

AN ORDINANCE ESTABLISHING REQUIREMENTS FOR THE PROTECTION AND PRESERVATION OF THE BIG SIOUX AQUIFER WITHIN THE JOINT JURISDICTIONAL AREA.

ART. IV. AGRICULTURAL, RESIDENTIAL, FLOOD PLAIN AND AQUIFER DISTRICTS

Section 404. AQUIFER DISTRICT.

The purpose of this ordinance is to preserve the water quality of the Big Sioux Aquifer within the Joint Jurisdictional Area, protecting the development and use of land in a manner that will positively affect the quality of water within the areas designated Aquifer Secondary Impact Areas, and preventing any use that would affect the water quality within the Aquifer Critical Impact Areas associated with the public wells that supply the City of Brookings.

The Brookings City and County Commissions recognize (1) that residents of Brookings County rely exclusively on ground water for a safe drinking water supply and (2) that certain land uses in Brookings County can contaminate ground water particularly in shallow/surficial aquifers.

The purpose of the Aquifer Protection Overlay District is to protect public health and safety by minimizing contamination of the shallow/surficial aquifers in the Joint Jurisdictional Area. It is the intent to accomplish this, as much as possible, by public education and securing public cooperation.

Appropriate land use regulations will be imposed, however, which are in addition to those imposed in the underlying zoning districts or in other regulations. It is not the intent to grandfather in existing land uses which pose a serious threat to public health through potential contamination of public water supply well head areas.

.1 DEFINITIONS.

- a) Action. Any application for a permit under this ordinance or any development or use encompassed within the jurisdiction of this ordinance.
- b) Adverse Effects. A land use which produces or may potentially produce deterioration in water quality in the Big Sioux Aquifer which presently exceeds the Federal Primary Drinking Water Standards.
- c) Aquifer. A geologic formation, group of formations or part of a formation capable of storing and yielding ground water to wells or springs.

- d) Best Management Practices. Measures contained in Soil Conservation Service South Dakota Technical Guide, either managerial or structural, that are determined to be the most effective, practical means of preventing or reducing pollution inputs from nonpoint sources to water bodies.
- e) Big Sioux Aquifer. An unconfined, shallow groundwater system connected to the Big Sioux River, its tributaries and many lakes. It lies in South Dakota's eastern border counties.
- f) Buffer Zone. An area outside and adjacent to Zone A that has been delineated to account for possible changes in the boundaries of Zone A due to effects of irrigation pumping.
- g) Chemigation. The process of applying agricultural chemicals (fertilizer or pesticides) using an irrigation system by injecting the chemicals into the water.
- h) Contamination. The process of making impure, unclean, inferior, or unfit for use by introduction of undesirable elements.
- i) Contingency Plans. Detailed plans for control, containment, recovery and clean up of hazardous materials released during fires, equipment failures, leaks and spills.
- j) Development. The carrying out of any construction, reconstruction, alteration of surface, structure, change of land use or intensity of use, and including but limited to the deposit of refuse, solid or liquid waste, any mining or drilling operation or work relating to the creation of a road, street, or parking area.
- k) Facility. Something that is built, installed or established for a particular purpose.
- l) Farm. An area with or without family dwelling which is used for the growing of the usual farm products, such as vegetables, fruit, trees and grain, and their storage on the area, as well as for the raising, feeding, or breeding thereon of the usual farm poultry and farm animals, such as horses, cattle, sheep and swine. The term "farming" includes the operating of such an area for one or more of the above uses, including dairy farms with the necessary accessory uses for treating or storing the produce; provided, however, that the operation of such accessory uses shall be secondary to that of the normal farming activities.

- m) Feedlot. A parcel of land whereon there is contained an operation of feeding or raising animals in excess of one hundred (100) animal units per acre or in excess of five hundred (500) animal units per parcel of land. One animal unit is equivalent to one beef cow, steer, feeder or fat beef animal, one horse, 0.7 dairy cow, 1.7 swine, 6.7 sheep, 33 hens, cockerels, capons, broiler or ducks, and 10 geese or turkeys.
- n) Grey Water. All domestic wastewater except toilet discharge water.
- o) Hazardous Materials. A material which is defined in one or more of the following categories.
- (1) Ignitable: A gas, liquid or solid which may cause fires through friction, absorption of moisture or which has low flash points. Examples: white phosphorous and gasoline.
 - (2) Carcinogenic: A gas, liquid or solid which is normally considered to be cancer causing or mutagenic. Examples: PCBs in some waste oils.
 - (3) Explosive: A reactive gas, liquid or solid which will vigorously and energetically react uncontrollably if exposed to heat, shock, pressure or combinations thereof. Examples: dynamite, organic peroxides and ammonium nitrate.
 - (4) Highly Toxic: A gas, liquid or solid so dangerous to man as to afford an unusual hazard to life. Examples: parathion and chlorine gas.
 - (5) Moderately Toxic: A gas, liquid or solid which through repeated exposure or in a single large dose can be hazardous to man. Example: atrazine.
 - (6) Corrosive: Any material, whether acid or alkaline, which will cause severe damage to human tissue, or in case of leakage might damage or destroy other containers of hazardous materials and cause the release of their contents. Examples: battery acid and phosphoric acid.
- p) Manure Storage Area. An area for the containment of animal manure in excess of 8,000 pounds or 1,000 gallons.
- q) Leaks and Spills. Any unplanned or improper discharge of a potential contaminant including any discharge of a hazardous material.

- r) Pasture. A field that provides continuous forage to animals without depletion of forage matter.
- s) Primary Containment Facility. A tank, pit, container, pipe or vessel of first containment of a liquid or chemical.
- t) Secondary Containment Facility. A second tank, catchment pit, pipe or vessel that limits and contains liquid or chemical leaking or leaching from a primary containment area. Monitoring and recovery are required
- u) Septic Tanks and Drain Fields. In accordance with the State Water and Natural Resource Management the NODAK system is adopted as the Joint Jurisdictional Area system of preference.
- v) Shallow/Surficial Aquifer. An aquifer in which the permeable media (sand and gravel) starts at the land surface or immediately below the soil profile. The main shallow/ surficial aquifer in Brookings County is the Big Sioux Aquifer.
- w) Ten Year Time of Travel Distance. The distance that ground water will travel in ten years. This distance is a function of the permeability and slope of the aquifer.
- x) Zone of Contribution. The entire area around a well or well field that is recharging or contributing water to the well or well field.
- y) Zone A - Aquifer Critical Impact Zone. That portion of the Big Sioux Aquifer which includes the city public water supply and other areas serving as public water supply. This area includes land surrounding the well fields and land upgradient from the well field in the established direction of ground and surface water flow.

Individual wells, meeting water quality parameters and petitioning for aquifer critical impact status shall be protected as Aquifer Critical Impact Zones.

- z) Zone B - Aquifer Secondary Impact Zone. The remainder of the Big Sioux Aquifer between the Aquifer Critical Impact Zone and the Aquifer boundary within the Joint Jurisdictional Area.

.2 ESTABLISHMENT AND DELINEATION OF AQUIFER PROTECTION OVERLAY ZONES.

Boundaries for the aquifer protection zones for the Aquifer Protection Overlay District are shown on published maps

entitled "Well Head Protection Area Maps, Brookings County Shallow Aquifer Map" dated May 1988 as drawn by Banner Associates. Sheets 3 and 4 of said maps are hereby adopted by reference as part of this ordinance as if the maps were fully described herein.

The shallow/surficial aquifer boundary was mapped using data from the South Dakota Geological Survey and United States Geological Survey. The zone of contribution was mapped using an analytical technique outlined in the U.S. Environmental Protection Agency publication "Guidelines for Delineation of Well head Protection Areas, June, 1987." The Aquifer Protection Overlay District was divided into two zones.

a) Zone A - Aquifer Critical Impact Zone.

Zone A, the well head protection area, is the zone of contribution mapped around all public water supply wells or well fields and includes land upgradient to the ten year time of travel boundary.

(1) Permitted uses in Zone A, provided they meet appropriate Performance Standards outlined For Aquifer Protection Overlay Zones:

- a) Agriculture;
- b) Horticulture;
- c) Park, greenways or publicly owned recreational areas;
- d) Necessary public utilities/facilities designed so as to prevent contamination of ground water.

(2) Special Exceptions in Zone A:

The following uses are permitted only under the terms of a special exception and must conform to provisions of the underlying zoning district and meet the Performance Standards outlined for the Aquifer Protection Overlay Zones.

- a) Expansion of existing nonconforming uses to the extent allowed by the underlying district. The Board of Adjustment shall not grant approval unless it finds such expansion does not pose greater potential contamination to ground water than the existing use.

(3) Prohibited Uses in Zone A:

The following uses are expressly prohibited in Zone A:

- a) New feedlots installed after adoption of this ordinance;
- b) Disposal of solid waste except spreading of manure;
- c) Outside unenclosed storage of road salt;
- d) Disposal of snow containing de-icing chemicals;
- e) Processing and storage of PCB containing oils;
- f) Car washes;
- g) Auto service, repair or painting facilities and junk or salvage yards;
- h) Disposal of radioactive waste;
- i) Graveyards or animal burial sites;
- j) Open burning and detonation sites;
- k) All other facilities involving the collection, handing, manufacture, use storage, transfer or disposal of any solid or liquid material or waste having a potentially harmful impact on ground water quality;
- l) All uses not permitted or not permitted as special exceptions in Zone A.
- m) Fall application of nitrogen fertilizer except spreading of manure.

b) Zone B - Aquifer Secondary Impact Zones

Zone B is established as the remainder of the mapped shallow/ surficial aquifer not included in Zone A plus contributing drainage areas, as delineated on the official copy of published maps representing sloping, adjacent lands not underlain by the aquifer from which surface water can flow directly onto Zone A.

This portion of the aquifer is being protected because (1) it is a valuable natural resource for future development, (2) it provides drinking water supply for individual households, (3) contamination is not justi-

fied, even though this area is not a public water supply wellhead and (4) contaminants could eventually reach Zone A.

(1) Permitted Uses in Zone B:

- a) All uses permitted in the underlying zoning districts provided that they can meet the Performance Standards as outlined for the Aquifer Protection Overlay Zones.

(2) Special Exceptions in Zone B:

- a) All special exceptions allowed in underlying districts may be approved by the Board of Adjustment provided they can meet Performance Standards outlined for the Aquifer Protection Overlay Zones.

(3) Prohibited Use in Zone B:

The following use is expressly prohibited in Zone B:

- a) Fall application of nitrogen fertilizer except spreading of manure.

c) Performance Standards:

In determining whether a permit should be granted, the City Engineer and/or the County Zoning Officer shall apply the following guidelines to determine the possible impact of the proposed action on Zone A - Aquifer Critical Impact Zone and/or Zone B - Secondary Impact Zone.

The following standards shall apply to Agricultural land uses in Zones A and B of the Aquifer Protection Overlay Districts:

- (1) New or replacement septic tanks and associated drain fields for containment of human or animal wastes must conform with regulations established by the State Department of Water and Natural Resources.
- (2) Any facility involving the collection, handling, manufacture, use, storage, transfer or disposal of any solid or liquid material or wastes, except for spreading of manure, in excess of 1000 pounds and/or 100 gallons which has the potential to contaminate ground water shall be regulated according to SDCL Chapter 74:03:28 - Underground Storage Tanks or SDCL Chapter 74:03:30 - Above Ground Stationary

Storage Tanks. Pipes installed to carry diluted chemicals for chemigation are exempted and storage of liquid fertilizer for chemigation is allowed as long as a secondary containment system is used. Secondary containment for tanks used for chemigation must be in place by July 1, 1990.

- (3) Open liquid waste ponds containing materials referred to in (2) above will not be permitted without a secondary containment system except for community wastewater lagoons. Agricultural waste storage ponds are permitted but must be constructed in conformance with Soil Conservation Service South Dakota Engineering Standard, Waste Storage Ponds 425. (See Appendix 1)
- (4) Storage of petroleum products in quantities exceeding fifty-five (55) gallons at one locality in one tank or series of tanks must be in elevated tanks; such tanks must have a secondary containment system noted in (2) above where it is deemed necessary by the County Zoning Office.
- (5) Discharge of industrial process water on site is prohibited without County Zoning Office approval.
- (6) Owners/operators of active or abandoned feedlots shall handle and dispose of manure in accordance with Soil Conservation Service South Dakota Engineering Standard, Waste Management System 312. (See Appendix 2)
- (7) Auto service, repair or painting facilities and junk or salvage yards in Zone B shall meet all State and Federal standards for storage, handling and disposal of petroleum products and shall properly dispose of all other potentially hazardous waste materials.
- (8) An acceptable contingency plan for all permitted facilities must be prepared and on file in the City/ County Zoning Office for preventing hazardous materials from contaminating the shallow/ surficial aquifer should floods, fire and other natural catastrophes or equipment failure occur:
 - a) For flood control, all underground facilities shall include but not be limited to a monitoring system and secondary standpipe above the 100 year flood control level, for monitoring and recovery. For above ground facilities, an impervious dike, above the 100 year flood level and capable of containing 110 percent of the largest volume of storage, will be pro-

vided with an overflow recovery catchment area (sump).

- b) For fire control, plans shall include but not be limited to a safe fire fighting procedure, a fire retardant system and provide for dealing safely with both health and technical hazards that may be encountered by disaster control personnel in combating fire. Hazards to be considered are overhead and buried electrical lines, pipes, other buried objects and other hazardous liquids, chemicals or open flames in the immediate vicinity.
- c) For equipment failures, plans shall include but not be limited to: Below ground level, removal and replacement of leaking parts, a leak detection system with monitoring and an overfill protection system.

Above ground level, liquid and leaching monitoring of primary containment systems, their replacement or repair and cleanup and/or repair of the impervious surface.

- d) For any other natural or man-caused disasters occurring, the owner and/or operator shall report all incidents involving liquid or chemical material in an endangerment of the health and /or safety of either disaster personnel and/or the public in general.
 - e) Agricultural operations are exempted from this section unless they store chemicals that are on the Superfund Amendments and Reauthorization Act of 1986 (SARA Title III) extremely hazardous substance list over the threshold planning quantity at any one time. (See Appendix 4)
 - f) The County Zoning Office and DWRN shall be informed within 24 hours of all leaks and spills of materials that might potentially contaminate ground water.
- (9) Since it is known that improperly abandoned wells can become a direct conduit for contamination of ground water by surface water, all abandoned wells should be plugged in conformance with South Dakota Well Construction Standards, Chapter 74:02:04:67-70.

d) The following standards shall apply to zoned areas excluding Agricultural in Zones A and B of the Aquifer Protection Overlay Districts:

- (1) Septic tanks and associated drain fields for containment of human or animal wastes must have approval of the State Department of Water and Natural Resources.
- (2) The storage and retention of any solid or liquid hazardous material which has the potential to adversely effect the water quality of the aquifer must have secondary containment facilities which are easily inspected and whose purpose is to intercept any leak or discharge from the primary containment vessel or structure. Underground tanks or buried pipes carrying such materials must have double walls and inspectable sumps.
- (3) No open liquid waste ponds containing materials in (2) above will be permitted.
- (4) Storage of petroleum products in quantities exceeding fifty-five gallons at one locality in one tank or series of tanks must meet the requirements of (2) above.
- (5) Discharge of Industrial Process water on site is prohibited without City Engineer approval.
- (6) Use or storage of road salt or other chemical de-icers must be contained as in (2) above.
- (7) Auto service, repair, junk and/or salvage yards that is in excess of eight (8) motor vehicles and including farm machinery shall meet the Federal standards of handling and disposal of petroleum products.
- (8) A contingency plan must be presented for protection of the aquifer should floods, fire, and other natural catastrophes or equipment failure occur:
 - a) For flood control, all underground facilities shall include a monitoring system and secondary standpipe above the 100 year flood control level, for monitoring and recovery. For above ground facilities an impervious material dike, above the 100 year flood level and capable of containing 110% of the largest volume of storage will be provided with an overflow recovery catchment area (sump).

- b) For fire control, all plans shall include health and technical hazards that may be encountered by disaster control personnel in combating the fire, a fire retardant system, and a fire fighting procedure. Technical hazards to be considered are electrical lines both overhead and buried, pipes, other buried objects, and other hazardous liquids, chemicals, or open flames in the immediate vicinity.
- c) For equipment failure, plans shall include:
 - (1) Below ground level, removal and replacement of leaking parts, leak detection system with monitoring, and an overflow protection.
 - (2) Above ground level, liquid and leaching monitoring of primary containment systems, their replacement or repair, and cleanup and/or repair of the impervious surface.
- d) If other natural disasters are known, the owner shall report of these incidents, either past or present, that involved this liquid or chemical material in an endangerment of the health and/or safety of either disaster personnel and/or the public in general.

The City Health Department shall be informed of all spills in excess of the amounts specified in this ordinance.

.3 USE PERMITS REQUIRED.

It shall be unlawful for any person to engage in the development of land, whether for residential purposes or otherwise, for any commercial, or industrial pursuit, whether permanent or temporary, unless such person first obtains a use permit as set forth in this ordinance.

.4 APPLICATION PROCEDURE.

All applications shall be made in the manner provided therein.

- a) Zone A - Critical Impact Zone shall be administered by both the City and County Planning Commissions in a joint meeting. All use permits in this area will be approved by the City and County Commission.

- b) All use permits in the zoned areas in Zone B - Secondary Impact Zone will be granted by the City Engineer's Office.
- c) All use permits in the Agricultural zoned areas will be granted by the County Zoning Officer.
- d) All use permit applications in Zone B - Secondary Impact Zone shall contain the following information.
 - (1) The applications shall include a description of the proposed action, use or development, including information and technical data, including complete blueprints, adequate to allow for a careful assessment of the guidelines set forth.
 - (2) Where relevant, maps and other information shall be provided.

.5 GRANT OF PERMIT, ALTERATION OF USE.

A permit will be granted when the City Engineer's Office or the County Zoning Officer has examined the application in light of the foregoing criteria and determined that the use, activity, or development as proposed would not adversely effect the water quality of the Big Sioux Aquifer

In granting a use permit, the owner/developer is responsible for any future modification which may become necessary to prevent contamination of shallow/surficial aquifers and the owner/developer must allow inspection of development by City and/or County personnel for the purpose of verifying that the development does not violate the intent of this ordinance.

Whenever any person has obtained a permit and thereafter desires to alter the use in any way from the authorized use, such person shall make application for a new permit.

If the area for which the permit is sought is zoned agricultural, the owner may appeal the decision to modify or deny a requested permit to the County Commission. In all other zoned areas, a similar appeal can be made to the City Commission.

.6 EXCEPTION.

Any lawful use in existence on the effective date of this ordinance shall be permitted to continue provided it can be shown such use does not threaten public health and safety by potential contamination of water in the shallow/surficial aquifers. Any proposed additions, changes or

improvements will require a permit.

Storage of liquids and chemicals used in agricultural operations during spring/fall planting and crop cultivation are exempt from the requirements of this ordinance April 1 to October 1. Tanks used for chemigation are not exempt. Best Management Practices are encouraged, particularly in Zone A.

Storage of liquid or dry fertilizer in amounts equal to or less than 1,000 pounds or 100 gallons, stored indoors by each farm operator is exempt from the requirements of this ordinance.

Septic tanks in the flood plain, during the spring flood period that use a drain or evaporation system, may release grey water into existing ditches, provided they inform the Department of Water & Natural Resources and the City Engineer and/or the County Zoning Officer.

.7 ENFORCEMENT.

It shall be the duty of the City and County Zoning Officer to enforce the provisions of this ordinance and to see that its requirements and restrictions are duly complied with. They shall adopt such reasonable procedures that within the scope of this ordinance shall facilitate the handling of all matters and questions arising hereunder, and may refer to the Health Officer, the Building Inspector, Emergency and Disaster Director, City Engineer and/or Fire Chief any matters that comes under their jurisdiction.

.8 UNDERLYING ZONES.

The underlying zoning restrictions of each zone apply as well as the restrictions set forth by this ordinance.

.9 PENALTY.

For each and every violation of the provision of this ordinance, the owner, contractor or other individuals required to get a permit shall be fined in accordance with Section 910 or Ordinance No 14-80, the Zoning Ordinance of the Joint Jurisdictional Area surrounding the City of Brookings, South Dakota, adopted in 1980.