**R309. Environmental Quality, Drinking Water.**

**R309-600. Source Protection: Drinking Water Source Protection for Groundwater Sources.**

**R309-600-1. Authority.**

Under the authority of Subsection 19-4-104(1)(a)(iv), the Drinking Water Board adopts this rule which governs the protection of groundwater sources of drinking water.

**R309-600-2. Purpose.**

Public Water Systems (PWSs) are responsible for protecting their sources of drinking water from contamination. This rule sets forth minimum requirements to establish a uniform, statewide program for implementation by PWSs to protect their groundwater sources of drinking water. PWSs are encouraged to enact more stringent programs to protect their sources of drinking water if they decide they are necessary.

This rule applies to groundwater sources and to groundwater sources which are under the direct influence of surface water which are used by PWSs to supply their systems with drinking water. However, compliance with this rule is voluntary for existing groundwater sources of drinking water which are used by transient non-community water systems.

**R309-600-3. Implementation.**

(1) New Groundwater Sources - Each PWS shall submit a Preliminary Evaluation Report (PER) in accordance with Subsection R309-600-13(2) for each of its new groundwater sources to the Division of Drinking Water (DDW). A PWS shall not begin construction of a new source until the Director concurs with its PER.

(2) Existing Groundwater Sources - Each PWS shall submit a Drinking Water Source Protection (DWSP) Plan in accordance with Subsection R309-600-7(1) for each of its existing groundwater sources to DDW according to the following schedule. Well fields or groups of springs may be considered a single source.

|  |  |  |
| --- | --- | --- |
| TABLE 1 | | |
| Population Served  By PWS: | Percent of  Sources: | DWSP Plans  Due By: |
| Over 10,000 | 50% of wells | December 31, 1995 |
| Over 10,000 | 100% of wells | December 31, 1996 |
| 3,300-10,000 | 100% of wells | December 31, 1997 |
| Less than 3,300 | 100% of wells | December 31, 1998 |
| Springs and other sources | 100% | December 31, 1999 |

(3) DWSP for existing groundwater sources under the direct influence of surface water shall be accomplished through delineation of both the groundwater and surface water contribution areas. The requirements of Subsection R309-600-7(1) apply to the groundwater portion and the requirements of Rule R309-605 apply to the surface water portion, except that the schedule for submitting these DWSP Plans to DDW is based on the schedule in Subsection R309-605-3(1).

(4) PWSs shall maintain land use agreements which were established under previous rules to protect their groundwater sources of drinking water from contamination.

**R309-600-4. Exceptions.**

(1) Exceptions to the requirements of Rule R309-600 or parts thereof may be granted by the Director to PWSs if: due to compelling factors, which may include economic factors, a PWS cannot comply with these requirements, and the granting of an exception will not result in an unreasonable risk to health.

(2) The Director may prescribe a schedule by which the PWS must come into compliance with the requirements of Rule R309-600.

**R309-600-5. Designated Person.**

(1) A designated person shall be appointed and reported in writing to the Director by each PWS within 180 days of the effective date of Rule R309-600. The designated person's address, email address, and telephone number shall be included in the written correspondence. Additionally, the designated person's contact information must be included in each DWSP Plan and PER submitted to DDW.

(2) Each PWS shall notify the Director in writing within 30 days of any changes in the appointment of a designated person.

**R309-600-6. Definitions.**

The following terms are defined for the purposes of this rule:

(1) "Collection area" means the area surrounding a groundwater source which is underlain by collection pipes, tile, tunnels, infiltration boxes, or other groundwater collection devices.

(2) "Controls" means

(a) the codes, ordinances, rules, and regulations currently in effect to regulate a potential contamination source.

(b) physical controls which may prevent contaminants from migrating off a site and into surface water or groundwater.

(c) negligible quantities of contaminants.

(3) "Criteria" means the conceptual standards that form the basis for DWSP area delineation to include distance, groundwater time of travel, aquifer boundaries, and groundwater divides.

(4) "Criteria threshold" means a value or set of values selected to represent the limits above or below which a given criterion will stop providing the desired degree of protection.

(5) "DWSP Program" means the program to protect drinking water source protection zones and management areas from contaminants that may have an adverse effect on the health of persons.

(6) "DWSP Zone" means the surface and subsurface area surrounding a groundwater source of drinking water supplying a PWS, through which contaminants are reasonably likely to move toward and reach such groundwater source.

(7) "Designated person" means the person appointed by a PWS to ensure that the requirements of Rule R309-600 are met.

(8) "Director" means the Director of the Division of Drinking Water.

(9) "Engineer" means the same as "Professional Engineer" as defined in Title 58, Chapter 22, Professional Engineers and Land Surveyors Licensing Act.

(10) "Existing groundwater source of drinking water" means a public supply groundwater source for which plans and specifications were submitted to DDW on or before July 26, 1993.

(11) "Geologist" means the same as "Professional Geologist" as defined in Title 58, Chapter 76, Professional Geologist Licensing Act.

(12) " Groundwater Source" means any well, spring, tunnel, adit, or other underground opening from or through which groundwater flows or is pumped from subsurface water-bearing formations.

(13) "Hydrogeologic methods" means the techniques used to translate selected criteria and criteria thresholds into mappable delineation boundaries. These methods include arbitrary fixed radii, analytical calculations and models, hydrogeologic mapping, and numerical flow models.

(14) "Land management strategies" means zoning and non-zoning strategies which include the following: zoning and subdivision ordinances, site plan reviews, design and operating standards, source prohibitions, purchase of property and development rights, public education programs, groundwater monitoring, household hazardous waste collection programs, water conservation programs, memoranda of understanding, written contracts and agreements, and so forth.

(15) "Land use agreement" means a written agreement wherein the owner agrees not to locate or allow the location of uncontrolled potential contamination sources or pollution sources within zone one of new wells in protected aquifers. The owner must also agree not to locate or allow the location of pollution sources within zone two of new wells in unprotected aquifers and new springs unless the pollution source agrees to install design standards which prevent contaminated discharges to groundwater. This restriction must be binding on any heirs, successors, and assigns. Land use agreements must be recorded with the property description in the local county recorder's office. Refer to Subsection R309-600-13(2)(d).

Land use agreements for protection areas on publicly owned lands need not be recorded in the local county recorder office. However, a letter must be obtained from the Administrator of the land in question and meet the requirements.

(16) "Management area" means the area outside of zone one and within a two-mile radius where the Optional Two-Mile Radius Delineation Procedure has been used to identify a protection area.

For wells, land may be excluded from the DWSP management area at locations where it is more than 100 feet lower in elevation than the total drilled depth of the well.

For springs and tunnels, the DWSP management area is any land at an elevation equal to or higher than, and within a two-mile radius, of the spring or tunnel collection area. The DWSP management area also includes any land lower in elevation than, and within 100 horizontal feet, of the spring or tunnel collection area. The elevation datum to be used is the point of water collection. Land may also be excluded from the DWSP management area at locations where it is separated from the groundwater source by a surface drainage which is lower in elevation than the spring or tunnel collection area.

(17) "New groundwater source of drinking water" means a public supply groundwater source of drinking water for which plans and specifications are submitted to DDW after July 26, 1993.

(18) "Nonpoint source" means any diffuse source of pollutants or contaminants not otherwise defined as a point source.

(19) "PWS" means public water system.

(20) "Point source" means any discernible, confined, and discrete source of pollutants or contaminants, including any site, pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, animal feeding operation with more than ten animal units, landfill, or vessel or other floating craft, from which pollutants are or may be discharged.

(21) "Pollution source" means point source discharges of contaminants to groundwater or potential discharges of the liquid forms of "extremely hazardous substances" which are stored in containers in excess of "applicable threshold planning quantities" as specified in SARA Title III. Examples of possible pollution sources include the following: storage facilities that store the liquid forms of extremely hazardous substances, septic tanks, drain fields, class V underground injection wells, landfills, open dumps, landfilling of sludge and septage, manure piles, salt piles, pit privies, drain lines, and animal feeding operations with more than ten animal units.

The following definitions are part of Rule R309-600 and clarify the meaning of "pollution source:"

(a) "Animal feeding operation" means a lot or facility where the following conditions are met: animals have been or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12 month period, and crops, vegetation forage growth, or post-harvest residues are not sustained in the normal growing season over any portion of the lot or facility. Two or more animal feeding operations under common ownership are considered to be a single feeding operation if they adjoin each other, if they use a common area, or if they use a common system for the disposal of wastes.

(b) "Animal unit" means a unit of measurement for any animal feeding operation calculated by adding the following numbers; the number of slaughter and feeder cattle multiplied by 1.0, plus the number of mature dairy cattle multiplied by 1.4, plus the number of swine weighing over 55 pounds multiplied by 0.4, plus the number of sheep multiplied by 0.1, plus the number of horses multiplied by 2.0.

(c) "Extremely hazardous substances" means those substances which are identified in the Sec. 302(EHS) column of the "Title III List of Lists: Consolidated List of Chemicals Subject to the Emergency Planning and Community Right-to-Know Act (EPCRA) and Section 112(R) of the Clean Air Act, As Amended," (550B98017). A copy of this document may be obtained from: NCEPI, PO Box 42419, Cincinnati, OH 45202. Online ordering is also available at https://nepis.epa.gov/.

(22) "Potential contamination source" means any facility or site which employs an activity or procedure which may potentially contaminate groundwater. A pollution source is also a potential contamination source.

(23) "Protected aquifer" means a producing aquifer in which the following conditions are met:

(a) a naturally protective layer of clay, at least 30 feet in thickness, is present above the aquifer;

(b) the PWS provides data to show the lateral continuity of the clay layer to the extent of zone two; and

(c) the public supply well is grouted with a grout seal that extends from the ground surface down to at least 100 feet below the surface, and for a thickness of at least 30 feet through the protective clay layer.

(24) "Replacement well" means a public supply well drilled for the sole purpose of replacing an existing public supply well which is impaired or made useless by structural difficulties and in which the following conditions are met:

(a) the proposed well location shall be within a radius of 150 feet from an existing groundwater supply well, as defined in Subsection R309-600-6(10); and

(b) the PWS provides a copy of the replacement application approved by the State Engineer, refer to Section 73-3-28.

(25) "Time of travel" means the time required for a particle of water to move in the producing aquifer from a specific point to a groundwater source of drinking water.

(26) "Unprotected aquifer" means any aquifer that does not meet the definition of a protected aquifer.

(27) "Wellhead" means the physical structure, facility, or device at the land surface from or through which groundwater flows or is pumped from subsurface, water-bearing formations.

**R309-600-7. DWSP Plans.**

(1) Each PWS shall develop, submit, and implement a DWSP Plan for each of its groundwater sources of drinking water.

Required Sections for DWSP Plans - DWSP Plans should be developed in accordance with the "Standard Report Format for Existing Wells and Springs." This document may be obtained from DDW. DWSP Plans must include the following seven sections:

(a) DWSP Delineation Report - A DWSP Delineation Report in accordance with Subsection R309-600-9(6).

(b) Potential Contamination Source Inventory and Assessment of Controls -- A Prioritized Inventory of Potential Contamination Sources and an assessment of their controls in accordance with Section R309-600-10.

(c) Management Program to Control Each Preexisting Potential Contamination Source - A Management Program to Control Each Preexisting Potential Contamination Source in accordance with Section R309-600-11.

(d) Management Program to Control or Prohibit Future Potential Contamination Sources - A Plan for Controlling or Prohibiting Future Potential Contamination Sources. This must be in accordance with Section R309-600-12, consistent with this rule, and implemented to an extent allowed under the PWS's authority and jurisdiction.

(e) Implementation Schedule - Each PWS shall develop a step-by-step implementation schedule which lists each of its proposed land management strategies with an implementation date for each strategy.

(f) Resource Evaluation - Each PWS shall assess the financial and other resources which may be required for it to implement each of its DWSP Plans and determine how these resources may be acquired.

(g) Recordkeeping - Each PWS shall document changes in each of its DWSP Plans as they are continuously updated to show current conditions in the protection zones and management areas. As a DWSP Plan is executed, the PWS shall document any land management strategies that are implemented. These documents may include any of the following: ordinances, codes, permits, memoranda of understanding, public education programs, public notifications, and so forth.

(2) DWSP Plan Administration - DWSP Plans shall be submitted, corrected, retained, implemented, updated, and revised according to the following:

(a) Submitting DWSP Plans - Each PWS shall submit a DWSP Plan to DDW in accordance with the schedule in Section R309-600-3 for each of its groundwater sources of drinking water.

(b) Correcting Deficiencies - Each PWS shall correct any deficiencies in a disapproved DWSP Plan and resubmit it to DDW within 90 days of the disapproval date.

(c) Retaining DWSP Plans - Each PWS shall keep on its premises a current copy of each of its DWSP Plans.

(d) Implementing DWSP Plans - Each PWS shall begin implementing each of its DWSP Plans in accordance with its schedule in Subsection R309-600-7(1)(e), within 180 days after submittal if they are not disapproved by the Director.

(e) Updating and Resubmitting DWSP Plans - Each PWS shall update its DWSP Plans as often as necessary to ensure they show current conditions in the DWSP zones and management areas. Updated plans also document the implementation of land management strategies in the recordkeeping section. Copies of any ordinances, codes, permits, memoranda of understanding, public education programs, bill stuffers, newsletters, training session agendas, minutes of meetings, memoranda for file. must be submitted with the recordkeeping section of updated plans. DWSP Plans are initially due according to the schedule in Section R309-600-3. Thereafter, updated DWSP Plans are due every six years from their original due date. This applies even though a PWS may have been granted an extension beyond the original due date.

(f) Revising DWSP Plans - Each PWS shall submit a revised DWSP Plan to DDW within 180 days after the reconstruction or redevelopment of any groundwater source of drinking water which addresses changes in source construction, source development, hydrogeology, delineation, potential contamination sources, and proposed land management strategies.

**R309-600-8. DWSP Plan Review.**

(1) The Director shall review each DWSP Plan submitted by PWSs and "concur," "concur with recommendations," "conditionally concur" or "disapprove" the plan. The Director may also authorize the designated DDW Source Protection Manager to issue the following actions: "concur" and "concur with recommendations."

(2) The Director may "disapprove" DWSP Plans for any of the following reasons:

(a) an inaccurate DWSP Delineation Report, a report that uses a non-applicable delineation method, or a DWSP Plan that is missing this report or any of the information and data required in it, refer to Subsection R309-600-9(7);

(b) an inaccurate Prioritized Inventory of Potential Contamination Sources or a DWSP Plan that is missing this report or any of the information required in it, refer to Subsection R309-600-10(1);

(c) an inaccurate assessment of current controls, refer to Subsection R309-600-10(2);

(d) a missing Management Program to Control Each Preexisting Potential Contamination Source which has been assessed as "not adequately controlled" by the PWS, refer to Subsection R309-600-11(1);

(e) a missing Management Program to Control or Prohibit Future Potential Contamination Sources, refer to Section R309-600-12;

(f) a missing or incomplete Implementation Schedule, Resource Evaluation, Recordkeeping Section, Contingency Plan, or Public Notification Plan, refer to Subsections R309-600-7(1)(e) through (g), Section R309-600-14, and Section R309-600-15.

(3) The Director may "concur with recommendations" when PWSs propose management programs to control preexisting potential contamination sources or management programs to control or prohibit future potential contamination sources for existing or new drinking water sources which appear inadequate or ineffective.

(4) The Director may "conditionally concur" with a DWSP Plan or PER. The PWS must implement the conditions and report compliance the next time the DWSP Plan is due and submitted to DDW.

**R309-600-9. Delineation of Protection Zones and Management Areas.**

(1) PWSs shall delineate protection zones or a management area around each of their groundwater sources of drinking water using the Preferred Delineation Procedure or the Optional Two-Mile Radius Delineation Procedure. The hydrogeologic method used by PWSs shall produce protection zones or a management area in accordance with the criteria thresholds specified in Subsection R309-600-9(2) through Subsection R309-600-9(7). PWSs may also choose to verify protected aquifer conditions to reduce the level of management controls applied in applicable protection areas.

(2) Reports must be prepared by a qualified licensed professional - A submitted report which addresses any of the following sections shall be stamped and signed by a professional geologist or professional engineer:

(a) a Delineation Report for Estimated DWSP Zones produced using the Preferred Delineation Procedure, as explained in Subsection R309-600-13(2)(a);

(b) a DWSP Delineation Report produced using the Preferred Delineation Procedure, as explained in Subsections R309-600-9(3)(a) and (6)(a);

(c) a report to verify protected aquifer conditions, as explained in Subsections R309-600-9(4) and (7);

(d) a report which addresses special conditions, as explained in Subsection R309-600-9(5); or

(e) a Hydrogeologic Report to Exclude a Potential Contamination Source, as explained in Subsection R309-600-9(6)(b)(ii).

(3) Criteria Thresholds for Groundwater Sources of Drinking Water:

(a) Preferred Delineation Procedure - Four zones are delineated for management purposes:

(i) Zone one is the area within a 100-foot radius from the wellhead or margin of the collection area.

(ii) Zone two is the area within a 250-day groundwater time of travel to the wellhead or margin of the collection area, the boundary of the aquifer which supplies water to the groundwater source, or the groundwater divide, whichever is closer. If the available data shows a zone of increased groundwater velocity within the producing aquifer, then time of travel calculations shall be based on this data.

(iii) Zone three, waiver criteria zone, is the area within a 3-year groundwater time of travel to the wellhead or margin of the collection area, the boundary of the aquifer which supplies water to the groundwater source, or the groundwater divide, whichever is closer. If the available data shows a zone of increased groundwater velocity within the producing aquifer, then time of travel calculations shall be based on this data.

(iv) Zone four is the area within a 15-year groundwater time of travel to the wellhead or margin of the collection area, the boundary of the aquifer which supplies water to the groundwater source, or the groundwater divide, whichever is closer. If the available data shows a zone of increased groundwater velocity within the producing aquifer, then time of travel calculation shall be based on this data.

(b) Optional Two-Mile Radius Delineation Procedure - In place of the Preferred Delineation Procedure, PWSs may choose to use the Optional Two-Mile Radius Delineation Procedure to delineate a management area. This procedure is best applied in remote areas where few if any potential contamination sources are located. Refer to Subsection R309-600-6(16) for the definition of a management area.

(4) Protected Aquifer Classification - PWSs may choose to verify protected aquifer conditions to reduce the level of management controls for a public supply well which produces water from a protected aquifer or to meet one of the requirements of a VOC or pesticide susceptibility waiver, refer to Subsection R309-600-16(4). Refer to Subsection R309-600-6(23) for the definition of a "protected aquifer."

(5) Special Conditions - Special scientific or engineering studies may be conducted to support a request for an exception, refer to Section R309-600-4, due to special conditions. These studies must be approved by the Director before the PWS begins the study. Special studies may include confined aquifer conditions, groundwater movement through protective layers, wastewater transport and fate.

(6) DWSP Delineation Report - Each PWS shall submit a DWSP Delineation Report to DDW for each of its groundwater sources using the Preferred Delineation Procedure or the Optional Two-Mile Radius Delineation Procedure.

(a) Preferred Delineation Procedure - Delineation reports for protection zones delineated using the Preferred Delineation Procedure shall include the following information and a list of sources or references for this information:

(i) Geologic Data - A brief description of geologic features and aquifer characteristics observed in the well and area of the potential protection zones. This should include the formal or informal stratigraphic name lithology of the aquifer and confining unit, and description of fractures and solution cavities, including the size, abundance, spacing, and orientation; and faults, including a brief description of location in or near the well, and orientation. Lithologic descriptions can be obtained from surface hand samples or well cuttings; core samples and laboratory analyses are not necessary. Fractures, solution cavities, and faults may be described from surface outcrops or drill logs.

(ii) Well Construction Data - If the source is a well, the report shall include the well driller's log, elevation of the wellhead, borehole radius, casing radius, total depth of the well, depth and length of the screened or perforated interval, well screen or perforation type, casing type, method of well construction, type of pump, location of pump in the well, and the maximum projected pumping rate of the well. The maximum pumping rate of the well must be used in the delineation calculations. Averaged pumping rate values shall not be used.

(iii) Spring Construction Data - If the source is a spring or tunnel the report shall include a description or diagram of the collection area and method of groundwater collection.

(iv) Aquifer Data for New Wells - A summary report including the calculated hydraulic conductivity of the aquifer, transmissivity, hydraulic gradient, direction of groundwater flow, estimated effective porosity, and saturated thickness of the producing aquifer. The PWS shall obtain the hydraulic conductivity of the aquifer from a constant-rate aquifer test and provide the data as described in Subsection R309-515-6(10)(b). Estimated effective porosity must be between 1% and 30%. Clay layers shall not be included in calculations of aquifer thickness or estimated effective porosity. This report shall include graphs, data, or printouts showing the interpretation of the aquifer test.

(v) Aquifer Data for Existing Wells - A summary report including the calculated hydraulic conductivity of the aquifer, transmissivity, hydraulic gradient, direction of groundwater flow, estimated effective porosity, and saturated thickness of the producing aquifer. The PWS shall obtain the hydraulic conductivity of the aquifer from a constant-rate aquifer test using the existing pumping equipment. Aquifer tests using observation wells are encouraged but are not required. If a previously performed aquifer test is available and includes the required data described in Subsection R309-600-9(6)(v)(A) and Subsection R309-600-9(6)(v)(B), data from that test may be used instead. Estimated effective porosity must be between 1% and 30%. Clay layers shall not be included in calculations of aquifer thickness or estimated effective porosity. This report shall include graphs, data, or printouts showing the interpretation of the aquifer test.

If a constant-rate aquifer test is not practical, then the PWS shall obtain hydraulic conductivity of the aquifer using another appropriate method, such as data from a nearby well in the same aquifer, specific capacity of the well, published hydrogeologic studies of the same aquifer, or local or regional groundwater models. A constant-rate test may not be practical for such reasons as insufficient drawdown in the well, inaccessibility of the well for water-level measurements, or insufficient overflow capacity for the pumped water.

The constant-rate test shall:

(A) Provide for continuous pumping for at least 24 hours or until stabilized drawdown has continued for at least six hours. Stabilized drawdown is achieved when there is less than one foot of change of groundwater level in the well within a six-hour period.

(B) Provide data as described in Subsections R309-515-6(10)(b)(v) through (vii).

(vi) Additional Data for Observation Wells - If the aquifer test is conducted using observation wells, the report shall include the following information for each observation well: location and surface elevation; total depth; depth and length of the screened or perforated intervals; radius, casing type, screen or perforation type, and method of construction; pre-pumping groundwater level; the time-drawdown or distance-drawdown data and curve; and the total drawdown.

(vii) Hydrogeologic Methods and Calculations - These include the groundwater model or other hydrogeologic methods used to delineate the protection zones, any applicable equations, values, and the calculations which determine the delineated boundaries of zones two, three, and four. The hydrogeologic method or groundwater model must be reasonably applicable for the aquifer setting. For wells, the hydrogeologic method or groundwater model must include the effects of drawdown, including increased hydraulic gradient near the well, and interference from other wells.

(viii) Map Showing Boundaries of the DWSP Zones - A map showing the location of the groundwater source of drinking water and the boundary for each DWSP zone. The base map shall be a 1:24,000-scale, 7.5-minute series, topographic map, such as is published by the US Geological Survey. Although zone one, 100-foot radius around the well or margin of the collection area, need not be on the map, the complete boundaries for zones two, three, and four must be drawn and labeled. More detailed maps are optional and may be submitted in addition to the required map.

The PWS shall also include a written description of the distances which define the delineated boundaries of zones two, three, and four. These written descriptions must include the maximum distances upgradient from the well, the maximum distances downgradient from the well, and the maximum widths of each protection zone.

(b) Optional Two-Mile Radius Delineation Procedure - Delineation Reports for protection areas delineated using the Optional Two-Mile Radius Delineation Procedure shall include the following information:

(i) Map Showing Boundaries of the DWSP Management Area - A map showing the location of the groundwater source of drinking water and the DWSP management area boundary. The base map shall be a 1:24,000-scale, 7.5-minute series, topographic map, such as is published by the US Geological Survey. Although zone one, 100-foot radius around the well or margin of the collection area, need not be on the map, the complete two-mile radius must be drawn and labeled. More detailed maps are optional and may be submitted in addition to the required map.

(ii) Hydrogeologic Report to Exclude a Potential Contamination Source - To exclude a potential contamination source from the inventory which is required in Subsection R309-600-10(1), a hydrogeologic report is required which clearly demonstrates that the potential contamination source has no capacity to contaminate the source.

(7) Protected Aquifer Conditions - If a PWS chooses to verify protected aquifer conditions, it shall submit the following additional data to DDW for each of its groundwater sources for which the protected aquifer conditions apply. The report must state that the aquifer meets the definition of a protected aquifer based on the following information:

(a) thickness, depth, and lithology of the protective clay layer;

(b) data to show the lateral continuity of the protective clay layer over the extent of zone two. This may include such data as correlation of beds in multiple wells, published hydrogeologic studies, stratigraphic studies, potentiometric surface studies, and so forth; and

(c) evidence that the well has been grouted or otherwise sealed from the ground surface to a depth of at least 100 feet and for a thickness of at least 30 feet through the protective clay layer in accordance with Subsections R309-600-6(23) and R309-515-6(6).

**R309-600-10. Potential Contamination Source Inventory and Identification and Assessment of Controls.**

(1) Prioritized Inventory of Potential Contamination Sources - Each PWS shall list every potential contamination source within each DWSP zone or management area in priority order and state the basis for this order. This priority ranking shall be according to relative risk to the drinking water source. The name and address of each commercial and industrial potential contamination source is required. Additional information should include the name and phone number of a contact person and a list of the chemical, biological, and radiological hazards associated with each potential contamination source. Additionally, each PWS shall identify each potential contamination source as to its location in zones one, two, three, four or in a management area and plot it on the map required in Subsection R309-600-9(6)(a)(viii) or Subsection R309-600-9(6)(b)(i).

(a) List of Potential Contamination Sources - A List of Potential Contamination Sources is found in the "Source Protection User's Guide for Groundwater Sources." This document may be obtained from DDW. This list may be used by PWSs as a guide to inventorying potential contamination sources within their DWSP zones and management areas.

(b) Refining, Expanding, Updating, and Verifying Potential Contamination Sources - Each PWS shall update its list of potential contamination sources to show current conditions within DWSP zones or management areas. This includes adding potential contamination sources which have moved into DWSP zones or management areas, deleting potential contamination sources which have moved out, improving available data about potential contamination sources, and any other appropriate refinements.

(2) Identification and Assessment of Current Controls - PWSs are not required to plan and implement land management strategies for potential contamination source hazards that are assessed as "adequately controlled." If controls are not identified, the potential contamination source will be "not adequately controlled." Additionally, if the hazards at a potential contamination source cannot be identified, the potential contamination source must be assessed as "not adequately controlled." Identification and assessment should be limited to one of the following controls for each applicable hazard: regulatory, best management and pollution prevention, physical, or negligible quantity. Each of the following topics for a control must be addressed before identification and assessment will be considered complete. Refer to the "Source Protection User's Guide for Groundwater Sources" for a list of government agencies and the programs they administer to control potential contamination sources. This guide may be obtained from DDW.

(a) Regulatory Controls - Identify the enforcement agency and verify that the hazard is being regulated by them; cite and quote applicable references in the regulation, rule or ordinance which pertain to controlling the hazard; explain how the regulatory control prevents groundwater contamination; assess the hazard; and set a date to reassess the hazard.

(b) Best Management and Pollution Prevention Practice Controls - List the specific best management and pollution prevention practices which have been implemented by potential contamination source management to control the hazard and show that they are willing to continue the use of these practices; explain how these practices prevent groundwater contamination; assess the hazard; and set a date to reassess the hazard.

(c) Physical Controls - Describe the physical controls which have been constructed to control the hazard; explain how these controls prevent contamination; assess the hazard; and set a date to reassess the hazard.

(d) Negligible Quantity Control - Identify the quantity of the hazard that is being used, disposed, stored, manufactured, or transported; explain why this amount should be considered a negligible quantity; assess the hazard; and set a date to reassess the hazard.

(3) For meeting the requirements of Rule R309-600, the Director will consider a PWS's assessment that a potential contamination source which is covered by a permit or approval under one of the regulatory programs listed below sufficient to demonstrate that the source is adequately controlled unless otherwise determined by the Director. For any other state programs, the PWS's assessment is subject to review by the Director; as a result, a PWS's DWSP Plan may be disapproved if the Director does not concur with its assessment.

(a) The Utah Groundwater Quality Protection program established by Section 19-5-104 and Rule R317-6;

(b) closure plans or Part B permits under authority of the Resource Conservation and Recovery Act (RCRA) of 1984 regarding the monitoring and treatment of groundwater;

(c) the Utah Pollutant Discharge Elimination System (UPDES) established by Section 19-5-104 and Rule R317-8;

(d) the Underground Storage Tank Program established by Section 19-6-403 and Rules R311-200 through R311-208; and

(e) the Underground Injection Control (UIC) Program for classes I-IV established by Sections 19-5-104 and 40-6-5 and Rules R317-7 and R649-5.

**R309-600-11. Management Program to Control Each Preexisting Potential Contamination Source.**

(1) PWSs shall plan land management strategies to control each preexisting potential contamination source in accordance with their authority and jurisdiction. Land management strategies must be consistent with Rule R309-600, designed to control potential contamination, and may be regulatory or non-regulatory. Each potential contamination source listed on the inventory required in Subsection R309-600-10(1) and assessed as "not adequately controlled" must be addressed. Land management strategies must be implemented according to the schedule required in Subsection R309-600-7(1)(e).

(2) PWSs with overlapping protection zones and management areas may cooperate in controlling a particular preexisting potential contamination source if one PWS will agree to take the lead in planning and implementing land management strategies and the remaining PWSs will assess the preexisting potential contamination source as "adequately controlled."

**R309-600-12. Management Program to Control or Prohibit Future Potential Contamination Sources for Existing Drinking Water Sources.**

(1) PWSs shall plan land management strategies to control or prohibit future potential contamination sources within each of its DWSP zones or management areas consistent with Rule R309-600 and to an extent allowed under its authority and jurisdiction. Land management strategies must be designed to control potential contamination and may be regulatory or non-regulatory. Additionally, land management strategies must be implemented according to the schedule required in Subsection R309-600-7(1)(e).

(2) Protection areas may extend into neighboring cities, towns, and counties. Since it may not be possible for some PWSs to enact regulatory land management strategies outside of their jurisdiction, except as described in Subsection R309-600-12(3) and Subsection R309-600-12(4), it is recommended that these PWSs contact their neighboring cities, towns, and counties to see if they are willing to implement protective ordinances to prevent groundwater contamination under joint management agreements.

(3) Cities and towns have extraterritorial jurisdiction in accordance with Section 10-8-15 to enact ordinances to protect a stream or source from which their water is taken for 15 miles above the point from which it is taken and for a distance of 300 feet on each side of such stream. Section 10-8-15 includes groundwater sources.

(4) Zoning ordinances are an effective means to control potential contamination sources that may want to move into protection areas. They allow PWSs to prohibit facilities that would discharge contaminants directly to groundwater. They also allow PWSs to review plans from potential contamination sources to ensure there will be adequate spill protection and waste disposal procedures. If zoning ordinances are not used, PWSs must establish a plan to contact potential contamination sources individually as they move into protection areas, identify and assess their controls, and plan land management strategies if they are not adequately controlled.

**R309-600-13. New Groundwater Sources of Drinking Water.**

(1) Before constructing a new groundwater source of drinking water, each PWS shall develop a PER which demonstrates whether the source meets the requirements of this section and submit it to DDW. Additionally, engineering information in accordance with Subsection R309-515-6(5)(a) or Subsection R309-515-7(4) must be submitted to DDW. The Director will not grant plan approval until both source protection and engineering requirements are met. Construction standards relating to protection zones and management areas, including fencing, diversion channels, sewer line construction, and grouting, are found in Rule R309-515. After the source is constructed a DWSP Plan must be developed, submitted, and implemented accordingly.

(2) Preliminary Evaluation Report for New Sources of Drinking Water - PERs shall cover each of the four zones or the entire management area. PERs should be developed in accordance with the "Standard Report Format for New Wells and Springs." This document may be obtained from DDW. PWSs shall include the following four sections in each PER:

(a) Delineation Report for Estimated DWSP Zones - The same requirements apply as in Subsection R309-600-9(6), except that the hydrogeologic data for the PER must be developed using the best available data which may be obtained from: surrounding wells, published information, or surface geologic mapping. PWSs must use the Preferred Delineation Procedure to delineate protection zones for new wells. The Delineation Report for Estimated DWSP Zones shall be stamped and signed by a professional geologist or professional engineer unless the Optional Two-Mile Radius Delineation Procedure is used for a new spring.

(b) Inventory of Potential Contamination Sources and Identification and Assessment of Controls - The same requirements apply as in Subsections R309-600-10(1) and (2). Additionally, the PER must demonstrate that the source meets the following requirements:

(i) Protection Areas Delineated using the Preferred Delineation Procedure in Protected Aquifers - A PWS shall not locate a new groundwater source of drinking water where an uncontrolled potential contamination source or a pollution source exists within zone one.

(ii) Protection Areas Delineated using the Preferred Delineation Procedure in Unprotected Aquifers - A PWS shall not locate a new groundwater source of drinking water where an uncontrolled potential contamination source or an uncontrolled pollution source exists within zone one. Additionally, a new groundwater source of drinking water may not be located where a pollution source exists within zone two unless the pollution source implements design standards which prevent contaminated discharges to groundwater.

(iii) Management Areas Delineated using the Optional Two-Mile Radius Delineation Procedure - A PWS shall not locate a new spring where an uncontrolled potential contamination source or a pollution source exists within zone one. Additionally, a new spring may not be located where a pollution source exists within the management area unless: a hydrogeologic report in accordance with Subsection R309-600-9(6)(b)(ii) which verifies that it does not impact the spring; or the pollution source implements design standards which prevent contaminated discharges to groundwater.

(c) Land Ownership Map - A land ownership map which includes the entirety of land within zones one and two or the entire management area. Additionally, include a list which exclusively identifies the land owners in zones one and two or the management area, the parcels of land which they own, and the zone in which they own land. A land ownership map and list are not required if ordinances are used to protect these areas.

(d) Land Use Agreements, Letters of Intent, or Zoning Ordinances - Land use agreements which meet the requirements of the definition in Subsection R309-600-6(15). Zoning ordinances which are already in effect or letters of intent may be substituted for land use agreements; however, they must accomplish the same level of protection that is required in a land use agreement. Letters of intent must be notarized, include the same language that is required in land use agreements, and contain the statement that "the owner agrees to record the land use agreement in the county recorder's office, if the source proves to be an acceptable drinking water source." The PWS shall not introduce a new source into its system until copies of each applicable recorded land use agreements are submitted to DDW.

(3) Sewers Within DWSP Zone One - A new groundwater source shall not be located where a sanitary sewer line, sewer lateral, or sewer maintenance access exists within zone one unless the criteria identified in Subsection R309-600-13(3)(a) or Subsection R309-600-13(3)(b) are met. If sewer lines, sewer laterals, or sewer maintenance access are located or planned to be located within zone one, the PER must demonstrate that they comply with these criteria. Sewer lines that comply with these criteria may be assessed as adequately controlled potential contamination sources.

(a) Unprotected Aquifers - In zone one, each sewer line, sewer lateral, and sewer maintenance access shall be constructed in accordance with Subsection R309-515-6(4) and shall be at least 50 feet from the wellhead or margin of the collection area.

(b) Protected Aquifers - In zone one, each sewer line, sewer lateral, and sewer maintenance access shall be constructed in accordance with Subsection R309-515-6(4), and shall be at least 10 feet from the wellhead or margin of the collection area.

(4) Use waivers for the VOC and pesticide parameter groups may be issued if the inventory of potential contamination sources indicates that the chemicals within these parameter groups are not used, disposed of, stored, transported, or manufactured within zones one, two, and three or the management area.

(5) Replacement Wells - A PER is not required for proposed wells if the PWS receives written notification from the Director that the well is classified as a replacement well. The PWS must submit a letter requesting that the well be classified as a replacement well and include documentation to show that the conditions required in Subsection R309-600-6(24) are met. If a proposed well is classified as a replacement well, the PWS is still required to submit and obtain written approval for any other information as required in:

(a) DWSP Plan for New Sources of Drinking Water, refer to Subsection R309-600-13(6); and

(b) the Outline of Well Approval Process, refer to Subsection R309-515-6(5).

(6) DWSP Plan for New Sources of Drinking Water - The PWS shall submit a DWSP Plan in accordance with Subsection R309-600-7(1) for any new groundwater source of drinking water within one year after the date of the Director's concurrence letter for the PER. In developing this DWSP Plan, PWSs shall refine the information in the PER by applying any new, as-constructed characteristics of the source, for example pumping rate and aquifer test.

**R309-600-14. Contingency Plans.**

PWSs shall submit a Contingency Plan which includes any sources of drinking water for their entire water system to DDW concurrently with the submission of their first DWSP Plan. Guidance for developing Contingency Plans may be found in the "Source Protection User's Guide for Groundwater Sources." This document may be obtained from DDW.

**R309-600-15. Public Notification.**

A PWSs consumers must be notified that its DWSP Plans are available for their review. This notification must be released to the public by December 31, 2003. Public notifications shall address each of the PWS's sources and include:

(a) a discussion of the general types of potential contamination sources within the protection zones;

(b) an analysis that rates the system's susceptibility to contamination as low, medium, or high; and

(c) a statement that the system's complete DWSP Plans are available to the public upon request.

Examples of means of notifying the public and examples of public notification material are discussed in the "Source Protection User's Guide for Groundwater Sources" which may be obtained from DDW.

**R309-600-16. Monitoring Reduction Waivers.**

(1) Three types of monitoring waivers are available to PWSs. They are:

(a) reliably and consistently;

(b) use; and

(c) susceptibility.

The criteria for establishing a reliably and consistently waiver is set forth in Rule R309-205. The criteria for use and susceptibility waivers follow.

(2) If a source's DWSP Plan is due according to the schedule in Section R309-600-3, and is not submitted to DDW, its use and susceptibility waivers for the VOC and pesticide parameter groups, refer to Subsections R309-205-6(1)(e) and (f); and Subsections R309-205-6(2)(h) and (i), will expire unless an exception, refer to Section R309-600-4, for a new due date has been granted. Additionally, current use and susceptibility waivers for the VOC, pesticide, and unregulated parameter groups will expire upon review of a DWSP Plan, if these waivers are not addressed in the plan. Monitoring reduction waivers must be renewed every six years when the PWSs Updated DWSP Plans are due and be addressed therein.

(3) Use Waivers - If the chemicals within the VOC and pesticide parameter groups, refer to Rule R309-200 table 200-3 and 200-2, have not been used, disposed, stored, transported, or manufactured within the past five years within zones one, two, and three, the source may be eligible for a use waiver. To qualify for a VOC or pesticide use waiver, a PWS must complete the following two steps:

(a) List the chemicals which are used, disposed, stored, transported, and manufactured at each potential contamination source within zones one, two, and three where the use of the chemicals within the VOC and pesticide parameter groups are likely; and

(b) submit a dated statement which is signed by the system's designated person that none of the VOCs and pesticides within these respective parameter groups have been used, disposed, stored, transported, or manufactured within the past five years within zones one, two, and three.

(4) Susceptibility Waivers - If a source does not qualify for use waivers, and if reliably and consistently waivers have not been issued, it may be eligible for susceptibility waivers. Susceptibility waivers tolerate the use, disposal, storage, transport, and manufacture of chemicals within zones one, two, and three as long as the PWS can demonstrate that the source is not susceptible to contamination from them. To qualify for a VOC or pesticide susceptibility waiver, a PWS must:

(a) submit the monitoring results of at least one applicable sample from the VOC or pesticide parameter groups that has been taken within the past six years. A non-detectable analysis for each chemical within the parameter groups is required;

(b) submit a dated statement from the designated person verifying that the PWS is confident that a susceptibility waiver for the VOC or pesticide parameter groups will not threaten public health; and

(c) verify that the source is developed in a protected aquifer, as defined in Subsection R309-600-6(23), and have a public education program which addresses proper use and disposal practices for pesticides and VOCs which is described in the management sections of the DWSP Plan.

(5) Special Waiver Conditions - Special scientific or engineering studies or best management practices may be developed to support a request for an exception to Subsection R309-600-16(4)(c) due to special conditions. These studies must be approved by the Director before the PWS begins the study. Special waiver condition studies may include:

(a) geology, and construction or grout seal of the well, to demonstrate geologic protection;

(b) memoranda of agreement which addresses best management practices for VOCs and pesticides with industrial, agricultural, and commercial facilities which use, store, transport, manufacture, or dispose of the chemicals within these parameter groups;

(c) public education programs which address best management practices for VOCs and pesticides;

(d) contaminant quantities;

(e) affected land area; and

(f) fate and transport studies of the VOCs and pesticides which are listed as hazards at the PCSs within zones one, two, and three, and any other conditions which may be identified by the PWS and approved by the Director.

**KEY: drinking water, environmental health**

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