subsections 620.210(a)(2), (a)(3) or (a)(4) should be designated as Class I: Potable Resource Groundwater if located 10 feet or more below the land surface.)

Section 620.220 Class II: General Resource Groundwater

Except as provided in Section 620.250, General Resource Groundwater is:

a) Groundwater which does not meet the provisions of Section 620.210 (Class I), Section 620.230 (Class III), or Section 620.240 (Class IV).

b) Groundwater which is found by the Board, pursuant to the petition procedures set forth in Section 620.260, to be capable of agricultural, industrial, recreational or other beneficial uses.

Section 620.230 Class III: Special Resource Groundwater

Except as provided in Section 620.250, Special Resource Groundwater is:

a) Groundwater that is determined by the Board, pursuant to the procedures set forth in Section 620.260, to be:

1) Demonstrably unique (e.g., irreplaceable sources of groundwater) and suitable for application of a water quality standard more stringent than the otherwise applicable water quality standard specified in Subpart D; or

2) Vital for a particularly sensitive ecological system.

b) Groundwater that contributes to a dedicated nature preserve that is listed by the Agency as set forth below:

1) A written request to list a dedicated nature preserve under this subsection must contain, at a minimum, the following information:

   A) A general description of the site and the surrounding land use;

   B) A topographic map or other map of suitable scale denoting the location of the dedicated nature preserve;

   C) A general description of the existing groundwater quality at and surrounding the dedicated nature preserve;

   D) A general geologic profile of the dedicated nature preserve based upon the most reasonably available information, including but not limited to geologic maps and subsurface groundwater flow directions; and

   E) A description of the interrelationship between groundwater and the nature of the site.

2) Upon confirmation by the Agency of the technical adequacy of a written request, the Agency shall publish the proposed listing of the dedicated nature preserve in the Environmental Register for a 45-day public comment period. Within 60 days after the close of the public comment period, the Agency shall either publish a final listing of the dedicated nature preserve in the Environmental Register or provide a written response to the requestor specifying the reasons for not listing the dedicated nature preserve.

3) At least once annually, the Agency shall publish in the Environmental Register a complete listing of all dedicated nature preserves listed under this subsection.

4) For purposes of this Section the term "dedicated nature preserve" means a nature preserve that is dedicated pursuant to the Illinois Natural Areas Preservation Act (Ill. Rev. Stat. 1989, ch. 105, pars. 701 et seq.).

Section 620.240 Class IV: Other Groundwater

Except as provided in Section 620.250, Other Groundwater is:

a) Groundwater within a zone of attenuation as provided in 35 Ill. Adm. Code 811 and 814;

b) Groundwater within a point of compliance as provided in 35 Ill. Adm. Code 724, but not to exceed a distance of 200 feet from a potential primary or secondary source.

c) Groundwater that naturally contains more than 10,000 mg/L of total dissolved solids;

d) Groundwater which has been designated by the Board as an exempt aquifer pursuant to 35 Ill. Adm. Code 730.104; or

e) Groundwater which underlies a potential primary or secondary source, in which contaminants may be present from a release, if the owner or operator of such source notifies the Agency in writing and the following conditions are met:

1) The outermost edge is the closest practicable distance from such source, but does not exceed:

A) A lateral distance of 25 feet from the edge of such potential source or the property boundary, whichever is less; and

B) A depth of 15 feet from the bottom of such potential source or the land surface, whichever is greater;

2) The source of any release of contaminants to groundwater has been controlled;

3) Migration of contaminants within the site resulting from a release to groundwater has been minimized;

4) Any on-site release of contaminants to groundwater has been managed to prevent migration off-site; and

5) No potable water well exists within the outermost edge as provided in subsection (e)(1).

f) Groundwater which underlies a coal mine refuse disposal area not contained within an area from which overburden has been removed, a coal combustion waste disposal area at a surface coal mine authorized under Section 21(s) of the Act, or an impoundment that contains sludge, slurry, or precipitated process material at a coal preparation plant, in which contaminants may be present, if such area or impoundment was placed into

operation after February 1, 1983, if the owner and operator notifies the Agency in writing, and if the following conditions are met:

1) The outermost edge is the closest practicable distance, but does not exceed:

   A) A lateral distance of 25 feet from the edge of such area or impoundment, or the property boundary, whichever is less; and

   B) A depth of 15 feet from the bottom of such area or impoundment, or the land surface, whichever is greater;

2) The source of any release of contaminants to groundwater has been controlled;

3) Migration of contaminants within the site resulting from a release to groundwater has been minimized;

4) Any on-site release of contaminants to groundwater has been managed to prevent migration off-site; and

5) No potable water well exists within the outermost edge as provided in subsection (e)(1).

g) Groundwater within a previously mined area, unless monitoring demonstrates that the groundwater is capable of consistently meeting the standards of Sections 620.410 or 620.420. If such capability is determined, groundwater within the previously mined area shall not be Class IV.

Section 620.250 Groundwater Management Zone

a) Within any class of groundwater, a groundwater management zone may be established as a three dimensional region containing groundwater being managed to mitigate impairment caused by the release of contaminants from a site:

1) That is subject to a corrective action process approved by the Agency; or

2) For which the owner or operator undertakes an adequate corrective action in a timely and appropriate manner and provides a written confirmation to the Agency. Such confirmation must be provided in a form as prescribed by the Agency.

b) A groundwater management zone is established upon concurrence by the Agency that the conditions as specified in subsection (a) are met and groundwater management continues for a period of time consistent with the action described in that subsection.

c) A groundwater management zone expires upon the Agency's receipt of appropriate documentation which confirms the completion of the action taken pursuant to subsection (a) and which confirms the attainment of applicable standards as set forth in Subpart D. The Agency shall review the on-going adequacy of controls and continued management at the site if concentrations of chemical constituents, as specified in Section 620.450(a)(4)(B), remain in groundwater at the site following completion of such action. The review must take place no less often than every 5 years and the results must be presented to the Agency in a written report.

Section 620.260 Reclassification of Groundwater by Adjusted Standard

Any person may petition the Board to reclassify a groundwater in accordance with the procedures for adjusted standards specified in Section 28.1 of the Act and 35 Ill. Adm. Code 106.Subpart G. In any proceeding to reclassify specific groundwater by adjusted standard, in addition to the requirements of 35 Ill. Adm. Code 106.Subpart G, and Section 28.1(c) of the Act, the petition shall, at a minimum, contain information to allow the Board to determine:

a) The specific groundwater for which reclassification is requested, including but not limited to geographical extent of any aquifers, depth of groundwater, and rate and direction of groundwater flow and that the specific groundwater exhibits the characteristics of the requested class as set forth in Sections 620.210(b), 620.220(b), 620.230, or 620.240(b);

b) Whether the proposed change or use restriction is necessary for economic or social development, by providing information including, but not limited to, the impacts of the standards on the regional economy, social benefits such as loss of jobs or closing of facilities, and economic analysis contrasting the health and environmental benefits with costs likely to be incurred in meeting the standards would be beneficial or necessary;

c) Existing and anticipated uses of the specific groundwater;

d) Existing and anticipated quality of the specific groundwater;

e) Existing and anticipated contamination, if any, of the specific groundwater;

f) Technical feasibility and economic reasonableness of eliminating or reducing contamination of the specific groundwater or of maintaining existing water quality;

g) The anticipated time period over which contaminants will continue to affect the specific groundwater;

h) Existing and anticipated impact on any potable water supplies due to contamination;

i) Availability and cost of alternate water sources or of treatment for those users adversely affected;

j) Negative or positive effect on property values; and

k) For special resource groundwater, negative or positive effect on:

   1) The quality of surface waters; and

   2) Wetlands, natural areas, and the life contained therein, including endangered or threatened species of plant, fish or wildlife listed pursuant to the Endangered Species Act, 16 U.S.C. 1531 et seq., or the Illinois Endangered Species Protection Act (Ill. Rev. Stat. 1989, ch. 8, par. 331 et seq.).

SUBPART C: NONDEGRADATION PROVISIONS FOR APPROPRIATE GROUNDWATERS

Section 620.301 General Prohibition Against Use Impairment of Resource Groundwater

a) No person shall cause, threaten or allow the release of any contaminant to a resource groundwater such that:

1) Treatment or additional treatment is necessary to continue an existing use or to assure a potential use of such groundwater; or

2) An existing or potential use of such groundwater is precluded.

b) Nothing in this Section shall prevent the establishment of a groundwater management zone pursuant to Section 620.250 or a cumulative impact area within a permitted site.

c) Nothing in this Section shall limit underground injection pursuant to a permit issued by the Agency under the Act or issued by the Department of Mines and Minerals under "An Act in relation to oil, gas, coal and other surface and underground resources and to repeal an Act herein named" (Ill. Rev Stat. 1989, ch. 96 1/2, pars. 5401 et seq., as amended).

d) Nothing in this Section shall limit the Board from promulgating nondegradation provisions applicable to particular types of facilities or activities which impact upon groundwater, including but not limited to landfills regulated pursuant to 35 Ill. Adm. Code.Subtitle G.

Section 620.302 Applicability of Preventive Notification and Preventive Response Activities

a) Preventive notification and preventive response as specified in Sections 620.305 through 620.310 applies to:

1) Class I groundwater under Section 620.210(a)(1), (a)(2), or (a)(3) which is monitored by the persons listed in subsection (b); or

2) Class III groundwater which is monitored by the persons listed in subsection (b).

b) For purposes of subsection (a), the persons that conduct groundwater monitoring are:

1) An owner or operator of a regulated entity for which groundwater quality monitoring must be performed pursuant to State or Federal law or regulation (e.g. Sections 106 and 107 of the Comprehensive Environmental Response, Compensation and Liability Act, (42 U.S.C. 9601, et seq.); Sections 3004 and 3008 of the Resource Conservation and Recovery Act, (42 U.S.C. 6901, et seq.); Sections 4(q), 4(v), 12(g), 21(d), 21(f), 22.2(f), 22.2(m) and 22.18 of the Act; 35 Ill. Adm. Code 724, 725, 730, 731, 750, 811 and 814.)"

2) An owner or operator of a public water supply well who conducts groundwater quality monitoring; or

3) A state agency which is authorized to conduct, or is the recipient of, groundwater quality monitoring data (e.g., Illinois Environmental Protection Agency, Department of Public Health, Department of Conservation, Department of Mines and Minerals, Department of Agriculture, Office of State Fire Marshall or Department of Energy and Natural Resources).

c) If a contaminant exceeds a standard set forth in Section 620.410 or Section 620.430, the appropriate remedy is corrective action and Sections 620.305 and 620.310 do not apply.

Section 620.305 Preventive Notification Procedures

a) Pursuant to groundwater quality monitoring as described in Section 620.302, a preventive notification must occur whenever a contaminant:

1) Listed under Section 620.310(a)(3)(A) is detected (except due to natural causes) in Class I groundwater; or

2) Denoted as a carcinogen under Section 620.410(b) is detected in Class I groundwater; or

3) Subject to a standard under Section 620.430 is detected (except due to natural causes) in Class III groundwater.

b) When a preventive notification is required for groundwater which is monitored by a regulated entity for the subject contaminant, the owner or operator of the site shall confirm the detection by resampling the monitoring well. This resampling shall be made within 30 days of the date on which the first sample analyses are received. The owner or operator shall provide a

preventive notification to the appropriate regulatory agency of the results of the resampling analysis within 30 days of the date on which the sample analyses are received, but no later than 90 days after the results of the first samples were received.

c) When a preventive notification is required for groundwater which is monitored by a regulatory agency, such agency shall notify the owner or operator of the site where the detection has occurred. The owner or operator shall confirm the detection by resampling within 30 days of the date of the notice by the regulatory agency. The owner or operator shall provide preventive notification to the regulatory agency of the results of the resampling analysis within 30 days of the date on which the sample analyses are received, but no later than 90 days after the results of the first samples were received.

d) When a preventive notification of a confirmed detection has been provided by an owner or operator pursuant to this Section, additional detections of the same contaminant do not require further notice, provided that the groundwater quality conditions are substantially unchanged or that preventive response is underway for such contaminant.

Section 620.310 Preventive Response Activities

a) The following preventive assessment must be undertaken:

1) If a preventive notification under Section 620.305(c) is provided by a community water supply:

A) The Agency shall notify the owner or operator of any identified potential primary source, potential secondary source, potential route, or community water supply well that is located within 2,500 feet of the wellhead.

B) The owner or operator notified under subsection (a)(1)(A) shall, within 30 days of the date of issuance of such notice, sample each water well or monitoring well for the contaminant identified in the notice if the contaminant or material containing such contaminant is or has been stored, disposed, or otherwise handled at the site. If a contaminant identified under Section 620.305(a) is detected, then the well must be resampled within 30 days of the date on which the first sample analyses are received. If a

contaminant identified under Section 620.305(a) is detected by the resampling, preventive notification must be given as set forth in Section 620.305.

C) If the Agency receives analytical results under subsection (a)(1)(B) that show a contaminant identified under Section 620.305(a) has been detected, the Agency shall:

i) Conduct a well site survey pursuant to Section 17.1(d) of the Act, if such a survey has not been previously conducted within the last 5 years; and

ii) Identify those sites or activities which represent a hazard to the continued availability of groundwaters for public use unless a groundwater protection needs assessment has been prepared pursuant to Section 17.1 of the Act.

2) If a preventive notification is provided under Section 620.305(c) by a non-community water supply or for multiple private water supply wells, the Department of Public Health shall conduct a sanitary survey within 1,000 feet of the wellhead of a non-community water supply or within 500 feet of the wellheads for multiple private water supply wells.

3) If a preventive notification under Section 620.305(b) is provided by the owner or operator of a regulated entity and the applicable standard in Subpart D has not been exceeded:

A) The appropriate regulatory agency shall determine if any of the following occurs for Class I: Potable Resource Groundwater:

i) The levels set forth below are exceeded or are changed for pH:

Constituent	Criterion (mg/L)
para-Dichlorobenzene	0.005
ortho-Dichlorobenzene	0.01
Ethylbenzene	0.03
Phenols	0.001
Styrene	0.01
Toluene	0.04

Xylenes	0.02

ii) A statistically significant increase occurs above background (as determined pursuant to other regulatory procedures (e.g., 35 Ill. Adm. Code 616, 724, 725 or 811)) for arsenic, cadmium, chromium, cyanide, lead or mercury (except due to natural causes); or for aldicarb, atrazine, carbofuran, endrin, lindane (gamma-hexachlor cyclohexane), 2,4-D, 1,1-dichloroethylene, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, methoxychlor, monochlorobenzene, 2,4,5-TP (Silvex) and 1,1,1-trichloroethane.

iii) For a chemical constituent of gasoline, diesel fuel, or heating fuel, the constituent exceeds the following:

Constituent	Criterion (mg/L)
BETX	0.095

iv) For pH, a statistically significant change occurs from background.

(Board Note: Constituents that are carcinogens have not been listed in subsection (a)(3)(A) because the standard is set at the PQL and any exceedence thereof is a violation subject to corrective action.)

B) The appropriate agency shall determine if, for Class III: Special Resource Groundwater, the levels as determined by the Board are exceeded.

C) The appropriate regulatory agency shall consider whether the owner or operator reasonably demonstrates that:

i) The contamination is a result of contaminants remaining in groundwater from a prior release for which appropriate action was taken in accordance with laws and regulations in existence at the time of the release;

ii) The source of contamination is not due to the on-site release of contaminants; or

iii) The detection resulted from error in sampling, analysis, or evaluation.

D) The appropriate regulatory agency shall consider actions necessary to minimize the degree and extent of contamination.

b) The appropriate regulatory agency shall determine whether a preventative response must be undertaken based on relevant factors including, but not limited to, the considerations in subsection (a)(3).

c) After completion of preventive response pursuant to authority of an appropriate regulatory agency, the concentration of a contaminant listed in subsection (a)(3)(A) in groundwater may exceed 50 percent of the applicable numerical standard in Subpart D only if the following conditions are met:

1) The exceedence has been minimized to the extent practicable;

2) Beneficial use, as appropriate for the class of groundwater, has been assured; and

3) Any threat to public health or the environment has been minimized.

d) Nothing in this Section shall in any way limit the authority of the State or of the United States to require or perform any corrective action process.

SUBPART D: GROUNDWATER QUALITY STANDARDS

Section 620.401 Applicability

Groundwaters must meet the standards appropriate to the groundwater's class as specified in this Subpart and the nondegradation provisions of Subpart C.

Section 620.405 General Prohibitions Against Violations of Groundwater Quality Standards

No person shall cause, threaten or allow the release of any contaminant to groundwater so as to cause a groundwater quality standard set forth in this Subpart to be exceeded.

Section 620.410 Groundwater Quality Standards for Class I: Potable Resource Groundwater

a) Inorganic Chemical Constituents

Except due to natural causes or as provided in Section 620.450, concentrations of the following chemical constituents must not be exceeded in Class I groundwater:

Constituent	Units	Standard
Arsenic	mg/L	0.05
Barium	mg/L	2
Boron	mg/L	2
Cadmium	mg/L	0.005
Chloride	mg/L	200
Chromium	mg/L	0.1
Cobalt	mg/L	1
Copper	mg/L	0.65
Cyanide	mg/L	0.2
Fluoride	mg/L	4.0
Iron	mg/L	5
Lead	mg/L	0.0075
Manganese	mg/L	0.15
Mercury	mg/L	0.002
Nickel	mg/L	0.1
Nitrate as N	mg/L	10
Radium-226	pCi/L	20
Radium-228	pCi/L	20
Selenium	mg/L	0.05
Silver	mg/L	0.05
Sulfate	mg/L	400
Total Dissolved Solids (TDS)	mg/L	1,200
Zinc	mg/L	5

b) Organic Chemical Constituents

Except due to natural causes or as provided in Section 620.450 or subsection (c), concentrations of the following organic chemical constituents must not be exceeded in Class I groundwater:

Constituent	Standard (mg/L)
Alachlor*	0.002
Aldicarb	0.003
Atrazine	0.003
Benzene*	0.005
Carbofuran	0.04
Carbon Tetrachloride*	0.005
Chlordane*	0.002
Endrin	0.002
Heptachlor*	0.0004
Heptachlor Epoxide*	0.0002
Lindane (Gamma-Hexachlor cyclohexane)	0.0002
2,4-D	0.07
ortho-Dichlorobenzene	0.6
para-Dichlorobenzene	0.075
1,2-Dichloroethane*	0.005
1,1-Dichloroethylene	0.007
cis-1,2-Dichloroethylene	0.07
trans-1,2-Dichloroethylene	0.1
1,2-Dichloropropane*	0.005
Ethylbenzene	0.7
Methoxychlor	0.04
Monochlorobenzene	0.1
Pentachlorophenol*	0.001
Phenols	0.1
Polychlorinated Biphenyls (PCB's) (as decachloro-bipehnyl)*	0.005
Styrene	0.1
2,4,5-TP (Silvex)	0.05
Tetrachloroethylene*	0.005
Toluene	1
Toxaphene*	0.003
1,1,1-Trichloroethane	0.2
Trichloroethylene*	0.005
Vinyl Chloride*	0.002
Xylenes	10

*Denotes a carcinogen.

c) Complex Organic Chemical Mixtures

Concentrations of the following chemical constituents of gasoline, diesel fuel, or heating fuel must not be exceeded in Class I groundwater:

Constituent	Standard (mg/L)
Benzene*	0.005
BETX	11.705

*Denotes a carcinogen.

d) pH

Except due to natural causes, a pH range of 6.5 - 9.0 units must not be exceeded in Class I groundwater.

e) Beta Particle and Photon Radioactivity

1) Except due to natural causes, the average annual concentration of beta particle and photon radioactivity from man-made radionuclides shall not exceed a dose equivalent to the total body organ greater than 4 mrem/year in Class I groundwater. If two or more radionuclides are present, the sum of their dose equivalent to the total body, or to any internal organ shall not exceed 4 mrem/year in Class I groundwater except due to natural causes.

2) Except for the radionuclides listed in subsection (e)(3), the concentration of man-made radionuclides causing 4 mrem total body or organ dose equivalent must be calculated on the basis of a 2 liter per day drinking water intake using the 168-hour data in accordance with the procedure set forth in NCRP Report Number 22, incorporated by reference at in Section 620.125(a).

3) Except due to natural causes, the average annual concentration assumed to produce a total body or organ dose of 4 mrem/year of the following chemical constituents shall not be exceeded in Class I groundwater:

Constituent	Critical Organ	Standard (pCi/1)
Tritium	Total body	20,000
Strontium-90	Bone marrow	8

Section 620.420 Groundwater Quality Standards for Class II: General Resource Groundwater

a) Inorganic Chemical Constituents

1) Except due to natural causes or as provided in Section 620.450 or subsection (a)(3) or (d), concentrations of the following chemical constituents must not be exceeded in Class II groundwater:

Constituent	Standard (mg/L)
Arsenic	0.2
Barium	2
Cadmium	0.05
Chromium	1
Cobalt	1
Cyanide	0.6
Fluoride	4.0
Lead	0.1
Mercury	0.01
Nitrate as N	100

2) Except as provided in Section 620.450 or subsection (a)(3) or (d), concentrations of the following chemical constituents must not be exceeded in Class II groundwater:

Constituent	Standard (mg/L)
Boron	2.0
Chloride	200
Copper	0.65
Iron	5
Manganese	10
Nickel	2
Selenium	0.05
Total Dissolved Solids (TDS)	1,200
Sulfate	400
Zinc	10

3) The standard for any inorganic chemical constituent listed in subsection (a)(2), for barium, or for pH does not apply to groundwater within fill material or within the upper 10 feet of parent material under such fill material on a site not within the rural property class for which:

A) Prior to the effective date of this Part, surficial characteristics have been altered by the placement of such fill material so as to impact the concentration of the parameters listed in subsection (a)(3), and any on-site groundwater monitoring of such parameters is available for review by the Agency.

B) On the effective date of this Part, surficial characteristics are in the process of being altered by the placement of such fill material, which proceeds in reasonably continuous manner to completion, so as to impact the concentration of the parameters listed in subsection (a)(3), and any on-site groundwater monitoring of such parameters is available for review by the Agency.

4) For purposes of subsection (a)(3), the term "fill material" means clean earthen materials, slag, ash, clean demolition debris, or other similar materials.

b) Organic Chemical Constituents

1) Except due to natural causes or as provided in Section 620.450 or subsection (b)(2) or (d), concentrations of the following organic chemical constituents must not be exceeded in Class II groundwater:

Constituent	Standard (mg/L)
Alachlor*	0.010
Aldicarb	0.015
Atrazine	0.015
Benzene*	0.025
Carbofuran	0.2
Carbon Tetrachloride*	0.025
Chlordane*	0.01
Endrin	0.01
Heptachlor*	0.002
Heptachlor Epoxide*	0.001
Lindane (Gamma-Hexachlor cyclohexane)	0.001
2,4-D	0.35
ortho-Dichlorobenzene	1.5
para-Dichlorobenzene	0.375
1,2-Dichloroethane*	0.025
1,1-Dichloroethylene	0.035
cis-1,2-Dichloroethylene	0.2
trans-1,2-Dichloroethylene	0.5

1,2-Dichloropropane*	0.025
Ethylbenzene	1.0
Methoxychlor	0.2
Monochlorobenzene	0.5
Pentachlorophenol*	0.005
Phenols	0.1
Polychlorinated Biphenyls (PCB's) (as decachloro-biphenyl)*	0.0025
Styrene	0.5
2,4,5-TP	0.25
Tetrachloroethylene*	0.025
Toluene	2.5
Toxaphene*	0.015
1,1,1-Trichloroethane	1.0
Trichloroethylene*	0.025
Vinyl Chloride*	0.01
Xylenes	10

*Denotes a carcinogen.

2) The standards for pesticide chemical constituents listed in subsection (b)(1) do not apply to groundwater within 10 feet of the land surface, provided that the concentrations of such constituents result from the application of pesticides in a manner consistent with the requirements of the Federal Insecticide, Fungicide and Rodenticide Act (7 U. S. C. 136 et seq.) and the Illinois Pesticide Act (Ill. Rev. Stat. 1989, ch. 5, pars. 801 et seq.).

c) Complex Organic Chemical Mixtures

Concentrations of the following organic chemical constituents of gasoline, diesel fuel, or heating fuel must not be exceeded in Class II groundwater:

Constituent	Standard (mg/L)
Benzene*	0.025
BETX	13.525

*Denotes a carcinogen.

d) pH

Except due to natural causes, a pH range of 6.5 - 9.0 units must not be exceeded in Class II groundwater that is within 5 feet of the land surface.

Section 620.430 Groundwater Quality Standards for Class III: Special Resource Groundwater

Concentrations of inorganic and organic chemical constituents must not exceed the standards set forth in Section 620.410, except for those chemical constituents for which the Board has adopted a standard pursuant to Section 620.260.

Section 620.440 Groundwater Quality Standards for Class IV: Other Groundwater

a) Except as provided in subsections (b) or (c), Class IV: Other Groundwater standards are equal to the existing concentrations of constituents in groundwater.

b) For groundwater within a zone of attenuation as provided in 35 Ill. Adm. Code 811 and 814, the standards specified in Section 620.420 must not be exceeded, except for concentrations of contaminants within leachate released from a permitted unit.

c) For groundwater within a previously mined area, the standards set forth in Section 620.420 must not be exceeded, except for concentrations of TDS, chloride, iron, manganese, sulfates, or pH. For concentrations of TDS, chloride, iron, manganese, sulfates, or pH, the standards are the existing concentrations.

Section 620.450 Alternative Groundwater Quality Standards

a) Groundwater Quality Restoration Standards

1) Any chemical constituent in groundwater within a groundwater management zone is subject to this Section.

2) Except as provided in subsections (a)(3) or (a)(4), the standards as specified in Sections 620.410, 620.420, 620.430, and 620.440 apply to any chemical constituent in groundwater within a groundwater management zone.

3) Prior to completion of a corrective action described in Section 620.250(a), the standards as specified in Sections 620.410, 620.420, 620.430, and 620.440 are not applicable to such released chemical constituent, provided that the initiated action proceeds in a timely and appropriate manner.

4) After completion of a corrective action as described in Section 620.250(a), the standard for such released chemical constituent is:

A) The standard as set forth in Section 620.410, 620.420, 620.430, or 620.440, if the concentration as determined by groundwater monitoring of such constituent is less than or equal to the standard for the appropriate class set forth in those sections; or

B) The concentration as determined by groundwater monitoring, if such concentration exceeds the standard for the appropriate class set forth in Section 620.410, 620.420, 620.430, or 620.440 for such constituent, and:

i) To the extent practicable, the exceedence has been minimized and beneficial use, as appropriate for the class of groundwater, has been returned; and

ii) Any threat to public health or the environment has been minimized.

5) The Agency shall develop and maintain a listing of concentrations derived pursuant to subsection (a)(4)(B). This list shall be made available to the public and be updated periodically, but no less frequently than semi-annually. This listing shall be published in the Environmental Register.

b) Coal Reclamation Groundwater Quality Standards

1) Any inorganic chemical constituent or pH in groundwater, within an underground coal mine, or within the cumulative impact area of groundwater for which the hydrologic balance has been disturbed from a permitted coal mine area pursuant to the Surface Coal Mining Land Conservation and Reclamation Act (Ill. Rev. Stat. 1989, ch. 96 1/2, pars. 7901.1 et seq., as amended) and 62 Ill. Adm. Code 1700 through 1850, is subject to this Section.

2) Prior to completion of reclamation at a coal mine, the standards as specified in Sections 620.410(a) and (d), 620.420(a) and (e), 620.430 and 620.440 are not applicable to inorganic constituents and pH.

3) After completion of reclamation at a coal mine, the standards as specified in Sections 620.410(a) and (d), 620.420(a), 620.430, and 620.440 are

applicable to inorganic constituents and pH, except:

A) The concentration of total dissolved solids (TDS) must not exceed:

i) The post-reclamation concentration or 3000 mg/L, whichever is less, for groundwater within the permitted area; or

ii) The post-reclamation concentration of TDS must not exceed the post-reclamation concentration or 5000 mg/L, whichever is less, for groundwater in underground coal mines and in permitted areas reclaimed after surface coal mining if the Illinois Department of Mines and Minerals and the Agency have determined that no significant resource groundwater existed prior to mining (62 Ill. Adm. Code 1780.21(f) and (g)); and

B) For chloride, iron, manganese and sulfate, the post-reclamation concentration within the permitted area must not be exceeded.

C) For pH, the post-reclamation concentration within the permitted area must not be exceeded within Class I: Potable Resource Groundwater as specified in Section 620.210(a)(4).

4) A refuse disposal area (not contained within the area from which overburden has been removed) is subject to the inorganic chemical constituent and pH requirements of:

A) 35 Ill. Adm. Code 303.203 for such area that was placed into operation after February 1, 1983, and before the effective date of this Part, provided that the groundwater is a present or a potential source of water for public or food processing;

B) Section 620.440(c) for such area that was placed into operation prior to February 1, 1983, and has remained in continuous operation since that date; or

C) Subpart D for such area that is placed into operation on or after the effective date of this Part.

5) For a refuse disposal area (not contained within the area from which overburden has been removed) that was placed into operation prior to February 1, 1983, and is modified after that date to include additional area, this Section applies to the area that meets the requirements of subsection (b)(4)(C) and the following applies to the additional area:

   A) 35 Ill. Adm. Code 303.203 for such additional refuse disposal area that was placed into operation after February 1, 1983, and before the effective date of this Part, provided that the groundwater is a present or a potential source of water for public or food processing; and

   B) Subpart D for such additional area that was placed into operation on or after the effective date of this Part.

6) A coal preparation plant (not located in an area from which overburden has been removed) which contains slurry material, sludge or other precipitated process material, is subject to the inorganic chemical constituent and pH requirements of:

   A) 35 Ill. Adm. Code 303.203 for such plant that was placed into operation after February 1, 1983, and before the effective date of this Part, provided that the groundwater is a present or a potential source of water for public or food processing;

   B) Section 620.440(c) for such plant that was placed into operation prior to February 1, 1983, and has remained in continuous operation since that date; or

   C) Subpart D for such plant that is placed into operation on or after the effective date of this Part.

7) For a coal preparation plant (not located in an area from which overburden has been removed) which contains slurry material, sludge or other precipitated process material, that was placed into operation prior to February 1, 1983, and is modified after that date to include additional area, this Section applies to the area that meets

the requirements of subsection (b)(6)(C) and the following applies to the additional area:

A) 35 Ill. Adm. Code 303.203 for such additional area that was placed into operation after February 1, 1983, and before the effective date of this Part, provided that the groundwater is a present or a potential source of water for public or food processing; and

B) Subpart D for such additional area that was placed into operation on or after the effective date of this Part.

SUBPART E: GROUNDWATER MONITORING AND ANALYTICAL PROCEDURES

Section 620.505 Compliance Determination

a) Compliance with standards at a site is to be determined as follows:

1) For a structure (e.g., buildings), at the closest practical distance beyond the outermost edge for the structure.

2) For groundwater that underlies a potential primary or secondary source, the outermost edge as specified in Section 620.240(e)(1).

3) For groundwater that underlies a coal mine refuse disposal area, a coal combustion waste disposal area, or an impoundment that contains sludge, slurry, or precipitated process material at a coal preparation plant, the outermost edge as specified in Section 620.240(f)(1) or location of monitoring wells in existence as of the effective date of this Part on a permitted site.

4) For a groundwater management zone, as specified in a corrective action process.

5) At any point at which groundwater monitoring is conducted using any water well or monitoring well that meets the following conditions:

A) For a potable well other than a community water supply well, a construction report has been filed with the Department of Public Health for such potable well, or such well has been located and constructed (or reconstructed) to meet the Illinois Water Well Construction Code (Ill. Rev. Stat. 1989, ch. 111 1/2, pars. 116.111 et seq., as amended) and 35 Ill. Adm. Code 920.

B) For a community water supply well, such well has been permitted by the Agency, or has been constructed in accordance with 35 Ill. Adm. Code 602.115.

C) For a water well other than a potable water well (e.g., a livestock watering well or an irrigation well), a construction report has been filed with the Department of Public Health or the Department of Mines and Minerals for such well, or such well has been located and constructed (or reconstructed) to

meet the Illinois Water Well Construction Code (Ill. Rev. Stat. 1989, ch. 111 1/2, pars. 116.111 et seq., as amended) and 35 Ill. Adm. Code 920.

D) For a monitoring well, such well meets the following requirements:

i) Construction must be done in a manner that will enable the collection of groundwater samples;

ii) Casings and screens must be made from durable material resistant to expected chemical or physical degradation that do not interfere with the quality of groundwater samples being collected; and

iii) The annular space opposite the screened section of the well (i.e., the space between the bore hole and well screen) must be filled with gravel or sand if necessary to collect groundwater samples. The annular space above and below the well screen must be sealed to prevent migration of water from adjacent formations and the surface to the sampled depth.

b) For a spring, compliance with this Subpart shall be determined at the point of emergence.

Section 620.510 Monitoring and Analytical Requirements

a) Representative Samples

A representative sample must be taken from locations as specified in Section 620.505.

b) Sampling and Analytical Procedures

1) Samples must be collected in accordance with the procedures set forth in the documents pertaining to groundwater monitoring and analysis, "Methods for Chemical Analysis of Water and Wastes, "Methods for the Determination of Organic Compounds in Drinking Water", "Practical Guide for Ground-Water Sampling", "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods" (SW-846), "Techniques of Water Resources Investigations of the United States Geological Survey, Guidelines for Collection and Field Analysis of Ground-Water Samples for Selected

Unstable Constituents", incorporated by reference at Section 620.125 or other procedures adopted by the appropriate regulatory agency.

2) Groundwater elevation in a groundwater monitoring well must be determined and recorded when necessary to determine the gradient.

3) The analytical methodology used for the analysis of constituents in Subparts C and D must be consistent with both of the following:

A) The methodology must have a PQL at or below the preventive response levels of Subpart C or the groundwater standard set forth in Subpart D, whichever is applicable; and

B) The methodology must be consistent with methodologies contained in "Methods for Chemical Analysis of Water and Wastes", "Methods for the Determination of Organic Compounds in Drinking Water", "Practical Guide for Ground-Water Sampling", "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods" (SW-846), "Techniques of Water Resources Investigations of the United States Geological Survey, Guidelines for Collection and Field Analysis of Ground-Water Samples for Selected Unstable Constituents", incorporated by reference at Section 620.125.

c) Reporting Requirements

At a minimum, groundwater monitoring analytical results must include information, procedures and techniques for:

1) Sample collection (including but not limited to name of sample collector, time and date of the sample, method of collection, and identification of the monitoring location);

2) Sample preservation and shipment (including but not limited to field quality control);

3) Analytical procedures (including but not limited to the method detection limits and the PQLs); and

4) Chain of custody control.

SUBPART F: HEALTH ADVISORIES

Section 620.601 Purpose of a Health Advisory

This Subpart establishes procedures for the issuance of a Health Advisory that sets forth guidance levels that, in the absence of standards under Section 620.410, must be considered by the Agency in:

a) Establishing groundwater cleanup or action levels whenever there is a release or substantial threat of a release of:

1) A hazardous substance or pesticide; or

2) Other contaminant that represents a significant hazard to public health or the environment.

b) Determining whether the community water supply is taking its raw water from a site or source consistent with the siting and source water requirements of 35 Ill. Adm. Code 611.114 and 611.115.

c) Developing Board rulemaking proposals for new or revised numerical standards.

d) Evaluating mixtures of chemical substances.

Section 620.605 Issuance of a Health Advisory

a) The Agency shall issue a Health Advisory for a chemical substance if all of the following conditions are met:

1) A community water supply well is sampled and a substance is detected and confirmed by resampling;

2) There is no standard under Section 620.410 for such chemical substance; and

3) The chemical substance is toxic or harmful to human health according to the procedures of Appendix A, B, or C.

b) The Health Advisory must contain a general description of the characteristics of the chemical substance, the potential adverse health effects, and a guidance level to be determined as follows:

1) If disease or functional impairment is caused due to a physiological mechanism for which there is a threshold dose below which no damage occurs, the guidance level for any such substance is the Maximum Contaminant Level Goal ("MCLG"), adopted

by USEPA for such substance, 56 Fed. Reg. 26460-26564, and 56 Fed. Reg. 3526-3597, incorporated by reference at Section 620.125. If there is no MCLG for the substance, the guidance level is the Human Threshold Toxicant Advisory Concentration for such substance as determined in accordance with Appendix A, unless the concentration for such substance is less than the lowest appropriate PQL specified in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods", EPA Publication No. SW-846 (SW-846), incorporated by reference at Section 620.125 for the substance. If the concentration for such substance is less than the lowest appropriate PQL for the substance specified in SW-846, incorporated by reference at Section 620.125, the guidance level is the lowest appropriate PQL.

2) If the chemical substance is a carcinogen, the guidance level for any such chemical substance is the lowest appropriate PQL specified in SW-846, incorporated by reference at Section 620.125 for such substance.

Section 620.610 Publishing Health Advisories

a) The Agency shall publish the full text of each Health Advisory upon issuance and make the document available to the public.

b) The Agency shall publish and make available to the public, at intervals of not more than 6 months, a comprehensive and up-to-date summary list of all Health Advisories.

Section 620.615 Additional Health Advice for Mixtures of Similar-Acting Substances

a) The need for additional health advice appropriate to site-specific conditions shall be determined by the Agency when mixtures of chemical substances are detected, where two or more of the chemical substances are similar-acting in their toxic or harmful physiological effect on the same specific organ or organ system.

b) If mixtures of similar-acting chemical substances are present, the procedure for evaluating the mixture of such substances is specified in accordance with Appendices A, B, and C.

Section 620.Appendix A Procedures for Determining Human Threshold Toxicant Advisory Concentration for Class I: Potable Resource Groundwater

a) Calculating the Human Threshold Toxicant Advisory Concentration

For those substances for which USEPA has not adopted a Maximum Contaminant Level Goal ("MCLG"), the Human Threshold Toxicant Advisory Concentration is calculated as follows:

HTTAC = RSC x ADE/W

Where:

HTTAC = Human Threshold Toxicant Advisory Concentration in milligrams per liter (mg/L);

RSC = Relative contribution of the amount of the exposure to a chemical via drinking water when compared to the total exposure to that chemical from all sources. Valid chemical-specific data shall be used if available. If valid chemical-specific data are not available, a value of 20% (=0.20) must be used;

ADE = Acceptable Daily Exposure of substance in milligrams per day (mg/d) as determined pursuant to subsection (b); and

W = Per capita daily water consumption equal to 2 liters per day (L/d).

b) Procedures for Determining Acceptable Daily Exposures for Class I: Potable Resource Groundwater

1) The Acceptable Daily Exposure (ADE) represents the maximum amount of a threshold toxicant in milligrams per day (mg/d) which if ingested daily for a lifetime results in no adverse effects to humans. Subsections (b)(2) through (b)(6) list, in prescribed order, methods for determining the ADE in Class I: Potable Resource Groundwater.

2) For those substances for which the USEPA has derived a Verified Oral Reference Dose for humans, USEPA's Reference Dose given in milligrams per kilogram per day (mg/kg/d), as determined in accordance with methods provided in National Primary and Secondary Drinking Water Regulations;

Final Rule, 56 Fed. Reg. 3526-3597, (January 30, 1991), incorporated by reference at Section 620.125, must be used. The ADE equals the product of multiplying the Reference Dose by 70 kilograms (kg), which is the assumed average weight of an adult human.

3) For those substances for which a no observed adverse effect level for humans (NOAEL-H) exposed to the substance has been derived, the ADE equals the product of multiplying one-tenth of the NOAEL-H given in milligrams of toxicant per kilogram of body weight per day (mg/kg/d) by the average weight of an adult human of 70 kilograms (kg). If two or more studies are available, the lowest NOAEL-H must be used in the calculation of the ADE.

4) For those substances for which only a lowest observed adverse effect level for humans (LOAEL-H) exposed to the substance has been derived, one-tenth the LOAEL-H must be substituted for the NOAEL-H in subsection (b)(3).

5) For those substances for which a no observed adverse effect level has been derived from studies of mammalian test species (NOAEL-A) exposed to the substance, the ADE equals the product of multiplying 1/100 of the NOAEL-A given in milligrams toxicant per kilogram of test species weight per day (mg/kg/d) by the average weight of an adult human of 70 kilograms (kg). Preference will be given to animal studies having High Validity, as defined in subsection (c), in the order listed in that subsection. Studies having a Medium Validity must be considered if no studies having High Validity are available. If studies of Low Validity must be used, the ADE must be calculated using 1/1000 of the NOAEL-A having Low Validity instead of 1/100 of the NOAEL-A of High or Medium Validity, except as described in subsection (b)(6). If two or more studies among different animal species are equally valid, the lowest NOAEL-A among animal species must be used in the calculation of the ADE. Additional considerations in selecting the NOAEL-A include:

   A) If the NOAEL-A is given in milligrams of toxicant per liter of water consumed (mg/L), prior to calculating the ADE the NOAEL-A must be multiplied by the average daily volume of water consumed by the mammalian test species in liters per day (l/d) and divided by the

average weight of the mammalian test species in kilograms (kg).

B) If the NOAEL-A is given in milligrams of toxicant per kilogram of food consumed (mg/kg), prior to calculating the ADE, the NOAEL-A must be multiplied by the average amount in kilograms of food consumed daily by the mammalian test species (kg/d) and divided by the average weight of the mammalian test species in kilograms (kg).

C) If the mammalian test species was not exposed to the toxicant each day of the test period, the NOAEL-A must be multiplied by the ratio of days of exposure to the total days of the test period.

D) If more than one equally valid NOAEL-A is available for the same mammalian test species, the best available data must be used.

6) For those substances for which a NOAEL-A is not available but the lowest observed adverse effect level (LOAEL-A) has been derived from studies of mammalian test species exposed to the substance, one-tenth of the LOAEL-A may be substituted for the NOAEL-A in subsection (b)(5). The LOAEL-A must be selected in the same manner as that specified in subsection (b)(5). One-tenth the LOAEL-A from a study determined to have Medium Validity may be substituted for a NOAEL-A in subsection (b)(3) if the NOAEL-A is from a study determined to have Low Validity, or if the toxicity endpoint measured in the study having the LOAEL-A of Medium Validity is determined to be more biologically relevant than the toxicity endpoint measured in the study having the NOAEL-A of Low Validity.

c) Procedures for Establishing Validity of Data from Animal Studies

1) High Validity Studies

A) High validity studies use a route of exposure by ingestion or gavage, and are based upon:

i) Data from animal carcinogenicity studies with a minimum of 2 dose levels and a control group, 2 species, both sexes, with 50 animals per dose per sex, and at least 50 percent survival at 15 months

in mice and 18 months in rats and at least 25 percent survival at 18 months in mice and 24 months in rats;

ii) Data from animal chronic studies with a minimum of 3 dose levels and a control group, 2 species, both sexes, with 40 animals per dose per sex, and at least 50 percent survival at 15 months in mice and 18 months in rats and at least 25 percent survival at 18 months in mice and 24 months in rats, and a well-defined NOAEL; or

iii) Data from animal subchronic studies with a minimum of 3 dose levels and control, 2 species, both sexes, 4 animals per dose per sex for non-rodent species or 10 animals per dose per sex for rodent species, a duration of at least 5% of the test species' lifespan, and a well-defined NOAEL.

B) Supporting studies which reinforce the conclusions of a study of Medium Validity may be considered to raise such a study to High Validity.

2) Medium Validity Studies

Medium validity studies are based upon:

A) Data from animal carcinogenicity, chronic, or subchronic studies in which minor deviations from the study design elements required for a High Validity Study are found, but which otherwise satisfy the standards for a High Validity Study;

B) Data from animal carcinogenicity and chronic studies in which at least 25 percent survival is reported at 15 months in mice and 18 months in rats (a lesser survival is permitted at the conclusion of a longer duration study, but the number of surviving animals should not fall below 20 percent per dose per sex at 18 months for mice and 24 months for rats), but which otherwise satisfy the standards for a High Validity Study;

C) Data from animal subchronic or chronic studies in which a Lowest Observable Adverse Effect Level (LOAEL) is determined, but which

otherwise satisfy the standards for a High Validity Study; or

D) Data from animal subchronic or chronic studies which have an inappropriate route of exposure (for example, intraperitoneal injection or inhalation) but which otherwise satisfy the standards for a High Validity Study, with correction factors for conversion to the oral route.

3) Low Validity Studies

Low validity studies are studies not meeting the standards set forth in subsection (c)(1) or (c)(2).

Section 620.Appendix B Procedures for Determining Hazard Indices for Class I: Potable Resource Groundwater for Mixtures of Similar-Acting Substances

a) This appendix describes procedures for evaluating mixtures of similar-acting substances which may be present in Class I: Potable Resource Groundwaters. Except as provided otherwise in subsection (c), subsections (d) through (h) describe the procedure for determining the Hazard Index for mixtures of similar-acting substances.

b) For the purposes of this appendix, a "mixture" means two or more substances which are present in Class I: Potable Resource Groundwater which may or may not be related either chemically or commercially, but which are not complex mixtures of related isomers and congeners which are produced as commercial products (for example, PCBs or technical grade chlordane).

c) The following substances listed in Section 620.410 are mixtures of similar acting substances:

1) Mixtures of ortho-Dichlorobenzene and para-Dichlorobenzene. The Hazard Index ("HI") for such mixtures is determined as follows:

HI = [ortho-Dichlorobenzene]\0.6 +
[para-Dichlorobenzene]\0.075

2) Mixtures of 1,1-Dichloroethylene and 1,1,1-trichloroethane. The Hazard Index ("HI") for such mixtures is determined as follows:

HI = [1,1-Dichloroethylene]\0.007 +
[1,1,1-trichloroethane]\0.2

d) When two or more substances occur together in a mixture, the additivity of the toxicities of some or all of the substances will be considered when determining health-based standards for Class I: Potable Resource Groundwater. This is done by the use of a dose addition model with the development of a Hazard Index for the mixture of substances with similar-acting toxicities. This method does not address synergism or antagonism. Guidelines for determining when the dose addition of similar-acting substances is appropriate are presented in Appendix C.

The Hazard Index is calculated as follows:

HI = [A]\ALA + [B]\ALB + . . . [I]\ALI

Where:

HI = Hazard Index, unitless.

[A], [B], [I] = Concentration of each similar-acting substance in groundwater in milligrams per liter (mg/L).

ALA, ALB, ALI = The acceptable level of each similar-acting substance in the mixture in milligrams per liter (mg/L).

e) For substances which are considered to have a threshold mechanism of toxicity, the acceptable level is:

1) The standards listed in Section 620.410; or

2) For those substances for which standards have not been established in Section 620.410, the Human Threshold Toxicant Advisory Concentration (HTTAC) as determined in Appendix A.

f) For substances which are carcinogens, the acceptable level is:

1) The standards listed in Section 620.410; or

2) For those substances for which standards have not been established under Section 620.410, the lowest appropriate PQL of USEPA-approved analytical methods specified in SW-846, incorporated by reference at Section 620.125, for each substance.

g) Since the assumption of dose addition is most properly applied to substances that induce the same effect by similar modes of action, a separate HI must be generated for each toxicity endpoint of concern.

h) In addition to meeting the individual substance objectives, a Hazard Index must be less than or equal to 1 for a mixture of similar-acting substances.

Section 620.Appendix C Guidelines for Determining When Dose Addition of Similar-Acting Substances in Class I: Potable Resource Groundwaters is Appropriate

a) Substances must be considered similar-acting if:

1) The substances have the same target in an organism (for example, the same organ, organ system, receptor, or enzyme).

2) The substances have the same mode of toxic action. These actions may include, for example, central nervous system depression, liver toxicity, or cholinesterase inhibition.

b) Substances that have fundamentally different mechanisms of toxicity (threshold toxicants vs. carcinogens) must not be considered similar-acting. However, carcinogens which also cause a threshold toxic effect should be considered in a mixture with other similar-acting substances having the same threshold toxic effect. In such a case, an Acceptable Level for the carcinogen must be derived for its threshold effect, using the procedures described in Appendix A.

c) Substances which are components of a complex mixture of related compounds which are produced as commercial products (for example, PCBs or technical grade chlordane) are not mixtures, as defined in Appendix B. Such complex mixtures are equivalent to a single substance. In such a case, the Human Threshold Toxicant Advisory Concentration may be derived for threshold effects of the complex mixture, using the procedures described in Appendix A, if valid toxicological or epidemiological data are available for the complex mixture. If the complex mixture is a carcinogen, the Health Advisory Concentration is the lowest appropriate PQL of USEPA-approved analytical methods specified in SW-846, incorporated by reference at Section 620.125.

Section 620.Appendix D Confirmation of an Adequate Corrective Action Pursuant to 35 Ill. Adm. Code 620.250 (a)(2).

Pursuant to 35 Ill. Adm. Code 620.250(a) if an owner or operator provides a written confirmation to the Agency that an adequate corrective action, equivalent to a corrective action process approved by the Agency, is being undertaken in a timely and appropriate manner, then a groundwater management zone may be established as a three-dimensional region containing groundwater being managed to mitigate impairment caused by the release of contaminants from a site. This document provides the form in which the written confirmation is to be submitted to the Agency.

Note 1. Parts I and II are to be submitted to IEPA at the time that the facility claims the alternative groundwater standards. Part III is to be submitted at the completion of the site investigation. At the completion of the corrective process, a final report is to be filed which includes the confirmation statement included in Part IV.

Note 2. The issuance of a permit by IEPA's Division of Air Pollution Control or Water Pollution Control for a treatment system does not imply that the Agency has approved the corrective action process.

Note 3. If the facility is conducting a cleanup of a unit which is subject to the requirements of the Resource Conservation and Recovery Act (RCRA) or the 35 Ill. Adm. Code 731 regulations for Underground Storage Tanks, this confirmation process is not applicable and cannot be used.

Note 4. If the answers to any of these questions require explanation or clarification, provide such in an attachment to this document.

Part I. Facility Information

Facility Name _____
Facility Address _____

County _____
Standard Industrial Code (SIC) _____

1. Provide a general description of the type of industry, products manufactured, raw materials used, location and size of the facility.

2. What specific units (operating or closed) are present at the facility which are or were used to manage waste, hazardous waste, hazardous substances or petroleum?

	YES	NO
Landfill	_____	_____
Surface Impoundment	_____	_____
Land Treatment	_____	_____
Spray Irrigation	_____	_____
Waste Pile	_____	_____
Incinerator	_____	_____
Storage Tank (above ground)	_____	_____
Storage Tank (underground)	_____	_____
Container Storage Area	_____	_____
Injection Well	_____	_____
Water Treatment Units	_____	_____
Septic Tanks	_____	_____
French Drains	_____	_____
Transfer Station	_____	_____

Other Units (Please describe)

_____

_____

3. Provide an extract from a USGS topographic or county map showing the location of the site and a more detailed scaled map of the facility with each waste management unit identified in Question 2 or known/suspected source clearly identified. Map scale must be specified and the location of the facility must be provided with respect to Township, Range and Section.

4. Has the facility ever conducted operations which involved the generation, manufacture, processing, transportation, treatment, storage or handling of "hazardous substances" as defined by the Illinois Environmental Protection Act? Yes _____ No _____ If the answer to this question is "yes" generally describe these operations.

5. Has the facility generated, stored or treated hazardous waste as defined by the Resource Conservation and Recovery Act? Yes _____ No _____ If the answer to this question is "yes" generally describe these operations.

6. Has the facility conducted operations which involved the processing, storage or handling of petroleum? Yes _____ No _____ If the answer to this questions is "yes" describe these operations.

7. Has the facility ever held any of the following permits?

   a. Permits for any waste storage, waste treatment or waste disposal operation. Yes _____ No _____ If

the answer to this question is "yes", identify the IEPA permit numbers.

b. Interim Status under the Resources Conservation and Recovery Act (filing of a RCRA Part A application). Yes _____ No _____ If the answer to this question is "yes", attach a copy of the last approved Part A application.

c. RCRA Part B Permits. Yes _____ No _____ If the answer to this question is "yes", identify the permit log number.

8. Has the facility ever conducted the closure of a RCRA hazardous waste management unit? Yes _____ No _____

9. Have any of the following State or federal government actions taken place for a release at the facility?

a. Written notification regarding known, suspected or alleged contamination on or emanating from the property (e.g., a Notice pursuant to Section 4(q) of the Environmental Protection Act)? Yes _____ No _____ If the answer to ths question is "yes", identify the caption and date of issuance.

b. Consent Decree or Order under RCRA, CERCLA, EPAct Section 22.2 (State Superfund), or EPAct Section 21(f) (State RCRA). Yes _____ No _____

c. If either of Items a or b were answered by checking "yes", is the notice, order or decree still in effect? Yes _____ No _____

10. What groundwater classification will the facility be subject to at the completion of the remediation? Class I _____ Class II _____ Class III _____ Class IV _____ If more than one Class applies, please explain.

11. Describe the circumstances which the release to groundwater was identified.

Based on my inquiry of those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true and accurate.

Facility Name	Signature of Owner/Operator
Location of Facility	Name of Owner/Operator

EPA Identification Number _____ Date _____

PART II: Release Information

1. Identify the chemical constituents released to the groundwater. Attach additional documents as necessary.

Chemical Description	Chemical Abstract No.

2. Describe how the site will be investigated to determine the source or sources of the release.

3. Describe how groundwater will be monitored to determine the rate and extent of the release.

4. Has the release been contained on-site at the facility?

5. Describe the groundwater monitoring network and groundwater and soil sampling protocols in place at the facility.

6. Provide the schedule for investigation and monitoring.

7. Describe the laboratory quality assurance program utilized for the investigation.

8. Provide a summary of the results of available soil testing and groundwater monitoring associated with the release at the facility. The summary of results should provide the following information: dates of sampling; types of samples taken (soil or water); locations and depths of samples; sampling and analytical methods; analytical laboratories used; chemical constituents for which analyses were performed; analytical detection limits; and concentrations of chemical constituents in ppm (levels below detection should be identified as "ND").

Based on my inquiry of those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of knowledge and belief, true and accurate and confirm that the actions identified herein will be undertaken in accordance with the schedule set forth herein.

Facility Name _____ Signature of Owner/Operator _____

_____ _____

Location of Facility _____ Name of Owner/Operator _____

EPA Identification Number _____ Date _____

Part III: Remedy Selection Information

1. Describe the selected remedy.

2. Describe other remedies which were considered and why they were rejected.

3. Will waste, contaminated soil or contaminated groundwater be removed from the site in the course of this remediation? Yes _____ No _____ If the answer to this question is "yes", where will the contaminated material be taken?

4. Describe how the selected remedy will accomplish the maximum practical restoration of beneficial use of groundwater.

5. Describe how the selected remedy will minimize any threat to public health or the environment.

6. Describe how the selected remedy will result in compliance with the applicable groundwater standards.

7. Provide a schedule for design, construction and operation of the remedy, including dates for the start and completion.

8. Describe how the remedy will be operated and maintained.

9. Have any of the following permits been issued for the remediation?

   a. Construction or Operating permit from the Division of Water Pollution Control. Yes _____ No _____

   b. Land treatment permit from the Division of Water Pollution Control. Yes _____ No _____ If the answer to this question is "yes", identify the permit number.

   c. Construction or Operating permit from the Division of Air Pollution Control. Yes _____ No _____ If the answer to this question is "yes", identify the permit number.

10. How will groundwater at the facility be monitored following completion of the remedy to ensure that the groundwater standards have been attained?

Based on my inquiry of those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true and accurate and confirm that the actions identified herein will be undertaken in accordance with the schedule set forth herein.

Facility Name	Signature of Owner/Operator
Location of Facility	Name of Owner/Operator
EPA Identification Number	Date

PART IV: Completion Certification

This certification must accompany documentation which includes soil and groundwater monitoring data demonstrating successful completion of the corrective process described in Parts I-III.

Facility Name _____
Facility Address _____
_____
_____
County _____
Standard Industrial Code (SIC) _____
Date _____

Based on my inquiry of those persons directly responsible for gathering the information, I certify that an adequate corrective action, equivalent to a corrective action process approved by the Agency, has been undertaken and that the following restoration concentrations are being met:

Chemical Name	Chemical Abstract No.	Concentration (mg/l)

Facility Name	Signature of Owner/Operator
Location of Facility	Name of Owner/Operator

EPA Identification Number _____ Date _____

IT IS SO ORDERED.

Board Member J.D. Dumelle concurred.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above Opinion and Order was adopted on the 14 day of November, 1991, by a vote of 7-0.

Dorothy M. Gunn

Dorothy M. Gunn, Clerk
Illinois Pollution Control Board