

TITLE 8: AGRICULTURE AND ANIMALS  
CHAPTER I: DEPARTMENT OF AGRICULTURE  
SUBCHAPTER i: PESTICIDE CONTROL

PART 259  
AGRICHEMICAL FACILITY RESPONSE ACTION PROGRAM

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Authority: Authorized by Section 19.3 of the Illinois Pesticide Act [415 ILCS 60/19.3].

Source: Adopted at 26 Ill. Reg. 1647, effective February 1, 2002; amended at 32 Ill. Reg. 1308, effective January 1, 2008.

**SUBPART A: GENERAL****Section 259.110 Purpose**

- a) *It is the policy of the State of Illinois that an Agrichemical Facility Response Action Program be implemented to reduce potential agrichemical pollution and minimize environmental degradation risk potential at the sites [415 ILCS 60/19.3a].*
- b) The purposes of this Part are to:
  - 1) establish minimum default soil cleanup objectives for possible remediation of an agrichemical facility;
  - 2) establish procedures for developing appropriate site-specific soil cleanup objectives;
  - 3) provide general guidance on procedures for voluntary site assessments to

assess the threat of groundwater contamination; and

- 4) establish procedures for the review and approval of voluntary corrective action plans and issuance of a notice of closure upon successful completion of corrective actions.

(Source: Amended at 32 Ill. Reg. 1308, effective January 21, 2008)

### **Section 259.120 Applicability**

- a) This Part applies to the owner or operator of an agrichemical facility who voluntarily requests approval of corrective action plans to remediate past agrichemical contamination.
  - 1) An owner or operator who elects to participate in the Agrichemical Facility Response Action Program shall determine if soil or groundwater at an agrichemical facility contains agrichemicals at concentrations requiring cleanup pursuant to Subpart B of this Part.
  - 2) An owner or operator who elects to participate in the Program shall conduct a site assessment to identify any agrichemical contamination of soil or groundwater and to develop sufficient information regarding the extent of any contamination to guide decisions about corrective actions pursuant to Subpart C of this Part.
  - 3) If soil or groundwater at an agrichemical facility contains agrichemicals at concentrations requiring cleanup pursuant to Subpart B of this Part, an owner or operator who elects to participate in the Program, shall submit a corrective action plan for review by the Department and final approval by the Board pursuant to Subpart D of this Part.
- b) Nothing in this Part limits the authority of the Illinois Environmental Protection Agency to provide notice of potential liability and need to conduct response actions or remedial activities or the release or threatened release of a regulated substance under Section 58.9(b) or Section 4(q) of the Illinois Environmental Protection Act [415 ILCS 5], to provide notice of apparent violations of the Environmental Protection Act, related regulations and/or permits pursuant to Section 31 of the Environmental Protection Act, to make enforcement referrals regarding apparent violations of the Environmental Protection Act, related regulations and/or permits pursuant to Section 42 or 43 of the Environmental Protection Act, or to undertake investigative, preventive or corrective action under any other applicable provisions of the Illinois Environmental Protection Act.

- c) This Part does not apply to facilities at which the contaminated soils exhibit a characteristic of hazardous waste as defined in 35 Ill. Adm. Code 721.120 through 124.

(Source: Amended at 32 Ill. Reg. 1308, effective January 21, 2008)

### **Section 259.130 Severability**

If any Section, subsection, sentence or clause of this Part is judged invalid, that adjudication shall not affect the validity of this Part as a whole or any Section, subsection, sentence or clause of this Part not judged invalid.

### **Section 259.140 Definitions**

Except as stated in this Section, or unless a different meaning of a word or term is clear from the context, the definition of the words or terms in this Part shall be the same as that applied to the same words or terms in the Act.

"Act" means the Illinois Pesticide Act [415 ILCS 60].

"Agency" means the Illinois Environmental Protection Agency.

*"Agrichemical" means pesticides or commercial fertilizers at an agrichemical facility. [415 ILCS 60/19.3]*

*"Agrichemical facility" means a site where agricultural agrichemicals are stored or handled, or both, in preparation for end use. The term does not include basic manufacturing facility sites or central distribution sites utilized only for wholesale purposes. [415 ILCS 60/19.3]*

"Agrichemical Facility Response Action Program" or "Program" means a voluntary environmental remediation program as set forth in Section 19.3 of the Act.

"Applicant" means an owner, operator or duly authorized agent of an agrichemical facility submitting a request for approval of a corrective action plan.

"Board" or "Agrichemical Facility Response Action Program Board" means the board set forth in Section 19.3 of the Act.

"Class I groundwater" means potable resource groundwater as described in 35 Ill.

Adm. Code 620.210.

"Class II groundwater" means general resource groundwater as described in 35 Ill. Adm. Code 620.220.

"Class III groundwater" means special resource groundwater as described in 35 Ill. Adm. Code 620.230.

"Commercial fertilizer" means a substance containing one or more recognized plant nutrients that is used for its plant nutrient content or that is designated for use or claimed to have value in promoting plant growth, including, but not limited to, nitrogen-containing compounds.

"Department" means the Illinois Department of Agriculture.

"Detection" means the identification of any agrichemical residue 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 40 CFR 136, Appendix B (1997); 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, SW-846" or "Methods for the Determination of Organic Compounds in Drinking Water, Supplement III of 1995".

"Duly authorized agent" means a person who is authorized by written consent or by law to act on behalf of an owner or operator including, but not limited to: for corporations, a principal executive officer of at least the level of vice president; or, for a sole proprietorship or partnership, the proprietor or a general partner.

"Groundwater" means groundwater as defined in Section 3 of the Illinois Groundwater Protection Act [415 ILCS 55/3].

"Groundwater quality standards" means the standards for groundwater set forth in 35 Ill. Adm. Code 620.

"Health advisory level" means a human threshold toxicant advisory concentration, as set forth in 35 Ill. Adm. Code 620, Subpart F.

"Licensed professional geologist" means a person who has a current license pursuant to the Professional Geologist Licensing Act of 1996 [225 ILCS 745].

"Licensed industrial hygienist" means a person who has a current license pursuant to the Industrial Hygienists Licensing Act of 1993 [225 ILCS 52].

"Notice of closure" means a written statement issued by the Department indicating that no further action is required to remedy the past agrichemical contamination at an agrichemical facility.

"Operator" means the person responsible for the operation and maintenance of an agrichemical facility.

"Owner" means the person who holds legal interest, liability or claim to the real property of an agrichemical facility.

"Pesticide" means *any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest or any substance or mixture of substances intended for use as a plant regulator, defoliant or desiccant* [415 ILCS 60/4.29].

"Professional engineer" means a person who has a current license pursuant to the Professional Engineering Practice Act of 1989 [225 ILCS 325].

"Release" means any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing of agrichemicals into the environment, but excludes application of agrichemicals at agronomic rates under regulations established by the Department in accordance with the Act.

"Remediation suitability determination level" or "RSDL" means the concentration of a pesticide residue in soil that represents a level below which the Department considers the remediation media to be suitable for land application pursuant to 8 Ill. Adm. Code 258.

"Soil cleanup objective" or "SCO" means the concentration of any agrichemical in soil below which there is a minimal risk that the agrichemical will move from soil to groundwater and cause an exceedence of a Class I, Class II or Class III groundwater quality standard or a health advisory level.

"Target pesticide" means any pesticide that can reasonably be expected by persons conducting a site assessment to be present at an agrichemical facility on

the basis of past and current storage or mixing and loading of the pesticide at the site.

(Source: Amended at 32 Ill. Reg. 1308, effective January 21, 2008)

### **Section 259.150 Incorporation by Reference**

This Section incorporates the following material by reference. These incorporations by reference do not include any amendments or editions beyond the dates specified.

Roy, W.R. and I.G. Krapac, Potential Soil Cleanup Objectives for Nitrogen-Containing Fertilizers at Agrichemical Facilities, Soil and Sediment Contamination, 15:241-251, 2006.

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

"A Compendium of Superfund Field Operations Methods", EPA Publication No. EPA/540/0-87-001, OSWER Directive 9355.0-14 (December 1987).

"Methods for the Determination of Organic Compounds in Drinking Water, Supplement III", EPA Publication No. EPA/600/R-95/131 (August 1995).

"Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods", EPA Publication No. SW-846 (Third Edition, April 1998), as amended by Updates I, IIA, III and IIIA.

"Soil Screening Guidance: Technical Background Document", EPA Publication No. EPA/540/R-95/128, PB96-963502 (May 1996).

"Soil Screening Guidance: User's Guide", EPA Publication No. EPA/540/R-96/018, PB96-963505 (April 1996).

"Subsurface Characterization and Monitoring Techniques: A Desk Reference Guide, Volume I: Solids and Ground Water, Appendices A and B", EPA Publication No. EPA/625/R-93/003a (May 1993).

"Subsurface Characterization and Monitoring Techniques: A Desk Reference Guide, Volume II: The Vadose Zone, Field Screening and Analytical Methods, Appendices C and D", EPA Publication No.

EPA/625/R-93/003b (May 1993).

(Source: Amended at 32 Ill. Reg. 1308, effective January 21, 2008)

## **SUBPART B: SOIL AND GROUNDWATER CLEANUP OBJECTIVES**

### **Section 259.210 General**

An owner or operator of an agrichemical facility who elects to participate in the Agrichemical Facility Response Action Program shall use the criteria in this Subpart to determine if soil at an agrichemical facility contains agrichemicals at concentrations that represent a significant environmental risk that must be managed under hazardous waste regulations, has agrichemical concentrations of moderate concern that may be managed under more flexible regulations, or has agrichemical concentrations that are below regulatory concern.

(Source: Amended at 32 Ill. Reg. 1308, effective January 21, 2008)

### **Section 259.220 Pesticides**

- a) If the pesticide concentrations in soil are equal to or greater than the remediation suitability determination levels in Appendix A of this Part, the soil is considered a high risk to cause an exceedence of a Class I or Class III groundwater quality standard or a health advisory level and is also considered to contain a hazardous constituent, subject to all applicable hazardous waste management requirements and restrictions (35 Ill. Adm. Code: Subtitle G: Chapter I: Subchapter c), and not suitable for land application pursuant to 8 Ill. Adm. Code 258.
- b) Notwithstanding the requirements of subsection (a) of this Section, applicants may demonstrate that the contaminated soils may be safely land applied pursuant to 8 Ill. Adm. Code 258.150.
- c) If the pesticide concentrations in soil are less than the remediation suitability determination levels in Appendix A of this Part, but are equal to or greater than the default soil cleanup objectives in Appendix B, the soil is considered a moderate risk to cause an exceedence of a groundwater quality standard or a health advisory level, and a corrective action plan to remediate the past contamination may be submitted to the Department and the Board for review. The soil may be suitable for the land application treatment program pursuant to 8 Ill. Adm. Code 258.
- d) If the pesticide concentrations in soil are less than the default SCOs in Appendix B of this Part, the pesticide concentrations are considered below regulatory

concern and the facility may apply for a notice of closure in accordance with Subpart E.

- e) If the pesticide concentrations are less than the remediation suitability determination levels in Appendix A, but equal to or greater than the default SCOs in Appendix B, the applicant may undertake a detailed site assessment as described in Section 259.340 to develop the information necessary to propose site-specific SCOs, using the equations in Section 259.350(a). All site-specific cleanup objectives are subject to Board approval.
- f) Pesticide concentrations in soils proposed to remain in place at the conclusion of corrective actions may not exceed the default SCOs in Appendix B, unless appropriate engineering barriers, in conjunction with necessary institutional controls, are approved as part of a corrective action plan.
- g) If soil samples at a facility contain pesticides for which default SCOs are not listed in Appendix B, the applicant shall consult with the Department to develop an appropriate SCO.
- h) The default SCOs for pesticides for surface soils in Appendix B apply to the upper 12 inches of the soil and any soil/gravel mixture within 12 inches of land surface. The subsurface SCOs for pesticides apply from 12 inches below land surface to 60 inches below land surface.
- i) Default surface SCOs for pesticides are calculated using the equations in Section 259.350(a) and an organic carbon content ( $f_{oc}$ ) of 0.008. The subsurface SCOs for pesticides are calculated using an  $f_{oc}$  of 0.002. If pesticides are present in soil at depths greater than 60 inches below land surface, the applicant shall measure the  $f_{oc}$  of at least 2 soil samples representative of the interval between 60 inches and the maximum depth at which pesticides are present in each boring within the area of contaminated soil. The variable  $f_{oc}$  may not be measured in soil samples with visible evidence of pesticide contamination. The measured  $f_{oc}$  shall be used in the equation in Section 259.350(a) to calculate the soil cleanup objective for contaminated soil below a depth of 60 inches.

(Source: Amended at 32 Ill. Reg. 1608, effective January 21, 2008)

### **Section 259.230 Nitrate and Ammonium**

- a) If the nitrate or ammonium concentrations in soil are equal to or greater than the default soil cleanup objectives in Appendix C of this Part, the soil is considered a moderate risk to cause an exceedence of a groundwater quality standard or a

health advisory level, and a corrective action plan to remediate the past contamination may be submitted to the Department and the Board for review. The soil may be suitable for the land application treatment program under 8 Ill. Adm. Code 258.

- b) If the nitrate or ammonium concentrations in soil are less than the default SCOs in Appendix C of this Part, the nitrate or ammonium concentrations are considered below regulatory concern and the facility may apply for a notice of closure in accordance with Subpart E of this Part.
- c) If the nitrate or ammonium concentrations are equal to or greater than the default SCOs in Appendix C of this Part, the applicant may undertake a detailed site assessment as described in Section 259.340 of this Part to develop the information necessary to propose site-specific SCOs, using the equations in Section 259.350(b) and (c) of this Part. All site-specific cleanup objectives are subject to Board approval.
- d) Nitrate or ammonium concentrations in soils proposed to remain in place at the conclusion of corrective actions shall not exceed the default SCOs in Appendix C of this Part, unless appropriate engineering barriers, in conjunction with necessary institutional controls, are approved as part of a corrective action plan.
- e) The default SCOs for nitrate as N in Appendix C of this Part shall apply to unsaturated soil and soil/gravel mixtures of the site regardless of depth from land surface.
- f) The default SCOs for ammonium in Appendix C of this Part shall apply to the upper 12 inches of the soil and any soil/gravel mixture within 12 inches of land surface.
- g) If ammonium is present at concentrations greater than 100 mg/kg in unsaturated soil at depths greater than 12 inches below land surface, the applicant shall measure the cation exchange capacities (CEC) of at least 2 soil samples representative of the interval between 12 inches and the maximum depth at which ammonium is present in each boring within the area of contaminated soil. The measured CEC shall be used in the equation in Section 259.350(c) of this Part to calculate the soil cleanup objective for contaminated soil below a depth of 12 inches.
- h) Appendix F of this Part includes a list of Illinois soils and approximate CECs that shall be used with the table of default SCOs in Appendix C to calculate the SCO for a specific site.

(Source: Added at 32 Ill. Reg. 1308, effective January 21, 2008)

### **Section 259.240 Groundwater Cleanup Objectives**

- a) The groundwater cleanup objectives for Class I and Class II groundwater are listed in Appendix D of this Part.
- b) The applicant may use the Class II groundwater cleanup objectives in Appendix D of this Part to calculate a site-specific SCO using the equations in Section 259.350 of this Part, if adequately demonstrated, during an initial, final or detailed site assessment, that the uppermost 15 feet of groundwater underlying the contaminated area is classified as Class II groundwater. If this cannot be demonstrated, the Class I groundwater objective shall be used.
- c) If groundwater samples from a facility contain pesticides for which groundwater cleanup objectives are not listed in Appendix C of this Part, the applicant should contact the Department for a determination of the groundwater objective.

(Source: Added at 32 Ill. Reg. 1308, effective January 21, 2008)

## **SUBPART C: SITE ASSESSMENT**

### **Section 259.310 General**

An owner or operator who elects to participate in the Agrichemical Facility Response Action Program shall conduct site assessments pursuant to this Subpart. The purposes of the site assessment are to identify any agrichemical contamination of soil or groundwater and to develop sufficient information regarding the extent of any contamination to guide decisions about corrective actions. The findings, opinions and conclusions of the site assessment shall be supported by adequate documentation. All site assessment activities shall be conducted by or under the supervision of a licensed professional geologist, professional engineer or licensed industrial hygienist. An applicant may request the Department's assistance in investigating suspected site contamination.

- a) The results of the initial assessment pursuant to Section 259.320 of this Part and plans to conduct sampling and analyses shall be submitted to the Department and the Board for review. The results of the final site assessment pursuant to Section 259.330 of this Part shall also be submitted. Both phases may be conducted and the combined results submitted for review. Based on the results of the initial site assessment, the Department may recommend the addition or deletion of compounds from the list of target pesticides and recommend collection and

analyses of groundwater samples.

- b) All field and laboratory activities shall satisfy the following to ensure that all data are scientifically valid and of known precision and accuracy:
- 1) All field sampling activities relative to sample collection, documentation, preparation, labeling, storage, shipment and security, quality assurance and quality control, acceptance criteria, corrective action, and decontamination procedures shall be conducted in accordance with "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (SW-846), Vol. One, Ch. One (Quality Control) and Vol. Two (Field Manual), incorporated by reference at Section 259.150 of this Part. If approved by the Department, such activities also may be conducted in accordance with ASTM standards; methods identified in "A Compendium of Superfund Field Operations Methods" (EPA/540/0-87-001, OSWER Directive 9355.0-14, December 1987), "Subsurface Characterization and Monitoring Techniques: A Desk Reference Guide, Volume I: Solids and Ground Water, Appendices A and B" (EPA/625/R-93/003a, May 1993), or "Subsurface Characterization and Monitoring Techniques: A Desk Reference Guide, Volume II: The Vadose Zone, Field Screening and Analytical Methods, Appendices C and D" (EPA/625/R-93/003b, May 1993); or other procedures.
  - 2) All field measurement activities relative to equipment and instrument operation, calibration and maintenance, corrective action, and data handling shall be conducted in accordance with SW-846, or with an equipment or instrument manufacturer's or vendor's published standard operating procedures.
  - 3) All laboratory quantitative analyses of soil samples to determine concentrations of agrichemicals shall be conducted fully in accordance with SW-846, relative to all facilities, equipment and instrumentation, operating procedures, sample management, test methods, equipment calibration and maintenance, quality assurance and quality control, corrective action, data reduction and validation, reporting, and records management. The practical quantitation limit (PQL) of the test methods selected shall be less than or equal to the default SCO contained in Appendix B of this Part, or, if site-specific cleanup objectives have been determined, the PQL shall be less than or equal to the site-specific SCOs for the site.
  - 4) All field or laboratory measurements of samples to determine physical or

geochemical characteristics shall be conducted in accordance with ASTM standards or other procedures as approved by the Department.

- 5) All laboratory quantitative analyses of soil samples to determine concentrations of any regulated substances or agrichemicals that require more sensitive detection limits or cannot be analyzed by standard methods identified in SW-846 shall be conducted in accordance with analytical protocols developed in consultation with and approved by the Department.
- 6) All groundwater monitoring and analytical procedures shall be conducted in accordance with 35 Ill. Adm. Code 620.505 and 620.510.
- 7) All quantitative analyses of soil and groundwater samples utilizing any of the approved test methods identified in 35 Ill. Adm. Code 186.180 shall be completed by an accredited laboratory in accordance with the requirements of 35 Ill. Adm. Code 186. Quantitative analyses not utilizing an accredited laboratory in accordance with Part 186 shall be deemed invalid.

(Source: Amended at 32 Ill. Reg. 1308, effective January 21, 2008)

#### **Section 259.320 Initial Assessment**

- a) The purpose of the initial site assessment is to develop an appropriate sampling and analysis plan based on the environmental conditions at the agrichemical facility. The specific objectives of the initial site assessment are to identify the following:
  - 1) target pesticides,
  - 2) locations of potable water supply wells,
  - 3) the classification of the groundwater underlying the site,
  - 4) soil and hydrogeologic conditions based on available information,
  - 5) areas that may be locations of past agrichemical contamination, and
  - 6) whether the facility is located within a delineated well head protection area, the minimum or designated maximum setback zone, or a regulated recharge area of a potable water supply well.

- b) The initial site assessment shall provide the following:
- 1) a listing of target pesticides, which shall include all pesticides known or suspected to have been released, on the basis of interviews with the owner and operator and a site investigation by or under the supervision of a licensed professional geologist, professional engineer or licensed industrial hygienist.
    - A) Unless affirmatively demonstrated that a pesticide has not been stored, mixed or loaded on the site, all pesticides listed in this subsection (b)(1)(A) shall be considered target pesticides.
 

acetochlor	carbofuran	simazine
alachlor	2,4-D	terbufos
atrazine	metolachlor	trifluralin
butylate	metribuzin	
chlorpyrifos	pendimethalin	
    - B) An applicant may elect to limit the agrichemicals, media (soil or groundwater) or area included in a site assessment. If the site assessment is limited in any way, the notice of closure shall be limited to the agrichemicals, media or area included in the site assessment and any corrective actions;
  - 2) facility site maps, at a scale no larger than 1 inch equals 200 feet, of sufficient detail and accuracy to show all of the following:
    - A) areas of the site that involve the storage or mixing and loading of agrichemicals,
    - B) site structures or buildings,
    - C) roads or driveways and parking facilities,
    - D) the location of the potable water supply for the site and any groundwater monitoring wells on the site, and
    - E) the map scale (graphic and nominal), north arrow, date, name and address of preparer, and location of the site with respect to section, township, range, and principal meridian;
  - 3) a map, at a scale no larger than 1 inch equals 400 feet, that shows the

facility boundaries and all of the following:

- A) land uses (e.g., residential, commercial/industrial, agricultural and conservation property) within 200 feet of the site boundaries,
  - B) any potable water supply wells within 200 feet of the site boundaries, and
  - C) the map scale (graphic and nominal), north arrow, date, name and address of preparer, and location of the site with respect to section, township, range, and principal meridian;
- 4) a soil survey map of the site and the surrounding area within 200 feet of the site and soil interpretation for each soil series identified on the site or within 200 feet of the site for:
- A) soil physical and chemical properties,
  - B) engineering index properties, and
  - C) soil and water features;
- 5) copies of lithologic and construction logs for any monitoring well or potable water supply well on or within 200 feet of the site. If copies are not available, the applicant shall provide:
- A) an explanation as to why such data could not be obtained,
  - B) estimations of the diameter and total depth of each well, the screened interval of each well and the depth to water in each well, and how those values were determined, and
  - C) an estimation of the geologic conditions at each well site;
- 6) U.S. Geological Survey 7.5 minute topographic map showing the location of the facility, any community water supply wells within 2,500 feet of the site boundaries and the boundaries of any delineated well head protection area, the minimum or designated maximum setback zone or regulated recharge area for a community water supply well;
- 7) any pertinent reports containing hydrologic or geologic information by the Illinois State Water Survey, Illinois State Geological Survey or U.S.

Geological Survey;

- 8) copies of prior site assessments and any pending, threatened or past litigation, administrative actions or notices from government entities regarding the storage or disposal of pesticides at the site; and
- 9) a detailed sampling and analysis plan including the following:
  - A) proposed number and location of soil samples,
  - B) total sampling depth and sampling depth intervals for soil samples,
  - C) locations and construction details for any proposed monitoring wells and any existing monitoring wells or water supply wells proposed for groundwater sampling,
  - D) list of analytes, analytical methods and expected detection limits in soil and water, and
  - E) quality assurance project plans for field and laboratory activities.

(Source: Amended at 32 Ill. Reg. 1308, effective January 21, 2008)

### **Section 259.330 Final Assessment**

- a) The purposes of the final assessment are to execute the sampling and analysis plan for the soil and/or groundwater at the site and determine the locations of the agrichemical concentrations that are:
  - 1) greater than or equal to the RSDLs,
  - 2) greater than or equal to the SCOs, and
  - 3) below the RSDLs and SCOs.
- b) The final site assessment shall provide:
  - 1) results of laboratory analyses or field screening measurements of agrichemical concentrations in soil and groundwater, including quality control samples;
  - 2) facility site maps, at a scale no larger than 1 inch equals 200 feet, of

sufficient detail and accuracy to show all of the following:

- A) the locations of all soil samples, keyed to a table of analytical results,
  - B) the locations of any monitoring or water supply wells sampled, keyed to a table of analytical results,
  - C) the direction and rate of movement of agrichemicals in groundwater, if known,
  - D) areas of the site that involve the storage or mixing and loading of agrichemicals,
  - E) site structures or buildings,
  - F) roads or driveways and parking facilities,
  - G) the location of the potable water supply for the site and any groundwater monitoring wells on the site, and
  - H) the map scale (graphic and nominal), north arrow, date, name and address of preparer, and location of the site with respect to section, township, range, and principal meridian;
- 3) characterization of significant physical features of the facility and vicinity that may affect agrichemical fate and transport and risk to potable wells and Class I, Class II or Class III groundwater.
- c) The applicant shall inform the Department of the schedule for conducting the final site assessment to allow representatives of the Department to observe assessment activities.

(Source: Amended at 32 Ill. Reg. 1308, effective January 21, 2008)

### **Section 259.340 Detailed Assessment for Development of Site-Specific Soil Cleanup Objectives**

The purpose of the detailed assessment for site-specific SCOs is to provide the information necessary for the calculation of site-specific SCOs based on the site physical properties. The detailed assessment is optional and is only required when an applicant proposes corrective actions based on site-specific SCOs, instead of reliance on the default SCOs of Appendix B and

## Appendix C of this Part.

- a) To determine site-specific physical soil and hydrogeologic parameters, a minimum of one boring per 0.5 acre of contaminated soil area shall be collected. This boring shall be deep enough to allow the collection of the required field measurements. The soil taken from the borings shall be visually inspected to ensure there are no significant differences in the stratigraphy. If there are similar soil types, one boring may be used to determine the site-specific physical soil parameters. If there are significant differences, all of the borings shall be evaluated before determining the site-specific soil parameters for the site. The site-specific physical parameters shall be determined from the portion of the boring representing the stratigraphic units being evaluated. In general, two samples from the boring shall be required:
  - 1) a sample of the predominant soil type in the unsaturated zone, and
  - 2) a sample of the predominant geologic unit in the saturated zone.
- b) Not all of the parameters identified in the equations in Section 259.350(a) of this Part shall be determined on a site-specific basis. An applicant may collect partial site-specific information and use default values for the other parameters. Applicants should consider measuring the organic carbon content in all soil samples that have been collected to analyze for pesticide concentrations because the product of the Equation in Section 259.350(a) of this Part is most sensitive to the organic carbon content. The variable  $f_{oc}$  may not be measured in soils with visible evidence of pesticide contamination.
- c) A site-specific groundwater dilution factor (DF) (used in developing SCOs based upon the protection of groundwater) may be determined by substituting site information in the equation in Section 259.350(a)(1) of this Part. A groundwater recharge rate (R in the equation in Section 259.350(a)(2) of this Part) less than 0.15 m/yr may not be used unless it is demonstrated through on-site testing of hydraulic properties that the saturated hydraulic conductivity of the geologic material in which a Class II groundwater occurs or of the geologic material overlying a Class I or III groundwater is smaller than  $1 \times 10^{-6}$  cm/sec. The mixing zone depth (d in the equation in Section 259.350(a)(2) of this Part) is the mean thickness of the geologic unit in which the Class I, II or III groundwater is present. A mixing zone depth larger than 6.5 meters may not be used in calculating a site-specific dilution factor.
- d) In addition to the parameters in the equation in Section 259.350(a)(2) of this Part, the following information on hydrogeologic conditions beneath the site shall be

determined:

- 1) mean depth to water table,
  - 2) mean depth to uppermost Class I, Class II or Class III groundwater,
  - 3) mean thickness of uppermost Class I, Class II or Class III groundwater,  
and
  - 4) groundwater flow direction.
- e) The applicant shall inform the Department of the schedule for conducting the final site assessment to allow representatives of the Department to conduct a site visit and observe assessment activities.

(Source: Amended at 32 Ill. Reg. 1308, effective January 21, 2008)

#### Section 259.350 Equations for Calculating Site-Specific Soil Cleanup Objectives

- a) Site-specific soil cleanup objectives for pesticides are determined by the following equation:

$$SCO = C_w \left[ (K_{oc} \times f_{oc}) + \frac{(\theta_w + (\theta_a \times H'))}{P_b} \right]$$

Where:

SCO	=	soil cleanup objective (mg/kg)
C <sub>w</sub>	=	target soil leachate concentration (mg/L)
K <sub>oc</sub>	=	organic carbon partition coefficient (L/kg)
f <sub>oc</sub>	=	organic carbon content of soil (kg/kg)
θ <sub>w</sub>	=	water-filled soil porosity (L <sub>water</sub> /L <sub>soil</sub> )
θ <sub>a</sub>	=	air-filled soil porosity (L <sub>air</sub> /L <sub>soil</sub> )
H'	=	Henry's law constant (dimensionless)
P <sub>b</sub>	=	dry soil bulk density (kg/L)

References:

"Soil Screening Guidance: User's Guide", p. 29, eq. 10.

"Soil Screening Guidance: Technical Background Document", p. 37, eq. 24.

- 1) The target soil leachate concentration can be determined by the following equation:

$$C_w = DF \times GW_{obj}$$

Where:

$C_w$  = target soil leachate concentration (mg/L)  
 $DF$  = groundwater dilution factor (dimensionless)  
 $GW_{obj}$  = groundwater cleanup objective (mg/L)

- 2) The dilution factor can be determined by the following equation:

$$DF = 1 + \frac{K \times i \times d \times W}{R \times L \times W}$$

Where:

$DF$  = groundwater dilution factor (unitless)  
 $K$  = aquifer hydraulic conductivity (m/yr)  
 $i$  = hydraulic gradient (m/m)  
 $d$  = mixing zone depth (m)  
 $R$  = groundwater recharge rate (m/yr)  
 $L$  = length of contaminated soil parallel to groundwater flow (m)  
 $W$  = width of contaminated soil perpendicular to groundwater flow (m)

- b) Site-specific soil cleanup objectives for nitrate as nitrogen can be determined by the following equation:

$$SCO(mg/kg) = 0.125(L/kg)C_w(mg/L)$$

Where:

$L$  = Liter  
 $C_w$  = Target soil leachate concentration (mg/L)

- c) Site-specific soil cleanup objectives for ammonium can be determined by the following empirical equation:

$$SCO = 0.36(CEC)^3 + 8.93(CEC)^2 + 143(CEC) + 103$$

Where:

CEC = cation exchange capacity (meq/100g)

Reference:

Potential Soil Cleanup Objectives for Nitrogen-Containing Fertilizers at Agrichemical Facilities, Soil and Sediment Contamination.

- d) The default values for the equations in subsections (a) and (b) of this Section are:

Parameter	Description	Default Value
DF	Groundwater dilution factor	30 (dimensionless)
f <sub>oc</sub>	Organic carbon content of soil	0.008 kg/kg (0.8%) surface or 0.002 kg/kg (0.2%) subsurface
Θ <sub>a</sub>	Air-filled soil porosity	0.2 (20%) L <sub>air</sub> /L <sub>soil</sub>
Θ <sub>w</sub>	Water-filled soil porosity	0.2 (20%) L <sub>water</sub> /L <sub>soil</sub>
P <sub>b</sub>	Dry soil bulk density	1.6 kg/L
H'	Henry's law constant	see Appendix E
K <sub>oc</sub>	Organic carbon partition coefficient	see Appendix E
GW <sub>obj</sub>	Groundwater cleanup objective	see Appendix D
CEC	Cation exchange capacity	see Appendix F

(Source: Amended at 32 Ill. Reg. 1308, effective January 21, 2008)

**SUBPART D: APPLICATION FOR REVIEW AND APPROVAL OF CORRECTIVE ACTION PLANS**

**Section 259.410 General**

An owner or operator who elects to participate in the Agrichemical Facility Response Action Program shall submit corrective action plans for review by the Department and final approval by the Board pursuant to this Subpart.

#### **Section 259.420 Submittal**

The Agrichemical Facility Response Action Program application shall be submitted to the Department on forms prescribed and provided by the Department with attachments, plans, and reports, as necessary. The forms may be copied or combined, but shall contain original signatures. The application shall be mailed or hand-delivered to the address designated by the Department on the forms. Corrective action plans shall be prepared and implemented by or under the supervision of a licensed professional geologist, professional engineer, or licensed industrial hygienist.

(Source: Amended at 32 Ill. Reg. 1308, effective January 21, 2008)

#### **Section 259.430 Contents**

The application shall, at a minimum, contain the following information:

- a) the facility name, address and telephone number and the applicant's full legal name, address and telephone number, including any duly authorized agents of the applicant, any contact persons to whom correspondence shall be addressed, and the original signature of the applicant certifying the accuracy and completeness of the application;
- b) the agrichemical facility site identification number, if any, and the approximate size of the site in acres, and copies of all Department and Agency permits and endorsements pertaining to the site that are currently held by the owner or operator;
- c) the results of any environmental site assessment conducted pursuant to Subpart C of this Part; and
- d) the corrective action plan, which shall include the following:
  - 1) a description of the scope of the problems to be addressed by the proposed action, including the specific agrichemicals and the physical area to be addressed by the corrective action plan;
  - 2) a statement of remediation objectives and a description of the method used

- to determine the remediation objectives;
- 3) a description and justification of the remediation methods selected and how each remediation method identified in the corrective action plan fits into the overall strategy for addressing the past agricultural contamination, including but not limited to:
    - A) feasibility of implementation; and
    - B) whether the methods will perform satisfactorily and reliably until the remediation objectives are achieved;
  - 4) the proposed schedule of cleanup activities;
  - 5) a description of any proposed engineered barriers or institutional controls necessary to achieve the remediation objectives, including long-term reliability, operation and maintenance requirements. For remediation of soil contamination, engineered barriers, in conjunction with institutional controls, may be used. The engineered barrier covering the contaminated soil shall consist of either caps constructed of compacted clay, asphalt, concrete or other material approved by the Department or permanent structures such as buildings;
  - 6) if technologies to remediate groundwater contamination are proposed, a description of post-remediation monitoring, including:
    - A) purpose,
    - B) locations,
    - C) frequency, and
    - D) contingencies in the event of an exceedence of applicable groundwater quality standards or health advisory levels;
  - 7) references and other informational sources included as appendices.

(Source: Amended at 32 Ill. Reg. 1308, effective January 21, 2008)

#### **Section 259.440 Department and Board Review**

The Department and Board will jointly review corrective action plans in accordance with this

Section. The Board has the authority to approve or deny the Department's recommendation regarding the application for corrective actions.

- a) For those corrective action plans that do not involve remediation of Class I or Class III groundwater, the Board and Department shall respond to the applicant within 90 days after receipt of an application. The Department will have 45 days from the receipt of an application to review and make a recommendation to the Board.
- b) For those corrective action plans that involve remediation of Class I or Class III groundwater, the Board and Department shall respond to the applicant within 120 days after receipt of an application. The Department will have 75 days after the receipt of an application to review and make a recommendation to the Board.
- c) The Department's record of the date of receipt of an application shall be deemed conclusive unless a contrary date is proved by a dated, signed receipt from the Department.
- d) The Department shall notify the applicant in writing if the application or corrective action plan is incomplete.
- e) Reasons for denial of an application include, but are not limited to, the following:
  - 1) the application is incomplete,
  - 2) the site does not meet the applicable requirements set forth in this Part, or
  - 3) the proposed corrective actions will not attain the appropriate RSDL or SCO.
- f) The Board shall have 30 days after the date of a recommendation by the Department to approve or deny the recommendation.
- g) The Department's record of the date it submitted a recommendation shall be deemed conclusive.
- h) The Board shall notify the Department in writing whether the recommendation is approved or denied.
- i) The Department shall notify the applicant within 15 days of the Board's decision.
- j) The notification of the Board's final action on the application shall be made by

certified or registered mail.

- k) The applicant may agree to waive the review deadline under this Section at the request of the Department or the Board.
- l) Final action shall be deemed to have taken place on the date that the notice is mailed by the Department as determined by the postmark.

### **Section 259.450 Agency Notification and Review**

The Department shall provide notice to the Agency when the results of any environmental site assessment indicate that agrichemical concentrations in Class I or Class III groundwater exceed any concentration level adopted as a standard pursuant to the Illinois Groundwater Protection Act or a health advisory level established by the Agency or the U.S. Environmental Protection Agency. If agrichemical contamination in Class I or Class III groundwater exceeds a groundwater quality standard or health advisory level, an applicant may elect to participate in the Agrichemical Facility Response Action Program. In these instances, the scope of the corrective action plans developed, approved and completed under the Program shall be limited to the soil agrichemical contamination at the site unless implementation of the plan is coordinated, pursuant to Section 19.3(f) of the Act, as follows:

- a) Upon receipt of an application for approval of corrective action plans that include remediation of contaminated Class I or Class III groundwater, the Department shall notify the Agency and coordinate a joint review of the plan with the Agency.
- b) The Agency may provide a written endorsement of the corrective action plan.
- c) The Agency may approve a groundwater management zone for a period of 5 years after implementation of the corrective action plan to allow for groundwater impairment mitigation results.
- d) The Department, in cooperation with the Agency, shall recommend a proposed corrective action plan to the Board for final approval to proceed with groundwater remediation. The Agency shall have 60 days after the date of the notice by the Department to recommend approval, denial, or modification.
- e) The Department, in cooperation with the Agency, shall provide remedial project oversight, monitor remedial work progress, and report to the Board on the status of the remediation project.

(Source: Amended at 32 Ill. Reg. 1308, effective January 21, 2008)

**SUBPART E: NOTICE OF CLOSURE AND RECORDING REQUIREMENTS****Section 259.510 General**

This Section provides for the issuance of a Notice of Closure following the satisfactory completion of corrective actions and submittal of a corrective action report.

- a) Upon completion of the activities described in the approved corrective action plan, the owner or operator shall submit a corrective action report to the Department. The report must provide adequate evidence to demonstrate that the actions were completed in accordance with the approved plan and that the cleanup objectives have been attained.
- b) The corrective action report shall provide the following:
  - 1) certification, by the facility owner and by the licensed professional geologist, professional engineer or licensed industrial hygienist who conducted the site assessments and supervised implementation of the corrective action plan, that all components of the approved corrective action plan were fully implemented;
  - 2) facility site maps, at a scale no larger than 1 inch equal to 200 feet, of sufficient detail and accuracy to show all of the following:
    - A) the boundaries of the facility;
    - B) any areas of the site from which agrichemical contaminated soils were removed;
    - C) any areas of the site on which an engineered barrier was installed; and
    - D) the map scale (graphic and nominal), north arrow, date, name and address of preparer, and location of the site with respect to section, township, range, and principal meridian;
  - 3) a list of the agrichemicals that were included in the soil or groundwater remediation activities;
  - 4) documentation of the volume of soil removed from the site and how the contaminated soil was disposed of;

- 5) as-built drawings of any engineered barriers constructed to achieve the approved remediation objectives;
- 6) copies of any documents describing institutional controls accompanying engineered barriers;
- 7) if groundwater remediation activities were conducted, copies of all analytical results of groundwater monitoring to demonstrate that the approved groundwater cleanup objectives were attained; and
- 8) the results of a final inspection by representatives of the Department or Board.

(Source: Amended at 32 Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_)

#### **Section 259.520 Issuance**

- a) The Board shall submit its recommendation on approval of a corrective action report within 30 days after receipt of the report from the Department.
- b) The Department shall issue the Notice of Closure to the applicant within 15 days after the Board's recommendation for approval of a corrective action report.
- c) The Department shall mail the Notice of Closure by registered or certified mail, post-marked with a date stamp and with return receipt requested.
- d) Final action shall be deemed to have taken place on the date that the notice is post-marked.

#### **Section 259.530 Contents**

A Notice of Closure shall state that cleanup objectives for the site have been met and no further remedial action is required to remedy the past agrichemical contamination, pursuant to Section 19.3 of the Act, and include the following:

- a) an acknowledgment that the requirements of the corrective action plan were satisfied;
- b) a copy of the corrective action report submitted pursuant to Section 259.510 of this Part;
- c) a statement that the issuance of the Notice of Closure signifies a release from

further responsibilities under the Act;

- d) if the remediation site includes a portion of a larger parcel of property or if the applicant has elected to limit either the area of soil or groundwater or the agrichemicals to be remediated, or both, the Notice of Closure shall be limited accordingly by its terms;
- e) the prohibition against the use of any remediation site in a manner inconsistent with any institutional limitations without additional appropriate remedial activities;
- f) a description of any preventive, engineering, and institutional controls required in the approved corrective action plan and notification that failure to manage the controls in full compliance with the terms of the corrective action plan may result in avoidance of the Notice of Closure;
- g) the recording obligations and opportunity to request a change in any institutional controls pursuant to this Part; and
- h) if groundwater conditions were addressed during the site assessment or corrective action, the Agency and the Department may choose to include conditional requirements in accordance with the Illinois Groundwater Protection Act [415 ILCS 55] or the Groundwater Quality Standards (35 Ill. Adm. Code 620).

(Source: Amended at 32 Ill. Reg. 1308, effective January 21, 2008)

#### **Section 259.540 Duty to Record**

The applicant shall record the Notice of Closure with the Office of Recorder or the Registrar of Titles of the county within which the site is located within 30 days after receipt of the Notice of Closure. In addition, proof of recording of a closure report and Notice of Closure shall be submitted to the Department within 30 days after filing. Failure to provide proof of recording may lead to avoidance of a Notice of Closure.

(Source: Amended at 32 Ill. Reg. 1308, effective January 21, 2008)

#### **Section 259.550 Voidance**

- a) The Board may void a Notice of Closure for:
  - 1) violation of any applicable institutional controls or land use restrictions;

- 
- 2) failure of the owner, operator, or any subsequent transferee to maintain any approved engineering barriers or institutional controls;
  - 3) disturbance or removal of contaminated soil that has been left in place in accordance with the corrective action plan;
  - 4) failure to comply with the recording requirements of this Part;
  - 5) obtaining the Notice of Closure by fraud or misrepresentation; and
  - 6) subsequent discovery of agrichemicals not identified as part of the investigative or remedial activities upon which the issuance of the Notice of Closure was based.
- b) If the Board voids a Notice of Closure, it shall provide notice to the current title holder of the remediation site.
- 1) The notice shall specify the cause for the voidance and describe facts in support of that cause.
  - 2) The Department shall mail Notices of Voidance by registered or certified mail, date-stamped with return receipt requested.
  - 3) The Department shall submit the Notice of Voidance to the Office of the Recorder or the Registrar of Titles for the county in which the site is located. The notice shall be filed in accordance with Illinois law so that it forms a permanent part of the chain of title for the site.

(Source: Amended at 32 Ill. Reg. 1308, effective January 21, 2008)

**Section 259.APPENDIX A Remediation Suitability Determination Levels of Pesticides  
Listed as Hazardous Constituents in 35 Ill. Adm. Code 721**

<u>Pesticide Name</u>	<u>CAS No.<sup>a</sup></u>	<u>Recommended Test Method<sup>b</sup></u>	<u>RSDL (mg/kg)<sup>c</sup></u>
aldicarb	116-06-3	8321	0.2
aldrin	309-00-2	8081	0.1
butylate	2008-41-5	8270	150
carbofuran	1563-66-2	8270	3
chlordane	57-74-9	8081	160
2,4-D	94-75-7	8151	6
4,4'-DDD	72-54-8	8081	130
4,4'-DDT	50-29-3	8081	380
dieldrin	60-57-1	8081	0.08
dimethoate	60-51-5	8141	0.07
dinoseb	88-85-7	8151	0.4
disulfoton	298-04-4	8141	0.5
endosulfan	115-29-7	8081	3400
endothall	145-73-3	8270	14
endrin	72-20-8	8081	27
EPTC	759-94-4	8270	57
heptachlor	76-44-8	8081	13
lindane	58-89-9	8081	0.4
methoxychlor	72-43-5	8151	4100
parathion, ethyl	56-38-2	8141	440
parathion, methyl	298-00-0	8141	15
phorate	298-02-2	8141	2
2,4,5-TP	93-72-1	8270	370
toxaphene	8001-35-2	8081	400

## Notes:

<sup>a</sup> Chemical Abstract Service (CAS)<sup>b</sup> USEPA Test Methods (SW-846)<sup>c</sup> Value using Class I groundwater objectives of Appendix D and surface soil conditions

(Source: Amended at 32 Ill. Reg. 1308, effective January 21, 2008)

**Section 259.APPENDIX B Default Soil Cleanup Objectives - Pesticides**

<u>Pesticide Name</u>	<u>CAS No.<sup>a</sup></u>	<u>Recommended Test Method<sup>b</sup></u>	<u>Subsurface (mg/kg)</u>	<u>Surface (mg/kg)</u>
acetochlor	34256-82-1	8151	0.12	0.9*
acifluorfen sodium	62476-59-9	8151	1.0	2.8
alachlor	15972-60-8	8081	0.02	1.7*
aldicarb	116-06-3	8321	0.02	0.03
aldrin	309-00-2	8081	0.01	0.02
atrazine	1912-24-9	8141	0.04	1.7*
bentazon sodium	50723-80-3	8151	1.2	2.6
bromacil	314-40-9	8321	3.3	5.2
bromoxynil (o)	1689-99-2	8270	2.1	6.9
butylate	2008-41-5	8270	7.7	27
carbofuran	1563-66-2	8270	0.3	0.6
chlordane	57-74-9	8081	7.2	29
chlorimuron-ethyl	90982-32-4	8081	1.3	3.6
chlorpyrifos	2921-88-2	8141	13	50
cyanazine	21725-46-2	8141	0.2	1.1*
2,4-D	94-75-7	8151	0.5	1.1
4,4'-DDD	72-54-8	8081	5.6	22
4,4'-DDE	72-55-9	8081	16	64
4,4'-DDT	50-29-3	8081	17	66
diazinon	333-41-5	8141	0.06	0.2
dicamba	1918-00-9	8151	1	1.4
dieldrin	60-57-1	8081	0.004	0.01
dimethoate	60-51-5	8141	0.01	0.01
dinoseb	88-85-7	8151	0.04	0.08
disulfoton	298-04-4	8141	0.02	0.2*
endosulfan	115-29-7	8081	150	600
endothall	145-73-3	8270	0.9	2.4
endrin	72-20-8	8081	1.2	5
EPTC	759-94-4	8270	3	10
glyphosate	1071-83-6	8321	91	350
HCH-alpha	319-84-6	8081	0.003	0.01
heptachlor	76-44-8	8081	0.6	2.3
heptachlor epoxide	1024-57-3	8081	0.9	3.8
lindane	58-89-9	8081	0.02	0.07
linuron	330-55-2	8321	0.5	1.7

malathion	121-75-5	8141	11	41
methoxychlor	72-43-5	8151	180	730
metolachlor	51218-45-2	8151	8.3	22
metribuzin	21087-64-9	8270	1.2	2.8
parathion, ethyl	56-38-2	8141	19	77
parathion, methyl	298-00-0	8141	0.7	2.6
pendimethalin	40487-42-1	8091	230	900
permethrin	52645-53-1	8081	830	3300
phorate	298-02-2	8141	0.09	1.1*
simazine	122-34-9	8141	0.05	1.7*
2,4,5-TP	93-72-1	8270	17	65
terbufos	13071-79-9	8141	0.07	0.4*
toxaphene	8001-35-2	8081	18	72
trifluralin	1582-09-8	8091	23	100

## Notes:

<sup>a</sup> Chemical Abstract Service (CAS)<sup>b</sup> USEPA Test Methods (SW-846)

\* Application Rate Equivalents (AREs) are based on USEPA-approved pesticide label rates for the specific pesticide active ingredient and conservative assumptions about soil properties. AREs only apply to the upper one foot of soil or soil/gravel mixture and are used as the SCO for the upper one foot of soil or soil/gravel mixture if the ARE is greater than the SCO value calculated using the Equation in Section 259.350(a) of this Part and less than the RSDL value.

The application rate equivalents can be determined using the equation below:

$$ARE(mg/kg) = Application_{rate}(lb/acre) \times \frac{acrefoot}{43560ft^3} \times \frac{ft^3}{110lb} \times \frac{1}{0.25foot} \times \frac{1.0E+06mg}{kg}$$

Where:

ARE<sub>s</sub> = application rate equivalent (mg/kg)

Application<sub>rate</sub> = current label application rate (lb/acre) for coarse-textured, low organic matter content soils

(Source: Amended at 32 Ill. Reg. 1308, effective January 21, 2008)

**Section 259.APPENDIX C Default Soil Cleanup Objectives – Nitrate-N and Ammonium**

Analyte Name	CEC	Groundwater Conditions	
		Class I (mg/kg)	Class II (mg/kg)
nitrate-N	N/A	80	800
ammonium	<8	500	1,000
	8-15	1,000	3,600
	15-24	2,200	9,300
	>24	5,000	20,300

Note: The default soil cleanup objectives for nitrate-N are based on an application rate equivalent to 160 pounds per acre.

(Source: Added at 32 Ill. Reg. 1308, effective January 21, 2008)

**Section 259.APPENDIX D Groundwater Cleanup Objectives (GW<sub>obj</sub>)**

<u>Name</u>	<u>CAS No.<sup>a</sup></u>	<u>Recommended Test Method<sup>b</sup></u>	<u>Subsurface (mg/L)<sup>c</sup></u>	<u>Surface (mg/L)<sup>d</sup></u>
acetochlor	34256-82-1	505	0.002 <sup>j</sup>	0.01 <sup>g</sup>
acifluorfen sodium	62476-59-9	515.1	0.091 <sup>f</sup>	0.455 <sup>g</sup>
alachlor	15972-60-8	505	0.002	0.01
aldicarb	116-06-3	531.1	0.003	0.015
aldrin	309-00-2	508	0.000005 <sup>e</sup>	0.000025 <sup>c</sup>
ammonia	7664-41-7	350.2	10.0 <sup>o</sup>	50.0 <sup>o</sup>
atrazine	1912-24-9	505	0.003	0.015
bentazon sodium	50723-80-3	515.1	0.21 <sup>f</sup>	1.05 <sup>g</sup>
bromacil	314-40-9	507	0.7 <sup>f</sup>	3.5 <sup>g</sup>
bromoxynil(o)	1689-99-2		0.14 <sup>f</sup>	0.7 <sup>g</sup>
butylate	2008-41-5	507	0.35 <sup>f</sup>	1.75 <sup>g</sup>
carbofuran	1563-66-2	531.1	0.04	0.2
chlordane	57-74-9	508	0.002	0.01
chlorimuron-ethyl	90982-32-4		0.14 <sup>f</sup>	0.7 <sup>g</sup>
chlorpyrifos	2921-88-2	525.2	0.021 <sup>f</sup>	0.105 <sup>g</sup>
cyanazine	21725-46-2	508.1	0.014 <sup>l</sup>	0.07 <sup>g</sup>
2,4-D	94-75-7	515.1	0.07	0.35
4,4'-DDD	72-54-8	508	0.0004 <sup>e</sup>	0.002 <sup>e</sup>
4,4'-DDE	72-55-9	508	0.0003 <sup>e</sup>	0.0015 <sup>e</sup>
4,4'-DDT	50-29-3	508	0.0003 <sup>e</sup>	0.0015 <sup>e</sup>
diazinon	333-41-5	507	0.00063 <sup>l</sup>	0.00315 <sup>g</sup>
dicamba	1918-00-9	515.1	0.21 <sup>f</sup>	1.05 <sup>g</sup>
dieldrin	60-57-1	508	0.000005 <sup>e</sup>	0.000025 <sup>c</sup>
dimethoate	60-51-5	8141 <sup>h</sup>	0.0014 <sup>f</sup>	0.007 <sup>g</sup>
dinoseb	88-85-7	515.1	0.007	0.07
disulfoton	298-04-4	507	0.00028 <sup>f</sup>	0.0014 <sup>g</sup>
endosulfan	115-29-7	508	0.2 <sup>e</sup>	1.0 <sup>e</sup>
endothall	145-73-3	548.1	0.1	0.1
endrin	72-20-8	508	0.002	0.01
EPTC	759-94-4	507	0.175 <sup>f</sup>	0.875 <sup>g</sup>
glyphosate	1071-83-6		0.7 <sup>k</sup>	3.5 <sup>g</sup>
HCH-alpha	319-84-6	508	0.00001 <sup>e</sup>	0.00005 <sup>c</sup>
heptachlor	76-44-8	505	0.0004	0.002
heptachlor epoxide	1024-57-3	505	0.0002	0.001
lindane	58-89-9	508	0.0002	0.001
linuron	330-55-2	508	0.014 <sup>f</sup>	0.07 <sup>g</sup>
malathion	121-75-5		0.14 <sup>f</sup>	0.7 <sup>g</sup>

methoxychlor	72-43-5	508	0.04	0.2
metolachlor	51218-45-2	507	1.05 <sup>f</sup>	5.25 <sup>g</sup>
metribuzin	21087-64-9	507	0.175 <sup>m</sup>	0.875 <sup>g</sup>
nitrate, as N	7631-99-4	300.0	10.0 <sup>c</sup>	100.0 <sup>d</sup>
parathion, ethyl	56-38-2	8141 <sup>h</sup>	0.042 <sup>f</sup>	0.21 <sup>g</sup>
parathion, methyl	298-00-0	8141 <sup>h</sup>	0.00175 <sup>f</sup>	0.00875 <sup>g</sup>
pendimethalin	40487-42-1		0.28 <sup>f</sup>	1.4 <sup>g</sup>
permethrin	52645-53-1		0.35 <sup>f</sup>	1.75 <sup>g</sup>
phorate	298-02-2	8141 <sup>h</sup>	0.0014 <sup>i</sup>	0.007 <sup>g</sup>
simazine	122-34-9	505	0.004	0.04
2,4,5-TP	93-72-1	515.1	0.05	0.25
terbufos	13071-79-9	507	0.00175 <sup>i</sup>	0.00875 <sup>g</sup>
toxaphene	8001-35-2	508	0.003	0.015
trifluralin	1582-09-8	508	0.0525 <sup>f</sup>	0.2625 <sup>g</sup>

## Notes:

<sup>a</sup> Chemical Abstract Service (CAS)

<sup>b</sup> USEPA "Methods for the Determination of Organic Compounds in Drinking Water" Supplement III of 1995

<sup>c</sup> Groundwater Quality Standards for Class I: Potable Resource Groundwater (35 Ill. Adm. Code 620.410)

<sup>d</sup> Groundwater Quality Standards for Class II: General Resource Groundwater (35 Ill. Adm. Code 620.420)

<sup>e</sup> Tiered Approach to Corrective Action Objectives (TACO): Values Used to Calculate the Tier I Soil Remediation Objectives for the Migration to Groundwater Portion of the Groundwater Ingestion Route (35 Ill. Adm. Code 742.Appendix B:Table F)

<sup>f</sup> Human Threshold Toxicant Advisory Concentration (HTTAC) from "Procedures for Determining Human Threshold Toxicant Advisory Concentration for Class I: Potable Resource Groundwater" (35 Ill. Adm. Code 620.Appendix A) using values from Integrated Risk Information System (IRIS), USEPA

<sup>g</sup> Class II GW<sub>obj</sub> values based on Class I GW<sub>obj</sub> values times 5

<sup>h</sup> USEPA "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods (SW-846)", July 1992

<sup>i</sup> HTTAC using values from Health Effects Assessment Summary Tables (HEAST), 1997, USEPA

<sup>j</sup> Value from the Acetochlor Registration Agreement monitoring program, <http://www.epa.gov/oppefed1/aceto/index.htm>

<sup>k</sup> MCL value from Drinking Water Standards and Health Advisories (Summer 2000, EPA 822-B-00-001)

<sup>l</sup> HTTAC using RfD value from Drinking Water Standards and Health Advisories (Summer 2000, EPA 822-B-00-001)

<sup>m</sup> HTTAC using RfD value from Risk Assessment Information System (RAIS),

[http://risk.lsd.ornl.gov/rap\\_hp.shtml](http://risk.lsd.ornl.gov/rap_hp.shtml)

<sup>n</sup> In order to provide environmentally conservative default SCOs that take into account the potential for long-term nitrification, one-third of the USEPA's Lifetime Health Advisory Level for ammonia in drinking water (30 mg/L) is used as basis for the groundwater cleanup objectives for Class I and Class II groundwater (U.S. Environmental Protection Agency, 2004, 2004 Edition of the Drinking Water Standards and Health Advisories, Office of Water, Washington, D.C., EPA 822-R-04-005). Although the Lifetime Health Advisory Level was established for ammonia, most of the dissolved ammonia occurs as ammonium within the pH range (5.6-9.0) of Illinois groundwater.

(Source: Amended at 32 Ill. Reg. 1308, effective January 21, 2008)

**Section 259.APPENDIX E Pesticide Organic Carbon Partition Coefficients and Henry's Law Constants**

<u>Pesticide Name</u>	<u>CAS No.<sup>a</sup></u>	<u>Organic Carbon Partition Coefficients <math>K_{oc}</math> (L/kg)<sup>b</sup></u>	<u>Henry's Law Constant <math>H'</math> (unitless)<sup>c</sup></u>
acetochlor	34256-82-1	952 <sup>d</sup>	9.14E-07 <sup>f</sup>
acifluorfen sodium	62476-59-9	113	8.10E-13
alachlor	15972-60-8	124	1.32E-06
aldicarb	116-06-3	26	5.07E-09
aldrin	309-00-2	17500	1.65E-02
atrazine	1912-24-9	147	1.01E-07
bentazon sodium	50723-80-3	35	4.63E-14
bromacil	314-40-9	15 <sup>h</sup>	4.57E-09
bromoxynil(o)	1689-99-2	190	1.31E-03
butylate	2008-41-5	304	3.46E-03
carbofuran	1563-66-2	46	2.10E-08
chlordane	57-74-9	60000	3.86E-03
chlorimuron-ethyl	90982-32-4	91 <sup>h</sup>	7.48E-14
chlorpyrifos	2921-88-2	9930	3.02E-04
cyanazine	21725-46-2	218	1.34E-10
2,4-D	94-75-7	48	7.35E-11
4,4'-DDD	72-54-8	231000	3.64E-04
4,4'-DDE	72-55-9	883000	4.15E-03
4,4'-DDT	50-29-3	921000 <sup>h</sup>	3.65E-04
diazinon	333-41-5	1520	2.90E-05
dicamba	1918-00-9	13	1.79E-08
dieldrin	60-57-1	12000	2.65E-05
dimethoate	60-51-5	20	5.61E-10
dinoseb	88-85-7	30 <sup>g</sup>	2.44E-07
disulfoton	298-04-4	1345	6.68E-05
endosulfan	115-29-7	12400	1.19E-05
endothall	145-73-3	85	1.56E-14 <sup>i</sup>
endrin	72-20-8	10000	5.99E-05
EPTC	759-94-4	223	6.56E-04
glyphosate	1071-83-6	2100	5.732-11
HCH-alpha	319-84-6	5440 <sup>d</sup>	3.53E-04 <sup>e</sup>
heptachlor	76-44-8	24000	1.43E-01
heptachlor epoxide	1024-57-3	78600 <sup>d</sup>	2.05E-03 <sup>e</sup>
lindane	58-89-9	1355	7.42E-05

linuron	330-55-2	496	2.56E-07
malathion	121-75-5	1200	4.64E-07
methoxychlor	72-43-5	76000	4.80E-04 <sup>i</sup>
metolachlor	51218-45-2	70	9.91E-07
metribuzin	21087-64-9	52	1.48E-09
parathion, ethyl	56-38-2	7660	9.57E-06
parathion, methyl	298-00-0	6300	3.88E-07
pendimethalin	40487-42-1	12400	4.98E-04
permethrin	52645-53-1	39300	7.68E-05
phorate	298-02-2	1057	4.07E-04
simazine	122-34-9	140	3.96E-08
2,4,5-TP	93-72-1	5440 <sup>d</sup>	2.04E-06 <sup>e</sup>
terbufos	13071-79-9	650	1.09E-03
toxaphene	8001-35-2	100000	2.97E-05
trifluralin	1582-09-8	7200	6.21E-03

## Notes:

<sup>a</sup> Chemical Abstract Service (CAS).

<sup>b</sup> Selected values from U.S. Department of Agriculture, Agriculture Research Service, Pesticide Properties Database (PPD), Alternate Crops & Systems Laboratory, Beltsville, Maryland, <http://wizard.arsusda.gov/acsl/ppdb3.html>, unless otherwise noted.

<sup>c</sup>  $H' = K_H$  as  $\text{atm}\cdot\text{m}^3/\text{mol}$  { vapor pressure x molecular weight / solubility in water } x { R (gas constant) x T (temperature as degrees Kelvin) } =  $K_H$  x 41 at 25° C. Values from the ARS Pesticide Properties Database (PPD), unless otherwise noted.

<sup>d</sup>  $K_{oc} = 10((0.983 \times \log K_{ow}) + 0.00028)$ , log  $K_{ow}$  linear relationship with  $K_{oc}$  by Di Toro, 1985 (Technical Background Document, p. 140, incorporated by reference at Section 259.150), log  $K_{ow}$  values from Syracuse Research Corporation, Physical Properties Database (PHYSPROP), <http://esc.syrres.com/interkow/physprop.htm>.

<sup>e</sup> Estimated  $K_H$  values using data from the SRC Physical Properties Database (PHYSPROP) then converted to  $H'$  as noted in <sup>c</sup> above.

<sup>f</sup>  $K_H$  values from the SRC Physical Properties Database (PHYSPROP) then converted to  $H'$  as noted in <sup>c</sup> above.

<sup>g</sup> Low  $K_{oc}$  based on anionic nature (high solubility, low vapor pressure and above pH 5).

<sup>h</sup> Mean of values listed in ARS Pesticide Properties Database (PPD).

<sup>i</sup> Estimated using vapor pressure from SRC Physical Properties Database (PHYSPROP).

(Source: Amended at 32 Ill. Reg. 1308, effective January 21, 2008)

**Section 259.APPENDIX F Approximate Cation Exchange Capacities (CEC) of Illinois Soils**

This data was provided by Professor R. G. Hoefl, Department of Crop Sciences, University of Illinois at Urbana-Champaign

<u>Soil Name</u>	<u>CEC (meq/100g)</u>
Ade loamy fine sand	<8
Adrian muck	>100
Aholt silty clay	>24
Alford silt loam	8-15
Alford-Baxter complex	8-15
Alford-Bold complex	8-15
Alford-Hickory complex	8-15
Alford-Hurst silty clay loams	8-15
Alford-Ursa silt loams	8-15
Alford-Wellston silt loams	8-15
Alford-Westmore silt loams	8-15
Alganssee fine sandy loam	<8
Allison silty clay loam	>24
Alvin fine sandy loam	<8
Alvin-Lamont complex	<8
Ambraw clay loam	15-24
Ambraw silty clay loam, sandy substratum	15-24
Ambraw-Ceresco-Sarpy complex	8-15
Andres silt loam	15-24
Appleriver silt loam	8-15
Aptakisic silt loam	8-15
Aptakisic and Nappanee silt loams	8-15
Arenzville silt loam	8-15
Argyle silt loam	15-24
Armiesburg silty clay loam	15-24
Ashdale silt loam	15-24

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Ashkum silty clay loam	>24
Assumption silt loam	15-24
Atkinson loam	8-15
Atlas silt loam	8-15
Atlas-Grantfork complex	8-15
Atlas-Grantfork variant complex	8-15
Atterberry silt loam	8-15
Aurelius muck	>100
Aurelius muck, sandy substratum	>100
Ava silt loam	8-15
Ava-Blair complex	8-15
Ava-Hickory complex	8-15
Aviston silt loam	15-24
Ayr sandy loam	<8
Backbone loamy sand	8-15
Banlic silt loam	8-15
Barony silt loam	15-24
Barrington silt loam	15-24
Barrington and Varna silt loams	15-24
Bartelso silt loam	15-24
Batavia silt loam	8-15
Baxter cherty silt loam	8-15
Baylis silt loam	8-15
Beardstown loam	8-15
Beasley silt loam	8-15
Beaucoup silty clay loam	>24
Beavercreek loam	<8
Bedford silt loam	8-15
Beecher silt loam	8-15
Belknap silt loam	8-15
Berks loam	8-15
Bertrand silt loam	8-15

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Bethalto silt loam	15-24
Biddle silt loam	15-24
Biggsville silt loam	>24
Biggsville-Mannon silt loams	15-24
Billett sandy loam	<8
Binghampton sandy loam	8-15
Birds silt loam	8-15
Birkbeck silt loam	8-15
Birkbeck-Miami silt loams	8-15
Blackoar silt loam	15-24
Blair silt loam	8-15
Blair-Atlas silt loams	8-15
Blair-Grantfork complex	8-15
Blair-Ursa silt loams	8-15
Blake silty clay loam	15-24
Blake-Beaucoup complex	15-24
Bloomfield fine sand	<8
Blount silt loam	8-15
Bluford silt loam	8-15
Bluford silt loam, bench	15-24
Bluford-Darmstadt complex	8-15
Blyton silt loam	<8
Bold silt loam	8-15
Bonfield silt loam	8-15
Bonnie silt loam	8-15
Booker silty clay	>24
Boone loamy fine sand	<8
Bowdre silty clay	>24
Bowes silt loam	8-15
Boyer sandy loam	<8
Brandon and Saffell soils	8-15
Breeds silty clay loam	15-24

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Brenton silt loam	15-24
Broadwell silt loam	15-24
Brooklyn silt loam	15-24
Brookside stony silty clay loam	15-24
Brouillett silt loam	15-24
Bryce silty clay	>24
Bryce-Calamine variant complex	15-24
Bunkum silty clay loam	15-24
Bunkum-Atlas silty clay loams	8-15
Bunkum-Coulterville silty clay loams	8-15
Burkhardt-Saude complex	8-15
Burksville silt loam	8-15
Burnside silt loam	8-15
Cairo silty clay	>24
Calamine silt loam	15-24
Calco silty clay loam	>24
Camden silt loam	8-15
Camden silt loam, sandy substratum	8-15
Canisteo silt loam	>24
Canisteo silt loam, sandy substratum	>24
Cape silty clay loam	15-24
Caprell silt loam	8-15
Carmi sandy loam	8-15
Casco silt loam	8-15
Casco-Fox complex	8-15
Caseyville silt loam	8-15
Catlin silt loam	15-24
Catlin-Saybrook complex	15-24
Ceresco loam	15-24
Channahon silt loam	15-24
Chaseburg silt loam	15-24
Chatsworth silt loam	8-15

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Chauncey silt loam	8-15
Chautauqua silty clay loam	15-24
Chelsea loamy fine sand	<8
Chenoa silt loam	>24
Chute fine sand	<8
Cisne silt loam	8-15
Cisne silt loam, bench	8-15
Cisne-Huey complex	8-15
Cisne-Piasa complex	8-15
Clare silt loam	15-24
Clarence silty clay loam	>24
Clarksdale silt loam	8-15
Clarksville cherty silt loam	8-15
Clinton silt loam	8-15
Clinton-El Dara complex	<8
Clyde clay loam	>24
Coatsburg silt loam	15-24
Coffeen silt loam	15-24
Cohoctah loam	15-24
Colo silty clay loam	>24
Coloma silt loam	<8
Colp silt loam	8-15
Comfrey clay loam	>24
Coot loam	8-15
Copperas silty clay loam	15-24
Corwin silt loam	15-24
Coulterville silt loam	<8
Coulterville-Darmstadt complex	<8
Coulterville-Grantfork silty clay loams	<8
Coulterville-Hoyleton-Darmstadt complex	<8
Coulterville-Oconee silt loams	<8
Cowden silt loam	8-15

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Cowden-Piasa complex	8-15
Coyne fine sandy loam	8-15
Craigmile sandy loam	<8
Crane silt loam	15-24
Crawleyville fine sandy loam	<8
Creal silt loam	8-15
Crider silt loam	8-15
Dakota silt loam	8-15
Dana silt loam	15-24
Danabrook silt loam	15-24
Darmstadt silt loam	8-15
Darmstadt-Grantfork complex	8-15
Darmstadt-Oconee silt loams	8-15
Darroch silt loam	15-24
Darwin silty clay	>24
Del Rey silt loam	8-15
Denny silt loam	8-15
Denrock silt loam	15-24
Derinda silt loam	8-15
Dickinson sandy loam	8-15
Dickinson sandy loam, loamy substratum	8-15
Dickinson-Hamburg complex	8-15
Dickinson-Onarga complex	8-15
Disco sandy loam	8-15
Dockery silt loam	8-15
Dodge silt loam	8-15
Dodgeville silt loam	15-24
Dorchester silt loam	8-15
Dorchester silt loam, cobbly substratum	8-15
Douglas silt loam	15-24
Dowagiac silt loam	8-15
Downs silt loam	8-15

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Downsouth silt loam	15-24
Dresden silt loam	15-24
Drummer silty clay loam	>24
Drummer silty clay loam, gravelly substratum	>24
Drummer silty clay loam, till substratum	>24
Drury silt loam	8-15
Du Page silt loam	15-24
Dubuque silt loam	8-15
Dubuque and Dunbarton soils	8-15
Dubuque and Palsgrove soils	8-15
Dubuque-Orthents- Fayette Complex	8-15
Dunbarton silt loam	8-15
Dunbarton silt loam, cherty variant	8-15
Dunbarton-Dubuque complex	8-15
Dunham silty clay loam	>24
Dupo silt loam	8-15
Durand silt loam	15-24
Ebbert silt loam	15-24
Eden silty clay loam	>24
Edgington silt loam	15-24
Edinburg silty clay loam	>24
Edmund silt loam	15-24
Edwards muck	>100
Edwardsville silt loam	>24
El Dara sandy loam	<8
Elburn silt loam	15-24
Elburn silt loam, gravelly substratum	15-24
Elco silt loam	8-15
Elco-Atlas silt loams	8-15
Elco-Ursa silt loams	8-15
Eleroy silt loam	8-15
Eleroy and Derinda soils	8-15

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Eleva sandy loam	<8
Elizabeth silt loam	15-24
Elkhart silt loam	15-24
Elliott silt loam	15-24
Elpaso silty clay loam	>24
Elsah cherty silt loam	8-15
Elvers silt loam	8-15
Emery silt loam	15-24
Emma silty clay loam	15-24
Evansville silt loam	8-15
Faxon clay loam	15-24
Faxon-Ripon complex	15-24
Fayette silt loam	8-15
Fayette silty clay loam, karst	<8
Fayette silt loam, sandy substratum	15-24
Fayette silt loam, till substratum	8-15
Fayette-Clarksville complex	8-15
Fayette-Hickory complex	8-15
Fayette-Westville complex	8-15
Fella silty clay loam	>24
Fieldon silt loam	15-24
Fincastle silt loam	8-15
Fishhook silt loam	8-15
Fishhook-Atlas complex	8-15
Flagg silt loam	8-15
Flagler sandy loam	8-15
Flanagan silt loam	15-24
Floraville silt loam	8-15
Fosterburg silt loam	>24
Fox silt loam	8-15
Frankfort silt loam	8-15
Frankville silt loam	15-24

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Friesland sandy loam	8-15
Frondorf loam	8-15
Fults silty clay	>24
Gale silt loam	8-15
Geff silt loam	8-15
Genesee silt loam	8-15
Geryune silt loam	15-24
Gilford fine sandy loam	8-15
Ginat silt loam	8-15
Gorham silty clay loam	>24
Gosport silt loam	8-15
Goss gravelly silt loam	8-15
Goss-Alford complex	8-15
Granby loamy sand	<8
Grantfork silty clay loam	8-15
Grantsburg silt loam	8-15
Graymont silt loam	15-24
Grays silt loam	8-15
Grays and Markham silt loams	8-15
Greenbush silt loam	15-24
Grellton sandy loam	<8
Griswold loam	8-15
Grundelein silt loam	>24
Hamburg silt loam	8-15
Harco silt loam	15-24
Harpster silty clay loam	>24
Harrison silt loam	15-24
Hartsburg silty clay loam	>24
Harvard silt loam	8-15
Hayfield loam	8-15
Haymond silt loam	8-15
Haynie silt loam	8-15

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Hennepin loam	<8
Hennepin and Miami soils	<8
Hennepin-Casco complex	<8
Hennepin-Vanmeter complex	8-15
Henshaw silt loam	8-15
Herbert silt loam	8-15
Herrick silt loam	15-24
Herrick-Biddle-Piasa silt loams	15-24
Herrick-Piasa complex	15-24
Hesch fine sandy loam	8-15
Hesch fine sandy loam, gray subsoil variant	8-15
Hesch loamy sand, shallow variant	8-15
Hickory loam	8-15
Hickory and Hennepin soils	8-15
Hickory and Sylvan soils	8-15
Hickory-Atlas complex	8-15
Hickory-Clinton complex	8-15
Hickory-Gosport complex	8-15
Hickory-Hennepin complex	8-15
Hickory-High Gap silt loams	8-15
Hickory-Hosmer silt loams	8-15
Hickory-Kell silt loams	8-15
Hickory-Negley complex	8-15
Hickory-Sylvan complex	8-15
Hickory-Sylvan-Fayette silt loams	8-15
Hickory-Wellston silt loams	8-15
High Gap loam	8-15
Hitt silt loam	15-24
Holly silt loam	15-24
Holton silt loam	8-15
Homen silt loam	15-24
Homer silt loam	8-15

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Hononegah loamy coarse sand	<8
Hoopeston sandy loam	8-15
Hooppole loam	15-24
Hosmer silt loam	8-15
Hosmer-Lax silt loams	8-15
Hosmer-Ursa silt loams	8-15
Houghton muck	>100
Houghton peat	>100
Hoyleton silt loam	8-15
Hoyleton silt loam, bench	8-15
Hoyleton-Darmstadt complex	8-15
Hoyleton-Tamalco complex	8-15
Huey silt loam	8-15
Huntington silt loam	15-24
Huntsville silt loam	15-24
Hurst silt loam	8-15
Hurst silt loam, sandy substratum	8-15
Iona silt loam	8-15
Ipava silt loam	15-24
Ipava-Sable complex	15-24
Ipava-Tama complex	15-24
Iva silt loam	8-15
Jacob clay	15-24
Jasper silt loam	15-24
Jasper silt loam, sandy substratum	15-24
Joliet silty clay loam	>24
Joslin silt loam	15-24
Joy silt loam	15-24
Joyce silt loam	15-24
Joy silt loam, sandy substratum	15-24
Jules silt loam	8-15
Juneau silt loam	8-15

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Kane silt loam	15-24
Kaneville silt loam	15-24
Kankakee fine sandy loam	8-15
Karnak silty clay	15-24
Kell silt loam	8-15
Keller silt loam	15-24
Keller-Coatsburg complex	15-24
Keltner silt loam	15-24
Kendall silt loam	8-15
Kendall silt loam, sandy substratum	8-15
Keomah silt loam	8-15
Kernan silt loam	8-15
Keswick loam	>24
Kidami silt loam	8-15
Kidder silt loam	<8
Kish loam	>24
Kishwaukee silt loam	15-24
Knight silt loam	15-24
La Hogue loam	8-15
La Rose silt loam	8-15
Lacrescent cobbly silty clay loam	15-24
Lahoguess loam	15-24
Lakaskia silt loam	15-24
Lamoille silt loam	15-24
Lamont fine sandy loam	<8
Lamont, Tell, and Bloomfield soils	<8
Landes fine sandy loam	8-15
Lanier fine sandy loam	8-15
Lawler loam	8-15
Lawndale silt loam	15-24
Lawson silt loam	15-24
Lax silt loam	8-15

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Lena muck	>100
Lenzburg silt loam	15-24
Lenzburg silt loam, acid substratum	15-24
Lenzlo silty clay loam	15-24
Lenzwheel silty clay loam	15-24
Lindley loam	8-15
Lisbon silt loam	15-24
Lismod silt loam	15-24
Littleton silt loam	15-24
Lomax loam	8-15
Loran silt loam	15-24
Lorenzo loam	8-15
Mannon silt loam	8-15
Marbletown silt loam	15-24
Marine silt loam	8-15
Marissa silt loam	8-15
Markham silt loam	8-15
Markland silt loam	8-15
Marseilles silt loam	8-15
Marseilles silt loam, gravelly substratum	8-15
Marseilles silt loam, moderately wet	15-24
Marseilles-Atlas complex	8-15
Marseilles-Hickory complex	8-15
Marshan loam	8-15
Marshan loam, sandy substratum	15-24
Martinsville silt loam	8-15
Martinton silt loam	15-24
Mascoutah silty clay loam	>24
Massbach silt loam	8-15
Matherton silt loam	8-15
Maumee fine sandy loam	<8
Mayville silt loam	15-24

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McFain silty clay	>24
McGary silt loam	8-15
McHenry silt loam	8-15
Meadowbank silt loam	15-24
Medary silty clay loam	8-15
Medway silty clay loam	>24
Menfro silt loam	8-15
Metea silt loam	<8
Miami fine sandy loam	<8
Miami silt loam	8-15
Miami-Casco complex	8-15
Miami-Hennepin complex	8-15
Miami-Russell silt loams	8-15
Middletown silt loam	8-15
Milford silty clay loam	>24
Millbrook silt loam	8-15
Millington loam	8-15
Millsdale silty clay loam	>24
Millstadt silt loam	>24
Millstream silt loam	15-24
Minneiska loam	15-24
Mokena silt loam	15-24
Mona silt loam	15-24
Monee silt loam	15-24
Monterey silty clay loam	>24
Montgomery silty clay loam	>24
Montmorenci silt loam	8-15
Morley silt loam	8-15
Morocco fine sand	<8
Morristown silt loam	8-15
Moundprairie silty clay loam	15-24
Mt. Carroll silt loam	8-15

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Mudhen clay loam	>24
Mundelein silt loam	15-24
Mundelein and Elliott soils	15-24
Muren silt loam	8-15
Muscatine silt loam	15-24
Muscatune silt loam	15-24
Muskego muck	>100
Muskego silty clay loam, overwash	>24
Muskego and Houghton mucks	>100
Muskego and Peotone soils, ponded	>100
Muskingum stony silt loam	<8
Muskingum and Berks soils	<8
Myrtle silt loam	8-15
Nachusa silt loam	15-24
Nameoki silty clay	15-24
Nappanee silt loam	8-15
Nasset silt loam	15-24
Navlys silty clay loam	15-24
Negley loam	8-15
Neotoma-Wellston complex	8-15
Newark silty clay loam	15-24
Newberry silt loam	8-15
NewGlarus-Lamoille complex	8-15
NewGlarus-Palsgrove silt loams	8-15
Newhaven loam	8-15
Niota silt loam	8-15
Niota silty clay loam, clayey subsurface variant	15-24
Nolin silty clay loam	8-15
Normal silt loam	15-24
Normandy silt loam	15-24
Oakville fine sand	<8
Oakville-Tell complex	<8

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Ockley silt loam	8-15
Oconee silt loam	8-15
Oconee-Coulterville-Darmstadt silt loams	8-15
Oconee-Darmstadt-Coulterville silt loams	8-15
Oconee-Tamalco complex	8-15
Octagon silt loam	8-15
Odell silt loam	15-24
Ogle silt loam	15-24
Ogle silt loam, silt loam subsoil variant	15-24
Okaw silt loam	8-15
Okaw silty clay loam	15-24
Onarga sandy loam	8-15
Onarga fine sandy loam, till substratum	8-15
Oneco silt loam	8-15
Orio sandy loam	<8
Orion silt loam	8-15
Osceola silt loam	15-24
Oscos silt loam	15-24
Otter silt loam	>24
Ozaukee silt loam	15-24
Palms muck	>100
Palms silty clay loam, overwash	>24
Palsgrove silt loam	8-15
Palsgrove and Woodbine soils	8-15
Pana silt loam	15-24
Papineau fine sandy loam	8-15
Parke silt loam	8-15
Parkville silty clay	8-15
Parmod silt loam	15-24
Parr fine sandy loam	8-15
Parr silt loam	8-15
Passport silt loam	8-15

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Passport-Grantfork complex	8-15
Patton silty clay loam	>24
Paxico silt loam	8-15
Pecatonica silt loam	8-15
Pella silty clay loam	>24
Peotone silty clay loam	>24
Peotone mucky silty clay loam, marl substratum	>100
Petrolia silty clay loam	15-24
Piasa silt loam	15-24
Pierron silt loam	8-15
Pike silt loam	8-15
Pillot silt loam	15-24
Piopolis silty clay loam	15-24
Piscasaw silt loam	15-24
Plainfield sand	<8
Plano silt loam	15-24
Plattville silt loam	15-24
Plumfield silty clay loam	15-24
Port Byron silt loam	15-24
Port Byron silt loam, sandy substratum	15-24
Prairieville silt loam	15-24
Princeton fine sandy loam	8-15
Proctor silt loam	15-24
Proctor silt loam, sandy substratum	15-24
Prophetstown silt loam	15-24
Quiver silty clay loam	15-24
Racoon silt loam	8-15
Raddle silt loam	15-24
Raddle-Sparta complex	8-15
Radford silt loam	15-24
Rantoul silty clay	>24
Rapatee silty clay loam	>24

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Raub silt loam	15-24
Raveenwash silty clay loam	8-15
Redbud silt loam	8-15
Redbud-Colp silty clay loams	8-15
Redbud-Hurst silty clay loams	8-15
Reddick silty clay loam	>24
Reesville silt loam	8-15
Rend silt loam	8-15
Richview silt loam	8-15
Richwood silt loam	15-24
Ridgeville fine sandy loam	8-15
Ridgway silt loam	8-15
Ridott silt loam	8-15
Riley silty clay loam	>24
Ringwood silt loam	15-24
Ripon silt loam	8-15
Ritchey silt loam	8-15
Robbs silt loam	8-15
Roby fine sandy loam	<8
Rocher loam	8-15
Rockton loam	8-15
Rockton and Dodgeville soils	8-15
Rodman loam	8-15
Rodman gravelly loam	<8
Rodman-Casco complex	8-15
Rodman-Fox complex	8-15
Rodman-Warsaw complex	8-15
Romeo silt loam	15-24
Rooks silt loam	>24
Ross loam	8-15
Rosburg loam	>24
Rowe silty clay	>24

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Rozetta silt loam	8-15
Ruark fine sandy loam	<8
Rubio silt loam	15-24
Ruma silt loam	15-24
Ruma-Ursa silty clay loams	8-15
Rush silt loam	8-15
Rushville silt loam	8-15
Rushville-Huey silt loams	8-15
Russell silt loam	8-15
Rutland silt loam	15-24
Sabina silt loam	15-24
Sable silty clay loam	>24
Saffell gravelly sandy loam	8-15
Sarpy sand	<8
Saude loam	15-24
Sawmill silty clay loam	>24
Sawmill-Lawson complex	>24
Saybrook silt loam	15-24
Saylesville silt loam	8-15
Schapville silt loam	15-24
Schuline silt loam	8-15
Sciotoville silt loam	8-15
Seaton silt loam	8-15
Seaton silt loam, sandy substratum	8-15
Seaton-Goss complex	8-15
Seaton-Hickory complex	8-15
Seaton-Oakville complex	8-15
Seaton-Timula silt loams	8-15
Selma loam	15-24
Selmass loam	15-24
Selma loam, bedrock substratum	15-24
Senachwine silt loam	8-15

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Sepo silty clay loam	15-24
Sexton silt loam	8-15
Shadeland silt loam	8-15
Shaffton loam	15-24
Sharon silt loam	8-15
Shiloh silty clay loam	>24
Shoals silt loam	8-15
Shullsburg silt loam	15-24
Sidell silt loam	8-15
Skelton fine sandy loam	8-15
Slacwater silt loam	8-15
Sogn silt loam	15-24
Somonauk silt loam	8-15
Sonsac very cobbly silt loam	8-15
Sparta loamy sand	<8
Sparta loamy sand, loamy substratum	<8
Springerton loam	15-24
Starks silt loam	8-15
Stockland loam	8-15
Stonelick fine sandy loam	<8
Stookey silt loam	15-24
Stookey and Timula soils	8-15
Stookey-Bodine complex	15-24
Stoy silt loam	8-15
Strawn silt loam	8-15
Strawn-Chute complex	8-15
Strawn-Hennepin loams	8-15
Streator silty clay loam	>24
Stronghurst silt loam	8-15
St. Charles silt loam	8-15
St. Charles silt loam, sandy substratum	15-24
St. Clair silt loam	8-15

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Sunbury silt loam	15-24
Swanwick silt loam	8-15
Swygert silty clay loam	>24
Sylvan silt loam	8-15
Sylvan-Bold complex	8-15
Symerton loam	15-24
Symerton silt loam	15-24
Tallula silt loam	15-24
Tallulabold silt loams	15-24
Tama silt loam	15-24
Tamalco silt loam	8-15
Tama silt loam, sandy substratum	15-24
Tell silt loam	8-15
Tell-Lamont complex	8-15
Terril loam	15-24
Thebes silt loam	8-15
Thorp silt loam	15-24
Tice silty clay loam	>24
Timewell silt loam	15-24
Timewell and Ipava soils	15-24
Timula silt loam	8-15
Timula-Hickory complex	8-15
Timula-Miami complex	8-15
Titus silty clay loam	>24
Toronto silt loam	15-24
Torox silt loam	15-24
Traer silt loam	8-15
Trempealeau silt loam	15-24
Troxel silt loam	15-24
Tuscola loam	8-15
Twomile silt loam	8-15
Udolpho loam	15-24

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Udolpho loam, sandy substratum	15-24
Uniontown silt loam	8-15
Ursa silt loam	8-15
Ursa-Atlas complex	8-15
Ursa-Hickory complex	8-15
Vanmeter silty clay loam	15-24
Vanpetten loam	15-24
Varna silt loam	15-24
Velma loam	8-15
Velma-Coatsburg silt loams	15-24
Velma-Walshville complex	8-15
Vesser silt loam	15-24
Virden silty clay loam	>24
Virden-Fosterburg silt loams	>24
Virden-Piasa silt loams	>24
Virgil silt loam	8-15
Wabash silty clay	>24
Wagner silt loam	8-15
Wakeland silt loam	8-15
Wakenda silt loam	15-24
Wallkill silty clay loam	>24
Wallkill silt loam	15-24
Ware silt loam	15-24
Warsaw silt loam	15-24
Washtenaw silt loam	15-24
Watseka loamy fine sand	<8
Wauconda silt loam	8-15
Wauconda and Beecher silt loams	8-15
Wauconda and Frankfort silt loams	8-15
Waukee loam	8-15
Waukegan silt loam	15-24
Waupecan silt loam	15-24

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Wea silt loam	15-24
Weinbach silt loam	8-15
Weir silt loam	8-15
Wellston silt loam	8-15
Wellston-Berks complex	8-15
Wenona silt loam	15-24
Wenona silt loam, loamy substratum	15-24
Wesley fine sandy loam	8-15
Westland clay loam	15-24
Westmore silt loam	8-15
Westmore-Neotoma complex	8-15
Westville silt loam	8-15
Whalan loam	8-15
Whalan and NewGlarus silt loams	8-15
Wheeling silt loam	8-15
Whitaker silt loam	8-15
Whitaker variant loam	8-15
Whitson silt loam	8-15
Wilbur silt loam	8-15
Will silty clay loam	>24
Windere silt loam	15-24
Winfield silt loam	8-15
Wingate silt loam	8-15
Winnebago silt loam	15-24
Wirt silt loam	8-15
Woodbine silt loam	8-15
Worthen silt loam	15-24
Wyanet silt loam	8-15
Wynoose silt loam	8-15
Wynoose silt loam, bench	8-15
Wynoose-Huey complex	8-15
Xenia silt loam	8-15

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Zanesville silt loam	8-15
Zanesville-Westmore silt loams	8-15
Zipp silty clay loam	15-24
Zook silty clay	>24
Zumbro sandy loam	8-15
Zurich silt loam	15-24
Zurich and Morley silt loams	15-24
Zurich and Nappanee silt loams	15-24
Zwingle silt loam	8-15

(Source: Added at 32 Ill. Reg. 1308, effective January 21, 2008)