Appendix C
Nebraska Department of Environmental Quality
Rules and Regulations
Title 122 – Rules and Regulations for Underground Injection and Mineral Production Wells

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TITLE 122 RULES AND REGULATIONS FOR UNDERGROUND INJECTION CONTROL

NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 1 - DEFINITIONS

When a defined term appears in a definition, the defined term is sometimes placed within quotation marks as an aid to readers.

001 "Abandoned well" shall mean a well whose use has been permanently discontinued or which is in a state of disrepair such that it cannot be used for its intended purpose or for observation purposes.

002 "Acidizing" shall mean the injection of acid through the borehole or "well" into a "formation" to increase permeability and porosity by dissolving the acid-soluble portion of the rock constituents.

003 "Administrator" shall mean the Administrator of the United States Environmental Protection Agency, or an authorized representative.

004 "Application" shall mean the standard forms used by the Department for applying for a permit, including any additions, revisions or modifications to the forms.

005 "Aquifer" shall mean a geological formation, group of formations, or part of a formation that is capable of yielding a useable amount of water to a well or spring.

006 "Area of review" shall mean the area surrounding an "injection well" including the "zone of endangering influence" and the area beyond of not less than two miles in radius as described in Chapter 10.

007 "Casing" shall mean pipe of varying diameter and weight, lowered into a borehole during or after drilling.

008 "Catastrophic collapse" shall mean the sudden and utter failure of overlying "strata" caused by removal of underlying materials.

009 "Cementing" shall mean the operation whereby a cement slurry or other approved material is pumped into a drilled hole and/or forced behind the casing.

010 "Confining bed" shall mean a body of impermeable or distinctly less permeable material stratigraphically adjacent to one or more aquifers.

011 "Confining zone" shall mean a geological formation, group of formations, or part of a formation that is capable of limiting fluid movement above or below an injection zone.

012 "Contaminant" shall mean any physical, chemical, biological, or radiological substance or matter in water.

013 "Council" shall mean the Environmental Control Council.

014 "CWA" shall mean the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Amendments of 1972) Pub.L. 92-500, as amended by

Pub.L. 95-217 and Pub.L. 95-576; 33 U.S.C. 1251 et seq.

015 "Department" is the Department of Environmental Control.

016 "Director" is the Director of the Department of Environmental Control.

017 "Drilling mud" shall mean a fluid circulated into the borehole while drilling by rotary methods.

018 "Effective date" shall mean the date five days after filing with the Nebraska Revisor of Regulations and the Nebraska Secretary of State.

019 "Environmental Protection Agency (EPA)" shall mean the United States Environmental Protection Agency.

020 "Exempted aquifer" shall mean an aquifer or its portion that meets the definition of "underground source of drinking water" which has been exempted according to Chapter 5.

021 "Existing injection well" shall mean an "injection well(s)" that is subject to regulation under the UIC program.

022 "Fault" shall mean a surface or zone of rock fracture along which there has been displacement.

023 "Flow rate" shall mean the volume per time unit given to the flow of gases or other fluid substance which emerges from an orifice, pump, turbine or passes along a conduit or channel.

024 "Fluid" shall mean material or substance which flows or moves whether in a semisolid, liquid, sludge, gas, or any other form or state.

025 "Formation" shall mean a body of rock characterized by a degree of lithologic homogeneity which is prevailingly, but not necessarily, tabular and is mappable on the earth's surface or traceable in the subsurface.

026 "Formation fluid" shall mean "fluid" present in a "formation" under natural conditions as opposed to introduced fluids.

027 "Generator" shall mean any person, by site, whose act or process produces hazardous waste.

028 "Groundwater" is that water which occurs, moves, seeps, filters or percolates through the ground beneath the land surface.

029 "Hazardous waste" shall mean a "waste", or combination of wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may:

029.01 Cause or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or

029.02 Pose a substantial present or potential health hazard to human or animal health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed. This definition shall be consistent with the Rules and Regulations Governing

030 "Hazardous waste management facility" ("HWM facility") shall mean all contiguous land, and structures, other appurtenances, and improvements on the land used for treating, storing, or disposing of hazardous waste.

031 "Injection well" shall mean a "well" into which "fluids" are being injected.

032 "Injection zone" shall mean a geological "formation", group of formations, or part of a formation receiving fluids through a well.

033 "Lithology" shall mean the description of rocks on the basis of their physical and chemical characteristics.

034 "Log" - see Well log.

035 "Mineral production well" shall mean a well drilled to extract "mineral resources" or energy including, but not limited to, a well designed for:

035.01 Mining of sulfur by the Frasch process,

035.02 Solution mining of sodium chloride, potash, phosphate, copper, uranium, or any other mineral which can be mined by this process,

035.03 In-situ combustion of coal, tar sands, oil shale, or any other fossil fuel, or

035.04 Recovery of geothermal energy for the production of electric power.

035.05 Mineral production well shall exclude any well designed for conventional oil or gas production, for use of fluids to promote enhanced recovery of oil or natural gas, for injection of hydrocarbons for storage purposes or for environmental monitoring purposes.

036 "Mineral resource" shall mean mineral substances, except oil and gas found in the form of consolidated rock or unconsolidated material, commingled, in solution, or otherwise occurring beneath the surface or in the waters of the State from which any product useful to humans may be produced, extracted, or obtained.

037 "New injection well" shall mean an "injection well" or "facility" other than an "existing injection well" which was not constructed or operated prior to the effective date of these rules and regulations.

038 "Owner or operator" means the owner or operator of any facility or activities subject to regulation under this title.

039 "Packer" shall mean a device lowered into a well which can be expanded to produce a fluidtight seal.

040 "Permit" shall mean an authorization, license, or equivalent control document issued to

implement the requirements of these rules and regulations.

041 "Person" shall mean any individual, partnership, association, public or private corporation, trustee, receiver, assignee, agent, municipality, or other governmental subdivision, public agency, officer, or governing or managing body of any municipality, governmental subdivision, or public agency, or any other legal entity except the Department of Environmental Control.

042 "Plug or Plugging" shall mean the act or process of sealing the flow of fluid into or out of a formation through a borehole or "well" penetrating that formation.

043 "Plugging record" shall mean a written documentation of permanent or temporary abandonment of test, exploration and injection wells.

044 "Pollution" shall mean air pollution, land pollution and water pollution as defined in the Neb. Rev. Stat. _81-1502.

045 "Pressure" shall mean the total load or force per unit area acting on a surface.

046 "RCRA" shall mean the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act of 1976 (Pub.L. 94-580, as amended by Pub.L. 95-609, 42 U.S.C. 6901 et seq).

047 "Restoration" shall mean the employment, during and after an activity, of procedures reasonably designed to control, minimize, and eliminate hazards to humans, animals, and the environment, to protect the public health and welfare and air, land, water, and subsurface resources, and to return each resource to a quality of use consistent with the "uses for which the resource was suitable" prior to the activity. Restoration shall be considered not accomplished if, after subsurface operations end, an aquifer is unsuitable for any use for which it was suitable before the subsurface operations began or if the post-activity water quality is such that treatment is preferable hydrologically, as determined by the Department in the exercise of its discretion, for the conduct of any such use.

048 "SDWA" shall mean the Safe Drinking Water Act (Pub.L. 95-523, as amended by Pub.L. 95-190, 42 U.S.C. 300(f) et seq.)).

049 "Site" shall mean the land or water area where any facility or activity is physically located or conducted, including adjacent land used in connection with the facility or activity.

050 "Stratum" (plural strata) shall mean a single sedimentary bed or layer, regardless of thickness, that consists of generally the same kind of rock material.

051 "Subsidence" shall mean the lowering of the natural land surface in response to: earth movements; lowering of fluid pressure; removal of underlying supporting material by mining or solution of solids, either artificially or from natural causes; compaction due to wetting (hydrocompaction); oxidation of organic matter in soils; or added load on the land surface.

052 "Surface casing" shall mean the string of well casing to be installed in the well to protect "USDW(s)" and structural integrity of the well.

053 "Total dissolved solids" ("TDS") shall mean the concentration of all dissolved matter and is generally expressed in milligrams per liter (mg/l).

054 "Trade Secret" shall mean a formula, pattern, device or compilation of information which is used in one's business and which is one opportunity to obtain advantage over competitors who do not know or use it. A plan or process, tool, mechanism or compound known only to its owner and those of his employees to whom it is necessary to confide. A secret formula or process not patented, but known only to certain individuals using it and compounding some article of trade having a commercial value.

055 "Tubing" shall mean a pipe placed within the casing of a well through which the injected materials are forced.

056 "UIC" shall mean the State Underground Injection Control program.

057 "Underground injection" shall mean a "well injection."

058 "Underground source of drinking water" ("USDW") shall mean an "aquifer" or its portion:

058.01 Which supplies drinking water for human consumption; or

058.02 In which the groundwater contains fewer than 10,000 mg/l "total dissolved solids;" and

058.03 Which is not an "exempted aquifer."

059 "USDW" shall mean "underground source of drinking water".

060 "Uses for which the resource was suitable" shall mean, with respect to in situ mining, those uses of the premining resource which are or could have reasonably been developed considering established standards and the premining quality conditions.

061 "Waste" is any substance, solid, liquid, or gaseous, including radioactive particles thereof, which pollutes or may tend to pollute.

062 "Well" shall mean a bored, drilled or driven shaft, or a dug hole, whose depth is greater than the largest surface dimension.

063 "Well injection" shall mean the subsurface emplacement of fluids through a bored, drilled or driven well; or through a dug well, where the depth of the dug well is greater than the largest surface dimension.

064 "Well log" shall mean a record by depth of the "lithology" surrounding a well obtained from "formation" samples and/or geophysical methods.

065 "Well plug" shall mean a fluidtight and gastight seal installed in a borehole or well to prevent movement of fluids.

066 "Well record" shall mean a concise statement of the available data regarding a well.

067 "Well stimulation" shall mean several processes used to clean the well bore, enlarge channels, and increase pore space in the interval to be injected thus making it possible for fluids to move more

readily into the formation.

068 "Well monitoring" shall mean the measurement, by on-site instruments or laboratory methods, of the quality and/or quantity of water in a well.

069 "Zone of endangering influence" shall mean the area surrounding an "injection well" as described in Chapter 10.

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 2 - CLASSIFICATION OF INJECTION WELLS AND MINERAL PRODUCTION WELLS

Injection wells are classified as follows:

001 Class I. Wells which inject fluids beneath the lowermost formation containing, within one quarter mile of the well bore, an underground source of drinking water. These include, but are not limited to:

001.01 Wells used by generators of hazardous wastes or owners or operators of hazardous waste management facilities to inject hazardous waste, other than Class IV wells; (see Chapter 6, "Elimination of Certain Well Types.") and

001.02 Other industrial and municipal waste disposal wells.

002 Class II. Wells which inject:

002.01 Formation fluids produced in connection with conventional oil or natural gas production;

002.02 Fluids to promote enhanced recovery of oil or natural gas; and

002.03 For storage purposes, hydrocarbons which are liquid at standard temperature and pressure.

003 Class III. Wells which inject fluids to promote extraction of mineral resources or energy, including:

003.01 Mining of sulfur by the Frasch process;

003.02 Solution mining of mineral resources which include sodium chloride, potash, phosphate, copper, uranium and any other mineral which can be mined by this process;

003.03 In-situ combustion of fossil fuel; fossil fuels include coal, tar sands, oil shale and any other fossil fuel which can be mined by this process; and

003.04 Recovery of geothermal energy to produce electric power; Class III wells do not include wells used in geothermal heating or aquaculture which fall under Class V.

004 Class IV. Wells used by generators of hazardous wastes or of radioactive wastes, by owners or operators of hazardous waste management facilities, or by owners or operators of radioactive waste

disposal sites to dispose of hazardous wastes or radioactive wastes into or above an underground source of drinking water. See Chapter 6, "Elimination of Certain Well Types".

005 Class V. Injection wells not included in Class I, II, III, or IV. Class V wells include, but are not limited to:

005.01 Air conditioning return flow wells used to return to the supply aquifer the water used for heating or cooling in a heat pump;

005.02 Cesspools or other devices that receive wastes, which have an open bottom and sometimes have perforated sides. These regulations do not apply to single family residential cesspools;

005.03 Cooling water return flow wells used to inject water previously used for cooling;

005.04 Drainage wells used to drain surface fluid, primarily storm runoff, into a subsurface formation;

005.05 Dry wells used for the injection of wastes into a subsurface formation;

005.06 Recharge wells used to replenish the water in an aquifer;

005.07 Saltwater intrusion barrier wells used to inject water into a fresh water aquifer to prevent the intrusion of salt water into the fresh water;

005.08 Sand backfill wells used to inject a mixture of water and sand, mill tailings or other solids into mined out portions of subsurface mines;

005.09 Septic system wells used:

005.09A To inject the waste or effluent from a multiple dwelling, business establishment, community or regional business establishment septic tank; or

005.09B For a household, community or regional cesspool. These regulations do not apply to single family residential waste disposal systems consisting of septic tank and tile field;

005.10 Subsidence control wells (not used for the purpose of oil or natural gas production) used to inject fluids into a non-oil or gas producing zone to reduce or eliminate subsidence associated with the overdraft of fresh water;

005.11 Geothermal wells used in heating and aquaculture;

005.12 Research wells used to determine geological or hydrogeological characteristics; and

005.13 Closed loop systems used in conjunction with any of the above.

006 Mineral production wells are classified as follows:

Wells drilled to promote extraction of those mineral resources or energy listed in 003.01 through 003.04 above.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(13); 81-1505(1)(9)

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 3 - PROHIBITION OF UNAUTHORIZED INJECTION AND CONSTRUCTION

001 Any injection or mineral production well not authorized by permit or rule under this title is prohibited.

002 Any injection or production well required to have a permit under this title is prohibited until the permit has been issued with final construction design as approved by the Director.

003 Any injection of hazardous waste will not be allowed into or above an aquifer pursuant to Chapter 6 or into or above an aquifer which has been exempted pursuant to Chapter 5 of this title.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(11)(13)(20); 81-1505(9); 81-1506(1)(b)(2)(b)

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 4 - PROHIBITION OF MOVEMENT OF FLUIDS INTO UNDERGROUND SOURCES OF DRINKING WATER

001 No owner or operator shall construct, operate, maintain, convert, plug or abandon, any injection well or mineral production well or conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant into underground sources of drinking water, if the presence of that contaminant may cause a violation of any primary drinking water regulation or the Nebraska Groundwater Protection Standards, or may otherwise adversely affect the health of persons. The applicant for a permit shall have the burden of showing that the requirements of this section are met.

002 For Class I and III injection wells and mineral production wells, if any water quality monitoring of an underground source of drinking water indicates the movement of any contaminant into the underground source of drinking water, except as authorized under this title, the Director shall prescribe such additional requirements for construction, corrective action, operation, monitoring, or reporting (including closure of the injection well and/or mineral production well) as are necessary to prevent such movement. In the case of wells authorized by permit, these additional requirements shall be imposed by modifying the permit in accordance with Chapter 27, or the permit may be terminated under Chapter 28 if cause exists, or appropriate enforcement action may be taken if the permit has been violated. In the case of wells authorized by rule, see Chapter 7.

003 For Class V wells, if at any time the Director learns that a Class V well may cause a violation of primary drinking water regulations or the Nebraska Groundwater Protection Standards, he or she shall:

003.01 Require the owner or operator to obtain an individual permit;

003.02 Order the owner or operator to take such actions (including, where required, closure of the injection well) as may be necessary to prevent the violation; or

003.03 Take enforcement action.

004 Whenever the Director learns that a Class V well may be otherwise adversely affecting the health of persons, he or she may prescribe such actions as may be necessary to prevent the adverse effect, including any action authorized under 003 of this Chapter.

005 Notwithstanding any other provision of this section, the Director will take emergency action upon receipt of information that a contaminant which is present in or is likely to enter an underground source of drinking water may present an imminent and substantial endangerment to the utility of the underground source of drinking water.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(7)(11)(13)(15)(20); 81-1505(1)(9)(16); 81-1506 (2)(b)(d)(e); 81-1507(1)(4)

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 5 - IDENTIFICATION OF UNDERGROUND SOURCES OF DRINKING WATER AND EXEMPTED AQUIFERS

001 The Director may identify (by narrative description, illustrations, maps, or other means) and shall protect, as underground sources of drinking water, all aquifers or parts of aquifers which meet the definition of an underground source of drinking water. Even if an aquifer has not been specifically identified by the Director, it is an underground source of drinking water if it meets the definition.

002 Upon petition by a permit applicant and after public notice and opportunity for a public hearing, the Director may designate an aquifer or a portion thereof as an exempted aquifer.

003 The petitioner must identify (by narrative description, illustrations, maps or other means) and describe, in geographic and/or geometric terms (such as vertical and lateral limits and gradient) which are clear and definite, an aquifer or parts thereof which he or she proposes the Director designate an exempted aquifer and effects of exemption of the aquifer from the Nebraska Ground Water Protection Standards. Petition can be made only after the permit application has been submitted and the information required in Chapter 11 is completed.

004 An aquifer or a portion of an aquifer which meets the criteria for an underground source of drinking water may be designated as an exempted aquifer if the following criteria are met:

004.01 It does not currently serve as a source of drinking water; and

004.02 It cannot now and will not in the future serve as a source of drinking water because:

004.02A It is mineral, hydrocarbon or geothermal energy bearing with production capability;

004.02B It is situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical;

004.02C It is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption; or

004.02D It is located above a Class III well mining area subject to subsidence or catastrophic collapse.

005 The Department will require a permit for injection into an exempted aquifer in order to protect underground sources of drinking water outside the exempted aquifer which may be subject to pollution caused by the injection.

006 After public notice and opportunity for public hearing, the designation of an exempted aquifer may be removed by the Director thereby eliminating the exempt status, provided required restoration

has been accomplished. Restoration shall be considered accomplished if, after subsurface operations end, an aquifer is suitable for the uses for which it was suitable before the subsurface operations began.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(9)(13); 81-1505(1)(9)(16)

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 6 - ELIMINATION OF CERTAIN WELL TYPES

001 In addition to the requirement of Chapter 20, the following activities are prohibited:

001.01 The construction of any Class IV well for the injection of hazardous waste directly into or above a USDW;

001.02 The injection of hazardous waste directly into or above a USDW through a Class IV well that was not in operation prior to the effective date of these rules and regulations;

001.03 Any increase in the amount of hazardous waste or change in the type of hazardous waste injected into a well injecting hazardous waste directly into or above a USDW; and

001.04 The operation of any Class IV well injecting hazardous waste directly into or above a USDW after 90 days following the effective date of these regulations.

002 Any existing Class IV well must comply with the plugging and abandonment requirements of Chapter 36.

003 The injection of hazardous waste into a Class I well as defined in Chapter 2 of this Title is prohibited.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1501(1); 81-1504(2)(7) (12)(13); 81-1505(1)(2)(9)(13) (a)(b); 81-1506(1)(a)(b)

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 7 - AUTHORIZATION OF UNDERGROUND INJECTION BY RULE

001 Persons operating a Class V well are hereby authorized to do so provided such injection does not endanger health or cause pollution of the environment.

002 The person authorized by rule shall retain all records concerning the nature and composition of injected fluids until five years after completion of any plugging and abandonment procedures governed by the criteria of Chapter 36.

003 The person authorized by rule shall report any noncompliance which may endanger health or cause pollution of the environment. Any information shall be provided orally within twenty-four hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within five days of the time the permittee becomes aware of the circumstances. The written submission shall contain:

003.01 A description of the noncompliance and its cause;

003.02 The period of noncompliance, including exact dates and times;

003.03 If the noncompliance has not been corrected, the anticipated time it is expected to continue;

003.04 Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance;

003.05 Any monitoring or other information which indicates that any contaminant may cause an endangerment to a USDW; and

003.06 Any malfunction of the injection system which may cause fluid migration into or between USDW's.

004 The person authorized by rule shall notify the Director at least 90 days before conversion or abandonment of the well.

005 The owner or operator of a Class V well must be able to demonstrate its mechanical integrity as defined in Chapter 16.

006 The Director may require any Class V injection well authorized by rule to apply for and obtain an individual or area UIC permit for one of the following reasons:

006.01 The injection well is not in compliance with one or more requirements;

006.02 The injection well is not or no longer is within the category of wells and types of well

operations authorized in this Chapter;

006.03 The protection of USDW's requires that the injection operation be regulated by requirements, such as for corrective action, monitoring and reporting, or operation, which are not contained in this Chapter; or

006.04 The injection well may cause a violation of primary drinking water standards or the Nebraska Ground Water Protection Standards.

007 Any owner or operator authorized to inject by rule may request to be excluded from the coverage of this rule by applying for an individual or area UIC permit. The owner or operator shall submit an application under Chapter 11 with reasons supporting the request, to the Director. The Director may grant any such request.

008 The owner or operator of any Class V injection well shall submit the following inventory information to DEC:

008.01 Name and address of owner or operator;

008.02 Legal location of well;

008.03 Specific type of Class V well (if disposal well, kind and volume of waste disposed); and

008.04 Status of well (in use, abandoned, under construction).

009 Nothing in this Chapter shall take precedence over more stringent requirements of local subdivisions of government.

010 Any underground injection operation authorized by rule which endangers health or causes pollution of the environment is subject to appropriate enforcement action including withdrawal of authorization by the Director. Withdrawal of authorization shall constitute a final order and be subject to appeal pursuant to Neb. Rev. Stat. §81-1509.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(11)(13)(15)(20); 81-1505(9)(14)(15); 81-1510 (2); 81-1521.04

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 8 - AUTHORIZATION OF UNDERGROUND INJECTION WELLS AND MINERAL PRODUCTION WELLS BY PERMIT; WHEN REQUIRED

001 No person shall construct or operate any Class I or III injection well in the State, without authorization by a permit from the Department. Owners and operators of Class II wells must secure authorization to inject from the Nebraska Oil and Gas Conservation Commission. Class V wells shall not be constructed or operated without authorization by the Department by either permit or permit by rule.

002 No person shall construct or operate any mineral production well in this State, without authorization by a permit from the Department.

003 Any person not authorized by permit or rule to construct or operate any injection well or mineral production well shall be subject to penalty provisions of §81-1508 of the Nebraska Environmental Protection Act and shall conduct restoration as required by the Director.

004 Any person who requires a permit shall complete, sign, and submit to the Director an application in accordance with Chapter 11 for each permit required. Applications are not required for Class IV and V underground injections authorized by rule except as specified in Chapter 7, 006.

005 The Director shall not begin the processing of a permit until the applicant has fully complied with the application requirements for that permit. Permit applications must comply with the signature and certification requirements in accordance with Chapter 24.

006 Class I and III injection wells in operation at the time of the adoption of these regulations shall be required to obtain a permit to continue operations as specified in Chapter 11, 001.

007 A permit is issued and shall be issued by the Department in technical consultation with the Conservation and Survey Division, University of Nebraska, and the Nebraska Oil and Gas Conservation Commission. Permit conditions shall be designed to carry out the purposes of the Nebraska Environmental Protection Act, Chapter 81, Article 15, Reissue Revised Statutes of Nebraska, 1943, as amended, Title 117, the Nebraska Water Quality Standards for Surface Waters of the State and Title 118, the Groundwater Quality Standards and Use Classification adopted thereunder. Such permit shall be issued with proper public notice (Chapter 31) and, if necessary, pursuant to a public hearing (Chapter 33).

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(9)(a)(10)(11)(13) (20); 81-1505(9)

Legal Citation: Title 122, Ch. 8, Nebraska Department of Environmental Control

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 9 - PERMIT CONDITIONS; GENERAL

The following conditions apply to all underground injection well and mineral production well permits.

001 The permittee must comply with all conditions of the permit. Any permit noncompliance constitutes a violation of Neb. Rev. Stat. §81-1501 to 81-1533 (Reissue 1981), as amended and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal.

002 If the permittee wishes to continue an activity regulated by the permit after the expiration date of the permit, the permittee must apply for and obtain a new permit prior to the expiration date of the permit in effect. Any application for a new permit must occur at least 180 days prior to expiration date of the permit.

003 It shall not be a defense for a permittee in an administrative enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of the permit.

004 The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with the permit.

005 The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of the permit. Proper operation and maintenance includes effective performance.

006 The permit may be modified, revoked and reissued, or terminated for cause by the Department (Chapters 27 and 28) or upon filing of a request by the permittee.

007 The permittee shall furnish to the Director, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit. The permittee shall also furnish to the Director upon request, copies of records required to be kept by the permit.

008 The permittee shall maintain financial responsibility (Chapter 37) to close, plug, and abandon the underground injection wells and/or mineral production wells and to restore the affected resources in accordance with the plan submitted under Chapter 11 requirements in a manner which has been approved by the Director. The permittee must show evidence of financial responsibility to the Director by the submission of a surety bond (or other adequate assurance, in accordance with Chapter 37, acceptable to the Director) in an amount set by the Director.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(11)(12)(13)(20); 81-1505(6)(14); 81-1506(3)(b)

Legal Citation: Title 122, Ch. 9, Nebraska Department of Environmental Control

before the casing is installed; and

002.01E2.(a)(2) A cement bond, temperature, or density log after the casing is set and cemented.

002.01E2.(b) For intermediate and long strings of casing intended to facilitate injection:

002.01E2.(b)(1) Resistivity, spontaneous potential, porosity, and gamma ray logs before the casing is installed;

002.01E2.(b)(2) Fracture finder logs; and

002.01E2.(b)(3) A cement bond, temperature, or density log after the casing is set and cemented.

002.01F At a minimum, the following information concerning the injection formation shall be determined or calculated for new Class I wells:

002.01F1. Fluid pressure;

002.01F2. Temperature;

002.01F3. Fracture pressure;

002.01F4. Other physical and chemical characteristics of the injection zone; and

002.01F5. Physical and chemical characteristics of the formation fluids.

002.02 Class III Injection Wells

002.02A All new Class III wells shall be cased and cemented to prevent the migration of fluids into or between underground sources of drinking water. The casing and cement used in construction of each newly drilled well shall be designed for the life expectancy of the well. In determining and specifying casing and cementing requirements, the following factors shall be considered:

002.02A1. Depth to the injection zone;

002.02A2. Injection pressure, external pressure, internal pressure, axial loading, etc;

002.02A3. Hole size;

002.02A4. Size and grade of all casing strings (wall thickness, diameter, nominal weight, length, joint specification, and construction material);

002.02A5. Corrosiveness of injected fluids and formation fluids;

002.02A6. Lithology of injection and confining zones; and

002.02A7. Type and grade of cement.

002.02B Each Class III well or group of wells utilizing a positive displacement pump shall be equipped with both high and low pressure safety switches which will shut down the pump in case of pressure increase over the authorized pressure or sudden pressure loss.

002.02C Appropriate logs and other tests shall be conducted during the drilling and construction of new Class III wells. A descriptive report interpreting the results of such logs and tests shall be prepared by a qualified log analyst and submitted to the Director. The logs and tests appropriate to each type of Class III well shall be determined based on the intended function, depth, construction and other characteristics of the well, availability of similar data in the area of the drilling site and the need for additional information that may arise from time to time as the construction of the well progresses. At a minimum, such logs and tests shall include deviation checks conducted on all holes where pilot holes and reaming are used, at sufficiently frequent intervals to assure that vertical avenues for fluid migration in the form of diverging holes are not created during drilling.

002.02D Where the injection zone is a water bearing formation, the following information concerning the injection zone shall be determined or calculated for new Class III wells:

002.02D1. Fluid pressure;

002.02D2. Temperature;

002.02D3. Fracture pressure;

002.02D4. Other physical and chemical characteristics of the injection zone;

002.02D5. Physical and chemical characteristics of the formation fluids; and

002.02D6. Compatibility of injected fluids with formation fluids.

002.02E Where the injection formation is not a water bearing formation, the information in section 002.02D3. of this Chapter must be submitted.

002.02F Where injection is into a formation which contains water with less than 10,000 mg/l TDS, monitoring wells shall be completed into the injection zone and into any underground sources of drinking water above the injection zone which could be affected by the mining operation. These wells shall be located in such a fashion as to detect any migration of injection fluids, process by-products, or formation fluids outside the mining area or zone. If the operation may be affected by subsidence or catastrophic collapse, the monitoring wells shall be located so that they will not be physically affected.

002.02G Where injection is into a formation which does not contain water with less than 10,000 mg/l TDS, no monitoring wells are necessary in the injection stratum.

002.02H Where the injection wells penetrate an USDW in an area subject to subsidence or catastrophic collapse an adequate number of monitoring wells shall be completed into the USDW to detect any movement of injected fluids, process by-products or formation fluids into the USDW. The monitoring wells shall be located outside the physical influence of the subsidence or catastrophic collapse.

002.02I In determining the number, location, construction and frequency of monitoring of the monitoring wells the following criteria shall be considered:

002.02I1. The population relying on the USDW affected or potentially affected by the injection operation;

002.02I2. The proximity of the injection operation to points of withdrawal of drinking water;

002.02I3. The local geology and hydrology;

002.02I4. The operating pressures and whether a negative pressure gradient is being maintained;

002.02I5. The toxicity and volume of the injected fluid, the formation water, and the process by-products; and

002.02I6. The injection well density.

002.03 Mineral Production Wells

002.03A All new mineral production wells shall be cased and cemented to prevent the migration of fluids into or between underground sources of drinking water. The casing and cement used in construction of each newly drilled well shall be designed for the life expectancy of the well. In determining and specifying casing and cementing requirements, the following factors shall be considered:

002.03A1. Depth to the production zone;

003.03A2. External pressure, internal pressure, axial loading, etc.;

002.03A3. Hole size;

002.03A4. Size and grade of all casing strings (wall thickness, diameter, nominal weight, length, joint specification, and construction material);

002.03A5. Corrosiveness of production fluids and formation fluids or combination thereof;

002.03A6. Lithology of production and confining zones; and

002.03A7. Type and grade of cement.

002.03B Each mineral production well or group of wells utilizing a positive

displacement pump shall be equipped with both high and low safety switches which will shut down the pump in case of pressure increase over the authorized pressure or sudden pressure loss.

002.03C Appropriate logs and other tests shall be conducted during the drilling and construction of new mineral production wells. A descriptive report interpreting the results of such logs and tests shall be prepared by a qualified log analyst and submitted to the Director. The logs and tests appropriate to each type of mineral production well shall be determined based on the intended function, depth, construction and other characteristics of the well, availability of similar data in the area of the drilling site and the need for additional information that may arise from time to time as the construction of the well progresses. At a minimum, such logs and tests shall include deviation checks conducted on all holes where pilot holes and reaming are used, at sufficiently frequent intervals to assure that vertical avenues for fluid migration in the form of diverging holes are not created during drilling.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(10)(13); 81-1505(9)(15); 81-1506(e)

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 16 - MECHANICAL INTEGRITY

001 Any injection and/or mineral production well must be capable of demonstrating mechanical integrity before authorization to operate by rule or permit.

002 An injection and/or mineral production well has mechanical integrity if:

002.01 There is no significant leak in the casing, tubing or packer; and

002.02 There is no significant fluid movement into an underground source of drinking water through vertical channels adjacent to the injection well bore.

003 One of the following tests must be used to evaluate the absence of significant leaks under section 002.01 of this Chapter.

003.01 Monitoring of annulus pressure; or

003.02 Pressure test with liquid or gas.

004 One of the following methods must be used to determine the absence of significant fluid movement under section 002.01 of this Chapter:

004.01 Well records demonstrating the presence of adequate cement to prevent such migration; or

004.02 The results of a temperature log, noise log, or cement bond log/variable density log.

005 The Director may allow the use of a test to demonstrate mechanical integrity other than those listed in sections 003 and 004.02 of this Chapter providing it will reliably demonstrate the mechanical integrity of the well(s) for which it is proposed.

006 In conducting and evaluating the tests enumerated in this Chapter or other tests to be allowed by the Director, the owner or operator and the Director shall apply methods and standards generally accepted in the industry. When the owner or operator reports the results of mechanical integrity tests to the Director, he shall include a description of the test(s) and the method(s) used. In making his/her evaluation, the Director shall review monitoring and other test data submitted since the previous evaluation.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(13)(15)(24); 81-1505(9)

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 17 - OPERATING REQUIREMENTS

001 General Requirements The permit shall establish any maximum injection volumes and/or pressures necessary to assure that fractures are not initiated in the confining zone, that injected fluids do not migrate into any underground source of drinking water, that formation fluids are not displaced into any underground source of drinking water, and to assure compliance with specific requirements of section 002 of this Chapter.

002 Specific Requirements

002.01 Operating requirements for Class I injection wells shall, at a minimum, specify that:

002.01A Injection pressure at the wellhead shall not exceed a maximum which shall be calculated so as to assure that the pressure in the injection zone during injection does not initiate new fractures or propagate existing fractures in the injection zone, initiate fractures in the confining zone or cause the movement of injection or formation fluids into an underground source of drinking water;

002.01B Injection between the outermost casing protecting underground sources of drinking water and the well bore is prohibited; and

002.01C Unless an alternative to a packer has been approved under Chapter 15, the annulus between the tubing and the long string of casings shall be filled with a fluid approved by the Director; and a pressure, also approved by the Director, shall be maintained on the annulus.

002.02 Operating requirements for Class III injection wells shall, at a minimum, specify that:

002.02A Injection pressure at the wellhead shall not exceed a maximum which shall be calculated so as to assure that the pressure in the injection zone during injection does not initiate new fractures or propagate existing fractures in the injection zone, initiate fractures in the confining zone or cause the migration of injection or formation fluids into an underground source of drinking water; and

002.02B Injection between the outermost casing protecting underground sources of drinking water and the well bore is prohibited.

003 Restoration and Financial Responsibility Requirements During Operation Any person conducting Class III activities shall comply with the restoration plan as approved by the Director (Chapter 9, 008) and maintain financial responsibility as per Chapter 37.

004 Notice of Intent to Operate Prior to operation of a Class I or III injection well(s) and/or mineral production well(s), the permittee must submit a notice of completion construction to the Director and provide the following information as required by the permit to obtain approval to operate:

004.01 All available logging and testing program data on the well(s);

004.02 A demonstration of mechanical integrity pursuant to Chapter 16;

004.03 The results of the formation testing program;

004.04 The compatibility of injected materials with fluids in the injection zone and minerals in both the injection zone and the confining zone; and

004.05 The status of corrective action on defective wells in the area of review.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(12)(13); 81-1505(1)(2)(9)

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 18 - MONITORING REQUIREMENTS

001 General

001.01 Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

001.02 The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the application for the permit, for a period of at least three years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

001.03 The permittee shall retain all records concerning the nature and composition of injected fluids until five years after completion of any plugging and abandonment procedures specified.

001.04 The owner or operator is required to deliver the records to the Director at the conclusion of the retention period.

001.05 Records of monitoring information shall include:

001.05A The date, exact place, and time of sampling or measurements;

001.05B The individual(s) who performed the sampling or measurements;

001.05C The date(s) analyses were performed;

001.05D The individual(s) who performed the analyses;

001.05E The analytical techniques or methods used; and

001.05F The results of such analyses.

002 Class I Injection Wells Monitoring requirements shall, at a minimum, include:

002.01 The analysis of the injected fluids with sufficient frequency to yield representative data of their characteristics; and the result of this analysis shall be transmitted to the Department as directed;

002.02 Continuous recording devices to monitor injection pressure, flow rate and volume, and the pressure on the annulus between the tubing and the long string of casing shall be installed, mOnitored, and the information submitted as directed;

002.03 The injection pressure at the wellhead plus the hydrostatic pressure shall not exceed the fracture pressure of the injection zone which shall be determined from core samples by a qualified laboratory;

002.04 Mechanical integrity (Chapter 16) must be demonstrated at least once every two years during the life of the well;

002.05 The Department will require and approve the type, number and location of wells within the area of review to be used to monitor any migration of fluids into and pressure in the underground sources of drinking water, the parameters to be measured and the frequency of monitoring; and

002.06 The permit may be suspended or revoked at any time by the Department if it determines that the injection well is being operated in violation of law, order, regulation or conditions of the permit. The Department shall have the right to make periodic visits to the installation for the purpose of inspecting the injection system.

003 Class III Injection Wells Monitoring requirements shall, at a minimum, include:

003.01 The analysis of the physical and chemical characteristics of the injected fluid with sufficient frequency to yield representative data on its characteristics;

003.02 Installation and use of devices to monitor the injection pressure, flow rate and volume as specified by the Department;

003.03 Demonstration of mechanical integrity pursuant to Chapter 16 at least once every five years during the life of the well;

003.04 Monitoring of fluid level and the parameters chosen to measure water quality in the injection zone as specified by the Department;

003.05 Monitoring of wells adjacent to the injection site to detect any migration from the injection zone into an USDW as specified by the Department; and

003.06 All Class III wells may be monitored on a field or project basis rather than an individual well basis by manifold monitoring. Manifold monitoring may be used in cases of facilities consisting of more than one injection well operating with a common manifold. Separate monitoring systems for each well are not required provided the owner/operator demonstrates that manifold monitoring is comparable to individual well monitoring.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(11)(12)(13)(15)(21) (24); 81-1509(9)(15)

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 10 - ZONE OF ENDANGERING INFLUENCE AND AREA OF REVIEW FOR CLASS I AND III WELLS

001 The zone of endangering influence for each injection well or each field, project or area of the State shall be determined according to either section 001.01 or 001.02 of this Chapter. The zone of endangering influence shall be that area the radius of which is the lateral distance from an injection well, field or project in which the pressures in the injection zone may cause the migration of the injection and/or formation fluid into an underground source of drinking water or into an improperly constructed, plugged or abandoned well or test hole.

001.01 The radius of the zone should be calculated by using a mathematical model (e.g., modified Theis equation) and should be calculated for an injection time period at least equal to the expected life of the injection well or field. The owner or operator must demonstrate to the Director that the mathematical model used and the calculated zone of endangering influence are appropriate for the known hydrologic properties of the underlying formations.

001.02 A fixed radius around the well, or the perimeter of the field or project of not less than one-fourth mile may be used. In determining the fixed radius, the following factors shall be taken into consideration: Chemistry of injected and formation fluids; hydrogeology; population and groundwater use and dependence; and historical practices in the area.

001.03 If the zone of endangering influence is determined by a mathematical model pursuant to 001.01 of this Chapter, the permissible radius is the result of such calculation even if it is less than one-fourth mile.

002 The area of review for each injection well or each field, project or area of the State shall include the zone of endangering influence and that area at least two miles in radius extending beyond the zone of endangering influence.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(13);81-1505(9)

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 11 - PERMIT APPLICATION; INFORMATION REQUIREMENTS

001 Any person who proposes or operates an underground injection for which a permit is or will be required shall submit to the Director, an application on forms furnished by the Department. Owners and/or operators of existing injection wells and/or mineral production wells must give written notification to the Department of their intent to continue operation within 30 days after the effective date of these regulations. The application shall be filed as expeditiously as practicable but no later than 60 days after receipt of the application form via certified mail from the Department. For new injection wells the application shall be filed at least 180 days before construction is planned to begin, including plans for testing, drilling and construction.

002 When a facility or activity is owned by one person but is operated by another person, it is the operator's duty to obtain a permit.

003 The Director shall not issue a permit before receiving a complete application for a permit, except for an emergency permit.

004 An application for a permit is complete when the Director receives an application form and any supplemental information which are completed to his or her satisfaction. The completeness of any application for a permit shall be judged independently of the status of any other permit application or permit for the same facility or activity.

005 Except as authorized by an area permit, no construction may commence until a permit has been issued containing construction requirements (Chapter 15).

006 All applicants shall provide the following information to the Director:

006.01 The activities conducted by the applicant which require a permit and a brief description of the nature of the business;

006.02 Up to four Standard Industrial Classification (SIC) codes which best reflect the principal products or services provided by the facility;

006.03 The operator's name, address, telephone number, ownership status, and status as Federal, State, private, public, or other entity;

006.04 The owner'(s) names(s), address(es), telephone number(s), ownership status, and status as Federal, State, private, public, or other entity;

006.05 A detailed description of the operator's technological expertise to construct and operate the facility and to conduct necessary well closure, plugging, or abandonment, reclamation, and aquifer restoration;

006.06 A description of all related underground injection projects, other than that for which a permit is being applied for, in which the operator is or has been involved as an operator. Such

description shall include for each the name of the project; location of project by county, state and country; nature of project; full listing of all permits and construction approvals or denials received or applied for, including complete name and address of permitting agency; date construction commenced and was completed; size of project by acreage and annual production units; copies of any citations and notices of violation issued with respect to regulatory compliance; copies of the complaint filed for each lawsuit concerning the project in which the operator was a party; and the disposition of all such citations, notices of violation, and lawsuits. Any citation, notice of violation, and/or lawsuit filed subsequent to date of application shall be reported to the Director within 30 days of filing. Failure to report any of the foregoing shall be grounds for denial of an application or transfer of a permit.

006.07 Whether the facility is located on Indian lands, historic and/or archaeologic sites;

006.08 A listing of all permits or construction approvals received or applied for under any of the following programs:

006.08A Hazardous Waste Management program under RCRA;

006.08B NPDES program under CWA;

006.08C Prevention of Significant Deterioration (PSD) program under the Clean Air Act;

006.08D Nonattainment program under the Clean Air Act;

006.08E National Emission Standards for Hazardous Pollutants (NESHAPS) preconstruction approval under the Clean Air Act;

006.08F Dredge or fill permits under Section 404 of CWA; or

006.08G Other relevant environmental permits, including State permits;

006.09 A map showing the injection well or facility for which a permit is sought and the applicable area of review. Within the area of review, the map must show the number, or name, and location of all existing producing wells, injection wells, abandoned wells, dry holes, surface bodies of water, springs, mines (surface and subsurface), quarries, water wells and other pertinent surface features including farmsteads, ranches, political subdivisions, and roads. The map should also show faults, if known or suspected. All information of public record is required to be included on this map and verified by surface inspection;

006.10 A tabulation of available data on all wells within the area of review which penetrate into the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, water level, record of plugging and/or completion, and any additional information the Director may require;

006.11 Maps and cross sections indicating the general vertical and lateral limits of all water resources within the area of review, available and/or substantiating background water quality data for any USDW within the area of review, the available amounts and potential uses, the position of all underground sources of drinking water relative to the injection formation, and the direction of groundwater movement;

006.12 Maps and cross sections detailing the geologic structure of the local area including faults if known or suspected;

006.13 Generalized maps and cross sections illustrating the regional geologic setting;

006.14 A narrative evaluating the geologic and hydrologic conditions of the well site and area which may be reasonably expected to be affected by the proposed injection project;

006.15 A narrative describing local topography, industry, agriculture, population densities, culture, wildlife, and fish and other aquatic life within the area of review and the existing economic activities of the region including, but not limited to, agriculture, recreation, tourism and industry with a projection as to the probable effects of the system;

006.16 Proposed operating data:

006.16A Average and maximum daily rate and volume of the fluid to be injected or withdrawn;

006.16B Average and maximum injection pressure; and

006.16C Source and an analysis of the chemical, physical, radiological and biological characteristics of injection fluids;

006.17 Proposed formation testing program to obtain an analysis of the chemical, physical, and radiological characteristics of and other information on the receiving formation and formation fluids;

006.18 Proposed stimulation program;

006.19 Proposed injection procedure;

006.20 Engineering drawings of the surface and subsurface construction details of the system;

006.21 Contingency plans to cope with all shut-ins or well failures so as to prevent migration of fluids into any underground source of drinking water;

006.22 Plans (including maps) for meeting the monitoring requirements in Chapter 18;

006.23 Expected changes in pressure, native fluid displacement, direction of movement of injection fluid;

006.24 For wells within the area of review which penetrate the injection zone but are not properly completed or plugged, the corrective action proposed to be taken under Chapter 35;

006.25 Construction procedures as specified in Chapter 15 including a cementing and casing program, logging procedures, deviation checks, and a drilling, testing, and coring program;

006.26 A plan demonstrating the resources (Chapter 37) necessary to close, plug or abandon the well (as required by Chapter 36) and to conduct restoration of the affected aquifer and of

the affected surface resources.

006.27 A determination of the zone of endangering influence as defined and, if calculated, specific calculations used in the determination of the zone of endangering influence, and all assumptions used in the calculations; and

006.28 Supply additional data that the Department may reasonably request. An applicant may furnish, upon its own initiative or when requested by the Department, an opinion of independent experts, satisfactory to the Department in respect to the accuracy and completeness of any information or data furnished by the applicant and on any aspect of the applicant's injection or production system or the contemplated operation or effects thereof.

006.29 Information Requirements for Class I Hazardous Waste Injection Well Permits

006.29A The following information is required for each active Class I hazardous waste injection well at a facility seeking a UIC permit:

006.29A1. Dates well was operated.

006.29A2. Specification of all wastes which have been injected in the well, if available.

006.29B The owner or operator of any facility containing one or more active hazardous waste injection wells shall submit all available information pertaining to any release of hazardous waste or constituents from any active hazardous waste injection well at the facility.

006.29C The owner or operator of any facility containing one or more active Class I hazardous waste injection wells shall conduct such preliminary site investigations as are necessary to determine whether a release is occurring, has occurred, or is likely to have occurred.

007 In addition to these conditions, the Director may establish other conditions on a case-by-case basis.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(11)(13)(20); 81-1505(1)(2)(9); 81-1506(3)(b)

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Nebraska Department of Environmental Quality

Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 12 - DRAFT PERMIT

001 Once an application is complete, the Director shall tentatively decide whether to prepare a draft permit or to deny the application.

002 If the Director tentatively decides to deny the permit application, he or she shall issue a notice of intent to deny. A notice of intent to deny the permit application shall be accompanied by a fact sheet (Chapter 13). If the Director's final decision is that the tentative decision to deny the permit application was incorrect, he or she shall withdraw the notice of intent to deny and proceed to prepare a draft permit.

003 If the Director decides to prepare a draft permit, he or she shall prepare a draft permit that contains the following information:

003.01 All conditions under Chapter 11;

003.02 All compliance schedules under Chapter 29;

003.03 All monitoring requirements under Chapter 18; and

003.04 All permit conditions under Chapters 9, 15, 17, 18, and 19.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(11)(13)(20); 81-1505(9)

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 13 - FACT SHEET

001 A fact sheet on a draft permit or an intent to deny the permit application shall be prepared. The fact sheet shall briefly set forth the principal facts and the significant factual, legal, methodological and policy questions considered. The Director shall send this fact sheet to the applicant and, on request, to any other person.

002 The fact sheet shall include, when applicable:

002.01 A brief description of the type of facility or activity which is the subject of the draft permit;

002.02 The type and quantity of wastes, fluids, or pollutants which are proposed to be or are being stored, disposed of or injected;

002.03 A brief summary of the basis for the draft permit conditions including references to applicable statutory or regulatory provisions.

002.04 Reasons why any requested variances or alternatives to required standards do or do not appear justified;

002.05 A description of the procedures for reaching a final decision on the draft permit including:

002.05A The beginning and ending dates of the comment period under Chapters 31 and 32 and the address where comments will be received;

002.05B Procedures for requesting a hearing and the nature of that hearing; and

002.05C Any other procedures by which the public may participate in the final decision;

002.06 Name and telephone number of a person to contact for additional information.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(11)(13)(20); 81-1505(9)

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 14 - RIGHT OF ENTRY

The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

001 Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;

002 Have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit;

003 Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under the permit; and

004 Sample or monitor at reasonable times, for the purpose of assuring permit compliance, any substances or parameters at any location.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(13)(15)(21)(24); 81-1510(2)

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 15 - CONSTRUCTION REQUIREMENTS; CLASS I AND III INJECTION WELLS AND MINERAL PRODUCTION WELLS

001 General Requirements Existing wells shall achieve compliance with requirements set forth in section 002 of this Chapter according to a compliance schedule established as a permit condition. New wells shall be in compliance with section 002 of this Chapter prior to commencing injection operations and contingent upon final Department approval of construction design as submitted by a registered professional engineer. Changes in construction plans during construction may be approved by the Director as minor modifications (Chapter 27). No such changes may be physically incorporated into construction of the well prior to approval of the modification by the Director.

002 Specific Requirements

002.01 Class I Injection Wells

002.01A All Class I wells shall be sited in such a fashion that they inject into a formation which is beneath the lowermost formation containing, within one quarter mile of the well bore, an underground source of drinking water.

002.01B All Class I wells shall be cased and cemented to prevent the movement of fluids into or between underground sources of drinking water. The casing and cement used in the construction of each newly drilled well shall be designed for the life expectancy of the well. In determining and specifying casing and cementing requirements the following factors shall be considered:

002.01B1. Depth to the injection zone;

002.01B2. Injection pressure, external pressure, internal pressure, and axial loading;

002.01B3. Hole size;

002.01B4. Size and grade of all casing strings (wall thickness, diameter, nominal weight, length, joint specification, and construction material);

002.01B5. Corrosiveness of injected fluid, formation fluids, and temperatures;

002.01B6. Lithology of injection and confining intervals; and

002.01B7. Type and grade of cement.

002.01C All Class I injection wells shall inject fluids through tubing with a packer set immediately above the injection zone, or tubing with an approved fluid seal as an alternative. The tubing, packer, and fluid seal shall be designed for the expected service.

002.01C1. The use of other alternatives to a packer may be allowed with the written approval of the Director. To obtain approval, the operator shall submit a written request to the Director, which shall set forth the proposed alternative and all technical data supporting its use. The Director shall approve the request if the alternative method will reliably provide a comparable level of protection to underground sources of drinking water. The Director may approve an alternative method solely for an individual well or for general use.

002.01C2. In determining and specifying requirements for tubing, packer, or alternatives the following factors shall be considered:

002.01C2.(a) Depth of setting;

002.01C2.(b) Characteristics of injection fluid (chemical content, corrosiveness, and density);

002.01C2.(c) Injection pressure;

002.01C2.(d) Annular pressure;

002.01C2.(e) Temperature and volume of injected fluid;

002.01C2.(f) Rate of fluid injection; and

002.01C2.(g) Size, composition and specifications of casing.

002.01D Each Class I well utilizing a positive displacement pump shall be equipped with both high and low pressure safety switches which will shut down the pump in case of pressure increase over the authorized pressure or sudden pressure loss.

002.01E Appropriate logs and other tests shall be conducted during the drilling and construction of new Class I wells. A descriptive report interpreting the results of such logs and tests shall be prepared by a qualified log analyst and submitted to the Director. At a minimum, such logs and tests shall include:

002.01E1. Deviation checks on all holes constructed by first drilling a pilot hole, and then enlarging the pilot hole by reaming or another method. Such checks shall be at sufficiently frequent intervals to assure that vertical avenues for fluid migration in the form of diverging holes are not created during drilling;

002.01E2. Such other logs and tests as may be needed after taking into account the availability of similar data in the area of the drilling site, the construction plan, and the need for additional information that may arise from time to time as the construction of the well progresses. In determining which logs and tests shall be required, the following logs shall be considered for use in the following situations:

002.01E2.(a) For surface casing intended to protect underground sources of drinking water:

002.01E2.(a)(1) Resistivity, spontaneous potential, and caliper logs

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Chapter 19 - REPORTING REQUIREMENTS

001 General

001.01 The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility.

001.02 A new injection well may not commence injection, and a new mineral production well may not commence production until construction is complete or as specified in an area permit (Chapter 21), and the following requirements are fulfilled:

001.02A The permittee has submitted notice of completion of construction to the Director; and

001.02B The Director has inspected or otherwise reviewed the new injection and/or mineral production well and finds it is in compliance with the conditions of the permit; or

001.02C The permittee has not received notice from the Director of his or her intent to inspect or otherwise review the new injection and/or mineral production well within thirty days of the date of the notice of completion of construction, in which case prior inspection or review is waived and the permittee may commence injection.

001.03 The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

001.04 Monitoring results shall be reported at the intervals specified in the permit.

001.05 Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of the permit shall be submitted no later than fourteen days following each schedule date.

001.06 The permittee shall report any noncompliance which may endanger health or the environment, such as fluid migration into or between USDW's. Any information shall be provided orally within twenty four hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within five days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

001.07 Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information. Failure to do so may result

in revocation of the permit, depending on the nature of the information withheld.

001.08 The permittee shall notify the Director at least 180 days before conversion or abandonment of the well except as provided in an area permit (Chapter 21). With the notice, the permittee shall submit a revised plugging and abandonment plan updated as appropriate.

002 Class I Injection Wells

Reporting requirements shall, at a minimum, include:

002.01 Reports to the Director at a frequency specified in the permit on:

002.01A The physical, chemical and other relevant characteristics of injection fluids;

002.01B Average, maximum and minimum values for injection pressure, flow rate and volume, and annular pressure at a frequency specified in the permit; and

002.01C The results of monitoring prescribed in Chapter 17.

002.02 Reporting test results with the first required report after the completion of:

002.02A Tests of mechanical integrity; and

002.02B Any well work over.

003 Class III Injection Wells and/or Mineral Production Wells Reporting requirements shall, at a minimum, include:

003.01 Reporting to the Director on required monitoring at a frequency specified in the permit;

003.02 Results of mechanical integrity reported with the first regular report after the completion of the test; and

003.03 Monitoring may be reported on a project or field basis rather than individual well basis where manifold monitoring is used.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(13)(25); 81-1505(9)(16); 81-1506(2)(e)(3); 81-1510(2)

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Chapter 20 - AMBIENT MONITORING REQUIREMENTS FOR CLASS I WELLS

001 Based on a site specific assessment of the potential for fluid movement from the well or injection zone and on the potential value of monitoring wells to detect such movement, the Director shall require the owner or operator of a Class I well to develop a monitoring program. At a minimum, the Director shall require annual monitoring of the pressure buildup in the injection zone including at a minimum, a shut down of the well for a time sufficient to conduct a valid observation of the pressure fall-off curve.

002 When prescribing a monitoring system, the Director may also require:

002.01 Continuous monitoring for pressure changes in the first aquifer overlying the confining zone. When such a well is installed, the owner or operator shall, on a quarterly basis, sample the aquifer and analyze for constituents specified by the Director;

002.02 The use of indirect, geophysical techniques to determine the position of the waste front, the water quality in a formation designated by the Director, or to provide other site specific data;

002.03 Periodic monitoring of the ground water quality in the first aquifer overlying the injection zone;

002.04 Periodic monitoring of the ground water quality in the lowermost USDW; and

002.05 Any additional monitoring necessary to determine whether fluids are moving into or between USDWs.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(11)(12)(13)(15)(17) (21)(24)(25); 81-1505(9); 81-1506

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 21 - AREA PERMITS

001 The Director may issue a permit on an area basis, except for hazardous waste injection wells, rather than for each well individually, provided that the permit is for injection wells and/or mineral production wells:

001.01 Described and identified by location in permit application(s), if they are existing wells;

001.02 Within the same well field, facility site, reservoir, project, or similar unit in the same State;

001.03 Of similar construction;

001.04 Of the same class as determined under Chapter 2; and

001.05 Operated by a single owner or operator.

002 Area permits shall specify:

002.01 The area within which underground injections are authorized;

002.02 The requirements for construction, monitoring, reporting, operation, and abandonment, for all wells authorized by the permit; and

002.03 The requirements for aquifer restoration.

003 The area permit may authorize the permittee to construct and operate new injection wells and/or mineral production wells within the permit area provided:

003.01 The permittee notifies the Director no later than the date on which monitoring reports are required to be submitted under Chapter 19, pursuant to a procedure which shall be specified in the permit, when and where the new well will be drilled;

003.02 Plans and specifications are submitted with notification and approved by the Department;

003.03 The additional well satisfies the criteria in section 001 of this Chapter and meets the requirements specified in the permit under section 002; and 003.04. The cumulative effects of drilling and operation of additional injection wells and/or mineral production wells are considered by the Director during evaluation of the area permit application and are acceptable to the Director.

004 If the Director determines that any well constructed pursuant to section 003 of this Chapter does not satisfy any of the requirements of sections 003.01, 003.02 and 003.03 of this Chapter the Director may modify the permit under Chapter 27, terminate under Chapter 28, or take enforcement action. If the Director determines that cumulative effects are unacceptable, the permit may be modified under Chapter 27.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(11)(13)(15); 81-1505(1); 81-1507(1); 81-1510 (2)

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 22 - EMERGENCY PERMITS

001 Notwithstanding any other provision of these regulations, the Director may temporarily permit a specific underground injection which has not otherwise been authorized by rule or permit if an imminent and substantial endangerment to the health of persons will result unless a temporary emergency permit is granted.

002 Any temporary permit shall be for no longer term than required to prevent the hazard.

003 Notice of any temporary permit under this Chapter shall be made public within ten days of the issuance of the permit.

004 The temporary permit under this Chapter may be either oral or written. If oral, it must be followed within five calendar days by a written temporary emergency permit.

005 The Director shall condition the temporary permit to ensure that the injection will not result in the movement of fluids into an underground source of drinking water.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(11)(13)(20); 81-1505(9); 81-1507(4)

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 23 - PERMIT DURATION

001 Permits for Class I and Class V wells shall be effective for a fixed term not to exceed ten years. Permits for Class III injection wells and mineral production wells shall be issued for a period up to the operating life of the facility. The Director shall review each issued Class III injection well and mineral and production well permit at least once every five years to determine whether it should be modified, revoked and reissued, terminated, or a minor modification made as provided in Chapters 27 and 28.

002 The term of a permit shall not be extended by modification beyond the maximum duration specified in this Chapter.

003 The Director may issue any permit for a duration that is less than the full allowable term under this Chapter.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(11)(13)(20); 81-1505(9)

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 24 - SIGNATORIES; PERMIT APPLICATIONS AND REPORTS

001 All permit applications shall be signed as follows:

001.01 For a corporation: by a principal executive officer of at least the level of vice-president;

001.02 For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

001.03 For a municipality, state, federal, or other public agency: by either a principal executive officer or ranking elected official.

002 All reports required by permits and other information requested by the Director, shall be signed by a person described in section 001 of this Chapter, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

002.01 The authorization is made in writing by a person described in section 001 of this Chapter;

002.02 The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.); and

002.03 The written authorization is submitted to the Director.

003 If an authorization under section 002 of this Chapter is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of section 002 of this Chapter must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.

004 Any person signing a document under sections 001 or 002 of this Chapter shall make certification under penalty of law that he or she has personally examined and is familiar with the information submitted in the document and all attachments and that, based on inquiry of those individuals immediately responsible for obtaining the information, he or she believes that the information is true, accurate, and complete. Further, he or she shall certify awareness that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(11)(13)(15)(20); 81-1505(9)(15)

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 25 - CONFIDENTIAL INFORMATION

001 Claims of confidentiality for the following information will be denied:

001.01 The name and address of any permit applicant or permittee; and

001.02 Information which deals with the existence, absence, or level of contaminants in drinking water.

002 Any records or other information furnished to or obtained by the Department concerning one or more air, water or land contaminant sources, which records or information, as certified by the owner or operator, and determined by the Director to relate to methods or processes entitled to protection as trade secrets of such owner or operator, shall be only for the confidential use of the Department.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(13); 81-1527

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 26 - PERMIT TRANSFER

001 A permit may be transferred by the permittee to a new owner or operator only if the permit has been modified or revoked and reissued, to identify the new permittee and incorporate such other requirements as the Director determines necessary except as provided in 001.02.

001.01 In the case of Class I and III injection and mineral production wells a permit may be transferred to a new permittee if, in addition to 001:

001.01A The request for transfer includes a written agreement between the existing and proposed new permittee containing a specific date for transfer of permit responsibility, coverage, and liability between them, and is received at least 90 days before the proposed transfer;

001.01B The request for transfer specifies the method by which the proposed new transferee shall meet the financial responsibility requirements of Chapter 37;

001.01C The Director re-examines the amount constituting financial responsibility in view of the change of circumstances arising from the proposed transfer and requires compliance with modifications in the amount and/or form of financial responsibility as a condition to granting the requested transfer;

001.01D The proposed new permittee furnishes to the Director the information required in Chapter 11, sections 006.05 and 006.06.

001.01E Transfer shall be effectuated by modification of the permit to reflect the new permittee including any changes made by the Director in light of subsections 001.01A through 001.01D.

001.02 In the case of other injection wells (as defined in Chapter 2) a permit may be transferred if in addition to 001:

001.02A The current permittee notifies the Director at least 30 days in advance of the proposed transfer date in section 001.02B of this Chapter;

001.02B The notice includes a written agreement between the existing and new permittee containing a specific date for transfer of permit responsibility, coverage, and liability between them and the notice demonstrates that the financial responsibility requirements will be met by the new permittee; and

001.02C The Director does not notify the existing permittee and the proposed new permittee of his or her intent to modify or revoke and reissue the permit. A modification under this subsection may also be a minor modification. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in section 001.02B of this Chapter.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(11)(13)(20); 81-1505(9);

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 27 - PERMIT MODIFICATION; REVOCATION AND REISSUANCE

001 Any permit under this title after public notice and opportunity for a public hearing according to Chapters 31 through 33, may be modified or revoked and reissued (either upon request of any interested person, including the permittee, or upon the Director's initiative) in whole or in part during its term for cause, including, but not limited to:

001.01 Cause exists for termination under Chapter 28, and the Director determines that modification or revocation and reissuance is appropriate;

001.02 The Director has received notification of a proposed transfer of a permit in accordance with Chapter 26;

001.03 New information or standards indicate that location and operation of the permitted facility poses a threat to human health or the environment;

001.04 Upon request by the permittee, provided such request does not create a violation of any existing applicable standards, laws, or rules and regulations; and

001.05 For Class III injection wells and mineral productions wells, causes for modification stated in section 002 below may be causes for revocation and reissuance as well as modification.

002 In addition to the above, causes for modification but not revocation and reissuance include, but are not limited to:

002.01 Material and substantial alterations or additions to the permitted facility or activity occurred after permit issuance which justify the application of permit conditions that are different or absent in the existing permit;

002.02 The Director has received information regarding:

002.02A Factor(s) arising after final permit issuance which would have justified the use of limitations or other requirements different from those required by applicable standards or limitations; and

002.02B For UIC area permits, factors which indicate that cumulative effects on the environment are unacceptable.

002.03 The standards and/or regulations on which the permit was based have been changed by promulgation of amended standards or regulations or by judicial decision after the permit was issued. Permits may be modified during their terms for this cause as follows:

002.03A For promulgation of amended standards or regulations, when:

002.03A1. The permit condition requested to be modified was based on a regulation under this title;

002.03A2. The Council has revised, withdrawn, or modified that portion of the regulation on which the permit condition was based, or has approved action with regard to a water quality standard on which the permit condition was based after consultation with the Regional Administrator; and

002.03A3. A permittee requests modification within ninety days after department or federal notice of the action on which the request is based;

002.03B For judicial decisions, a court of competent jurisdiction has remanded and stayed state or federally promulgated regulations if the remand and stay concern that portion of the regulations or guidelines on which the permit condition was based and a request is filed by the permittee within ninety days of judicial remand;

002.04 The Director determines good cause exists for modification of a compliance schedule, such as an act of God, strike, flood, or materials shortage or other events over which the permittee has little or no control and for which there is no reasonably available remedy.

003 Upon the consent of the permittee, the Director may modify a permit to make the corrections or allowances for changes in the permitted activity listed in this section. Any permit modification not processed as minor modification under this section must be made for cause and with draft permit and public notice as required. Minor modifications may only:

003.01 Correct typographical errors;

003.02 Require more frequent monitoring or reporting by the permittee;

003.03 Change an interim compliance date in a schedule of compliance, provided the new date is not more than 120 days after the date specified in the existing permit and does not interfere with attainment of the final compliance date requirement;

003.04 Allow for a change in ownership of a facility shere the Director determines that no other change in the permit is necessary, provided that a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new permittees has been submitted to the Director;

003.05 Change quantities or types of fluids injected which are within the capacity of the facility as permitted and, in the judgment of the Director, after reviewing information required, would not interfere with the operation of the facility or its ability to meet conditions prescribed in the permit, and would not change the classification of the facility's injection well(s);

003.06 Change construction requirements approved by the Director, provided that any such alteration shall comply with the requirements of these regulations; or

003.07 Amend a plugging and abandonment plan which has been updated.

004 When a permit is modified, only the conditions subject to modification are reopened. If a permit is revoked and reissued, the entire permit is reopened and subject to revision and the permit is reissued for a new term.

005 If cause does not exist, the Director shall not modify or revoke and reissue the permit; and he or she shall send the requester a brief written response giving a reason for the decision. Denials of requests for modification, revocation and reissuance, or termination are not subject to public notice, comment, or hearings, but constitute a "final order" subject to appeal pursuant to Section 81-1509.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(11)(13)(20); 81-1505(9)

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 28 - PERMIT TERMINATION AND DENIAL

001 The following are causes for terminating a permit during its term, or for denying a permit renewal:

001.01 Noncompliance by the permittee with any condition of the permit;

001.02 The permittee's failure in the application or during the permit issuance process to disclose fully all relevant facts or the permittee's misrepresentation of any relevant facts at any time; or

001.03 A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit modification or termination.

002 The permittee has the right to request a hearing within 30 days after notification of permit termination or denial of permit renewal.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(11)(13)(20); 81-1505(9)

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 29 - SCHEDULES OF COMPLIANCE

001 A permit may, when appropriate, specify a schedule of compliance leading to compliance with these regulations.

002 Schedules of compliance shall require compliance as soon as possible but not later than two years after the effective date of the permit.

003 If a permit establishes a schedule of compliance which exceeds one year from the date of permit issuance, the schedule shall set forth interim requirements and the dates for their achievement.

004 No later than fourteen days following each interim date and the final date of compliance, the permittee shall notify the Director in writing of its compliance or noncompliance with the interim or final requirements, or submit progress reports.

005 A permit applicant or permittee may cease conducting regulated activities (by plugging and abandonment for wells and conducting restoration) rather than continue to operate and meet permit requirements as follows:

005.01 If the permittee decides to cease conducting regulated activities at a given time within the term of a permit which has been issued;

005.01A The permit may be modified to contain a new or additional schedule leading to timely cessation of activities; or

005.01B The permittee shall cease conducting permitted activities before noncompliance with any interim or final compliance schedule requirement already specified in the permit;

005.01C If the decision to cease conducting regulated activities is made before issuance of a permit whose term will include the termination date, the permit shall contain a schedule leading to termination which will ensure timely compliance with applicable requirements;

005.01D If the permittee is undecided whether to cease conducting regulated activities, the Director may issue or modify a permit to contain two schedules as follows:

005.01D1. Both schedules shall contain an identical interim deadline requiring a final decision on whether to cease conducting regulated activities no later than a date which ensures sufficient time to comply with applicable requirements in a timely manner if the decision is to continue conducting regulated activities;

005.01D2. One schedule shall lead to timely compliance with applicable requirements;

005.01D3. The second schedule shall lead to cessation of regulated activities by a date which will ensure timely compliance with applicable requirements; and

005.01D4. Each permit containing two schedules shall include a requirement that after the permittee has made a final decision under section 005.01D1. of this Chapter it shall follow the schedule leading to compliance if the decision is to continue conducting regulated activities, and follow the schedule leading to termination if the decision is to cease conducting regulated activities;

005.01D5. The applicant's or permittee's decision to cease conducting regulated activities shall be evidenced by a firm public commitment satisfactory to the Director, such as a resolution of the board of directors of a corporation.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(13)(25); 81-1505(9)

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 30 - NONCOMPLIANCE REPORTING BY THE DIRECTOR

001 All instances of noncompliance within the following categories shall be reported in successive reports until the noncompliance is reported as resolved. Once noncompliance is reported as resolved it need not appear in subsequent reports. Instances of noncompliance to be reported include:

001.01 When the permittee has failed to complete, by the date specified in the permit, an element of a compliance schedule involving either planning for construction (for example, award of a contract, preliminary plans), or a construction step (for example, begin construction, attain operation level); and the permittee has not returned to compliance by accomplishing the required element of the schedule within 30 days from the date a compliance schedule report is due under the permit;

001.02 When a schedule of compliance in the permit has been modified because of the permittee's noncompliance;

001.03 When the permittee has failed to complete or provide a report required in a permit compliance schedule (for example, progress report or notice of noncompliance or compliance) or a monitoring report; and the permittee has not submitted the complete report within 30 days from the date it is due under the permit for compliance schedules, or from the date specified in the permit for monitoring reports;

001.04 When the required reports provided by the permittee are so deficient as to cause misunderstanding by the Director and thus impede the review of the status of compliance;

001.05 Noncompliance with other permit requirements:

001.05A Whenever the permittee has violated a permit requirement (other than reported under section 001 or 002 of this Chapter), and has not returned to compliance within 45 days from the date reporting of noncompliance was due under the permit; or

001.05B When the Director determines that a pattern of noncompliance exists for a Class I or III permittee over the most recent four consecutive reporting periods. This pattern includes any violation of the same requirement in two consecutive reporting periods, and any violation of one or more requirements in each of four consecutive reporting periods; or

001.05C When the Director determines significant permit noncompliance or other significant event has occurred, such as migration of fluids into a USDW.

001.06 Statistical information shall be reported monthly on all other instances of noncompliance by Class I or III permittees with permit requirements not otherwise reported under section 001.

002 The Director shall submit annual statistical reports for Class V permittees in noncompliance with permit requirements, indicating the total number reviewed, the number of noncomplying Class V permittees, the number of enforcement actions, and number of permit modifications extending compliance deadlines.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(13)(25); 81-1505(1)(9)(16); 81-1510(2)

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 31 - PUBLIC NOTICE

001 General

001.01 The Director shall give public notice that the following actions have occurred:

001.01A A permit application has been tentatively denied;

001.01B A draft permit has been prepared;

001.01C A hearing has been scheduled;

001.01D An appeal has been granted; or

001.01E A petition has been made for designation of an exempted aquifer.

001.02 No public notice is required when a request for permit modification, revocation and reissuance, or termination is denied. Written notice of that denial shall be given to the requester and to the permittee. Such denial shall be considered a "final order" by the Director and subject to appeal pursuant to Neb. Rev. Stat. _81-1509

001.03 Public notices may describe more than one permit or permit action.

002 Timing

002.01 Public notice of the preparation of a draft permit (including a notice of intent to deny a permit application) or petition for designation of an exempted aquifer required under section 001 of this Chapter shall allow at least 30 days for public comment.

002.02 Public notice of a public hearing shall be given at least 30 days before the hearing. (Public notice of the hearing may be given at the same time as public notice of the draft permit and/or aquifer exemption petition and the notices may be combined.)

003 Methods

Public notice of activities described in 001.01 of this Chapter shall be given by the following methods:

003.01 By mailing a copy of a notice to the following persons (any person otherwise entitled to receive notice under this section may waive his or her rights to receive notice for any classes and categories of permits):

003.01A The applicant;

003.01B Adjacent land owners; and

003.01C Any other person or group either upon request or on a Departmental mailing list to receive UIC public notices under this title.

003.02 For permits under this title, publication of a notice in a daily or weekly newspaper within the area affected by the facility or activity; and

003.03 Any other method reasonably calculated to give actual notice of the action in question to the persons potentially affected by it, including press releases or any other forum or medium to elicit public participation.

004 Contents

004.01 All public notices issued under this Chapter shall contain the following minimum information:

004.01A Name and address of the office processing the action under section 001.01 of this Chapter for which notice is being given;

004.01B Name and address of the permittee or permit applicant and/or the petitioner for aquifer exemption, if different, of the facility or activity regulated by the permit;

004.01C A brief description of the business conducted at the facility or activity which is described in the permit application or the draft permit or which requires an aquifer exemption;

004.01D Name, address and telephone number of a person from whom interested persons may obtain further information;

004.01E A brief description of the comment procedures and the time and place of any hearing that will be held, including a statement of procedures to request a hearing (unless a hearing has already been scheduled) and other procedures by which the public may participate in the final permit decision; and

004.01F Any additional information considered necessary or proper.

004.02 In addition to the general public notice described in section 004.01 of this Chapter, the public notice of a hearing shall contain the following information:

004.02A Reference to the date of previous public notices relating to the permit;

004.02B Date, time, and place of the hearing; and

004.02C A brief description of the nature and purpose of the hearing, including the

applicable rules and procedures.

004.03 In addition to the general public notice described in section 004.01 of this Chapter, upon request all interested persons shall be mailed a copy of the fact sheet, the permit application (if any), the draft permit (if any), and the petition for aquifer exemption.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(3)(6)(9)(a)(11) (13)(17)(20); 81-1507(1)(3)(5); 81-1509(1).

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Chapter 32 - PUBLIC COMMENTS AND REQUESTS FOR PUBLIC HEARINGS

001 During the public comment period, any interested person may submit written comments on actions specified in Chapter 31, 001.01, and may request a public hearing, if no hearing has already been scheduled. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing. All comments shall be considered in making the final decision and shall be answered as provided in Chapter 34.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(3)(6)(9)(a)(11) (13)(17)(20)

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Chapter 33 - PUBLIC HEARINGS

002 The Director shall hold a public hearing whenever he or she finds, on the basis of requests, a significant degree of public interest in actions as specified in Chapter 31, 001.01. The Director also may hold a public hearing at his or her discretion; whenever, for instance, such a hearing might clarify one or more issues involved in the permit and/or aquifer exemption decision. Public notice of the hearing shall be given as specified in Chapter 31.

002 Any person may submit oral or written statements and data concerning the draft permit or aquifer exemption. Reasonable limits may be set upon the time allowed for oral statements, and the submission of statements in writing may be required. The public comment period shall automatically be extended to the close of any public hearing under this Chapter. The hearing officer may also extend the comment period by so stating at the hearing.

003 A tape recording or written transcript of the hearing shall be made available to the public upon request and receipt of payment.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(3)(9)(a)(d)(11)(13) (17)(20); 81-1505(9)

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 34 - RESPONSE TO COMMENTS

001 When any final permit or aquifer exemption decision is made, the Director shall issue a response to relevant comments. This response shall:

001.01 Specify which provisions, if any, of the draft permit have been changed in the final permit decision, and the reasons for the change; and/or

001.02 Briefly describe and respond to all relevant comments on the permit decision or aquifer exemption decision raised during the public comment period, or during any hearing.

002 The response to comments shall be available to the public.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(3)(11)(13)(17)(20)

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 35 - CORRECTIVE ACTION

001 Applicants for Class I or III injection well and/or mineral production well permits shall identify the location of all wells which penetrate the injection and/or production zone within the facility's area of review. For such wells which are improperly sealed, completed, or abandoned, the applicant shall also submit a plan consisting of such steps or modifications as are necessary to prevent movement of fluid into underground sources of drinking water ("corrective action"). Where the plan is adequate, the Director shall incorporate it into the permit as a condition. Where the Director's review of an application indicates that the applicant's plan is inadequate, the Director shall require the applicant to revise the plan, prescribe a plan for corrective action as a condition of the permit under section 002 of this Chapter, or deny the application.

002 In determining the adequacy of corrective action proposed by the applicant and in determining the additional steps needed to prevent fluid movement into underground sources of drinking water, the following criteria and factors shall at a minimum be considered by the Director:

002.01 Toxicity and volume of the injected and/or produced fluid;

002.02 Toxicity of native fluids or by-products of injection and/or production;

002.03 Potentially affected population;

002.04 Geology;

002.05 Hydrology;

002.06 History of the injection and/or production operation;

002.07 Completion and plugging records;

002.08 Abandonment procedures in effect at the time the well was abandoned; and

002.09 Hydraulic connections with underground sources of drinking water.

003 Any permit issued for an existing injection well and/or mineral production well requiring corrective action shall include a compliance schedule requiring any corrective action accepted or prescribed under section 001 of this Chapter to be completed as soon as possible.

004 No permit for a new injection well and or production well may authorize injection until all required corrective action has been taken.

005 The Director may require as a permit condition that injection pressure be so limited that pressure in the injection zone does not exceed hydrostatic pressure at the site of any improperly completed or abandoned well within the area of review. This pressure limitation shall satisfy the corrective action

requirement. Alternatively, such injection pressure limitation can be part of a compliance schedule and last until all other required corrective action has been taken.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(11)(13)(20)(25); 81-1505(9)

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 36 - PLUGGING AND ABANDONMENT

001 Prior to abandoning Class I, III, IV and mineral production wells, the permittee or owner/operator must plug the well with cement, a permanent mechanical bridge plug, or, in the case of Class III or mineral production wells, use other plugging materials, in a manner approved by the Department which will not allow the movement of fluids either into or between underground sources of drinking water.

002 Placement of the plugs shall be accomplished by one of the following:

002.01 The Balance Method;

002.02 The Dump Bailer Method;

002.03 The Two-Plug Method; or

002.04 An alternative method approved by the Director.

003 The well to be abandoned shall be in a state of static equilibrium with the mud weight equalized top to bottom, either by circulating the mud in the well at least once or by a comparable method prescribed by the Director, prior to the placement of the plug(s).

004 In the case of a Class III well field which underlies or is in an aquifer which has been exempted, the plugging and abandonment plan shall also address the restoration of the aquifer (Chapter 9, 008 and Chapter 11).

005 An affidavit, setting forth in detail the significant data in connection with the well and the procedure used in plugging, signed by a qualified witness to the plugging and duly notarized, shall be filed in duplicate with the Department, within fifteen days after plugging is completed. The Department reserves the right to require the operator to replug any well where it can be determined that the plugging was not effective due to failure of plugging material or other difficulty.

006 Prior to plugging and abandonment of Class I and III wells and mineral production wells, the permittee must provide at least the following information to the Director to obtain approval:

006.01 The type and number of plugs to be used;

006.02 The placement of each plug including the elevation of the top and bottom;

006.03 The type, grade, and quantity of plugging material to be used; and

006.04 The method for placement of the plugs.

007 Class V wells shall be plugged and abandoned in accordance with the Rules and Regulations for Abandonment of Water Wells promulgated by the Nebraska Department of Water Resources or other applicable regulations, standards, or guidelines.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(2)(13); 81-1505(9)(15)

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 37 - FINANCIAL RESPONSIBILITY

001 General Requirements

001.01 Each application for a permit or a renewal shall be accompanied by a written estimate of the costs to undertake environmental protection measures necessary to prevent contamination of ground water having 10,000 mg/l or less TDS during and after the cessation of operations. These measures shall include, but are not limited to:

001.01A Any improper management techniques committed during the term of the permit;

001.01B The proper closing, plugging, and abandonment of a well(s);

001.01C The proper disassembly, decontamination, and restoration of the aquifer site;

001.01D The probable difficulty of completing the requirements of 001.01B and 001.01C due to such factors as topography, geology of the site, and hydrology;

001.01E Any post-operational monitoring as may be required by the Environmental Protection Act, the regulations of this title, and/or the permit; and

001.01F Additional estimated costs to the State which may arise from applicable public contracting requirements or the need to bring personnel and equipment to the permit area to complete the restoration after its abandonment by the permittee.

001.02 After the submission of the estimate and as a prerequisite to commencing operations, the Department shall require the applicant to provide evidence, to its satisfaction, of financial responsibility that monies are available in an amount estimated by the Director to be sufficient to undertake the measures specified in 001.01 above.

001.03 In determining the amount of financial assurance, in addition to the requirements of 001.01 and 001.02, the Director shall consider the prior history of environmental activities of the applicant as submitted pursuant to Chapter 11, 006.06 and 006.08.

001.04 Each owner or operator shall keep its evidence of financial responsibility on file with the Department current and accurate. Any change in the form or nature of a owner's or operator's method of maintaining the financial responsibility required shall be filed with and approved by the Department prior to any such change.

001.05 Evidence of financial responsibility does not operate to any extent as a limitation upon the obligation of the owner or operator to comply with its permit or complete any restoration.

001.06 Failure of the permit applicant to provide evidence of financial responsibility shall be sufficient cause for withholding issuance of a permit or the revocation of an existing permit.

002 Methods of Providing Financial Responsibility

The applicant shall choose among the following options in establishing financial responsibility:

002.01 An Environmental Protection Trust. An owner or operator may satisfy the requirements of this Chapter by establishing an Environmental Protection Trust. This stand-by trust shall be sufficient to compensate for all the environmental protection costs as specified in section 001 of this Chapter.

002.02 A surety bond guaranteeing payment into an Environmental Protection Trust. This bond must be worded as in Appendix II and would work in tandem with the stand-by Trust provided for in 002.01.

002.03 A collateral bond, in which case the applicant shall deposit, with a bank acceptable to the Department, cash, negotiable bonds issued by the United States or the State; or negotiable certificates of deposit; or deliver to the Department an irrevocable letter of credit of any banks or other savings institution organized or transacting business in the United States. The bank shall receive and hold any collateral bond in the name of the State, in trust, for the purposes for which the deposit is posted. The applicant shall pay all costs of the trust, and shall be paid all interest accruing to the account of the trust.

002.04 An established escrow account; or

002.05 A bond of the applicant without separate surety upon a satisfactory demonstration to the Director that such applicant has the financial means sufficient to self-bond pursuant to bonding requirements specified below in section 008;

002.06 Any combination of the above.

003 Replacement of Financial Assurance

003.01 The Director may allow the owner or operator to replace approved financial assurance with another type of financial assurance described in 002 above, if the liability which has accrued against the owner or operator on the permit, is transferred to such replacement.

003.02 The Director shall not release existing financial assurance until the owner or operator has submitted and the Director has approved an acceptable replacement.

004 The Environmental Protection Trust.

004.01 An owner or operator of a underground injection well, except for Class II and V, may submit an originally signed trust agreement to the Director with the permit application. The trustee shall be an entity which has the authority to act as a trustee and whose trust operations

are regulated and examined by a Federal or State agency.

004.02 The wording of the trust agreement shall be identical to the wording specified in Appendix I and accompanied by a formal certification of acknowledgement as illustrated in said Appendix. Schedule A of the trust agreement shall be updated within 60 days of a change in the amount of the environmental protection measures cost (EPMC), covered by the agreement.

004.03 Payments into the trust fund shall be made annually by the owner or operator over the term of the initial permit or over the remaining life of the mineral injection well(s) as stated in the EPMC estimate (See 001.01), whichever period is shorter. This period is hereafter referred to as the "pay-in period". The payments into the Environmental Protection Trust Fund shall be made as follows:

004.03A For a new well(s), the first payment shall be made before the initial injection into the well(s). A receipt from the trustee for this payment shall be submitted by the owner or operator to the Director before the first injections are made. The first payment shall be at least equal to the estimate of EPMC, divided by the number of years in the pay-in period. Subsequent payments shall be made no later than 30 days after each anniversary date of the first payment. The amount of each subsequent payment shall be determined by this formula:

$$\text{Next Payment} = \frac{EPM - CV}{Y}$$

where EPM is the current EPMC estimate, CV is the current value of the trust fund and Y is the number of years remaining in the pay-in period.

004.03B If an owner or operator establishes a trust fund as specified in 004.01 of this Chapter, and the value of that trust fund is less than the current EPMC estimate when a permit is awarded for the injection well(s), the amount of the cost estimate still to be paid into the trust fund shall be paid in over the pay-in period, as defined in subsection 004.03A above.

004.04 The owner or operator may accelerate payments into the trust fund or he or she may deposit the full amount of the current EPMC estimate at the time the fund is established. However, he or she shall maintain the value of the fund at no less than the value that the fund would have if annual payments were made as required by subsection 004.03A above.

004.05 If the owner or operator establishes an Environmental Protection Trust Fund after having used one or more alternate mechanisms for financial assurance specified in section 002 of this Chapter, his or her first payment shall be in at least the amount that the fund would contain if the trust fund were established initially and annual payments made according to the specifications of 004.03A above.

004.06 After the pay-in period is completed, whenever the EPMC estimate changes, the owner or operator shall compare the new estimate with the trustee's most recent annual valuation of the trust fund. If the value of the fund is less than the amount of the new estimate, the owner or operator, within 60 days after the change in the cost estimate, shall either deposit an amount into the fund so that its value after this deposit at least equals the amount of the current EPMC

estimate, or obtain other financial assurance as specified in 002 of this Chapter to cover the difference.

004.07 If the value of the trust fund is greater than the total amount of the current EPMC estimate, the owner or operator may submit a written request to the Director for release of the amount in excess of the current EPMC estimate.

004.08 If an owner or operator substitutes other financial assurance as specified in this section for all or a part of the trust fund, he may submit a written request to the Director for release of the amount, if any, in excess of the current EPMC estimate covered by the trust fund.

004.09 Within 60 days after receiving a request from the owner or operator as specified in subsections 004.07 and 004.08, the Director will instruct the trustee to release to the owner or operator such funds as the Director specifies in writing.

004.10 After beginning final operations for the environmental protection measures specified in 001.01A to 001.01E an owner or operator or any other person authorized to perform such acts may request reimbursement for expenditures for such acts by submitting itemized bills to the Director. Within 60 days after receiving bills for any of such items, the Director will determine whether the expenditures are in accordance with the permit or otherwise justified, and if so, he or she will instruct the trustee to make reimbursements in such amounts as the Director specifies in writing. If the Director has reason to believe that the cost of such measures will be significantly greater than the value of the trust fund, he or she may withhold reimbursement of such amounts as he or she deems prudent until he or she determines in accordance with subsection 004.11, that the owner or operator is no longer required to maintain financial assurance for environmental protection measures as specified in 001.01A to 001.01E.

004.11 The Director will agree to termination of the trust when:

004.11A An owner or operator substitutes alternate financial assurance as specified in this Chapter; or

004.11B Within 60 days from receiving certifications from the owner or operator and independent registered professional engineer that the measures specified in 001.01A to 001.01E have been accomplished in accordance with the permit, the Director notifies the owner or operator in writing that financial assurance is no longer required to be maintained unless the Director has reason to believe that the environmental protection measures have not been in accordance with the permit.

005 Surety Bond Guaranteeing Payment Into An Environmental Protection Trust Fund.

005.01 An owner or operator shall satisfy the requirements of this section by obtaining a surety bond which conforms to the requirements of this section and submitting the bond to the Director with the application for a permit or for approval to operate under rule. The bond must be effective prior to injection. The surety company shall, at a minimum, be among those listed as acceptable sureties on Federal bonds in Circular 570 of the U.S. Department of the Treasury.

005.02 The wording of the surety bond shall be identical to the wording in Appendix II.

005.03 The owner or operator who uses a surety bond to satisfy the requirements of this section shall also establish a standby Environmental Protection Trust fund. Under the terms of the bond, all payments made thereunder will be deposited by the surety directly into the standby trust fund in accordance with instructions from the Director. This standby trust fund shall meet the requirements specified in section 004, except that:

005.03A An originally signed duplicate of the trust agreement shall be submitted to the Director with the surety bond; and

005.03B Until the standby trust fund is funded pursuant to the requirements of this section, the following are not required:

005.03B1. Payments into the trust as specified in section 004.03;

005.03B2. Updating of Schedule A of the Trust Agreement to show current EPMC estimates;

005.03B3. Annual valuations as required by the trust agreement; and

005.03B4 Notices of nonpayment as required by the trust agreement.

005.04 The bond shall guarantee that the owner or operator will:

005.04A Fund the standby trust fund in an amount equal to the penal sum of the bond before beginning the environmental protection measures enumerated in section 001.01;

005.04B Fund the standby trust fund in an amount equal to the penal sum within 15 days after an order to begin section 001.01 environmental protection measures is issued by the Director or a district court of competent jurisdiction; or

005.04C Provide alternate financial assurance as specified in this Chapter, and obtain the Director's written approval of the assurance provided, within 90 days after receipt by both the owner or operator and the Director of a notice of cancellation of the bond from the surety.

005.05 Under the terms of the bond, the surety will become liable on the bond obligation when the owner or operator fails to perform as guaranteed by the bond.

005.06 The penal sum of the bond shall be in an amount at least equal to the current EPMC estimate.

005.07 Whenever the current EPMC estimate increases to an amount greater than the penal sum, the owner or operator, within 60 days after the increase, shall either cause the penal sum to be increased to an amount at least equal to the current EPMC estimate and submit evidence of such increase to the Director, or obtain other financial assurance as specified in this section to cover the increase. Whenever the current EPMC estimate decreases, the penal sum may be reduced to the amount of the current EPMC estimate following written approval by the Director.

005.08 Under the terms of the bond, the surety may cancel the bond by sending notice of cancellation by certified mail, return receipt requested, to the owner or operator and to the Director. Cancellation may not occur, however, during 120 days beginning on the date of the receipt of the notice of cancellation by both owner or operator and the Director as evidenced by the returned receipt.

005.09 The owner or operator may cancel the bond if the Director has given prior written consent based on his or her receipt of evidence of alternate financial assurance as specified in this section.

006 Collateral bonds, except for letters of credit, shall be subject to the following conditions:

006.01 The Director shall value collateral at its current market value, not face value.

006.02 The Director shall only accept certificates of deposit which are automatically renewable.

007 Irrevocable standby letters of credit shall be subject to the following conditions:

007.01 The letter shall be payable to the State of Nebraska in part or in full upon demand and receipt from the Director of a notice of forfeiture pursuant to section 011 below.

007.02 The letter shall contain terms which authorize the Director to draw upon the letter, in full, to obtain cash collateral in the event the owner or operator has failed to furnish replacement financial assurance at least 30 days prior to the expiration of the letter, and shall be worded as specified in Appendix III.

007.03 The total amount of letters of credit that will be accepted from any bank for any owner or operator, on all permits held by the owner or operator, shall not exceed the bank's maximum legal lending limit as required by the Nebraska Department of Banking or Federal banking regulatory agency.

007.04 The bank shall give prompt notice to the owner or operator and the Director of any notice received or action filed alleging the insolvency or bankruptcy of the bank, or alleging any violations of regulatory requirements which could result in suspension or revocation of the bank's charter or license to do business;

007.05 In the event the bank becomes unable to fulfill its obligations under the letter of credit for any reason, notice shall be given immediately to the owner or operator and the Director.

007.06 Upon the incapacity of a bank by reason of bankruptcy, insolvency, or suspension or revocation of its charter or license, the owner or operator shall obtain a replacement financial assurance within 45 days. Failure of the owner or operator to obtain replacement financial assurance shall result in revocation of its permit.

008 Established escrow accounts shall be subject to the following conditions:

008.01 The escrow account shall be drawn solely in favor of the State of Nebraska with a bank or lending company chartered by or licensed to operate in the State of Nebraska as escrow agent and in an amount to reimburse the State of Nebraska in the event of abandonment, default, or other inability of the owner or operator to meet the conditions imposed in 001.01 .

008.02 The escrow account shall be drawn containing terms which authorize the Director to draw upon the account partially or in full, to obtain cash collateral for the purposes of subsection 007.01..

008.03 The total amount of the escrow account shall remain intact and free of any other encumbrance by the owner or operator or the escrow agent holding the same for the benefit of the State of Nebraska.

008.04 Upon the incapacity of the escrow agent by reason of bankruptcy, insolvency or suspension or revocation of its charter or license, the owner or operator shall obtain replacement financial assurance within 45 days. Failure of the owner or operator to obtain replacement financial assurance shall result in revocation of its permit.

009 Owner or operator's bond without separate surety shall be subject to the following conditions:

009.01 The owner or operator may satisfy the requirements of this section by demonstrating that it passes the financial test as specified in this paragraph. To pass this test the permittee shall meet the criteria of either 009.01A or 009.01B of this section:

009.01A The owner or operator shall have:

009.01A1. Two of the following three ratios: a ratio of total liabilities to net worth less than 2.0, a ratio of the sum of net income plus depreciation, depletion, and amortization to total liabilities greater than 0.1; and a ratio of current assets to current liabilities greater than 1.5;

009.01A2. Net working capital and tangible net worth each at least six times the sum of the current EPMC estimate;

009.01A3. Tangible net worth of at least $10 million; and

009.01A4. Assets in the United States amounting to at least 90 percent of its total assets or at least six times the sum of the current EPMC estimate.

009.01B The owner or operator shall have:

009.01B1. A current rating for its most recent bond issuance of at least AAA, AA, A or BBB as issued by Standard and Poor's or Aaa, Aa, A or Baa as issued by

Moody's;

009.01B2. Tangible net worth at least six times the sum of the current EPMC estimate;

009.01B3. Tangible net worth of at least $10 million; and

009.01B4. Assets located in the United States amounting to at least 90 percent of its total assets or at least six times the sum of the current EPMC estimates.

009.02 The phrase "EPMC estimate" as used in this section refers to the cost estimate required to be shown in Appendix IV (the letter to the Director from the owner or operator's chief financial officer).

009.03 To demonstrate that it meets this test, the owner or operator shall submit the following items to the Director:

009.03A A letter signed by the owner or operator's chief financial officer and worded as specified in Appendix IV;

009.03B A copy of an independent certified public accountant's report on examination of the owner or operator's financial statements for the latest completed fiscal year;

009.03C A special report from the owner or operator's independent certified public accountant to the owner or operator that:

009.03C1. He or she has compared the data which the letter from the chief financial officer specifies as having been derived from the independently audited, year-end financial statements for the latest fiscal year with the amounts in such financial statements; and

009.03C2. In connection with that procedure, no matters came to his or her attention which caused him or her to believe that the specified data should be adjusted.

009.04 An applicant for a permit for a new injection well shall submit the items specified in paragraph 009.03 of this section to the Director within 90 days after the close of each succeeding fiscal year.

009.05 After the initial submission of items specified in 009.03 of this section, the owner or operator shall send updated information to the Director within 90 days after the close of each succeeding fiscal year. The information shall consist of all three items specified in paragraph 009.03 of this section.

009.06 If the owner or operator no longer meets the requirements of paragraph 009.01 of this section, he or she shall send notice to the Director of intent to establish alternate financial assurance as specified in 004 to 008 above. The notice shall be sent by certified mail within 90 days after the end of the fiscal year for which the year-end data show that the owner or operator no longer meets the requirements. The owner or operator shall provide alternate financial assurance within 45 days after the end of such fiscal year.

009.07 The Director may, based upon a reasonable belief that the owner or operator may no longer meet the requirements of 009.01 of this section, require reports of financial condition at any time from the owner or operator in addition to those specified in paragraph 009.03 of this section. If the Director finds on the basis of such reports or other information, that the owner or operator no longer meets the requirements of 009.01 of this section, the owner or operator shall provide alternate financial assurance within 45 days after notification of such a finding.

009.08 The Director may disallow use of this test on the basis of qualifications in the opinion expressed by the independent certified public accountant in his report on the owner or operator's financial statement (See paragraph 009.03B of this section). An adverse or disclaimer of opinion will be cause for disallowance. The Director will evaluate other qualifications on an individual basis. The owner or operator must provide alternate financial assurance as specified in this Chapter within 45 days after notification of the disallowance.

009.09 The owner or operator is no longer required to submit the items specified in 009.03 of this section when:

009.09A The owner or operator substitutes alternate financial assurance as specified in this Chapter; or

009.09B The Director releases the owner or operator from the requirements of this section in accordance with 010 below.

010 Release of Financial Assurance

The owner or operator may file a request with the Director for the release of all or part of its financial assurance. Following public notice, the Director shall release its financial assurance, in whole or in part, when he or she is satisfied any restoration covered by the financial assurance or portion thereof has been accomplished as required by these regulations.

011 Forfeiture of Financial Assurance

011.01 The Director shall declare all or any appropriate part of financial assurance for any permit as forfeited if he or she determines that:

011.01A The owner or operator has violated any of the terms or conditions of its permit and/or financial assurance and has failed to take adequate corrective action; or

011.01B The owner or operator has failed to conduct its operations in accordance with the Nebraska Environmental Protection Act, these regulations and the permit within the time required, and that it is necessary, in order to fulfill the requirements of the permit and any restoration, plugging or abandonment, to have someone other than the owner or operator correct or complete such work.

011.02 The Director may withhold declaration of forfeiture if the owner or operator and surety, escrow agent, or other person responsible for financial assurance agree to a compliance schedule to comply with the violations of the financial assurance or permit conditions.

011.03 In the event a determination to forfeit financial assurance is made, the Director shall:

011.03A Send written notification by certified mail, return receipt requested, to the owner or operator and the surety, escrow agent, or other person responsible for financial assurance of the Director's determination to forfeit all or part of the financial assurance and the reasons for the forfeiture, including a finding of the amount to be forfeited;

011.03B The owner or operator may request a hearing on the issue of whether the financial assurance, or part thereof, shall be forfeited in accordance with the procedures specified in Neb. Rev. Stat. §§ 81-1507(1)(2) and Title 115 of the Department's Rules of Practice and Procedure.

011.03C An appeal from a final decision of the Director shall be in accordance with Neb. Rev. Stat. §§ 81-1509.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1505(9)(c), (21)(a)(b) and (c)

Legal Citation: Title 122, Ch. 37, Nebraska Department of Environmental Control

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 38 - FEES

001 Permit Processing and Issuance Fees

001.01 A fee shall be assessed from permit applicants to process, issue, modify or reissue permits. A permit shall not be issued to any applicant until the fees, assessed by the Department, have been paid.

001.02 In determining the fees, the Department shall calculate and itemize the direct costs associated with permit evaluation, processing, and monitoring, including application review, meetings and correspondence with the permit applicant, permit research and drafting time, necessary travel, technical and administrative review of the drafted permit, clerical preparation of the permit and related tasks, advertising costs for public notice, review of public comments on the draft permit, hearing costs, if applicable, permit processing fee billing, and final permit issuance. The Department shall apply the current indirect rate to the total direct wages and salary expenses recovered on a quarterly basis. This method is the approved agency-wide procedure for recovering indirect costs from its federal programs.

001.03 The Department shall maintain itemized records of staff time and costs incurred in the processing of a permit application. Permit processing fees shall apply without regard to whether a permit is issued, denied or requested to be inactivated prior to issuance or thereafter.

001.04 Each application for a new or reissued permit shall be accompanied by a filing fee as set forth below:

001.04A $25,000 - Class I or III well(s);

001.04B $5,000 - Class V well(s) as required by Chapter 4, Section 003.01.

001.05 All fees shall be made payable to the State of Nebraska and shall be paid within thirty days of receipt of the Department's billing statement. All fees shall be collected by the Department.

001.05A Where the fees assessed in accordance with 001.02 above are less than the filing fee set forth in 001.04 above, the Department shall refund the balance to the applicant.

001.05B Where the fees assessed in accordance with 001.02 above exceed the filing fee set forth in 001.04 above, the applicant shall be billed the balance.

002 When it is necessary for the Department to determine if a Class V individual permit is required, the owner or operator of such well shall be assessed a fee based on direct and indirect costs (as in 001.02) whether or not a permit is issued.

003 Annual Permit Administration Fees

003.01 An annual administration fee shall be assessed to permittees based upon direct and indirect costs.

003.02 In determining the annual fees, the Department shall calculate and itemize the cost of monitoring the permitted facility, inspections of the facility or other site visits, reviewing the compliance of facilities with the associated permit conditions, general legal costs incurred by the Department, or other tasks related to administering the permit program.

003.03 The Department shall maintain itemized records of staff time and costs incurred in the administration of a permit.

003.04 Permittees shall be billed quarterly. All fees shall be made payable to the State of Nebraska and shall be paid within thirty days of receipt of the Department's billing statement. Annual fees not received on the due date shall be subject to a late charge of $25.00 and an additonal ten percent per month. All fees shall be collected by the Department. Failure of a permittee to pay the annual fee by the end of the fiscal year (June 30) is a violation of the permit and may result in the revocation of such permit.

004 The fees subject to this Chapter shall be applicable upon the effective date of these regulations.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1505(9)(b); 81-1505.01

Legal Citation: Title 122, Ch. 38, Nebraska Department of Environmental Control

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 39 - COMPLIANCE; ACTIONS TO ENFORCE, PENALTIES FOR NONCOMPLIANCE

001 Failure to comply with the requirements of these regulations may be grounds for administrative enforcement proceedings as provided in Section 81-1507, R.R.S., 1943, or penalties in proceedings brought in the discretion of the county attorney or Attorney General pursuant to Neb. Rev. Stat. § 81-1508

Enabling Legislation: Neb. Rev. Stat. §§ 81-1507; 81-1508 (Reissue 1981).

Legal Citation: Title 122, Ch. 39, Nebraska Department of Environmental Control

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 40 - SEVERABILITY

001 If any clause, paragraph, subsection or section of these regulations shall be held invalid, it shall be conclusively presumed that the Environmental Control Council would have enacted the remainder of these regulations not directly related to such clause, paragraph, subsection or section.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1504(13); 81-1505(1)(11) (16)(17); 84-906

Legal Citation: Title 122, Ch. 40, Nebraska Department of Environmental Control

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 41 - APPEALS

001 Any appeal from any final order or final determination of the Director shall be pursuant to Neb. Rev. Stat §§ 81-1509.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1509.

Legal Citation: Title 122, Ch. 41, Nebraska Department of Environmental Control

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Title 122 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 42 - AMENDMENT OR REPEAL

001 These rules and regulations may be amended or repealed pursuant to Chapters 65 through 68 of the Department's Rules of Practice and Procedure which procedure shall in all respects conform to Neb. Rev. Stat. §§ 81-1505 and §§ 84-901 through 84-919.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1505 and §§ 84-901 through 84-919

Legal Citation: Title 122, Ch. 42, Department of Environmental Control

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Appendix I
Environmental Protection Trust Agreement

\A trust agreement for a trust fund as specified in Title 122, Ch. 37, _004, must be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

Trust Agreement

\This Trust Agreement, the "Agreement", entered into as of {date} by and between {name of the owner or operator}, {insert address} {insert "corporation," "partnership", "association"' or "proprietorship"}, the Grantor, and {name of corporate trustee}, {insert "incorporated in the State of _____" or a "national bank"}, the "Trustee."

\Whereas, the Nebraska Department of Environmental Control, "NDEC", an agency of the State of Nebraska, has established Title 122 (Nebraska Administrative Code), Chapter 37, Financial Assurance, applicable to the Grantor, requiring that an owner or operator of a Class I or III injection well shall provide assurance that funds will be available when needed for environmental protection measures (as specified in Title 122, Ch. 37, §001.01) of the injection well(s),

\Whereas, the Grantor, acting through its duly authorized officers, has selected the Trustee to be the trustee under this agreement, and the Trustee is willing to act as trustee,

\Now, Therefore, the Grantor and the Trustee agree as follows:

\Section 1. Definitions. As used in this Agreement:

\(a) The term "Grantor" means the owner or operator who enters into this Agreement and any successors or assigns of the Grantor.

\(b) The term "Trustee" means the Trustee who enters into this Agreement and any successor Trustee.

\(c) Facility or activity means any Class I or III "underground injection well" or any other facility or activity that is subject to control under the Underground Injection Control Program of NDEC.

\Section 2. Identification of Facilities and Cost Estimates. This Agreement pertains to the facilities and cost estimates for environmental protection measures as defined in Title 122, Ch. 37, §001.01, which are identified on attached Schedule A. {on Schedule A, for each Class I or III well, list the Identification Number and the current cost estimates for environmental protection measures, or portions thereof, for which financial assurance is demonstrated by this Agreement.}

\Section 3. Establishment of Fund. The Grantor and the Trustee hereby establish a trust fund, the "Fund", for the benefit of NDEC. The Grantor and the Trustee intend that no third party have access to the Fund except as herein provided. The Fund is established initially as consisting of the property, which is acceptable to the Trustee, described in Schedule B attached hereto. Such property and any other property subsequently transferred to the Trustee is referred to as the Fund, together with all

earnings and profits thereon, less any payments or distributions made by the Trustee pursuant to this Agreement. The Fund shall be held by the Trustee, IN TRUST NEVERTHELESS, as hereinafter provided. The Trustee shall not be responsible nor shall it undertake any responsibility for the amount or adequacy of, nor any duty to collect from the Grantor, and payments necessary to discharge any liabilities of the Grantor established by NDEC.

\Section 4. Payment for Environmental Protection Measures. The Trustee shall make payments from the Fund as the NDEC Director shall direct, in writing, to provide for the payment of costs of environmental protection measures of the injection wells covered by this Agreement. The Trustee shall reimburse the Grantor or other persons as specified by the NDEC Director from the Fund for environmental protection measures in such amounts as the NDEC Director shall direct in writing. In addition, the Trustee shall refund to the Grantor such amounts as the NDEC Director specifies in writing. Upon refund, such funds shall no longer constitute part of the Fund as defined herein.

\Section 5. Payments Comprising the Fund. Payments made to the Trustee for the Fund shall consist of cash or securities acceptable to the Trustee.

\Section 6. Trustee Management. The Trustee shall invest and reinvest the principal and income of the Fund and keep the Fund invested as a single fund, without distinction between principal and income, in accordance with general investment policies and guidelines which the Grantor may communicate in writing to the Trustee from time to time, subject however, to the provisions of this Section. In investing, reinvesting, exchanging, selling, and managing the Fund, the Trustee shall discharge its duties with respect to the trust fund solely in the interest of the beneficiary and with the care, skill, prudence, and diligence under the circumstances then prevailing which persons of prudence, acting in a like capacity and familiar with such matters, would use in the conduct of an enterprise of a like character and with like aims; except that:

\(i) Securities or other obligations of the Grantor, or any other owner or operator of the facilities, or any of their affiliates as defined in the Investment Company Act of 1940, as amended, 15 U.S.C. §80a-2.(a) shall not be acquired or held, unless they are securities or other obligations of the Federal of the State government;

\(ii) The Trustee is authorized to invest the Fund in time or demand deposits of the Trustee, to the extent insured by an agency of the Federal or State government; and

\(iii) The Trustee is authorized to hold cash awaiting investment or distribution uninvested for a reasonable time and without liability for the payment of interest thereon.

\Section 7. Commingling and Investment. The Trustee is expressly authorized in its discretion:

\(a) To transfer from time to time any or all of the assets of the Fund to any common, commingled, or collective trust fund created by the Trustee in which the Fund is eligible to participate, subject to all of the provisions thereof, to be commingled with the assets of other trusts participating therein; and

\(b) To purchase shares in any investment Company Act of 1940, 15 U.S.C. §80a-1 et seq., including one which may be created, managed, underwritten, or to which investment advice is rendered or the shares of which are sold by the Trustee. The Trustee may vote shares in its discretion.

\Section 8. Express Powers of the Trustee. Without in any way limiting the powers and discretions conferred upon the Trustee by the other provisions of this Agreement or by law, the Trustee is

expressly authorized and empowered:

\(a) To sell, exchange, convey, transfer, or otherwise dispose of any property held by it by public or private sale. No person dealing with the Trustee shall be bound to see to the application of the purchase money or to inquire into the validity or expediency of any such sale or other disposition;

\(b) To make, execute, acknowledge, and deliver any and all documents of transfer and conveyance and any and all other instruments that may be necessary or appropriate to carry out the powers herein granted;

\(c) To register any securities held in the Fund in its own name or in the name of a nominee and to hold any security in bearer form or in book entry, or to combine certificates representing such securities with certificates of the same issue held by the Trustee in other fiduciary capacities, or to deposit or arrange for the deposit of such securities in a qualified central depository even though when so deposited, such securities may be merged and held in bulk in the name of the nominee of such depository with other securities deposited therein by another person, or to deposit or arrange for the deposit of any securities issued by the United States Government, or any agency or instrumentality thereof, with a Federal Reserve Bank, but the books and records of the Trustee shall at all times show that all such securities are part of the Fund;

\(d) To deposit any cash in the Fund in interest-bearing accounts maintained or savings certificates issued by the Trustee, in its separate corporate capacity, or in any other banking institution affiliated with the Trustee, to the extent insured by an agency of the Federal or State government; and

\(e) To compromise or otherwise adjust all claims in favor of or against the Fund.

\Section 9. Taxes and Expenses. All taxes of any kind that may be assessed or levied against or in respect of the Fund and all brokerage commission incurred by the Fund shall be paid from the Fund. All other expenses incurred by the Trustee in connection with the administration of this Trust, including fees for legal services rendered to the Trustee, the compensation of the Trustee to the extent not paid directly by the Grantor, and all other proper charges and disbursements of the Trustee shall be paid by the fund.

\Section 10. Annual Valuation: The Trustee shall annually, at least 30 days prior to the anniversary date of establishment of the Fund, furnish to the Grantor and to the Director of NDEC a statement confirming the value of the Trust. Any securities in the Fund shall be valued at market value as of no more than 60 days prior to the anniversary date of establishment of the Fund. The failure of the Grantor to object in writing to the Trustee within 90 days after the statement has been furnished to the Grantor and the NDEC Director shall constitute a conclusively binding assent by the Grantor, barring the Grantor from asserting any claim or liability against the Trustee with respect to matters disclosed in the statement.

\Section 11. Advice of Counsel. The Trustee may from time to time consult with counsel, who may be counsel for the Grantor, with respect to any question arising as to the construction of this Agreement of any action to be taken hereunder. The Trustee shall be fully protected, to the extent permitted by law, in acting upon the advise of counsel.

\Section 12. Trustee Compensation. The Trustee shall be entitled to reasonable compensation for its services as agreed upon in writing from time to time with the Grantor.

\Section 13. Successor Trustee. The Trustee may resign or the Grantor may replace the Trustee, but such resignation or replacement shall not be effective until the Grantor has appointed a successor trustee and this successor accepts the appointment. The successor trustee shall have the same powers and duties as those conferred upon the Trustee hereunder. Upon the successor trustee's acceptance of the appointment the Trustee shall assign, transfer and pay over to the successor trustee the funds and property constituting the Fund. If for any reason the Grantor cannot or does not act in the event of the resignation of the Trustee, the Trustee may apply to a court of competent jurisdiction for the appointment of a successor trustee or for instructions. The successor trustee shall specify the date on which it assumes administration of the trust in a writing sent to the Grantor, the NDEC Director, and the present Trustee by certified mail, return receipt requested, 10 days before such change becomes effective. Any expenses incurred by the Trustee as a result of any of the acts contemplated by this section shall be paid as provided in Section 9.

\Section 14. Instructions to the Trustee. All orders, requests, and instructions by the Grantor to the Trustee shall be in writing, signed by such persons as are designated in the attached Exhibit A or such other designees as the Grantor may designate by amendment to Exhibit A. The Trustee shall be fully protected in acting without inquiry in accordance with the Grantor's orders, requests, or instructions. All orders, requests, and instructions by the NDEC Director to the Trustee shall be in writing, signed by the NDEC Director, or his designee, and the Trustee shall act and be fully protected in acting in accordance with such orders, requests, and instructions. The trustee shall have the right to assume, in the absence of written notice to the contrary, that no event constituting a change or a termination of the authority of any person to act on behalf of the Grantor or NDEC hereunder has occurred. The Trustee shall have no duty to act in the absence of such orders, requests, and instructions from the Grantor and/or NDEC, except as provided herein.

\Section 15. Notice of Nonpayment. The Trustee shall notify the Grantor and the NDEC Director by certified mail, return receipt requested, within 10 days following the expiration of the 30-day period after the anniversary of the establishment of the Trust, if no payment is received by the Grantor during that period. After the pay-in period is completed, the Trustee shall not be required to send a notice of nonpayment.

\Section 16. Amendment of Agreement. This Agreement may be amended by an instrument in writing executed by the Grantor, the Trustee, and the NDEC Director, or by the Trustee and the NDEC Director if the Grantor ceases to exist.

\Section 17. Irrevocability and Termination. Subject to the right of the parties to amend this agreement as provided in Section 16, this Trust shall be irrevocable and shall continue until terminated at the written agreement of the Grantor, the Trustee, and the NDEC Director, or by the Trustee and the NDEC Director if the Grantor ceases to exist. Upon termination of the Trust, all remaining trust property, less final trust administration expenses, shall be delivered to the Grantor.

\Section 18. Immunity and Indemnification. The trustee shall not incur personnel liability of any nature in connection with any act or omission, made in good faith, in the administration of the Trust, or in carrying out any directions by the Grantor or the NDEC Director issued in accordance with this Agreement. The Trustee shall be indemnified and saved harmless by the Grantor or from the Trust Fund, or both from and against any personal liability to which the Trustee may be subjected by reason of any act or conduct in its official capacity, including all expenses reasonably incurred in its defense in the event the Grantor fails to provide such defense.

\Section 19. Choice of Law. This Agreement shall be administered, construed, and enforced

according to the laws of the State of Nebraska.

\Section 20. Interpretation. As used in this Agreement, words in the singular include the plural and words in the plural include the singular. The descriptive headings for each Section of this Agreement shall not affect the interpretation or the legal efficacy of this Agreement.

\IN WITNESS WHEREOF, the parties have caused this Agreement to be executed by their respective officers duly authorized and their corporate seals to be hereunto affixed, and attested as of the date first above written. The parties below certify that the wording of this Agreement is identical to the wording specified in Title 122, Nebraska Administrative Code, Appendix I, as such regulations were constituted on the date first above written.

{Signature of Grantor}

{Title}

Attested

{Seal}

_____

{Signature of Trustee}

{Title}

Attested

{Seal}

_____
{Title}

State of Nebraska)
) ss.
County of _____)

On this _____ day of _____, 19___ before me, a Notary Public in and for said County, personally came _____, _____(Title) of _____(Corporation) to me personally known to be the identical person whose name is affixed to the foregoing instrument as such officer and acknowledged the execution thereof to be his voluntary act and deed as such officer and the voluntary act and deed of said corporation.

\Witness my hand and Notarial Seal the last date aforesaid.

Notary Public

My seal expires _____

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Appendix II
Financial Guarantee Bond

\A surety bond guaranteeing payment into a trust fund, as specified in Ch. 37, §005, must be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

Financial Guarantee Bond

Date bond executed: _____

Effective date: _____

\Principal: {legal name and business address of owner or operator}

\Type of organization: {insert "individual," "joint venture," "partnership," or "corporation."

\State of incorporation: _____;.br

\Surety(ies): {name(s) and business address(es)}

\Class I Identification No., name, address, and Environmental Protection Measures Cost, (hereafter EMPC) for each facility guaranteed by this bond (Indicate EPMC amounts separately}: _____

\Total penal sum of bond $_____

\Surety's bond no. _____

\Know All Persons By These Presents, That we, the Principal and Surety(ies) hereto are firmly bound to the Nebraska Department of Environmental Control (hereinafter NDEC), in the above penal sum for the payment of which we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally; provided that, where the Surety(ies) are corporations acting as Co-sureties, we, the Sureties, bind ourselves in such sum "jointly and severally" only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety, but if no limit of liability is indicated, the limit of liability shall be the full amount of the penal sum.

\Whereas said Principal is required, under Title 122, (Nebraska Administrative Code) Chapter 37, (hereinafter Title 122) to have a permit or comply with requirements to operate under rule in order to own or operate each injection well identified above, and

\Whereas said Principal is required to provide financial assurance for environmental protection measures as a condition of the permit, or provisions to operate under rule, and

\Whereas said Principal shall establish a stand-by trust fund as is required when a surety bond is used to provide such financial assurance;

\Now, therefore, the conditions of the obligation are such that if the Principal shall faithfully, before beginning environmental protection measures as specified in Title 122, for each injection well identified above, fund the stand-by trust fund in the amount(s) identified above for the injection well,

Or if the Principal shall fund the standby trust fund in such amount(s) within 15 days after an order to begin environmental protection measures as specified in Title 122, Ch. 37, §001.01, is issued by the NDEC Director or a Nebraska district court,

\Or if the Principal shall provide alternate financial assurance, as specified in Title 122, Ch. 37, §002, as applicable, and obtain the NDEC Director's written approval of such assurance, within 90 days of the date of notice of cancellation is received by both the Principal and the NDEC Director from the Surety(ies), then this obligation shall be null and void, otherwise it is to remain in full force and effect,

\The Surety(ies) shall become liable on this bond obligation only when the Principal has failed to fulfill the conditions described above. Upon notification by the NDEC Director that the Principal has failed to perform as guaranteed by this bond, the Surety(ies) shall place funds in the amount guaranteed for the injection well(s) into the stand-by trust funds as directed by the NDEC Director.

\The liability of the Surety(ies) shall not be discharged by any payment or succession of payments hereunder, unless and until such payment or payments shall amount in the aggregate to the penal sum of the bond, but in no event shall the obligation of the Surety(ies) hereunder exceed the amount of such penal sum.

\The Surety(ies) may cancel the bond by sending notification by certified mail, return receipt requested, to the Principal and the NDEC Director, provided, however, that the cancellation shall not occur during the 120 days beginning on the date of receipt of the notice of cancellation by both the Principal and the NDEC Director, as evidenced by the return receipts.

\The Principal may terminate this bond by sending written notice to the Surety(ies), provided, however, that no such notice shall become effective until the Surety(ies) receive(s) written authorization for termination of the bond by the NDEC Director.

\{The following paragraph is an optional rider that may be included but is not required}:

\Principal and Surety(ies) hereby agree to adjust the penal sum of the bond yearly so that it guarantees a new EPMC (as specified in Title 122, Ch. 27, §001.01), provided that the penal sum does not increase by more than 20 percent in any one year, and no decrease in the penal sum occurs without the written permission of the NDEC Director.

\In Witness Whereof, the Principal and Surety(ies) have executed this Financial Guarantee Bond and have affixed their seals on the date set forth above.

\The persons whose signatures appear below hereby certify that they are authorized to execute this surety bond on behalf of the Principal and Surety(ies) and that the wording of this surety bond is identical to the wording specified in Title 122, Appendix II as such was constituted on the date this bond was executed.

Principal

{Signature(s)}
{Name(s)}
{Title(s)};

{Corporate Seal}

Corporate Surety(ies)

{Name and address}

\State of Incorporation: _____
\(Must be licensed to do business in Nebraska)

\Liability limit: $_____

{Signature(s)}
{Name(s)}
{Title(s)}

{Corporate Seal}

\{For every co-surety, provide signature(s), corporate seal, and other information in the same manner as for Surety above.}

Bond premium: $ _____

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For more information, contact
MoreInfo@NDEQ.state.NE.US

Nebraska Department of Environmental Quality
1200 "N" Street, Suite 400
PO Box 98922
Lincoln, NE 68509
(402)471-2186 fax: (402)471-2909

Appendix III
Irrevocable Standby Letter of Credit

Director
Nebraska Department of Environmental Control
P.O. Box 98922,
Statehouse Station
Lincoln, NE 68509

Dear {Director}

\We hereby establish our irrevocable standby letter of credit No. _____ in your favor, at the request and for the account of (Owner or Operator's name) up to the aggregate amount of (Amount in Words) U.S. Dollars ($_____), available upon presentation of your sight draft, mentioning thereon this letter of credit No. _____, accompanied by a notice of statement by the Director that (Owner or Operator's Name) has not properly closed plugged, and abandoned the underground injection wells and/or mineral production well(s) and has not properly disassembled, decontaminated, and restored the aquifer and site, including any post-operational monitoring, in accordance with its permit and as required by the Nebraska Environmental Protection Act and the rules and regulations of your Department.

\\This letter of credit is effective as of (Date) and shall expire on (Date at least one year later), but such expiration date shall be automatically extended for a period of (At least one year) on (Date) and on each successive expiration date, unless we notify both you and (Owner or Operator's Name) by certified mail, return receipt requested, that we have decided not to extend this letter of credit beyond the current expiration date. In the event you are so notified, any unused portion of the credit shall be available upon presentation of your sight draft for one-hundred twenty days after the date of receipt by both you and (Owner or Operator's Name) as shown on the signed return receipts.

\We shall promptly notify you and (Owner or Operator's Name) of any notice received or action filed alleging our insolvency or bankruptcy, or alleging any violations of regulatory requirements which could result in suspension or revocation of our charter or license to do business. We will further immediately notify you and (Owner or Operator's Name) of our inability to fulfill our obligations under this letter of credit for any reason.

\This letter of credit is subject to the Uniform Customs and Practices for Documentary Credits (1983 Revision) published by the International Chamber of Commerce, Publication 400.

Sincerely yours,

_____/s/_____

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APPENDIX IV
Letter From Chief Financial Officer

\A letter from the chief financial officer as specified in Ch. 27, §008 must be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted.

Letter From Chief Financial Officer

\{Address to Director, Nebraska Department of Environmental Control, Box 98922, State House Station, Lincoln, NE 68509}

\I am the chief financial officer of {name and address of firm.} This letter is in support of this firm's use of a bond without surety as financial assurance and to meet the financial test in Title 122, Chapter 37, 008.01.

\{Fill out the following paragraph regarding injection wells and associated cost estimates. For each injection well, include its name, address, and current EPMC cost estimate.}

\This firm is the operator of the following injection wells for which financial assurance for EPMC is demonstrated through the financial test specified in Title 122, Chapter 37, §008.01. The current EPMC cost estimate covered by the test is shown for each injection well:

\The fiscal year of this firm ends on {month, day}. The figures for the following items marked with an asterisk are derived from this firm's independently audited, year-end financial statements for the latest completed fiscal year ended {date}.

\{Fill in Alternative I if the criteria of section 008.01A of Chapter 37, Title 122 are used. Fill in Alternative II if the criteria of section 008.01B of the same Chapter and Title are used}.

Alternative I

1. Current EPMC costs.	$ _____
*2. Total liabilities {If any portion of the EPMC costs is included in total liabilities, you may deduct the amount of that portion from this line and add that amount to lines 3 and 4}.	$ _____
*3. Tangible net worth	$ _____
*4. Net worth	$ _____
*5. Current assets	$ _____
*6. Current liabilities	$ _____
*7. Net working capital (line 5 minus line 6)	$ _____
*8. The sum of net income plus depreciation, depletion and amortization	$ _____

*9. Total assets in U.S. (required only if less than 90% of firm's assets are located in U.S.)	$ _____

	Yes	No
10. Is line 3 at least $10 million?		
11. Is line 3 at least 6 times line 1?		
12. Ise line 7 at least 6 times line 1?		
13. Are at least 90% of firm's assets located in U.S.? If not, complete line 14.		
14. Is line 9 at least 6 times line 1?		
15. Is line 2 divided by line 4 less than 2.0?		
16. Is line 8 divided by line 2 greater than 0.1?		
17. Is line 5 divided by line 6 greater than 1.5?		

Alternative II

1. Current EPMC $ _____

2. Current bond rating of most recent issuance of this firm and name of rating service _____

_____

3. Date of issuance of bond _____

4. Date of maturity of bond _____

*5. Tangible net worth {If any portion of the EPMC cost estimate is included in "total liabilities" on your firm's financial statements, you may add the amount of that portion to this line} $ _____

*6. Total assets in U.S. (required only if less than 90% of firm's assets are located in U.S.) $ _____

_____

	Yes	No
7. Is line 5 at least $10 million?		
8. Is line 5 at least 6 times line 1?		
*9. Are at least 90% of firm's assets located in the U.S? If not, complete line 10.		
10. Is line 6 at least 6 times line 1?		

I hereby certify that the wording of this letter is identical to the wording specified in Title 122, §008 as such regulations were constituted on the date shown immediately below.

{Signature}

{Name}

{Title}

{Date}

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For more information, contact
MoreInfo@NDEQ.state.NE.US

Nebraska Department of Environmental Quality
1200 "N" Street, Suite 400
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Appendix D

United States Environmental Protection Agency
Drinking Water Standards and Health Advisories
EPA 822-B-00-001
Summer 2000

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United States
Environmental Protection
Agency

Office of Water
4304

EPA 822-B-00-001
Summer 2000

EPA

Drinking Water Standards and Health Advisories

DRINKING WATER STANDARDS

AND HEALTH ADVISORIES

Office of Water
U.S. Environmental Protection Agency
Washington, D.C.

Summer 2000

The *Drinking Water Standards and Health Advisories* tables are revised periodically by EPA's Office of Water on an "as needed" basis. This Summer 2000 edition of the tables has undergone rather extensive revisions in format and content. The changes are as follows:

The tables are in PDF format to facilitate their printing from the internet.

The Health Advisory status column includes the year of publication for the final or draft Health Advisory. Final Health Advisories have been externally peer reviewed; draft documents have not.

Reference dose (RfD) values have been updated to reflect the values in the Integrated Risk Information System (IRIS), and the Drinking Water Equivalent Level (DWEL) has been calculated accordingly. Thus, both the RfD and DWEL will differ from the values in the Health Advisory document if the IRIS value is more recent than the Health Advisory. The RfD values from IRIS that differ from the values in the Health Advisory documents are in **BOLD** type to distinguish them from the other values. For chemicals with a new IRIS RfD, the lifetime Health Advisory was calculated from the DWEL using the relative source contribution values published in the Health Advisory. Where the revised lifetime value differed from the Maximum Contaminant Level Goal (MCLG), no lifetime value was provided in the Table.

For regulated chemicals, the cancer group designation reflects the status at the time of regulation.

Several pesticides listed in IRIS have been re-evaluated by the Office of Pesticide Programs (OPP) resulting in an RfD other than that in IRIS. For these pesticides, the IRIS value is listed in the Table, and the newer OPP value is given in a footnote.

The longer term Health Advisory values for children and adults were deleted from the table. A large number of these values should be reevaluated in the light of new data. However, due to resource limitations at this time, the Office of Science and Technology (OST) has not been able to update the longer term values.

In some cases there is a Health Advisory value for a contaminant but there is no reference to a Health Advisory document. These Health Advisory values can be found in the Drinking Water Criteria Document for the contaminant.

With a few exceptions, the Health Advisory values have been rounded to one significant figure.

The *Drinking Water Standards and Health Advisories* tables may be reached from the Office of Science and Technology home page at

http://www.epa.gov/OST

The tables are accessed under the OST Programs heading on the OST Home Page.

Although no permanent mailing list is kept, copies may be ordered free of charge from

SAFE DRINKING WATER HOTLINE
1-800-426-4791
Monday thru Friday, 9:00 AM to 5:30 PM EST

Copies of the supporting technical documentation for the health advisories can be ordered for a fee on the Internet at

http://www.epa.gov/OST/orderpubs.html

or from

Educational Resource Information Center (ERIC)
1929 Kenny Road
Columbus, OH 43210-1080
Telephone number 614-292-6717; 1-800-276-0462
FAX 614-292-0263
e-mail ERICSE@osu.edu
Payment by Purchase Order/Check/Visa or Mastercard.

For further information regarding the *Drinking Water Standards and Health Advisories*, call the Safe Drinking Water Hotline at 1-800-426-4791 or 703-285-1093.

DEFINITIONS

The following definitions for terms used in the Tables are not all-encompassing, and should not be construed to be "official" definitions. They are intended to assist the user in understanding terms found on the following pages.

Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow. For lead or copper it is the level which, if exceeded in over 10% of the homes tested, triggers treatment.

Cancer Group: A qualitative weight-of-evidence judgement as to the likelihood that a chemical may be a carcinogen for humans. Each chemical is placed into one of the following five categories:

Group	Category
A	Human carcinogen
B	Probable human carcinogen: B1 indicates limited human evidence; B2 indicates sufficient evidence in animals and inadequate or no evidence in humans
C	Possible human carcinogen
D	Not classifiable as to human carcinogenicity
E	Evidence of noncarcinogenicity for humans

This categorization is based on EPA's 1986 *Guidelines for Carcinogen Risk Assessment.* The *Proposed Guidelines for Carcinogen Risk Assessment* which were published in 1996, when final, will replace the 1986 cancer guidelines.

10^{-4} Cancer Risk: The concentration of a chemical in drinking water corresponding to an estimated lifetime cancer risk of 1 in 10,000.

DWEL: Drinking Water Equivalent Level. A lifetime exposure concentration protective of adverse, non-cancer health effects, that assumes all of the exposure to a contaminant is from drinking water.

HA: Health Advisory. An estimate of acceptable drinking water levels for a chemical substance based on health effects information; a Health Advisory is not a legally enforceable Federal standard, but serves as technical guidance to assist Federal, state, and local officials.

One-day HA: The concentration of a chemical in drinking water that is not expected to cause any adverse noncarcinogenic effects for up to one day of exposure.

Ten-day HA: The concentration of a chemical in drinking water that is not expected to cause any adverse noncarcinogenic effects for up to ten days of exposure.

Lifetime HA: The concentration of a chemical in drinking water that is not expected to cause any adverse noncarcinogenic effects for a lifetime of exposure.

LED_{10}: Lower Limit on Effective $Dose_{10}$. The 95% lower confidence limit of the dose of a chemical needed to produce an adverse effect in 10% of those exposed to the chemical, relative to the control.

MCLG: Maximum Contaminant Level Goal. A non-enforceable health goal which is set at a level at which no known or anticipated adverse effect on the health of persons occur and which allows an adequate margin of safety.

MCL: Maximum Contaminant Level. The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLG as feasible using the best available treatment technology and taking cost into consideration. MCLs are enforceable standards.

RfD: Reference Dose. An estimate (with uncertainty spanning perhaps an order of magnitude) of a daily oral exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime.

SDWR: Secondary Drinking Water Regulations. Non-enforceable Federal guidelines regarding cosmetic effects (such as tooth or skin discoloration) or aesthetic effects (such as taste, odor, or color) of drinking water.

TT: Treatment Technique. A required process intended to reduce the level of a contaminant in drinking water.

ABBREVIATIONS

D	Draft
F	Final
NA	Not Applicable
NOAEL	No-Observed-Adverse-Effect-Level
OPP	Office of Pesticide Programs
P	Proposed
Reg	Regulation
TT	Treatment Technique

Drinking Water Standards and Health Advisories

Chemicals	Standards			Status HA Document	Health Advisories						Cancer Group
					10-kg Child						
	Status Reg.	MCLG (mg/L)	MCL (mg/L)		One-day (mg/L)	Ten-day (mg/L)	RfD (mg/kg/day)	DWEL (mg/L)	Lifetime (mg/L)	mg/L at 10^{-4} Cancer Risk	
ORGANICS											
Acenaphthene	-	-	-	-	-	-	0.06	2	-	-	-
Acifluorfen (sodium)		-	-	F '88	2	2	0.01	0.4	-	0.1	B2
Acrylamide	F	zero	TT[1]	F '87	1.5	0.3	0.0002	0.007	-	0.001	B2
Acrylonitrile		-	-	-	-	-	-	-	-	0.006	B1
Alachlor	F	zero	0.002	F '88	0.1	0.1	0.01	0.4	-	0.04[2]	B2
Aldicarb[3]	F[4]	0.007	0.007	F '95	0.01	0.01	0.001	0.04	0.007	-	D
Aldicarb sulfone[3]	F[4]	0.007	0.007	F '95	0.01	0.01	0.001	0.04	0.007	-	D
Aldicarb sulfoxide[3]	F[4]	0.007	0.007	F '95	0.01	0.01	0.001	0.04	0.007	-	D
Aldrin	-	-	-	F '92	0.0003	0.0003	0.00003	0.001	-	0.0002	B2
Ametryn	-	-	-	F '88	9	9	0.009	0.3	0.06	-	D
Ammonium sulfamate	-	-	-	F '88	20	20	0.2	8	2	-	D
Anthracene (PAH)[5]	-	-	-	-	-	-	0.3	10	-	-	D
Atrazine[6]	F	0.003	0.003	F '88	-	-	0.035	1	0.2	-	C
Baygon	-	-	-	F '88	0.04	0.04	0.004	0.1	0.003	-	C
Bentazon	-	-	-	F '99	0.3	0.3	0.03	1	0.2	-	E
Benz[a]anthracene (PAH)	-	-	-	-	-	-	-	-	-	-	B2
Benzene	F	zero	0.005	F '87	0.2	0.2	-	-	-	0.1	A
Benzo[a]pyrene (PAH)	F	zero	0.0002	-	-	-	-	-	-	0.002	B2
Benzo[b]fluoranthene (PAH)	-	-	-	-	-	-	-	-	-	-	B2
Benzo[g,h,i]perylene (PAH)	-	-	-	-	-	-	-	-	-	-	D
Benzo[k]fluoranthene (PAH)	-	-	-	-	-	-	-	-	-	-	B2
bis-2-Chloroisopropyl ether	-	-	-	F '89	4	4	0.04	1	0.3	-	D
Bromacil	-	-	-	F '88	5	5	0.1	5	0.09	-	C
Bromobenzene	-	-	-	D '86	4	4	-	-	-	-	D

[1] When acrylamide is used in drinking water systems, the combination (or product) of dose and monomer level shall not exceed that equivalent to a polyacrylamide polymer containing 0.05% monomer dosed at 1 mg/L.

[2] Determined not to be carcinogenic at low doses by OPP.

[3] The lifetime HA value or the MCLG/MCL value for any combination of two or more of these three chemicals should remain at 0.007 mg/L because of similar mode of action.

[4] Administrative stay of the effective date.

[5] PAH = Polycyclic aromatic hydrocarbon

[6] Under review

Drinking Water Standards and Health Advisories

Chemicals	Standards			Status HA Document	Health Advisories						Cancer Group
					10-kg Child						
	Status Reg.	MCLG (mg/L)	MCL (mg/L)		One-day (mg/L)	Ten-day (mg/L)	RfD (mg/kg/day)	DWEL (mg/L)	Lifetime (mg/L)	mg/L at 10^{-4} Cancer Risk	
Bromochloromethane	-	-	-	F '89	50	1	0.01	0.5	0.09	-	D
Bromodichloromethane (THM)	F	zero	0.08[1]	D '93	6	6	0.02	0.7	-	0.06	B2
Bromoform (THM)	F	zero	0.08[1]	D '93	5	2	0.02	0.7	-	0.4	B2
Bromomethane	-	-	-	D '89	0.1	0.1	0.001	0.05	0.01	-	D
Butyl benzyl phthalate (PAE)[2]	-	-	-	-	-	-	0.2	7	-	-	C
Butylate	-	-	-	F '89	2	2	0.05	2	0.4	-	D
Carbaryl	-	-	-	F '88	1	1	0.1	4	0.7	-	D
Carbofuran[3]	F	0.04	0.04	F '87	0.05	0.05	0.005	0.2	0.04	-	E
Carbon tetrachloride	F	zero	0.005	F '87	4	0.2	0.0007	0.03	-	0.03	B2
Carboxin	-	-	-	F '88	1	1	0.1	4	0.7	-	D
Chloramben	-	-	-	F '88	3	3	0.015	0.5	0.1	-	D
Chlordane	F	zero	0.002	F '87	0.06	0.06	**0.0005**	0.02	-	0.001	B2
Chloroform (THM)	F	zero	0.08[1]	D '93	4	4	0.01	0.4	-	0.6	B2
Chloromethane	-	-	-	F '89	9	0.4	0.004	0.1	0.003	-	C
Chlorophenol (2-)	-	-	-	D '94	0.5	0.5	0.005	0.2	0.04	-	D
p-Chlorophenyl methyl sulfide/sulfone/sulfoxide	-	-	-	-	-	-	-	-	-	-	D
Chlorothalonil	-	-	-	F '88	0.2	0.2	0.015	0.5	-	0.15	B2
Chlorotoluene o-	-	-	-	F '89	2	2	0.02	0.7	0.1	-	D
Chlorotoluene p-	-	-	-	F '89	2	2	0.02	0.7	0.1	-	D
Chlorpyrifos	-	-	-	F '92	0.03	0.03	0.003	0.1	0.02	-	D
Chrysene (PAH)	-	-	-	-	-	-	-	-	-	-	B2
Cyanazine	-	-	-	D '96	0.1	0.1	0.002	0.07	0.001	-	-

[1] 1998 Final Rule for Disinfectants and Disinfection By-products: The total for trihalomethanes is 0.08 mg/L.

[2] PAE = phthalate acid ester

[3] Under review

Chemicals	Standards			Status HA Document	Health Advisories						Cancer Group
					10-kg Child						
	Status Reg.	MCLG (mg/L)	MCL (mg/L)		One-day (mg/L)	Ten-day (mg/L)	RfD (mg/kg/day)	DWEL (mg/L)	Lifetime (mg/L)	mg/L at 10^{-4} Cancer Risk	
Cyanogen chloride[1]	-	-	-	-	0.05	0.05	0.05	2	-	-	D
2,4-D (2,4-dichlorophenoxyacetic acid)	F	0.07	0.07	F '87	1	0.3	0.01	0.4	0.07	-	D
DCPA (Dacthal)	-	-	-	F '88	80	80	**0.01**	0.4	0.07	-	D
Dalapon (sodium salt)	F	0.2	0.2	F '89	3	3	0.03	0.9	0.2	-	D
Di(2-ethylhexyl)adipate	F	0.4	0.4	-	20	20	0.6	20	0.4	3	C
Di(2-ethylhexyl)phthalate (PAE)	F	zero	0.006	-	-	-	0.02	0.7	-	0.3	B2
Diazinon	-	-	-	F '88	0.02	0.02	0.00009	0.003	0.0006	-	E
Dibromochloromomethane (THM)	F	0.06	0.08[2]	D '93	6	6	0.02	0.7	0.06	0.04	C
Dibromochloropropane (DBCP)	F	zero	0.0002	F '87	0.2	0.05	-	-	-	0.003	B2
Dibutyl phthalate (PAE)	-	-	-	-	-	-	0.1	4	-	-	D
Dicamba	-	-	-	F '88	0.3	0.3	0.03	1	0.2	-	D
Dichloroacetic acid	F	zero	0.06[3]	D '93	5	5	0.004	0.1	-	-[4]	B2
Dichlorobenzene o-	F	0.6	0.6	F '87	9	9	0.09	3	0.6	-	D
Dichlorobenzene m-[5]	-	-	-	F '87	9	9	0.09	3	0.6	-	D
Dichlorobenzene p-	F	0.075	0.075	F '87	11	11	0.1	4	0.075	-	C
Dichlorodifluoromethane	-	-	-	F '89	40	40	0.2	5	1	-	D
Dichloroethylene (1,1-)	F	0.007	0.007	F '87	2	1	0.01	0.4	0.007	-	C
Dichloroethane (1,2-)	F	zero	0.005	F '87	0.7	0.7	-	-	-	0.04	B2
Dichloroethylene (cis-1,2-)	F	0.07	0.07	F '90	4	1	0.01	0.4	0.07	-	D
Dichloroethylene (trans-1,2-)	F	0.1	0.1	F '87	20	1	**0.02**	0.7	0.1	-	D
Dichloromethane	F	zero	0.005	D '93	10	2	0.06	2	-	0.5	B2
Dichlorophenol (2,4-)	-	-	-	D '94	0.03	0.03	0.003	0.1	0.02	-	E
Dichloropropane (1,2-)	F	zero	0.005	F '87	-	0.09	-	-	-	0.06	B2
Dichloropropene (1,3-)	-	-	-	F '88	0.03	0.03	**0.03**	1	-	**0.04**	B2
Dieldrin	-	-	-	F '88	0.0005	0.0005	0.00005	0.002	-	0.0002	B2
Diethyl phthalate (PAE)	-	-	-	-	-	-	0.8	30	-	-	D

[1] Under review

[2] 1998 Final Rule for Disinfectants and Disinfection By-products: The total for trihalomethanes is 0.08 mg/L.

[3] 1998 Final Rule for Disinfectants and Disinfection By-products: The total for five haloacetic acids is 0.06 mg/L.

[4] A quantitative risk estimate has not been determined.

[5] The values for m-dichlorobenzene are based on data for o-dichlorobenzene.

Drinking Water Standards and Health Advisories

Chemicals	Standards			Status HA Document	Health Advisories						Cancer Group
					10-kg Child						
	Status Reg.	MCLG (mg/L)	MCL (mg/L)		One-day (mg/L)	Ten-day (mg/L)	RfD (mg/kg/day)	DWEL (mg/L)	Lifetime (mg/L)	mg/L at 10^{-4} Cancer Risk	
Diisopropyl methylphosphonate	-	-	-	F '89	8	8	0.08	3	0.6	-	D
Dimethrin	-	-	-	F '88	10	10	0.3	10	2	-	D
Dimethyl methylphosphonate	-	-	-	F '92	2	2	0.2	7	0.1	0.7	C
Dimethyl phthalate (PAE)	-	-	-	-	-	-	-	-	-	-	D
Dinitrobenzene (1,3-)	-	-	-	F '91	0.04	0.04	0.0001	0.005	0.001	-	D
Dinitrotoluene (2,4-)	-	-	-	F '92	0.50	0.50	0.002	0.1	-	0.005	B2
Dinitrotoluene (2,6-)	-	-	-	F '92	0.40	0.40	0.001	0.04	-	0.005	B2
Dinitrotoluene (2,6 & 2,4) [1]	-	-	-	F '92	-	-	-	-	-	0.005	B2
Dinoseb	F	0.007	0.007	F '88	0.3	0.3	0.001	0.04	0.007	-	D
Dioxane p-	-	-	-	F '87	4	0.4	-	-	-	**0.3**	B2
Diphenamid	-	-	-	F '88	0.3	0.3	0.03	1	0.2	-	D
Diquat	F	0.02	0.02	-	-	-	**0.002**	0.07	-	-	D
Disulfoton	-	-	-	F '88	0.01	0.01	0.00004	0.001	0.0003	-	E
Dithiane (1,4-)	-	-	-	F '92	0.4	0.4	0.01	0.4	0.08	-	D
Diuron	-	-	-	F '88	1	1	0.002[2]	0.07	0.01	-	D
Endothall	F	0.1	0.1	F '88	0.8	0.8	0.02	0.7	0.1	-	D
Endrin	F	0.002	0.002	F '87	0.02	0.005	**0.0003**	0.01	0.002	-	D
Epichlorohydrin	F	zero	TT[3]	F '87	0.1	0.1	0.002	0.07	-	0.4	B2
Ethylbenzene	F	0.7	0.7	F '87	30	3	0.1	3	0.7	-	D
Ethylene dibromide (EDB)[4]	F	zero	0.00005	F '87	0.008	0.008	-	-	-	0.00005	B2
Ethylene glycol	-	-	-	F '87	20	6	2	70	14	-	D
Ethylene Thiourea (ETU)	-	-	-	F '88	0.3	0.3	**0.00008**	0.003	-	0.02	B2
Fenamiphos	-	-	-	F '88	0.009	0.009	0.00025	0.009	0.002	-	D

[1] technical grade.
[2] New OPP RfD = 0.003 mg/kg/day.
[3] When epichlorohydrin is used in drinking water systems, the combination (or product) of dose and monomer level shall not exceed that equivalent to an epichlorohydrin-based polymer containing 0.01% monomer dosed at 20 mg/L.
[4] 1,2-dibromomethane

Chemicals	Standards			Status HA Standards	Health Advisories						Cancer Group
					10-kg Child						
	Status Reg.	MCLG (mg/L)	MCL (mg/L)		One-day (mg/L)	Ten-day (mg/L)	RfD (mg/kg/day)	DWEL (mg/L)	Lifetime (mg/L)	mg/L at 10^{-4} Cancer Risk	
Fluometuron	-	-	-	F '88	2	2	0.01	0.5	0.09		D
Fluorene (PAH)	-	-	-	-	-	-	0.04	1	-	-	D
Fonofos	-	-	-	F '88	0.02	0.02	0.002	0.07	0.01	-	D
Formaldehyde	-	-	-	D '93	10	5	0.15	5	1	-	B1[1]
Glyphosate	F	0.7	0.7	F '88	20	20	0.1[2]	4	0.7	-	D
Heptachlor	F	zero	0.0004	F '87	0.01	0.01	0.0005	0.02	-	0.0008	B2
Heptachlor epoxide	F	zero	0.0002	F '87	0.01	-	0.00001	0.0004	-	0.0004	B2
Hexachlorobenzene	F	zero	0.001	F '87	0.05	0.05	0.0008	0.03	-	0.002	B2
Hexachlorobutadiene	-	-	-	F '89	0.3	0.3	0.002	0.07	0.001	0.05	C
Hexachlorocyclopentadiene	F	0.05	0.05	-	-	-	0.007	0.2	-	-	D
Hexachloroethane	-	-	-	F '91	5	5	0.001	0.04	0.001	-	C
Hexane (n-)	-	-	-	F '87	10	4	-	-	-	-	D
Hexazinone	-	-	-	F '96	3	2	0.05[3]	2	0.4	-	D
HMX[4]	-	-	-	F '88	5	5	0.05	2	0.4	-	D
Indeno[1,2,3,-c,d]pyrene (PAH)	-	-	-	-	-	-	-	-	-	-	B2
Isophorone	-	-	-	F '92	15	15	0.2	7	0.1	4	C
Isopropyl methylphosphonate	-	-	-	F '92	30	30	0.1	4	0.7	-	D
Isopropylbenzene (cumene)	-	-	-	D '87	11	11	0.1	4	-	-	D
Lindane[5]	F	0.0002	0.0002	F '87	1	1	0.0003	0.01	0.0002	-	C
Malathion	-	-	-	F '92	0.2	0.2	0.02	0.8	0.1	-	D
Maleic hydrazide	-	-	-	F '88	10	10	0.5	20	4	-	D
MCPA[6]	-	-	-	F '88	0.1	0.1	0.0005[7]	0.02	0.004	-	D
Methomyl	-	-	-	F '88	0.3	0.3	0.025	0.9	0.2	-	E
Methoxychlor	F	0.04	0.04	F '87	0.05	0.05	0.005	0.2	0.04	-	D
Methyl ethyl ketone	-	-	-	F '87	75	7.5	0.6	20	-	-	D
Methyl parathion	-	-	-	F '88	0.3	0.3	0.00025	0.009	0.002	-	D

[1] Carcinogenicity based on inhalation exposure.
[2] New OPP RfD = 2 mg/kg/day.
[3] The Health Advisory is based on a new OPP RfD rather than the IRIS RfD.
[4] HMX = octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
[5] Lindane = γ – hexachlorocyclohexane
[6] MCPA = 4(chloro-2-methoxyphenoxy)acetic acid
[7] New OPP RfD = 0.0015 mg/kg/day

Chemicals	Standards			Status HA Document	Health Advisories						Cancer Group
					10-kg Child						
	Status Reg.	MCLG (mg/L)	MCL (mg/L)		One-day (mg/L)	Ten-day (mg/L)	RfD (mg/kg/day)	DWEL (mg/L)	Lifetime (mg/L)	mg/L at 10^{-4} Cancer Risk	
Metolachlor	-	-	-	F '88	2	2	**0.15**[1]	0.5	0.1	-	C
Metribuzin	-	-	-	F '88	5	5	0.025[2]	0.9	0.2	-	D
Monochloroacetic acid	F	-	0.06[3]	-	-	-	-	-	-	-	-
Monochlorobenzene	F	0.1	0.1	F '87	4	4	**0.02**	0.7	0.1	-	D
Naphthalene	-	-	-	F '90	0.5	0.5	**0.02**	0.7	0.1	-	**C**
Nitrocellulose (non-toxic)	-	-	-	F '88	-	-	-	-	-	-	-
Nitroguanidine	-	-	-	F '90	10	10	0.1	4	0.7	-	D
Nitrophenol p-	-	-	-	F '92	0.8	0.8	0.008	0.3	0.06	-	D
Oxamyl (Vydate)	F	0.2	0.2	F '87	0.2	0.2	0.025	0.9	0.2	-	E
Paraquat	-	-	-	F '88	0.1	0.1	0.0045	0.2	0.03	-	**C**
Pentachlorophenol	F	zero	0.001	F '87	1	0.3	0.03	1	-	0.03	B2
Phenanthrene (PAH)	-	-	-	-	-	-	-	-	-	-	D
Phenol	-	-	-	D '92	6	6	0.6	20	4	-	D
Picloram	F	0.5	0.5	F '88	20	20	0.07[4]	2	0.5	-	D
Polychlorinated biphenyls (PCBs)	F	zero	0.0005	D '93	-	-	-	-	-	0.01	B2
Prometon[5]	-	-	-	F '88	0.2	0.2	0.015	0.5	0.1	-	D
Pronamide	-	-	-	F '88	0.8	0.8	0.075	3	0.05	-	C
Propachlor	-	-	-	F '88	0.5	0.5	0.01	0.5	0.09	-	D
Propazine	-	-	-	F '88	1	1	0.02	0.7	0.01	-	C
Propham	-	-	-	F '88	5	5	0.02	0.6	0.1	-	D
Pyrene (PAH)	-	-	-	-	-	-	0.03	-	-	-	D
RDX[6]	-	-	-	F '88	0.1	0.1	0.003	0.1	0.002	0.03	C
Simazine	F	0.004	0.004	F '88	0.5	0.5	0.005	0.2	0.004	-	C
Styrene	F	0.1	0.1	F '87	20	2	0.2	7	0.1	-	C
2,4,5-T (Trichlorophenoxyacetic acid)	-	-	-	F '88	0.8	0.8	0.01	0.4	0.07	-	D

[1] New OPP RfD = 0.1 mg/kg/day
[2] New OPP RfD = 0.013 mg/kg/day
[3] 1998 Final Rule for Disinfectants and Disinfection By-products: the total for five haloacetic acids is 0.06mg/L.
[4] New OPP RfD = 0.2 mg/kg/day
[5] Under review.
[6] RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine

Chemicals	Standards			Status HA Document	Health Advisories						Cancer Group
					10-kg Child						
	Status Reg.	MCLG (mg/L)	MCL (mg/L)		One-day (mg/L)	Ten-day (mg/L)	RfD (mg/kg/day)	DWEL (mg/L)	Lifetime (mg/L)	mg/L at 10^{-4} Cancer Risk	
2,3,7,8-TCDD (Dioxin)	F	zero	3E-08	F '87	1E-06	1E-07	1E-09	4E-08	-	2E-08	B2
Tebuthiuron	-	-	-	F '88	3	3	0.07	2	0.5	-	D
Terbacil	-	-	-	F '88	0.3	0.3	0.01	0.4	0.09	-	E
Terbufos	-	-	-	F '88	0.005	0.005	0.0001	0.005	0.0009	-	D
Tetrachloroethane (1,1,1,2-)	-	-	-	F '89	2	2	0.03	1	0.07	0.1	C
Tetrachloroethane (1,1,2,2-)	-	-	-	F '89	0.04	0.04	0.00005	0.002	0.0003	0.02	C
Tetrachloroethylene	F	zero	0.005	F '87	2	2	0.01	0.5	0.01	-	-
Trichlorofluoromethane	-	-	-	F '89	7	7	0.3	10	2	-	D
Toluene	F	1	1	D '93	20	2	0.2	7	1	-	D
Toxaphene	F	zero	0.003	F '96	0.004	0.004	0.0004	0.01	-	0.003	B2
2,4,5-TP (Silvex)	F	0.05	0.05	F '88	0.2	0.2	0.008	0.3	0.05	-	D
Trichloroacetic acid	F	0.3	0.06[1]	D '96	4	4	0.1	4.0	0.3	-	C
Trichlorobenzene (1,2,4-)	F	0.07	0.07	F '89	0.1	0.1	0.001	0.05	0.01	-	D
Trichlorobenzene (1,3,5-)	-	-	-	F '89	0.6	0.6	0.006	0.2	0.04	-	D
Trichloroethane (1,1,1-)	F	0.2	0.2	F '87	100	40	0.035	1	0.2	-	D
Trichloroethane (1,1,2-)	F	0.003	0.005	F '89	0.6	0.4	0.004	0.1	0.003	0.06	C
Trichloroethylene [2]	F	zero	0.005	F '87	-	-	0.007	0.2	-	0.2	B2
Trichlorophenol (2,4,6-)	-	-	-	D '94	0.03	0.03	0.0003	0.01	-	0.3	B2
Trichloropropane (1,2,3-)	-	-	-	F '89	0.6	0.6	0.006	0.2	0.04	-	-
Trifluralin	-	-	-	F '90	0.08	0.08	0.0075	0.3	0.005	0.5	C
Trimethylbenzene (1,2,4-)	-	-	-	D '87	-	-	-	-	-	-	D
Trimethylbenzene (1,3,5-)	-	-	-	D '87	10	-	-	-	-	-	D
Trinitroglycerol	-	-	-	F '87	0.005	0.005	-	-	0.005	0.2	-
Trinitrotoluene (2,4,6-)	-	-	-	F '89	0.02	0.02	0.0005	0.02	0.002	0.1	C
Vinyl chloride[2]	F	zero	0.002	F '87	3	3	-	-	-	0.002	A
Xylenes	F	10	10	D '93	40	40	2	70	10	-	D

[1] 1998 Final Rule for Disinfectants and Disinfection By-products: The total for five haloacetic acids is 0.06 mg/L.
[2] Under review

Drinking Water Standards and Health Advisories

Chemicals	Standards			Status HA Document	Health Advisories						Cancer Group
					10-kg Child						
	Status Reg.	MCLG (mg/L)	MCL (mg/L)		One-day (mg/L)	Ten-day (mg/L)	RfD (mg/kg/day)	DWEL (mg/L)	Lifetime (mg/L)	mg/L at 10^{-4} Cancer Risk	
INORGANICS											
Ammonia	-	-	-	D '92	-	-	-	-	30	-	D
Antimony	F	0.006	0.006	F '92	0.01	0.01	0.0004	0.01	0.006	-	D
Arsenic	P	zero	0.005	D '95	-	-	-	-	-	0.002	A
Asbestos (fibers/l >10μm length)	F	7 MFL[1]	7 MFL	-	-	-	-	-	-	700 MFL	A[2]
Barium	F	2	2	D '93	0.7	0.7	**0.07**	2	2	-	D
Beryllium	F	0.004	0.004	F '92	30	30	**0.002**	0.07	-	-	-
Boron[3]	-	-	-	D '92	4	0.9	0.09	3	0.6	-	D
Bromate	F	zero	0.01	D '98	0.2	-	-	-	-	0.005	B2
Cadmium	F	0.005	0.005	F '87	0.04	0.04	0.0005	0.02	0.005	-	D
Chloramine[4]	F	4[5]	4[5]	D '95	1	1	0.1	3.5	3.0	-	-
Chlorine	F	4	4	D '95	3	3	0.1	5	4	-	D
Chlorine dioxide	F	0.8[5]	0.8[5]	D '98	0.84	0.84	0.03	1	0.8	-	D
Chlorite	F	0.8	1	D '98	0.84	0.84	0.03	1	0.8	-	D
Chromium (total)	F	0.1	0.1	F '87	1	1	**0.003**[6]	0.1	-	-	D
Copper (at tap)	F	1.3	TT[7]	D '98	-	-	-	-	-	-	D
Cyanide	F	0.2	0.2	F '87	0.2	0.2	0.02[8]	0.8	0.2	-	D
Fluoride	F	4	4	-	-	-	0.06[9]	-	-	-	-
Lead (at tap)	F	zero	TT[7]	-	-	-	-	-	-	-	B2
Manganese	-	-	-	-	-	-	0.14[10]	-	-	-	-
Mercury (inorganic)	F	0.002	0.002	F '87	0.002	0.002	**0.0003**	0.01	0.002	-	D
Molybdenum	-	-	-	D '93	0.08	0.08	0.005	0.2	0.04	-	D
Nickel	F	-	-	F '95	1	1	0.02	0.7	0.1	-	-

[1] MFL = million fibers per liter
[2] Carcinogenicity based on inhalation exposure.
[3] Under review.
[4] Monochloramine; measured as free chlorine.
[5] 1998 Final Rule for Disinfectants and Disinfection By-products: MRDLG=Maximum Residual Disinfection Level Goal; and MRDL=Maximum Residual Disinfection Level.
[6] IRIS value for chromium VI.
[7] Copper action level 1.3 mg/L; Lead action level 0.015 mg/L.
[8] This RfD is for Hydrogen Cyanide.
[9] Based on dental fluorosis in children, a cosmetic effect. MCLG based on skeletal fluorosis.
[10] Dietary manganese.

Chemicals	Standards			Status HA Document	Health Advisories						Cancer Group
					10-kg Child						
	Status Reg.	MCLG (mg/L)	MCL (mg/L)		One-day (mg/L)	Ten-day (mg/L)	RfD (mg/kg/day)	DWEL (mg/L)	Life-time (mg/L)	mg/L at 10^{-4} Cancer Risk	
Nitrate (as N)	F	10	10	D '93	10[1]	10[1]	1.6	-	-	-	-
Nitrite (as N)	F	1	1	D '93	1[1]	1[1]	0.16	-	-	-	-
Nitrate + Nitrite (both as N)	F	10	10	D '93	-	-	-	-	-	-	-
Selenium	F	0.05	0.05	-	-	-	0.005	0.2	0.05	-	D
Silver	-	-	-	F '92	0.2	0.2	0.005[2]	0.2	0.1	-	D
Strontium	-	-	-	D '93	25	25	0.6	20	4	-	D
Thallium	F	0.0005	0.002	F '92	0.007	0.007	0.00007	0.002	0.0005	-	-
White phosphorous	-	-	-	F '90	-	-	0.00002	0.0005	0.0001		D
Zinc	-	-	-	D '93	6	6	0.3	10	2	-	D
RADIONUCLIDES											
Beta particle and photon activity (formerly man-made radionuclides)[3]	F	-[4]	4 mrem	-	-	-	-	-	-	4 mrem/y	A
Gross alpha particle activity[3]	F	-[4]	15 pCi/L	-	-	-	-	-	-	15 pCi/L	A
Combined Radium 226 & 228[3]	F	-[4]	5 pCi/L	-	-	-	-	-	-	-	A
Radon[3]	P	zero	300 pCi/L	-	-	-	-	-	-	150 pCi/L	A
Uranium[3]	P	zero	20 μg/L	-	-	-	0.003	-	-	-	A

[1] These values are calculated for a 4-kg infant and are protective for all age groups.
[2] Based on a cosmetic effect.
[3] Under review.
[4] No final MCLG, but zero proposed in 1991.

Secondary Drinking Water Regulations

Chemicals	Status	SDWR
Aluminum	F	0.05 to 0.2 mg/L
Chloride	F	250 mg/L
Color	F	15 color units
Copper	F	1.0 mg/L
Corrosivity	F	non-corrosive
Fluoride	F	2.0 mg/L
Foaming agents	F	0.5 mg/L
Iron	F	0.3 mg/L
Manganese	F	0.05 mg/L
Odor	F	3 threshold odor numbers
pH	F	6.5 — 8.5
Silver	F	0.1 mg/L
Sulfate	F	250 mg/L
Total dissolved solids (TDS)	F	500 mg/L
Zinc	F	5 mg/L

Microbiology

	Status Reg.	Status HA Document	MCLG	MCL	Treatment Technique
Cryptosporidium	F	F '93	-	TT	Systems that filter must remove 99% of *Cryptosporidium*
Giardia lamblia	F	-	-	TT	99.9% killed/inactivated
Legionella	F[1]	F '87	zero	TT	No limit; EPA believes that if *Giardia* and viruses are inactivated, *Legionella* will also be controlled
Heterotrophic Plate Count (HPC)	F[1]	-	NA	TT	No more than 500 bacterial colonies per milliliter.
Total Coliforms	F	-	5%	-	No more than 5.0% samples total coliform-positive in a month. Every sample that has total coliforms must be analyzed for fecal coliforms; no fecal coliforms are allowed.
Turbidity	F	-	NA	TT	At no time can turbidity go above 5 NTU (nephelometric turbidity units)
Viruses	F[1]	-	zero	TT	99.99% killed/inactivated

[1] Final for systems using surface water; also being considered for regulation under groundwater disinfection rule.

Consumer Acceptability Advisory Table

Chemicals	Status	MoE	Taste Threshold	Odor Threshold
Methyl tertiary butyl ether (MtBE)	F	At 20 µg/L, MoE for cancer effects is 40,000 or greater; MoE for non-cancer effects is 120,000 or greater. At 40 µg/L, MoE for cancer effects is 20,000 or greater; MoE for non-cancer effects is 60,000 or greater	40 µg/L	20 µg/L

MoE: Margin of Exposure which is calculated by dividing the NOAELs for non-cancer endpoints or LED_{10} for cancer effects by 20 µg/L or 40 µg/L.

Taste Threshold: Concentration at which the majority of consumers do not notice an adverse taste in drinking water; it is recognized that some sensitive individuals may detect a chemical at levels below this threshold.

Odor Threshold: Concentration at which the majority of consumers do not notice an adverse odor in drinking water; it is recognized that some sensitive individuals may detect a chemical at levels below this threshold.

Appendix E
Nebraska Department of Environmental Quality
Rules and Regulations
Title 118 – Ground Water Quality Standards and Use Classification

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TITLE 118
Ground Water Quality Standards and Use Classification

NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Title 118 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 1 - DEFINITIONS

001 "Aquifer" shall mean a geologic formation, group of formations, or part of a formation that is capable of yielding usable amounts of water to a well, spring, or other point of discharge.

002 "Background" shall mean the levels of chemical, physical, biological, and radiological constituents or parameters prior to an activity or pollution event, as determined by methods acceptable to the Department.

003 "Beneficial use" shall mean any existing or potential ground water quality dependent use as identified in Chapter 6, 001.

004 "Cleanup" shall mean the removal or attenuation of pollutants from the environment through physical, chemical, or biological processes.

005 "Council" shall mean the Environmental Quality Council.

006 "Degradation" shall mean a worsening (i.e., of ground water quality) caused directly or indirectly by man.

007 "Department" shall mean the Department of Environmental Quality.

008 "Director" shall mean the Director of the Department of Environmental Quality.

009 "Gross beta particle activity" shall mean the total radioactivity due to beta particle emission as inferred from measurements on a dry sample.

010 "Ground water" shall mean water occurring beneath the surface of the ground that fills available openings in rock or soil materials such that they may be considered saturated.

011 "Impairment of Use" shall mean an adverse impact on a beneficial use of ground water due to water quality degradation (as indicated by the narrative and numerical standards of Chapter 4) such that any previously existing beneficial use cannot be fully attained.

012 "Maximum contaminant level" shall mean the maximum permissible level of a substance or matter in ground water.

013 "Milligrams per liter (mg/l)" shall mean the concentration of a substance expressed as the weight in milligrams contained in one liter of solution. For most practical purposes, this term is equivalent to parts per million (ppm).

014 "Nonpoint source" shall mean any source of pollutants other than those defined as point sources.

015 "Person" shall mean any individual, partnership, association; public or private corporation; trustee, receiver, assignee, agent, municipality, or other governmental subdivision, public agency, officer or governing or managing body of any municipality, governmental subdivision or public

agency, or any other legal entity except the Department.

016 "Petroleum" shall mean:

a) motor vehicle fuels as defined in §66-482, except denatured agricultural ethyl alcohol that is not blended with motor vehicle fuels;
b) diesel fuel as defined in §66-654, including kerosene; and
c) a fraction of crude oil that is liquid at a temperature of sixty degrees Fahrenheit and a pressure of fourteen and seven-tenths pounds per square inch absolute, except any such fraction which is regulated as a hazardous substance under §101(14) of the federal Comprehensive Environmental Response, Compensation, and Liability Act of 1980.

017 "pH" shall mean the negative logarithm of the hydrogen ion concentration (pH = -log [H]+). pH is a measure of the acidity and alkalinity of a solution on a scale from 0 to 14, with 7 representing neutrality. Numbers from 7 up to 14 denote increasing alkalinity, and numbers from 7 down to 0 denote increasing acidity.

018 "Picocurie (pCi)" shall mean that quantity of radioactive material producing 2.22 nuclear transformations per minute.

019 "Point source" shall mean any discernible confined and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, or vessel or other floating craft from which pollutants are or may be discharged.

020 "Pollution" shall mean the man-made or man-induced alteration of the chemical, physical, biological, or radiological integrity of water.

021 "Pollutant" shall mean any gas, liquid, or solid introduced into ground water that causes pollution.

022 "Private drinking water supply" shall mean that ground water used as drinking water which is not included under public drinking water supply.

023 "Public drinking water supply" shall mean that ground water used in a public water supply system.

024 "Public water supply system" shall mean a water supply system designed to provide the public water for human consumption if such system has at least fifteen service connections or regularly serves at least twenty-five individuals. Public water supply system includes, but is not limited to,

a) any collection, treatment, storage, or distribution facilities under control of the operator of such system and used primarily in connection with such system; and

b) any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system. For purposes of this subdivision, a connection to a system that delivers water by a constructed conveyance other than a pipe shall not be considered a connection if

i) the water is used exclusively for purposes other than residential uses, such as drinking, bathing, cooking, and other similar uses,

ii) the Department of Health and Human Services Regulation and Licensure determines that alternative water to achieve the equivalent level of public health protection provided by the Nebraska Safe Drinking Water Act and rules and regulations under the act is provided for residential or similar uses for drinking and cooking, or

iii) the Department of Health and Human Services Regulation and Licensure determines that the water provided for residential or similar uses for drinking, cooking, and bathing is centrally treated or treated at the point of protection provided by the Nebraska Safe Drinking Water Act and the rules and regulations.

An irrigation district in existence prior to May 18, 1994, that provides primarily agricultural service through a piped water system with only incidental residential or similar use shall not be considered to be a public water system if the system or the residential or similar users of the system comply with subdivision (ii) or (iii) of this subdivision. A water supplier that would be a public water system only as a result of the amendments made by the 1996 amendments to the federal Safe Drinking Water Act shall not be considered a public water system until August 7, 1998.

025 "Rem" shall mean the unit of dose equivalent from ionizing radiation to the total body or any internal organ or organ system. A "millirem" (mrem) is 1/1000 of a rem.

026 "Remedial action" shall mean any immediate or long term response to a pollution occurrence including cleanup, restoration, mitigative actions, and any other action approved or required by the Department.

027 "Responsible party" shall mean any person causing pollution or creating a condition from which pollution is likely to occur, any owner or operator of a source where pollution has occurred or where a condition has been created from which pollution is likely to occur, or any responsible person as defined by Title 126 - Rules and Regulations Pertaining to the Management of Wastes.

028 "Restoration" shall mean the cleanup of polluted ground water to background quality.

029 "Toxic substances" shall mean those pollutants or combinations of pollutants, or disease causing agents which, after discharge and upon exposure, ingestion, inhalation or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will, on the basis of information available to the Department, cause either death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunction in reproduction), inhibition of growth or physical deformation on any organism or its offspring.

030 "Wastes" shall mean all liquid, gaseous, solid, radioactive, or other substances introduced directly or indirectly by man which may pollute or tend to pollute any air, land, or waters of the State.

031 "Water supply system" shall mean all sources of water and their surroundings under the control of one owner, and shall include all structures, conduits, and appurtenances by means of which such

water is collected, treated, stored, or delivered, except service pipes between street mains and buildings and the plumbing within or in connection with the buildings served.

032 "Water well" shall mean any excavation that is drilled, cored, bored, washed, driven, dug, jetted, or otherwise constructed for the purpose of exploring for ground water, monitoring ground water, utilizing the geothermal properties of the ground, obtaining hydrogeologic information, or extracting water from or injecting water into the underground water reservoir. Water well shall not include any excavation made for obtaining or prospecting for oil or natural gas or for inserting media to repressure oil or natural gas bearing formations regulated by the Nebraska Oil and Gas Conservation Commission.

033 "Waters of the State" shall mean all waters within the jurisdiction of this State including all streams, lakes, ponds, impounding reservoirs, marshes, wetlands, watercourses, waterways, wells, springs, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface or underground, natural or artificial, public or private, situated wholly or partly within or bordering upon the State.

034 "Wellfield" shall mean a group of two or more public drinking water supply wells in close proximity to each other.

035 "Wellhead area" shall mean the water-saturated subterranean strata from which ground water is withdrawn for a public water supply system, along with the overlying unsaturated subterranean strata, land surface, surface waters, and air space providing ground water recharge to such strata.

036 "Wellhead protection area" shall mean that part of a wellhead area from which ground water contaminants could be expected to reach a public water supply well within the useful lifetime of that well.

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Title 118 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 2 - INTENT AND APPLICABILITY OF STANDARDS AND CLASSIFICATION

001 The Ground Water Quality Standards and Use Classification are intended to be the foundation for other ground water regulatory programs. These Standards shall be implemented in conjunction with other regulatory programs. If other regulatory programs do not exist, these Standards alone may be used as the basis for remedial action of ground water contamination.

002 The ground water standards and ground water classifications shall apply to all ground waters of the State with the following exceptions:

002.01 Within an aquifer or a part of an aquifer that has been exempted through the Rules and Regulations of the Nebraska Oil and Gas Conservation Commission or through the Nebraska Department of Environmental Quality's Title 122 - Rules and Regulations for Underground Injection and Mineral Production Wells. This exception will apply only for ground water contaminants directly related to the activity requiring exemption. If the exemption designation is removed, this exception will no longer apply.

002.02 As explained in 003 and 004 below.

003 The numerical standards of Chapter 4 are intended to be applied in regulatory programs administered by the Department. This does not imply that all ground waters in the State will be expected to meet these levels. When point source ground water pollution has occurred, the numerical standards shall be applied according to Chapter 10.

004 The numerical standards of Chapter 4 shall apply to all ground water classes of Chapter 7 except as provided below:

004.01 The numerical standards of Chapter 4 shall not apply to ground waters classified as GC unless any of the following situations occur:

004.01A If a condition exists which has impaired or will impair, in the Department's judgment, beneficial uses other than drinking water.

004.01B If public health or welfare are threatened.

004.01C If considered necessary by the Department to protect hydrologically connected ground waters, surface water beneficial uses (as assigned in Title 117 - Nebraska Surface Water Quality Standards), or surface waters defined by the Department through the Nebraska Wellhead Protection Program as contiguous with a wellhead protection area.

004.02 The numerical standards of Chapter 4 shall not apply within a discrete boundary for the pollutants under consideration, as may be determined under the remedial action provisions of Chapter 10 in the event of pollution.

Enabling Legislation: Neb. Rev. Stat. § 81-1505(1)(2)

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Title 118 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 3 - ANTIDEGRADATION CLAUSE

001 It is the public policy of the State of Nebraska to protect and improve the quality of ground water for human consumption; agriculture, industry and other productive, beneficial uses; and to achieve the standards set out in Chapter 4 herein, wherever attainable. In determining whether such standards are attainable for any specific aquifer, the State should take into consideration environmental, technological, social and economic factors.

002 It is recognized that the existing quality of some ground water in Nebraska is better than the maximum contaminant levels set out in Chapter 4 herein as of the date on which these standards become effective. This existing high quality ground water will be maintained and protected.

003 In select cases the State may choose, after notice and hearing, to allow degradation of such high quality ground water where justified as a result of necessary and widespread economic or social development; provided however, that in no event may degradation of ground water quality interfere with or become injurious to existing water uses.

Enabling Legislation: Neb. Rev. Stat. § 81-1505(1)(2)

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Title 118 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 4 - NARRATIVE AND NUMERICAL STANDARDS

001 The following narrative standards shall apply to ground waters in the State:

001.01 Wastes, toxic substances, or any other pollutant (alone or in combination with other pollutants) introduced directly or indirectly by human activity shall not be allowed to enter ground water:

001.01A If beneficial uses of ground water would be impaired or public health and welfare would be threatened; or

001.01B If beneficial uses of hydrologically connected ground waters or assigned uses of surface waters would be impaired.

001.02 Any pollutant introduced directly or indirectly by human activity that would impair beneficial uses of ground water due to unacceptable color, corrosivity, odor, or any other aesthetic characteristic shall not be allowed.

002 Numerical standards (maximum contaminant levels) for the parameters listed below shall apply to ground waters in the State in accordance with Chapters 2 and 3. Any substance introduced directly or indirectly by human activity shall not be allowed to enter ground water if one or more of the following numerical standards would be exceeded ("reserved" indicates that a standard will be promulgated for this parameter):

Public Health Parameters	Maximum Contaminant Levels
1,1,1-Trichloroethane	0.2 mg/l
1,1,2-Trichloroethane	0.005 mg/l
1,1-Dichloroethylene	0.007 mg/l
1,2,4-Trichlorobenzene (1,2,4-TCB)	0.07 mg/l
1,2-Dibromo-3-chloropropane (DBCP)	0.0002 mg/l
1,2-Dichloroethane	0.005 mg/l
1,2-Dichloropropane	0.005 mg/l
2,4,5-TP Silvex	0.05 mg/l
2,4-D	0.07 mg/l
Acrylamide	(Reserved)
Alachlor	0.002 mg/l
Aldicarb	(Reserved)
Antimony	0.006 mg/l

Arsenic	0.05 mg/l
Asbestos	7.00E+06 fibers/liter with fiber length > 10 microns
Atrazine	0.003 mg/l
Barium	2 mg/l
Benzene	0.005 mg/l
Benzo(a)pyrene (PAHs)	0.0002 mg/l
Beryllium	0.004 mg/l
Cadmium	0.005 mg/l
Carbofuran	0.04 mg/l
Carbon Tetrachloride	0.005 mg/l
Chlordane	0.002 mg/l
Chlorobenzene	0.1 mg/l
Chromium	0.1 mg/l
cis-1,2-Dichloroethylene	0.07 mg/l
Copper	1.3 mg/l
Cyanide	0.2 mg/l
Dalapon	0.2 mg/l
Di(2-ethylhexyl)adipate (Adipates)	0.4 mg/l
Di(2-ethylhexyl)phthalate (Phthalates)	0.006 mg/l
Dibromomethane	(Reserved)
Dichloromethane (Methylene Chloride)	0.005 mg/l
Dinoseb	0.007 mg/l
Dioxin (2,3,7,8-TCDD)	3.00E-08 mg/l
Diquat	0.02 mg/l
Endothall	0.1 mg/l
Endrin	0.002 mg/l
Epichlorohydrin	(Reserved)
Ethylbenzene	0.7 mg/l
Ethylene Dibromide	0.00005 mg/l
Fluoride	4.0 mg/l
Glyphosate	0.7 mg/l
Heptachlor	0.0004 mg/l
Heptachlor Epoxide	0.0002 mg/l
Hexachlorobenzene	0.001 mg/l
Hexachlorocyclopentadiene	0.05 mg/l
Lead	0.015 mg/l
Lindane	0.0002 mg/l

Mercury	0.002 mg/l
Methoxychlor	0.04 mg/l
Molybdenum	(Reserved)
Nickel	(Reserved)
Nitrate (as N)	10 mg/l
Nitrite (as N)	1 mg/l
o-Dichlorobenzene	0.6 mg/l
Oxamyl (Vydate)	0.2 mg/l
p-Dichlorobenzene	0.075 mg/l
Pentachlorophenol	0.001 mg/l
Picloram	0.5 mg/l
Polychlorinated biphenyls (PCBs)	0.0005 mg/l
Selenium	0.05 mg/l
Simazine	0.004 mg/l
Sodium	(Reserved)
Styrene	0.1 mg/l
Tetrachloroethylene	0.005 mg/l
Thallium	0.002 mg/l
Toluene	1 mg/l
Total Trihalomethanes (TTHMs)	0.10 mg/l
Toxaphene	0.003 mg/l
trans-1,2-Dichloroethylene	0.1 mg/l
Trichloroethylene	0.005 mg/l
Vanadium	(Reserved)
Vinyl Chloride	0.002 mg/l
Xylenes	10 mg/l
Radionuclides:	
Gross alpha particle activity (including radium-226 but excluding radon and uranium)	15 pCi/l
Gross beta particle activity	4 mrem/yr
Combined radium-226 and radium-228	5 pCi/l
Radon	(Reserved)
Uranium	(Reserved)
Microbiology:	
Total coliform	(Reserved)
Other Parameters Affecting Use	

Aluminum	0.05 mg/l
Chloride	250 mg/l
Foaming agents	0.5 mg/l
Iron	0.3 mg/l
Manganese	0.05 mg/l
pH	6.5 - 8.5 standard pH units
Silver	0.10 mg/l
Sulfate	250 mg/l
Total Dissolved Solids (TDS)	500 mg/l
Zinc	5 mg/l

003 The numerical standards listed in 002 above are intended to protect beneficial uses of ground water. If the background level of a parameter is greater than the numerical standard, this shall not in and of itself prohibit the use of the ground water.

004 If the background level of a parameter is greater than the numerical standard listed in 002 above, the background level shall be used as the numerical standard.

Enabling Legislation: Neb. Rev. Stat. § 81-1505(1)(2)

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Title 118 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 5 - SAMPLE COLLECTION AND ANALYSIS METHODS

001 Sample collection shall be performed according to methods approved by the Department to insure the collection of a representative sample.

002 Any sample analysis method used must be approved by the U.S. Environmental Protection Agency and/or approved by the Department and provide protection to public health, safety, and the environment.

Enabling Legislation: Neb. Rev. Stat. § 81-1505(1)(2)

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Title 118 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 6 - GROUND WATER BENEFICIAL USES

001 The beneficial uses of ground water in the State shall be protected from impairment. These include existing or potential use for drinking water, irrigation, livestock watering, industrial and commercial purposes, maintaining assigned surface water uses, and other beneficial uses.

002 Although all beneficial uses included in 001 above shall be protected, the highest and most sensitive beneficial use of ground water is drinking water. Ground water that is suitable for drinking water is usually suitable for other beneficial uses. Therefore, protecting ground water for drinking water use normally protects it for all beneficial uses.

003 The Department will protect the beneficial uses of ground water regardless of its quality.

Enabling Legislation: Neb. Rev. Stat. § 81-1505(1)(2)

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Title 118 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 7 - GROUND WATER CLASSIFICATION

001 All ground waters of the State shall be classified based on existing and potential drinking water use.

002 Class assignment, where possible, shall be based on the background condition or beneficial use of the ground water prior to a pollution event.

003 All ground waters of the State shall be classified by the Department into one of the following classes:

003.01 Class GA. Ground water assigned to this class is currently being used as a public drinking water supply or is proposed to be used as a public drinking water supply. This includes:

003.01A Ground water withdrawn by a public water supply system that is used or is intended to be used as drinking water. This includes wells used incidentally or intermittently for drinking water and wells that are temporarily not being used (but have been used in the past) for drinking water. Class GA will be determined by delineating a boundary around:

003.01A1. An area, based on local hydrogeologic conditions around a well or wellfield, defined by the Nebraska Department of Health and Human Services Regulation and Licensure, the Department, or the local water system involved (as approved by the Nebraska Department of Health and Human Services Regulation and Licensure), including wellhead protection areas, as defined by the Department through the Nebraska Wellhead Protection Program.

003.01A2. An area at least as large as and encompassing the entirety of that described by 003.01A3. below designated through local ordinances, if 003.01A1. above has not been determined; or

003.01A3. The area within a 1,000-foot radius of a single well or the area within a 1,000-foot distance of the perimeter of a wellfield, if neither 003.01A1. nor 003.01A2. above has been determined.

003.01B Ground water represented by an area of overlying land which has been zoned or purchased by a local government for the purpose of developing a public drinking water supply well or wellfield, including ground water in provisional wellhead protection areas as defined by the Department through the Nebraska Wellhead Protection Program.

003.02 Class GB. Ground water assigned to this class is currently being used as a private drinking water supply or has the potential for being used as a public or private drinking water supply but currently cannot be classified as GA. Class GB shall be assigned to all ground waters in the State except those assigned to Classes GA and GC.

003.03 Class GC. Ground water assigned to this class is not being used, and has little or no potential for being used, as a public or private drinking water supply. Class GC shall be assigned on a case-by-case basis as the necessary information becomes available and shall include, but not be limited to:

003.03A Ground water with poor natural or background quality compared to the numerical standards of Chapter 4. Class GC(R), a subset of Class GC, shall be assigned to certain portions of this ground water if the Department determines that restoration or cleanup may be appropriate, pursuant to the provisions of Chapter 10, to allow for attainment of future beneficial uses.

003.03B Ground water in which hydrogeologic conditions make development of a public or private drinking water supply unlikely. Such information as depth to ground water and the transmissivity and areal extent of the aquifer may be considered.

004 All public drinking water supply wells as identified by the Nebraska Department of Health and Human Services Regulation and Licensure shall be used in Class GA determination. As of the effective date of these regulations, Class GC has not been assigned to any ground waters in the State.

005 Ground water may be reclassified according to the procedures set forth in Chapter 8.

Enabling Legislation: Neb. Rev. Stat. § 81-1505(1)(2)

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Title 118 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 8 - PROCEDURES FOR CHANGING A GROUND WATER CLASSIFICATION

001 Ground waters classified by these regulations may be reclassified by the Council, pursuant to the Department's Title 115 - Rules of Practice and Procedure, if a just cause exists. Requesting a classification change to avoid cleanup in the event of ground water pollution or in anticipation of ground water pollution shall not be considered a just cause except that reclassification may be justified if a lower classification is appropriate based on the criteria of 003 below.

002 The Department may initiate the reclassification process, or any other person may petition the Council to reclassify a portion of ground water. If a petition for reclassification comes from outside the Department, it shall contain or reference sufficient information for the Council to make a decision on the petition. All information will be thoroughly examined to determine the need for reclassification.

003 Criteria which may be used to evaluate the need for reclassification shall include but not be limited to:

003.01 Information documenting a use of the ground water that either was previously unknown or has changed since a former classification;

003.02 Information concerning the natural or background quality of the ground water; and

003.03 Hydrogeologic conditions including depth to ground water and transmissivity and areal extent of the aquifer.

004 A ground water reclassification to Class GC shall not be required for an aquifer exemption petition to be considered or granted by the Department pursuant to Title 122.

Enabling Legislation: Neb. Rev. Stat. § 81-1505(1)(2)

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the preceding paragraph. In these situations the background level will be used as the preliminary cleanup level.

In a few cases ground water cleanup based on drinking water use may not be sufficient to maintain other beneficial uses. For these unusual instances, preliminary cleanup levels will be based on the level needed to maintain the uses other than drinking water. This may necessitate cleanup even in RAC-3 occurrences. Although the ground water in RAC-3 areas is not used as drinking water, it may serve other important uses (e.g., irrigation, industrial). It may also be necessary to set cleanup levels which protect streams and lakes from a contaminated ground water discharge that would violate surface water standards. Finally, the proximity to RAC-1 or RAC-2 areas, the likelihood of slow but eventual migration to these areas, and the cumulative effects of a series of contamination events must be considered when setting the preliminary cleanup level for RAC-3.

After the responsible party is notified of the preliminary cleanup level, they have the right to agree or propose an alternate level. If a different cleanup level is proposed, it must be based on technological and economic analyses completed by the responsible party.

The technological analysis will determine if technologies exist to clean up the ground water to the preliminary cleanup level. If technologies do exist, the various methods will be reported, including the contribution of cleanup processes which occur naturally. If cleanup to the preliminary level is not technologically possible, the responsible party should report what level of cleanup is attainable. As part of this analysis, the technological feasibility of various mitigative actions (e.g., supplying new sources of water and point-of-use treatment) should be investigated.

In their economic analysis, the responsible party must examine the economics of cleaning up to the preliminary level. If it is impossible to reach the preliminary cleanup level, the responsible party will report what level of cleanup is economically possible. The economic feasibility of mitigation instead of cleanup should also be analyzed.

If cleanup to the preliminary level is not attainable based on the foregoing analyses, the responsible party will report what portion of the ground water will remain contaminated following a lesser degree of cleanup. Given the technological considerations of cleanup, the appropriate calculations should be used in an attempt to define the three-dimensional boundary of the contamination plume under different remedial action scenarios (including no cleanup). The contamination plume, in this case, is defined as ground water where the concentrations of identified contaminants exceed their preliminary cleanup levels. For every cleanup scenario assessed, the economic impacts are to be defined. The relationship of the contaminated ground water boundary to existing users and discharge points of ground water should be described.

Justification for an alternate cleanup level, a contamination maintenance program, a mitigation plan, or a combination of these will be submitted to the Department. The Department will consider the information contained in the justification on a case-by-case basis and establish a proposed final cleanup level or action. The level may be the same as the Department's preliminary cleanup level, the same as the responsible party's alternate cleanup level, or some other level.

The time frame for required action (including cleanup) will be the period of potential exposure to the contamination in the absence of any remedial action or 20 years, whichever is less. On a case-by-case basis, a longer period of time may be allowed if adequately justified by the responsible party.

The Department's decision on the remedial action necessary, including the proposed final cleanup

level, will be placed on public notice. Any person may submit written comments on the proposed action or may request a hearing.

Following the Department's final decision (including changes made as a result of a hearing), a workplan for performance of the final remedial action will be prepared by the responsible party except in chemigation accidents in accordance with Neb. Rev. Stat. § 46-1101 et seq. The workplan is subject to the Department's approval.

Proceed to Step 9.

Step 9. Implementation and Review of Remedial Actions

The remedial actions specified in the workplan are to be implemented by the responsible party. The responsible party will keep the Department apprised of their cleanup efforts, and the Department will periodically review the effectiveness of the remedial actions. If the long-term needs of protecting the public health and welfare and the environment have not been, or are not being, satisfied or if additional remedial action is necessary, reassess the situation in Steps 7 and 8.

Any request by the responsible party to modify the required final remedial action during the implementation process must be accompanied by additional justification as described in Step 8. The Department will review the information, and if a change is appropriate, a public notice will be issued.

If the remedial action needs have been satisfied, proceed to Step 10.

Step 10. Final Review

A final review will be performed by the Department to determine the need for any ongoing actions. These may include long-term monitoring to insure cleanup levels are stabilized and maintained, periodic sampling of nearby supply wells, maintenance of installed structures, and annual case review. If acceptable cleanup levels were never reached, ongoing monitoring or maintenance may be necessary to insure other ground water does not become contaminated. Such ongoing actions should be continued until ground water contamination is no longer a concern.

If ground water is no longer threatened by contamination, proceed to Step 11.

Step 11. Situation of No Threat to Ground Water Quality

The situation does not pose a threat to ground water quality. However, if other health, safety, or environmental concerns exist, they should be addressed by the appropriate Departmental procedures.

Note: A flow diagram depicting the steps of the protocol and major decision points is given in Figure 1.

Figure 1: Flow diagram depicting protocol steps

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Appendix B - REMEDIAL ACTION PROTOCOL FOR PETROLEUM RELEASES

Procedures for Determining Needed Action for Point Source Pollution Occurrences From Petroleum Releases Using Risk-Based Corrective Action (RBCA)

Part I. IMMEDIATE ACTION

Step 1. Initial Review

An initial review will be performed to determine whether immediate action is needed, and if so, what actions are required. The amount of time spent for this review may range from a field decision requiring only minutes to a more involved office decision taking a few days. The review will be based on as many of the items addressed in Step 6 as possible.

The determination as to whether immediate action is needed may include consideration of at least the following two factors:

1) Existence or likelihood of an imminent and substantial threat to the public health and welfare or the environment

a) imminent - a short time span (i.e., less than 90 days)
b) substantial - a significant impact on the public or environment (e.g., human illness or death, serious financial loss, severe ecological damage)

2) Significantly increasing difficulty of cleanup if action is delayed (e.g., if action delayed, cleanup costs increase by one or two orders of magnitude).

The type and extent of immediate action to be taken will, at a minimum, satisfy the following:

1) eliminate imminence or substantiality of threat

2) result in significantly less cleanup difficulty than if action delayed.

If the need for immediate action is apparent or if the need cannot be readily determined, proceed to Step 2 and work in conjunction with Department's Emergency Response Plan. If at a later time it becomes apparent that immediate action is not needed, proceed to Step 4.

In some cases, it may be obvious that immediate action will not be necessary due to the nature of the pollution occurrence (e.g., developed over many years, moving slowly). If no immediate action is necessary, proceed to Step 4.

Step 2. Implementation of Immediate Actions

Immediate actions may include cleanup to at least an initial level, stabilization or containment, monitoring, shutdown/termination of facility/activity, or any combination of measures. These actions will be carried out by the responsible party.

Proceed to Step 3.

Step 3. Evaluation of Immediate Actions

After immediate action has been taken, a determination will be made as to whether or not it successfully met the requirements of Steps 1 and 2.

If requirements were not met, return to Steps 1 and 2 for reassessment.

If requirements were met, proceed to Step 4.

Step 4. No Immediate Threat Present

Immediate action is not now needed, but additional measures for complete and permanent resolution of the problem may be required. Further assessment is necessary to determine the need for any final remedial action.

Proceed to Part II, Step 5.

Part II. FINAL REMEDIAL ACTION

Note: If at any time during the Part II assessment an immediate threat is identified, return to Step 1 (Part I).

Step 5. Preliminary Assessment

A preliminary assessment will be undertaken to evaluate the possible threat of contamination to soils and ground water and threat to public health and welfare. This assessment is to involve a review of existing information and require the collection of minimal or no field data. If it can be determined by the Department from this preliminary assessment that there is limited soil contamination and no threat of ground water contamination or threat to human health and welfare, proceed to Step 12. If soil contamination is extensive or its extent is unknown or ground water contamination is possible or likely, proceed to Step 6.

Step 6. RBCA Tier 1 Site Assessment

If not already known, the Department will identify, if possible, the source(s) of contamination and the responsible party (or parties). The Department will notify the responsible party after the determination has been made. The responsible party will be required to perform the risk-based corrective action (RBCA) Tier 1 site assessment as described in this Step.

The purpose of the site assessment will be to gather information in order to incorporate principles of RBCA into the Department's petroleum release corrective action process. Site assessment data collected will be reported in a format specified by the Department. Site assessment data reported to

the Department will include, but not be limited to, the following types of information, as specified by the Department:

1. historical information;

2. site information;

3. contamination characteristics;

4. aquifer characteristics.

The following potential exposure pathways are to be investigated:

1. Dermal contact with and ingestion of chemicals of concern from contaminated surface soils;

2. Enclosed space inhalation of chemicals of concern from contaminated subsurface soils;

3. Leaching of chemicals of concern from contaminated surface and subsurface soils to ground water;

4. Enclosed space inhalation of chemicals of concern from contaminated, shallow ground water; and,

5. Ingestion of chemicals of concern from contaminated ground water.

The Department will specify sampling and analysis requirements. Individual chemicals of concern are designated based on the petroleum product(s) released at the site and include, but are not limited to, the following:

Gasoline & Jet Fuels
Benzene
Total Xylenes
Toluene
n-Hexane
Ethylbenzene

Diesel Fuel/Fuel Oil #2 & Kerosene
Benzene
Naphthalene
Toluene
Pyrene
Ethylbenzene
Benzo(a)pyrene (BaP)
Total Xylenes

Waste Oil
Benzene
Naphthalene
Chlorinated solvents*
Toluene
Pyrene
Metals*
Ethylbenzene
BaP
Ethylene glycol*
Total Xylenes

* To be determined on a case-by-case basis as directed by the Department. The Department will provide investigative and sampling requirements for these chemicals as needed.

The responsible party will identify land use within 500 feet and any water supply well within 2000 feet of a source area of contamination.

Before this or any subsequent assessments are started, the responsible party should discuss their plans with the Department to make sure they understand what information must be collected.

Proceed to Step 7.

Step 7. Evaluation of RBCA Tier 1 Investigation Results

In evaluating the RBCA Tier 1 investigation results, the contamination levels found during the site investigation will be compared to risk-based screening levels (RBSLs) which will be established by the Department using the following criteria:

1. Remedial Action Classifications.

Most ground water in the principal aquifer (closest underlying major aquifer) is of drinkable quality and is used by nearly all Nebraskans as drinking water. Water of drinking water quality is usually suitable for all other beneficial uses. For these reasons, protecting ground water for drinking water use is most important and normally protects it for all uses. A remedial action class (RAC) is defined for pollution occurrences in three types of ground water (or overlying soils) depending on the degree (or potential) of use of the ground water as drinking water. The extent of remedial action recommended will differ depending on the RAC of the contaminated (or likely to be contaminated) ground water. (Note that the RAC assigned will be determined from the condition of the ground water prior to the pollution occurrence. The Department will do this based on information submitted by the responsible party in the RBCA Tier 1 site assessment and other available information.) Below are definitions of the three RAC categories followed by some further explanation.

RAC-1. This category includes ground waters of Class GA and a portion of Class GB, a 500-foot radius (or greater, if determined necessary by the Department) around all private drinking water supply wells. In addition, RAC-1 shall be automatically assigned anytime a public or private drinking water supply well has been polluted. RAC-1 will usually receive the most

extensive remedial action measures.

RAC-2. This category includes ground waters of Class GB (except for the portion of Class GB placed in RAC-1) and Class GC(R).

RAC-3. This category includes, but is not limited to, ground waters of Class GC (except for Class GC(R) which was placed in RAC-2). RAC-3 will usually receive the least extensive remedial action measures.

The RAC categories are not intended to represent a ground water classification system but rather a pollution occurrence ranking scheme. It gives the Department a method to determine the importance of remedial action based on the use of the ground water. For instance RAC-1 is the category of highest rank; it represents that ground water actually being used for drinking water and that ground water intended to be used in a public drinking water supply. Therefore, RAC-1 occurrences will normally receive the most extensive remedial action measures.

RAC-2 occurrences involve ground water not now directly used as drinking water but having a reasonable potential to be used in the future. The potential for use exists if the ground water is located in a highly populated area or is part of a regional, high-yielding aquifer or if otherwise justified. The RAC-2 category also includes ground water with prior contamination that may be easily or cost-effectively treated to drinking water quality.

Pollution occurrences will be of lowest importance, RAC-3, if the ground water involved is not used, or likely to be used, as drinking water. Generally remedial action measures will be least extensive for this category since the future use of ground water for drinking is improbable. Justification for assigning occurrences to RAC-3 will be based on a combination of several different reasons. One reason for unusability is poor natural quality which makes the ground water unfit for human consumption. Insufficient yield is another reason the ground water may not be used for drinking. A third reason is historical contamination that occurred prior to the pollution event currently being investigated (see NRS § 81-1505(2)(d)). This past contamination may have rendered ground water unsuitable for drinking and uneconomical to treat. Past and present intensive land use is also a reason why ground water could be unusable as drinking water. This includes areas of concentrated industrial development or densely populated areas where ground water is likely to be contaminated or will not be used as drinking water.

The ranking of some occurrences as RAC-3 does not mean there will be places in the State where wholesale contamination of ground water will be allowed. Departmental authority through its various programs to control practices or discharges that may contaminate ground water will still be in effect. RAC-3 occurrences, in general, will be given a lower priority and less staff effort by the Department than RAC-1 or RAC-2 occurrences; however, cleanup of a RAC-3 occurrence may be required due to concerns about enclosed space inhalation exposure pathways and vapors threatening public health and welfare.

RACs were developed primarily for use with the principal aquifer--the ground water commonly used for drinking. They will also be adapted for use with both deeper and perched ground water. When doing so, interconnections with overlying or underlying ground water of different quality will be considered.

Some contamination threats may occur in which the use potential of the ground water would

be RAC-1 or RAC-2, but the soil, geology, and other site-specific characteristics are such that ground water contamination is virtually impossible. After an appropriate assessment, the occurrence may be downgraded to RAC-3.

In every ground water contamination occurrence, certain minimum requirements will be imposed upon the responsible party, depending on the RAC. In RAC-1 and RAC-2, cleanup of readily removable contaminants (e.g., free product) will be required. Additional cleanup and/or mitigation may also be required. If additional cleanup is not required, the remaining contaminated ground water will be managed and monitored to prevent any further damage.

In RAC-3, cleanup of readily removable contaminants (e.g., free product) will be required. Additional cleanup of a RAC-3 occurrence may be required due to concerns about enclosed space inhalation exposure pathways and public health and welfare. Monitoring may also be necessary. Because RAC-3 ground water is generally not used for drinking water, the ground water ingestion and soil leaching to ground water pathways are considered to be incomplete in RAC-3 and not subject to this RBCA assessment.

2. Carcinogenic and non-carcinogenic health effects.

A. Carcinogenic effects

Chemical-specific Maximum Contaminant Levels (MCLs) (see Chapter 4) will be used to calculate the appropriate RBSL for a carcinogen for the groundwater ingestion and soil-leaching to groundwater exposure pathways of concern for a RAC-1 release.

An Excess Lifetime Cancer Risk (ELCR) of 10-6 will be used in the calculation of the RBSLs for a carcinogen for the dermal contact/soil ingestion exposure pathway and for inhalation pathways in the presence of subsurface structures for all releases.

An ELCR of 10-5 will be used in the calculation of the RSBLs for a carcinogen for the groundwater ingestion and soil-leaching to groundwater exposure pathways of concern for a RAC-2 release and for the inhalation exposure pathways when no subsurface structures are present for all releases.

B. Non-carcinogenic effects

Chemical-specific MCLs (or a health-based standard where an MCL has not been promulgated for a particular chemical) will be used to calculate the RBSL for a non-carcinogen for the groundwater ingestion and soil-leaching to groundwater exposure pathways of concern for a RAC-1 release.

RBSLs for non-carcinogens for the groundwater ingestion and soil-leaching to groundwater exposure pathways of concern for a RAC-2 release, for the dermal contact/soil ingestion exposure pathway for all releases, and for the enclosed space inhalation pathways for all releases will be established by the Department using the following criteria:

1. exposure pathway;

2. RAC designation;

3. level of exposure based on the ratio of the observed concentration of a chemical of concern to a chemical-specific reference concentration.

For purposes of the RBCA Tier 1 assessment, toluene, ethylbenzene and total xylenes are considered to have additive health effects.

3. Fate and transport models. The Department will select various models and model default values to calculate RBSLs for use in evaluating the RBCA Tier 1 data.

4. Land use. Residential land use refers to the presence of dwellings (e.g., houses, apartments) and sensitive population centers (e.g., schools, daycare centers, hospitals, nursing homes) within 500 feet of a source area. Commercial land use will be any land use not meeting the criteria of residential land use.

5. Location of water supply wells.

6. Other criteria as determined by the Department.

Upon comparing the RBSLs to the actual contamination levels found during the site investigation, the Department will determine if additional remedial actions will be required. If additional remedial actions are not required, proceed to Step 11. Otherwise, proceed to Step 8.

Step 8. Detailed Site Assessment

A detailed site assessment will now be performed by the responsible party for those exposure pathways where actual site contamination levels were greater than the Tier 1 RBSLs under Step 7. For ground water or soil contamination occurrences, various items considered may include:

soil characteristics - texture, permeability, porosity, thickness, chemical/physical properties of materials from the land surface to the water table

hydrogeologic characteristics - depth to ground water, direction and rate of ground water flow, permeability, transmissivity, aquifer interconnections, perched ground water, recharge area and rate

contaminant characteristics - toxicity, health risks, concentration, amount, mobility, areal extent, source characterization

site characteristics - climate information, topography, accessibility, proximity to water supply well and its recharge area or cone of influence, land use

background water quality and use - background levels of conventional parameters and additional contaminants of concern, existing or potential use

background soil quality or use - background levels of conventional parameters and additional contaminants of concern, existing or potential use of soil

The Department may, at any time, request additional information.

Step 9. Define Preliminary Cleanup Levels and Review Proposed Remedial Actions

The Department will set a preliminary cleanup level for any additional cleanup required. The level will normally be set at the appropriate RBSL(s) established in Step 7.

In a few cases ground water cleanup based on drinking water use may not be sufficient to maintain other beneficial uses or protect human health and welfare. For these instances, preliminary cleanup levels will be based on the level needed to maintain the uses other than drinking water. This may necessitate cleanup even in RAC-3 occurrences. Cleanup of a RAC-3 occurrence may be required due to concerns about enclosed space inhalation exposure pathways. Although the ground water in RAC-3 areas is not used as drinking water, it may serve other important uses (e.g., irrigation, industrial). It may also be necessary to set cleanup levels which protect streams and lakes from a contaminated ground water discharge that would violate surface water standards. Finally, the proximity to RAC-1 or RAC-2 areas, the likelihood of slow but eventual migration to these areas, and the cumulative effects of a series of contamination events must be considered when setting the preliminary cleanup level for RAC-3.

After the responsible party is notified of the preliminary cleanup level, they have the right to agree or propose an alternate level. If a different cleanup level is proposed, it must be based on a technological, risk, or economic analysis completed by the responsible party. The Department may also propose an alternate level.

The technological analysis will determine if technologies exist to clean up the ground water to the preliminary cleanup level. If cleanup to the preliminary level is not technologically possible, the responsible party should report what level of cleanup is attainable. As part of this analysis, the technological feasibility of various mitigative actions (e.g., supplying new sources of water and point-of-use treatment) should be investigated.

The risk analysis may include other factors, information, or evaluations not previously considered. Other ELCR target levels may be considered if appropriate.

In their economic analysis, the responsible party must examine the economics of cleaning up to the preliminary level. If it is impossible to reach the preliminary cleanup level, the responsible party will report what level of cleanup is economically possible. The economic feasibility of mitigation instead of cleanup should also be analyzed.

If cleanup to the preliminary level is not attainable based on one or more of the foregoing analyses, the responsible party will report what portion of the ground water will remain contaminated following a lesser degree of cleanup. Given the technological considerations of cleanup, the appropriate calculations should be used in an attempt to define the three-dimensional boundary of the contamination plume under different remedial action scenarios (including no-cleanup). The contamination plume, in this case, is defined as ground water where the concentrations of identified contaminants exceed their preliminary cleanup levels. For every cleanup scenario assessed, the economic impacts are to be defined. The relationship of the contaminated ground water boundary to existing users and discharge points of ground water must be described.

Title 118 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 9 - REGULATION OF POTENTIAL POINT SOURCES

001 In determining regulatory requirements which may be placed on potential point sources, the Department shall consider the ground water classification, vulnerability of the ground water to pollution, beneficial uses of ground water, characteristics of the potential point source, technical and socioeconomic factors, and other site-specific factors, as necessary. This shall apply to all potential point sources for which the Department has regulatory authority, including but not limited to:

Point Source	Regulated By
National Pollutant Discharge Elimination Systems	Title 119
Injection Wells	Title 122
Wastewater Treatment Plants	Title 123
Septic Tanks	Title 124
Individual Waste Treatment Lagoons	Title 125
Pretreatment Facilities	Title 127
Hazardous Waste Treatment, Storage, or Disposal Facilities	Title 128
Livestock Waste Control Facilities	Title 130
Licensed Landfills	Title 132
Mineral Exploration Holes	Title 135

002 The regulatory requirements of this chapter shall not preempt more stringent restrictions required of sources and facilities covered by federal regulations within the Clean Water Act (CWA); Safe Drinking Water Act (SDWA); Resource Conservation and Recovery Act (RCRA); or the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA); and other applicable federal statutes.

Enabling Legislation: Neb. Rev. Stat. § 81-1505(1)(2)

Legal Citation: Title 118, Ch. 9, Nebraska Department of Environmental Quality

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Title 118 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 10 - REMEDIAL ACTION PROVISIONS FOR POINT SOURCE GROUND WATER POLLUTION OCCURRENCES

001 When a point source pollution event (except for petroleum releases which are covered under 002 below) has caused or will cause, in the Department's judgment, ground water pollution, the Ground Water Remedial Action Protocol found in Appendix A shall apply. Such events which result from activities subject to the ground water standards and classifications of Title 118, and which are regulated by a permit issued under Title 122, may be governed by the remedial action plan approved in the Title 122 permit instead of Appendix A, but only if the Title 122 permit contains such an approved plan.

002 When a point source pollution event has been caused by a release of petroleum, the procedures of Appendix B shall apply.

Enabling Legislation: Neb. Rev. Stat. § 81-1505(1)(2); 81-15, 124.01

Legal Citation: Title 118, Ch. 10, Nebraska Department of Environmental Quality

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Title 118 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 11 - PUBLIC NOTICE AND COMMENT PERIOD

001 The Department shall give public notice of the following:

001.01 A final remedial action has been proposed, in accordance with Appendix A, Step 8, or Appendix B, Step 9.

001.02 During implementation, a modification to a final remedial action has been proposed, in accordance with Appendix A, Step 9, or Appendix B, Step 10.

001.03 A hearing has been scheduled.

001.04 The Department will allow degradation of ground water quality, according to Chapter 3.

002 No public notice is required when a request or petition for an action or a hearing is denied by the Department. Written notice of the denial shall be given to the person who submitted the request or petition. Such denial shall be considered a final order by the Director and subject to appeal pursuant to Chapter 12.

003 The conditions or requirements for public notices include:

003.01 Notices may describe more than one proposed action or event.

003.02 Notices shall give the public a comment period of at least 30 days.

003.03 Notices shall be mailed to the following persons:

003.03A Person requesting action by the Department or the responsible party in a remedial action situation.

003.03B Person in charge of the public water supply system and the Nebraska Department of Health and Human Services Regulation and Licensure if a Class GA area is involved.

003.03C Overlying and adjacent ground water users and land owners which would be affected if Class GB or GC areas are involved. A notice published pursuant to 003.04 below may be substituted for individual mailings if the affected area is a densely populated, municipal area.

003.03D Any other person either upon request or on a Department mailing list to receive notices for a particular geographic area or on a specific subject.

003.04 Public notice shall be issued by circulating the notice in the geographical area of the affected ground water through publication in a daily or weekly newspaper with general circulation.

003.05 Notices may be announced in press releases or by other methods designed to give actual notice to persons potentially affected by the proposed action or event.

003.06 Notices shall contain the following information:

003.06A A summary of the proposed action or event including location and description of the ground water involved.

003.06B An address to which all comments should be sent.

003.06C The name, address, and telephone number of a person from whom interested persons may obtain further information.

003.06D A brief description of the comment procedures and the procedures by which a public hearing may be requested.

003.06E Any additional information considered necessary or proper by the Department.

003.07 If the notice is for a hearing, it shall also contain the following:

003.07A A reference to the date of any previous public notices relating to the proposed action or event.

003.07B The date, time, and location of the hearing.

003.07C A brief description of the nature and purpose of the hearing, including the applicable rules and procedures and a concise statement of the issues.

003.07D The name and address of the person requesting or petitioning for a hearing.

004 During the public comment period, any interested person may submit to the Director written comments on the proposed action or event and may request or petition for a hearing, in writing, stating the nature of the issues to be raised in the hearing.

Enabling Legislation: Neb. Rev. Stat. § 81-1505(1)(2)

Legal Citation: Title 118, Ch. 11, Nebraska Department of Environmental Quality

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Title 118 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 12 - GENERAL PROVISIONS

001 Public hearings are governed by the Department's Title 115 - Rules of Practice and Procedure, for permits and licenses.

002 If any clause, paragraph, subsection, or section of these regulations shall be held invalid, it shall conclusively be presumed that the Environmental Quality Council would have enacted the remainder of these regulations not directly related to such clause, paragraph, subsection, or section.

003 Any appeal from any final order or final determination of the Director shall be pursuant to Neb. Rev. Stat. § 81-1509.

004 These rules and regulations shall become effective five days after filing with the Secretary of State.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1505(1)(2)(11)(16)(17); 81-1509; 84-906 et seq.; 84-914; 84-915

Legal Citation: Title 118, Ch. 12, Nebraska Department of Environmental Quality

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Title 118 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Appendix A - GROUND WATER REMEDIAL ACTION PROTOCOL

Procedures for Determining Needed Action for Point Source
Ground Water Pollution Occurrences

Part I. IMMEDIATE ACTION

Step 1. Initial Review

An initial review will be performed to determine whether immediate action is needed, and if so, what actions are required. The amount of time spent for this review may range from a field decision requiring only minutes to a more involved office decision taking a few days. The review will be based on as many of the items addressed in Steps 6 and 7 as possible.

The determination as to whether immediate action is needed will be based upon the following two factors:

1) Existence or likelihood of an imminent and substantial threat to the public health and welfare or the environment

a) imminent - a short time span (i.e., less than 90 days)
b) substantial - a significant impact on the public or environment (e.g., human illness or death, serious financial loss, severe ecological damage)

2) Significantly increasing difficulty of cleanup if action is delayed (e.g., if action delayed, cleanup costs increase by one or two orders of magnitude).

The type and extent of immediate action to be taken will, at a minimum, satisfy the following:

1) eliminate imminence or substantiality of threat

2) result in significantly less cleanup difficulty than if action delayed.

If the need for immediate action is apparent or if the need cannot be readily determined, proceed to Step 2 and work in conjunction with Department's Emergency Response Plan. If at a later time it becomes apparent that immediate action is not needed, proceed to Step 4.

In some cases, it may be obvious that immediate action will not be necessary due to the nature of the pollution occurrence (e.g., developed over many years, moving slowly). If no immediate action is necessary, proceed to Step 4.

Step 2. Implementation of Immediate Actions

Immediate actions may include cleanup to at least an initial level, stabilization or containment, monitoring, shutdown/ termination of facility/activity, or any combination of measures. These actions will be carried out by the responsible party.

Proceed to Step 3.

Step 3. Evaluation of Immediate Actions

After immediate action has been taken, a determination will be made as to whether or not it successfully met the requirements of Steps 1 and 2.

If requirements were not met, return to Steps 1 and 2 for reassessment.

If requirements were met, proceed to Step 4.

Step 4. No Immediate Threat Present

Immediate action is not now needed, but additional measures for complete and permanent resolution of the problem may be required. Further assessment is necessary to determine the need for any final remedial action.

Proceed to Part II, Step 5.

Part II. FINAL REMEDIAL ACTION

Note: If at any time during the Part II assessment an immediate threat is identified, return to Step 1 (Part I).

Step 5. Preliminary Assessment

A preliminary assessment will be undertaken to evaluate the possible threat of contamination to ground water. This assessment is to involve a review of existing information and require the collection of minimal or no field data. If it can be determined from this preliminary assessment that there is no threat of ground water contamination, proceed to Step 11. If ground water contamination is possible or likely, proceed to Step 6.

Note: In certain pollution occurrences where the ground water is not or could not be used as drinking water (RAC-3, as described in Step 8), an abbreviated site assessment (Steps 6 and 7) may be appropriate.

Enough information must be collected for the Department to determine if the occurrence fits into the RAC-3 category.

Step 6. Initial Site Assessment

If not already known, the Department will identify, if possible, the source(s) of contamination and the responsible party (or parties). The Department will notify the responsible party after the determination has been made.

If ground water contamination is possible or likely, an initial site assessment will be made by the responsible party to define the extent of contamination. This may involve test holes to determine if contaminants have reached ground water or, if not, how close they are (see Attachment A). If this initial assessment reveals that there is no threat of ground water contamination, proceed to Step 11; otherwise proceed to Step 7.

Before this or any subsequent assessments are started, the responsible party should discuss their plans with the Department to make sure they understand what information must be collected. In some cases where ground water contamination is immediately evident, it is acceptable to combine Steps 6 and 7.

Note: Initial and Detailed Site Assessments will be performed by the Department in the case of chemigation accidents in accordance with Neb. Rev. Stat. § 46-1101 et seq.

Step 7. Detailed Site Assessment

A detailed site assessment will now be performed through examination of all pertinent factors (see Attachment B). For ground water or soil (potential ground water) contamination occurrences, various items considered may include:

soil characteristics - texture, permeability, thickness, chemical/physical properties of materials from the land surface to the water table

hydrogeologic characteristics - depth to ground water, direction and rate of ground water flow, permeability, transmissivity, aquifer interconnections, perched ground water, recharge area and rate

contaminant characteristics - toxicity, health risks, concentration, amount, mobility, areal extent, source characterization

site characteristics - climate information, topography, accessibility proximity to supply well and its recharge area or cone of influence, land use

background water quality and use - background levels of conventional parameters and additional contaminants of concern, existing or potential use

background soil quality or use - background levels of conventional parameters and additional contaminants of concern, existing or potential use of soil

The detailed site assessment will be presented to the Department by the responsible party. The Department may, at any time, request additional information.

Step 8. Define Preliminary Cleanup Levels and Review Proposed Remedial Actions

Most ground water in the principal aquifer (closest underlying major aquifer) is of drinkable quality and is used by nearly all Nebraskans as drinking water. Water of drinking water quality is usually suitable for all other beneficial uses. For these reasons, protecting ground water for drinking water use is most important and normally protects it for all uses. A remedial action class (RAC) is defined

for pollution occurrences in three types of ground water (or overlying soils) depending on the degree (or potential) of use of the ground water as drinking water. The extent of remedial action recommended will differ depending on the RAC of the contaminated (or likely to be contaminated) ground water. (Note that the RAC assigned will be determined from the condition of the ground water prior to the pollution occurrence. The Department will do this based on information submitted by the responsible party in the detailed site assessment and other available information.) Below are definitions of the three RAC categories followed by some further explanation.

RAC-1. This category includes ground waters of Class GA and a portion of Class GB, a 500-foot radius (or greater, if determined necessary by the Department) around all private drinking water supply wells. In addition, RAC-1 shall be automatically assigned anytime a public or private drinking water supply well has been polluted. RAC-1 shall receive the most extensive remedial action measures.

RAC-2. This category includes ground waters of Class GB (except for the portion of Class GB placed in RAC-1) and Class GC(R).

RAC-3. This category includes, but is not limited to, ground waters of Class GC (except for Class GC(R) which was placed in RAC-2). RAC-3 shall receive the least extensive remedial action measures.

The RAC categories are not intended to represent a ground water classification system but rather a pollution occurrence ranking scheme. It gives the Department a method to determine the importance of remedial action based on the use of the ground water. For instance RAC-1 is the category of highest rank; it represents that ground water actually being used for drinking water and that ground water intended to be used in a public drinking water supply. Therefore, RAC-1 occurrences will normally receive the most extensive remedial action measures.

RAC-2 occurrences involve ground water not now directly used as drinking water but having a reasonable potential to be used in the future. The potential for use exists if the ground water is located in a highly populated area or is part of a regional, high-yielding aquifer or if otherwise justified. The RAC-2 category also includes ground water with prior contamination that may be easily or cost-effectively treated to drinking water quality.

Pollution occurrences will be of lowest importance, RAC-3, if the ground water involved is not used, or likely to be used, as drinking water. Generally remedial action measures will be least extensive for this category since the future use of ground water for drinking is improbable. Justification for assigning occurrences to RAC-3 will be based on a combination of several different reasons. One reason for unusability is poor natural quality which makes the ground water unfit for human consumption. Insufficient yield is another reason the ground water may not be used for drinking. A third reason is historical contamination that occurred prior to the pollution event currently being investigated (see NRS § 81-1505(2)(d)). This past contamination may have rendered ground water unsuitable for drinking and uneconomical to treat. Past and present intensive land use is also a reason why ground water could be unusable as drinking water. This includes areas of concentrated industrial development or densely populated areas where ground water is likely to be contaminated or will not be used as drinking water.

The ranking of some occurrences as RAC-3 does not mean there will be places in the State where wholesale contamination of ground water will be allowed. Departmental authority through its various programs to control practices or discharges that may contaminate ground water will still be in effect.

RAC-3 occurrences will be given a lower priority and less staff effort by the Department than RAC-1 or RAC-2 occurrences.

RACs were developed primarily for use with the principal aquifer--the ground water commonly used for drinking. They will also be adapted for use with both deeper and perched ground water. When doing so, interconnections with overlying or underlying ground water of different quality will be considered.

Some contamination threats may occur in which the use potential of the ground water would be RAC-1 or RAC-2, but the soil, geology, and other site-specific characteristics are such that ground water contamination is virtually impossible. After an appropriate assessment, the occurrence may be downgraded to RAC-3.

In every ground water contamination occurrence, certain minimum requirements will be imposed upon the responsible party, depending on the RAC. In RAC-1, cleanup of readily removable contaminants (e.g., free product) will be required. Additional cleanup and/or mitigation will also be required. If additional cleanup is not required, the remaining contaminated ground water will be managed and monitored to prevent any further damage.

In RAC-2, cleanup of readily removable contaminants (e.g., free product) will be required. If additional cleanup is not required, the remaining contaminated ground water will be managed and monitored to prevent any further damage.

In RAC-3, cleanup of readily removable contaminants (e.g., free product) will be required. Monitoring may also be necessary.

In addition to the minimum requirements listed above, RAC-1 and RAC-2 occurrences are potentially subject to additional cleanup requirements. No further cleanup will be required for RAC-3 occurrences based on drinking water usage. In certain cases, other permits from the Department may be required (e.g., UIC, NPDES).

The Department will set a preliminary cleanup level for additional cleanup required in RAC-1 and RAC-2 occurrences. The idealistic goal of the Department for any ground water cleanup is restoration - returning the ground water to its quality before contamination (background levels). Most (if not all) of the time these levels are impractical, unattainable, and (in some cases) unmeasurable. Therefore, the preliminary cleanup level will be based on the level necessary to maintain a drinking water use, although a preliminary cleanup level set at the background level may be considered in some cases. If a Department or EPA ground water/drinking water standard exists for the contaminant, it will be the level used. If there is no established standard, EPA's Ambient Water Quality Criteria, Health Advisories, and other documents will be used to set the preliminary cleanup level. The level will be set at the concentration which is estimated to result in a 1 in a 1,000,000 (10^{-6}) excess cancer risk over a lifetime, at the concentration which is expected to result in no adverse health effect for longer-term or lifetime exposure, or the laboratory detection limit (if higher and within an acceptable range). If appropriate EPA data is nonexistent, data found in the literature will be used to determine the preliminary cleanup level. If sufficient information regarding acceptable levels is not found, the preliminary cleanup level will be set at background or the acceptable laboratory detection limit.

Sometimes the background level of a contaminant (as reported by the responsible party and approved by the Department) may be higher than what would be proposed as the preliminary cleanup level in

Justification for an alternate cleanup level, a contamination maintenance program, a mitigation plan, or a combination of these will be submitted to the Department. The Department will consider the information contained in the justification on a case-by-case basis and establish a proposed final cleanup level or action. The level may be the same as the Department's preliminary cleanup level, the same as the responsible party's alternate cleanup level, or some other level.

The time frame for required action (including cleanup) will be the period of potential exposure to the contamination in the absence of any remedial action or 20 years, whichever is less. On a case-by-case basis, a longer period of time may be allowed if adequately justified by the responsible party.

The Department's decision on the remedial action necessary, including the proposed final cleanup level, will be placed on public notice. Any person may submit written comments on the proposed action or may request a hearing.

Following the Department's final decision (including changes made as a result of a hearing), a workplan and schedule for performance of the final remedial action will be prepared by the responsible party. The workplan is subject to the Department's approval.

Proceed to Step 10.

Step 10. Implementation and Review of Remedial Actions

The remedial actions approved in the workplan are to be implemented by the responsible party. The responsible party will keep the Department apprised of their cleanup efforts, and the Department will periodically review the effectiveness of the remedial actions. If the long-term needs of protecting the public health and welfare and the environment have not been, or are not being, satisfied or if additional remedial action is necessary, reassess the situation in Steps 8 and 9.

Any request by the responsible party to modify the required final remedial action during the implementation process must be accompanied by additional justification as described in Step 9. The Department may propose modifications to the required final remedial action. If a change is appropriate, a public notice will be issued.

If the remedial action needs have been satisfied, proceed to Step 11.

Step 11. Final Review

A final review will be performed by the Department to determine the need for any ongoing actions. These may include long-term monitoring to insure cleanup levels are stabilized and maintained, periodic sampling of nearby supply wells, maintenance of installed structures, and annual case review. If established cleanup levels were never reached, ongoing monitoring or maintenance may be necessary to insure other ground water does not become contaminated. Such ongoing actions should be continued until ground water and soil contamination is no longer a concern.

If ground water is no longer threatened by contamination and a threat to public health and welfare does not exist, as determined by the Department, proceed to Step 12.

Step 12. Closure

The situation does not pose a threat to ground water quality or public health and welfare.

ATTACHMENT A

RECOMMENDED INFORMATION REQUIREMENTS FOR STEP 6 ASSESSMENT

I. Unsaturated Zone

A. Soils (0-5 feet) (if applicable)
1. Association name
2. Texture of each horizon
3. Permeability of each horizon
4. Depth (thickness) of each horizon
5. Chemical composition and characteristics

B. Underlying sediments
1. Thickness of each stratum
2. Lithology of each stratum
3. Permeability of each stratum

C. Total thickness of unsaturated zone

II. Zone of Contamination in Unsaturated Zone

A. Lateral and vertical delineation
B. Quantity and/or concentration of contaminant(s)

III. Physical/Chemical Properties of Material Discharged

A. Density
B. Other pertinent physical properties
C. Chemical composition
D. Solubility
E. Volatility
F. Persistence
G. Toxicity
H. Degradation products (if applicable)

IV. Reporting Requirements
(Note: A report is to be prepared if it is found that no threat of groundwater contamination exists or if requested by the Department).

A. Detailed test-hole logs
Use of Unified Soil Classification is recommended

B. Map(s)/Cross Section(s)/Table(s)
1. Large-scale site map showing pertinent features and location of test holes
2. Map and cross section(s) depicting zone of contamination
3. Results of field/laboratory analyses

C. Text describing and analyzing information

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ATTACHMENT B

RECOMMENDED INFORMATION REQUIREMENTS FOR STEP 7 ASSESSMENT

Note: A Detailed Site Assessment (Step 7) is performed in addition to, and possibly in conjunction with, the Initial Site Assessment (Step 6) if ground water contamination is identified, suspected, or imminent).

I. Aquifer(s)

A. Hydrogeologic framework of principal (regional) aquifer
1. Thickness
2. Transmissivity
3. Lithology
4. Faults, fractures and other secondary permeability characteristics (if present)
5. Approximate water-level elevation or depth to water
6. Overlying (perched) aquifer and underlying confined aquifer (if present)
7. Geologic formation name(s)
8. Regional flow direction(s)
9. Flow velocity

B. Uppermost aquifer
1. Configuration of the water table
2. Thickness of each stratum
3. Lithology of each stratum
4. Permeability or transmissivity
5. Flow velocity
6. Local sources of recharge and/or discharge (e.g., losing and gaining streams)

II. Ground Water Contaminant Plume

A. Lateral and vertical configuration
B. Quantity and/or concentration of contaminant(s)
C. Velocity of movement

III. Ground Water Use

A. Identify all water supply wells within 2,000 feet of thecontaminant plume

B. Well inventory data
1. Location (legal description)
2. Use(s)

3. Depth
4. Owner
5. Construction specifications

IV. Background Quality of Ground Water

A. Uppermost aquifer
B. Principal aquifer (if distinct from uppermost aquifer)
C. Water-quality parameters
1. Dissolved solids content (or specific conductance measurement)
2. Nitrate-nitrogen
3. Primary chemical constituents of material discharged

V. Site Characteristics

A. Climatic information
B. Topography
C. Accessibility
D. Land Use
E. Existing or abandoned wells or test holes not identified in III above within 2,000 feet of the contaminant plume

VI. Reporting Requirements

A. Detailed test hole logs
1. Thickness and lithology of all strata
2. Measured water levels
3. Land surface elevations
4. Other pertinent information

B. Map(s)/Cross Section(s)/Table(s)
1. Large-scale site map showing pertinent features and location of test borings and inventoried wells and/or test holes.
2. Map and cross section(s) depicting contaminant plume
3. Water-table-configuration map
4. Results of field/laboratory analyses

C. Text describing and analyzing information

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Appendix F
Nebraska Department of Environmental Quality
Rules and Regulations
Title 135 - Rules and Regulations for Mineral Exploration Holes

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TITLE 135
RULES AND REGULATIONS FOR MINERAL EXPLORATION HOLES

NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Title 135 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 1 - DEFINITIONS

When a defined term appears in a definition, the defined term is sometimes placed within quotation marks as an aid to readers.

001 "Aquifer" shall mean a geological "formation", group of formations or part of a formation that is capable of yielding a useable amount of water to a well or spring.

002 "Council" shall mean Environmental Control Council.

003 "Department" is the Department of Environmental Control.

004 "Director" is the Director of the Department of Environmental Control.

005 "Formation" shall mean a body of rock characterized by a degree of lithologic homogeneity which is prevailing, but not necessarily, tabular and is mappable on the earth's surface or traceable in the subsurface.

006 "Groundwater" is that water which occurs, moves, seeps, filters or percolates through the ground beneath the land surface.

007 "Lithology" shall mean the description of rocks on the basis of their physical and chemical characteristics.

008 "Log" shall mean a record by depth of the "lithology" surrounding a mineral exploration hole obtained from formation samples and/or geophysical methods.

009 "Mineral Exploration Hole" shall mean a hole bored, drilled, driven, or dug in the act of exploring for a "mineral resource" other than oil or gas.

010 "Mineral Resource" shall mean mineral substances found in the form of consolidated rock or unconsolidated material, commingled, in solution, or otherwise occurring beneath the surface or in the waters of the State from which any product useful to humans may be produced, extracted, or obtained, but excluding oil and gas.

011 "Operator" shall mean the "person" to whom the permit is issued.

012 "Person" shall mean any individual, partnership, association, public or private corporation, trustee, receiver, assignee, agent, municipality, or other governmental subdivision, public agency, officer, or governing or managing body of any municipality, governmental subdivision, or public agency, or any other legal entity except the Department of Environmental Control.

013 "Plug (or Plugging)" shall mean the act or process of sealing the flow of fluid into or out of a "formation" through a hole penetrating that formation.

014 "Restoration" shall mean the employment, during and after an activity, of procedures reasonably

designed to control, minimize, and eliminate hazards to humans, animals, and the environment, to protect the public health and welfare and air, land, water, and subsurface resources, and to return each resource to a quality of use consistent with the "uses for which the resource was suitable" prior to the activity.

015 "Total dissolved solids (TDS)" shall mean the concentration of all dissolved matter and is generally expressed in milligrams per liter (mg/l).

016 "Trade Secret" shall mean a formula, pattern, device or compilation of information which is used in one's business and which gives one the opportunity to obtain advantage over competitors who do not know or use it. A plan or process, tool, mechanism or compound known only to its owner and those of his employees to whom it is necessary to confide. A secret formula or process not patented, but known only to certain individuals using it and compounding some article of trade having a commercial value.

017 "Uses for which the resource was suitable" shall mean, with respect to this Title, the pre-exploration quality conditions.

Legal Citation: Title 135, Ch. 1, Nebraska Department of Environmental Control

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Title 135 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 2 - AUTHORIZATION BY PERMIT; WHEN REQUIRED

001 No person shall conduct drilling, driving, boring or digging of any mineral exploration hole(s) without authorization by a permit from the Department.

002 Any person conducting the drilling, driving, boring, or digging of mineral exploration holes on the effective date of these regulations who would have been required to apply for a permit under this Title may continue operations but shall, within thirty days thereafter, file an application with information required in Chapter 3. A report to indicate the requirements of Chapter 5 have been or are being met shall be required if operations cease between the effective date of these regulations and the thirty day filing requirement of this section.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1505(9)(16); 81-1505.02; 81-1506(3)(b)

Legal Citation: Title 135, Ch. 2, Nebraska Department of Environmental Control

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Title 135 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 3 - PERMIT APPLICATION; INFORMATION REQUIREMENTS, CONFIDENTIALITY

001 An application shall be filed at least thirty days prior to any mineral exploration hole(s) activity.

002 An application will include:

002.01 The name and legal mailing address of the operators and their lessees, assignees, or designees.

002.02 A map showing the township, range and section(s) in which the mineral exploration hole activity will take place and a description of the activities which will include the number of exploration holes and the disturbed area per exploration hole; and

002.03 Information sufficient to describe or identify the type of operations proposed and how they would be conducted, including the approximate depth of each test hole, the period during which the proposed activity will take place, and the measures to be taken to meet the requirements for environmental protection in Chapter 5.

003 The application will cover the requirements set forth in Chapter 5 for the entire operation for the full period of activity.

004 All information and data submitted by the applicant shall be available for examination by the public except specifically identified information and data submitted in writing by the applicant as confidential concerning trade secrets as determined by the Director.

Enabling Legislation: §§ 81-1505(9); 81-1506(3)(b); 81-1527

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Title 135 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 4 - PERMIT CONDITIONS; GENERAL

001 The permittee must comply with all conditions of the permit. Any permit noncompliance constitutes a violation of Neb. Rev. Stat. §§ 81-1501 to 81-1533, and is grounds for enforcement action and/or for permit termination.

002 If the permittee wishes to continue an activity regulated by the permit after the expiration date of the permit, the permittee must apply for an extension of the permit at least seven days prior to the expiration date.

003 The permittee shall at all times properly operate and maintain all facilities and systems to meet the requirements of Chapter 5 and all conditions of the permit.

004 The permittee shall maintain financial responsibility (Chapter 7) to permanently plug the exploratory holes and restore the associated pits and the affected resources in accordance with Chapter 5.

Enabling Legislation: §§ 81-1505(9)

Legal Citation: Title 135, Ch. 4, Nebraska Department of Environmental Control

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Title 135 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 5 - REQUIREMENTS FOR ENVIRONMENTAL PROTECTION

001 All operations shall be conducted so as to minimize adverse impacts on the State's air, water, land and subsurface resources, by consideration of the following:

001.01 Air Quality. Operator shall comply with applicable Federal and State air quality standards, including the requirements of the Clean Air Act, as amended (42 U.S.C. 7401 et seq.);

001.02 Water Quality. Operator shall comply with applicable Federal and State water quality standards, including regulations issued pursuant to the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et. seq.), and section 002.01 of this Chapter;

001.03 Land Quality. Operator shall comply with applicable Federal and State standards for the disposal and treatment of solid wastes and section 002.02 of this Chapter. All garbage, refuse, or waste shall either be removed or disposed of or treated so as to minimize its impact on the environment. All cuttings, dumpage, deleterious materials or substances and other waste produced by operations shall be deployed, arranged, disposed of or treated so as to minimize adverse impact upon the environment; and

001.04 Fisheries and Wildlife Habitat. In addition to compliance with all water quality standards and solid waste disposal activities required by this section, operator shall take all practicable measures to maintain and protect fisheries and wildlife habitat which may be affected by the operations. Conditions of the permit shall be specified to protect these resources through consultation with the Nebraska Game and Parks Commission.

002 All mineral exploration holes sunk (drilled, driven, bored, or dug) shall be plugged pursuant to the requirements of this section immediately following collection of the geological and geophysical information.

002.01 Any mineral exploration hole permit application must contain a plugging plan to protect against ground water contamination from surface contamination, subsurface contamination, and commingling of aquifer fluids. Such plan shall indicate to the Department the specific procedures and materials to be used for plugging based on the knowledge of the area geology.

002.02 Any mineral exploration hole activities affecting land resources of the State shall ensure restoration to a condition consistent with the land use existing prior to the exploration. The restoration shall include, but not be limited to, the following:

002.02A Topsoil to be removed shall be stockpiled for final backfill cover;

002.02B Any pits, mud pits, or other disturbances shall be backfilled and graded to blend

with the surrounding surface;

002.02C If vegetative cover was disturbed or destroyed, an appropriate seed mix shall be used in the first normal period favorable for planting;

002.02D If necessary to assure successful revegetation, the drill site area shall be scarified, mulched, and the seed covered, or the permittee shall contract with the local Natural Resources District to provide the assurance of this subsection and subsection 002.02C above; however, the permittee remains responsible for the successful revegetation; and

002.02E If necessary, any drill cuttings shall be spread to a depth no greater than one-half inch or buried in an approved disposal pit.

Enabling Legislation: §§ 81-1505(9); 81-1505.02

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Title 135 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 6 - FINAL REPORT

001 On or before March 31, of each calendar year, the operator conducting the exploration shall submit to the Director a report on all activities conducted from January 1 through December 31 of the previous year including:

001.01 The date of completion of plugging of each hole;

001.02 A plat or map at a scale, approved by the Department prior to the submittal of the report, showing the location of each mineral exploration hole;

001.03 For holes having artesian flow at the surface, the estimated rate of flow; and

001.04 A geophysical description which shall include:

001.04A A lithologic description of each hole comprising:

001.04A1. Identification of aquifers and the formation penetrated, excluding information regarding mineral occurrence or zonation.

001.04A2. A representative sample of any mechanical, electrical, or radiological survey logs but upon request, the permittee shall make available all logs existing for the permit area.

001.04A3. Any permittee shall have available upon request any geophysical data regarding the hole.

001.04B A description of the plugging techniques used:

001.04B1. When abandonment mud is used to plug the exploration hole, a a description of each hole shall include the viscosity of the mud when the exploration hole reached bottom, the trade name of the plugging mud utilized, and the final viscosity of the plugging mixture.

001.04B2. When cement is used to plug the exploration hole, a description of the cement grout mixture shall be included.

001.05 The permittee shall furnish a list of surface owners, the holes drilled on each owner's land and the owner's address and telephone number.

002 In the case of closely spaced drill holes having similar geologic and hydrologic characteristics, the operator may, with the approval of the Director, submit a single consolidated final report including the locations of all mineral exploration holes, the plugging technique used and typical lithologic description. Upon request by the Department, the permittee shall make available any

additional information for any or all holes in the permit area.

003 All information and data submitted in the final report by the permittee shall be available for examination by the public except specifically identified information and data submitted in writing by the applicant as confidential concerning trade secrets as determined by the Director. Trade secrets as determined by the Director shall be held confidential for three years.

004 The report shall be signed by the operator conducting the exploration operation, attesting to the accuracy of the information contained therein.

Enabling Legislation: §§ 81-1505(9); 81-1505(16)

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Title 135 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 7 - FINANCIAL RESPONSIBILITY

001 General Requirements

001.01 Each application for a mineral exploration hole permit or a renewal shall be accompanied by a written estimate of the costs to undertake measures necessary to prevent contamination of ground water having 10,000 mg/l or less TDS during and after cessation of operations, including, but not limited to, the proper plugging of a hole(s).

001.02 After the submission of the estimate and as a prerequisite to commencing operations, the Department shall require the applicant to provide evidence, to its satisfaction, of financial responsibility that monies are available in an amount estimated by the Director to be sufficient to:

001.02A Undertake the measures specified in 001.01 above; and

001.02B Cover the additional estimated costs to the State which may arise from applicable public contracting requirements or the need to bring personnel and equipment to the permit area to complete the restoration after its abandonment by the permittee.

001.03 Each permittee shall keep its evidence of financial responsibility on file with the Department current and accurate. Any change in the form or nature of a permittee's method of maintaining the financial responsibility required shall be filed with and approved by the Department prior to any such change.

001.04 Evidence of financial responsibility does not operate to any extent as a limitation upon the obligation of the permittee to comply with its permit or complete any restoration.

001.05 Failure of the permit applicant to provide evidence of financial responsibility shall be sufficient cause for withholding issuance of a permit or the revocation of an existing permit.

002 Methods of Providing Financial Responsibility

The applicant shall choose among the following options in establishing financial responsibility:

002.01 A surety bond, payable to the State, and conditioned that, to the amount of such bond, the State shall be reimbursed for all costs arising in connection with the abandonment, default or other inability of the permittee to meet the requirements of these regulations and/or permit conditions and upon determination of forfeiture by the Director pursuant to section 005 below. The bond shall be executed by a responsible surety company authorized to do business in the State of Nebraska.

002.02 A collateral bond, in which case the applicant shall deposit, with a bank acceptable to

the Department, cash, negotiable bonds issued by the United States or the State; or negotiable certificates of deposit; or deliver to the Department an irrevocable letter of credit of any bank or other savings institution organized or transacting business in the United States. The bank shall receive and hold any collateral bond in the name of the State, in trust, for the purposes for which the deposit is posted. The applicant shall pay all costs of the trust, and shall be paid all interest accruing to the account of the trust.

002.03 Any combination of the above.

003 Terms and Conditions of the Bond

003.01 Replacement of Bonds

003.01A The Department may allow the permittee to replace an approved bond with another type of bond described in 002 above, if the liability which has accrued against the permittee on the permit area is transferred to such replacement bonds.

003.01B The Department shall not release existing bonds until the permittee has submitted and the Department has approved acceptable replacement bonds.

003.02 Surety bonds shall be subject to the following conditions:

003.02A The bond may be subject to cancellation by the surety company; provided that, no such cancellation, nor release of the surety company's liability under the bond, shall be effective sooner than one hundred twenty days following receipt by the Department and the permittee of written notice of cancellation sent by certified mail, return receipt requested. Such one hundred twenty day period shall be measured from the later of the receipt by the Department or permittee of such notice. In the event of cancellation, the permittee must provide a replacement bond in accordance with subsection 003.01 no later than forty-five days prior to the effective date of cancellation specified in the notice. Failure of the permittee to obtain a replacement bond shall result in revocation of its bond.

003.02B The bond shall provide that the surety and the permittee shall be jointly and severally liable to the amount of such bond.

003.02C The bond shall provide that:

003.02C1. The surety will give prompt notice to the permittee and the Department of any notice received or action filed alleging the insolvency or bankruptcy of the surety, or alleging any violation of regulatory requirements that could result in suspension or revocation of the surety's license to do business;

003.02C2. In the event the surety becomes unable to fulfill its obligations under the bond for any reason, notice shall be given immediately to the permittee and the Department; and

003.02C3. Upon the incapacity of a surety by reason of bankruptcy, insolvency or

suspension or revocation of its license, the permittee shall obtain a replacement bond within sixty days. Failure of the permittee to obtain a replacement bond shall result in revocation of its permit.

003.03 Collateral bonds, except for letters of credit, shall be subject to the following conditions:

003.03A The Department shall value collateral at its current market value, not face value; and

003.03B The Department shall only accept certificates of deposit which are automatically renewable.

003.04 Irrevocable letters of credit shall be subject to the following conditions:

003.04A The letter shall be payable to the State of Nebraska in part or in full upon demand and receipt from the Department of a notice or forfeiture pursuant to section 005.03 below;

003.04B The letter shall contain terms which authorize the Department to draw upon the letter, in full, to obtain cash collateral in the event the permittee has failed to furnish a replacement bond at least thirty days prior to the expiration of the letter; and

003.04C The total amount of letters of credit that will be accepted from any bank for any permittee, on all permits held by the permittee, shall not exceed the bank's maximum legal lending limit as required by the appropriate Nebraska or Federal banking regulatory agency.

003.04D The letter of credit shall provide that:

003.04D1. The bank shall give prompt notice to the permittee and the Department of any notice received or action filed alleging the insolvency or bankruptcy of the bank, or alleging any violations of regulatory requirements which could result in suspension or revocation to the bank's charter or license to do business;

003.04D2. In the event the bank becomes unable to fulfill its obligations under the letter of credit for any reason, notice shall be given immediately to the permittee and the Department; and

003.04D3. Upon the incapacity of a bank by reason or bankruptcy, insolvency, or suspension or revocation of its charter or license, the permittee shall obtain a replacement bond within sixty days. Failure of the permittee to obtain a replacement bond shall result in revocation of its permit.

004 Release of the Bonds

The permittee may file a request with the Department for the release of all or part of a bond. Following public notice, the Department shall release a bond, in whole or in part, when it is satisfied any restoration covered by the bond or portion thereof has been accomplished as required by these

regulations.

005 Forfeiture of Bonds

005.01 The Director shall declare all or any appropriate part of a bond for any permit as forfeited if the Department determines that:

005.01A The permittee has violated any of the terms or condiitons of the bond and has failed to take adequate corrective action; or

005.01B The permittee has failed to conduct its operations in accordance with the Nebraska Environmental Protection Act, these regulations and the permit within the time period required, and that it is necessary, in order to fulfill the requirements of the permit and any restoration, to have someone other than the permittee correct or complete such work.

005.02 The Director may withhold declaration of forfeiture if the permittee and surety, if any, agree to a compliance schedule to comply with the violations of the bond or permit conditions.

005.03 In the event a determination to forfeit bond is made, the Director shall:

005.03A Send written notification by certified mail, return receipt requested, to the permittee and the surety, if any, on the bond, of the Department's determination to forfeit all or part of the bond and the reasons for the forfeiture, including a finding of the amount to be forfeited;

005.03B The permittee may request a hearing on the issue of whether the bond shall be forfeited in accordance with the procedures specified in Neb. Rev. Stat. §§ 8101507(1) (2) and Title 115 of the Department's Rules of Practice and Procedure.
005.03C An appeal from a final decision of the Director shall be in accordance with Neb. Rev. Stat. §§ 81-1509.

Enabling Legislation: §§ 81-1505(9)(c)

Legal Citation: Title 135, Ch. 7, Nebraska Department of Environmental Control

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Title 135 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 8 - FEES

001 Permit Processing Fees

001.01 A fee shall be assessed from permit applicants to process, issue, modify or reissue permits. A permit shall not be issued to any applicant until the fees, assessed by the Department, have been paid.

001.02 In determining the fees, the Department shall calculate and itemize the direct costs associated with permit evaluation, processing, and monitoring, including application review, meetings and correspondence with the permit applicant, permit research and drafting time, necessary travel, technical and administrative review of the drafted permit, clerical preparation of the permit and related tasks, advertising costs for public notice, review of public comments on the draft permit, hearing costs, if applicable, permit processing fee billing, and final permit issuance. The Department shall apply the current indirect rate to the total direct wages and salary expenses recovered on a quarterly basis. This method is the approved agency-wide procedure for recovering indirect costs from its federal programs.

001.03 The Department shall maintain itemized records of staff time and costs incurred in the processing of a permit application. Permit processing fees shall apply without regard to whether a permit is issued, denied or requested to be inactivated prior to issuance or thereafter.

001.04 Each application for a new or reissued permit shall be accompanied by a filing fee of five hundred dollars.

001.05 All fees shall be made payable to the State of Nebraska and shall be paid within thirty days of receipt of the Department's billing statement. All fees shall be collected by the Department.

001.05A Where the fees assessed in accordance with 001.02 above are less than the filing fee set forth in 001.04 above, the Department shall refund the balance to the applicant.

001.05B Where the fees assessed in accordance with 001.02 above exceed the filing fee set forth in 001.04 above, the applicant shall be billed the balance.

002 Annual Permit Administration Fees

002.01 An annual administration fee shall be assessed to permittees based upon direct and indirect costs.

002.02 In determining the annual fees, the Department shall calculate and itemize the costs of monitoring, inspections or other site visits, reviewing the compliance to the associated permit

conditions, general legal costs incurred by the Department, or other tasks related to administering the permit program.

002.03 The Department shall maintain itemized records of staff time and costs incurred in the administration of a permit.

002.04 Permittees shall be billed quarterly. All fees shall be made payable to the State of Nebraska and shall be paid within thirty days of receipt of the Department's billing statement. Annual fees not received on the due date shall be subject to a late charge of Twenty-five Dollars and an additonal ten percent per month. All fees shall be collected by the Department. Failure of a permittee to pay the annual fee by the end of the fiscal year (June 30) is a violation of the permit and may result in the revocation of such permit.

003 The fees subject to this Chapter shall be applicable upon the effective date of these regulations.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1505(9)(b); 81-1505.01

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Title 135 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 9 - COMPLIANCE; ACTIONS TO ENFORCE, PENALTIES FOR NONCOMPLIANCE

001 Failure to comply with the requirements of these regulations may be grounds for administrative enforcement proceedings as provided in Neb. Rev. Stat. §§ 81-1507, or penalties in proceedings brought in the discretion of the county attorney or Attorney General pursuant to Neb. Rev. §§ 1508.

Enabling Legislation: §§ 81-1507; 81-1508

Legal Citation: Title 135, Ch. 9, Nebraska Department of Environmental Control

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Title 135 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 10 - SEVERABILITY

001 If any clause, paragraph, subsection or section of these regulations shall be held invalid, it shall be conclusively presumed that the Environmental Control Council would have enacted the remainder of these regulations not directly related to such clause, paragraph, subsection or section.

Enabling Legislation: §§ 81-1505(17); 84-906

Legal Citation: Title 135, Ch. 10, Nebraska Department of Environmental Control

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Title 135 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 11 - APPEALS

001 Any appeal from any final order or final determination of the Director shall be pursuant to Neb. Rev. Stat. §§ 81-1509 (Reissue 1981)

Enabling Legislation: §§ 81-1509

Legal Citation: Title 135, Ch. 11, Nebraska Department of Environmental Control

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Title 135 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 12 - AMENDMENT OR REPEAL

001 These rules and regulations may be amended or repealed pursuant to Chapters 65 through 68 of the Department's Rules of Practice and Procedure which procedure shall in all respects conform to Neb. Rev. Stat. §§ 81-1505 and §§ 84-901 through 84-919.

Enabling Legislation: §§ 81-1505; 84-901 through 84-919

Legal Citation: Title 135, Ch. 12, Nebraska Department of Environmental Control

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Rules and Regulation Page

For more information, contact
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Nebraska Department of Environmental Quality
1200 "N" Street, Suite 400
PO Box 98922
Lincoln, NE 68509
(402)471-2186 fax: (402)471-2909

Appendix G
Nebraska Department of Environmental Quality
Permit for Class I Non- Hazardous Waste Injection Well
Permit NE0206369

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STATE OF NEBRASKA

Mike Johanns
Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY
Suite 400, The Atrium
1200 'N' Street
P.O. Box 98922
Lincoln, Nebraska 68509-8922
Phone (402) 471-2186

COPY

Mr. Steve Collings, President
Crow Butte Resources, Inc.
1670 Broadway, Suite 3450
Denver, Colorado 80202

Dear Mr. Collings:

Pursuant to the Nebraska Environmental Protection Act, Neb. Rev. Stat. Secs. 81-1501, 81-1502, 81-1504 through 81-1510 and 81-1527 (Reissue 1994), the Nebraska Administrative Procedure Act (Reissue 1987, cum. supp. 1992), and the Nebraska Department of Environmental Quality Title 122, Rules and Regulations for Underground Injection and Mineral Production Wells, we are modifying and enclosing to Crow Butte Resources, Inc. Underground Injection Control Permit Number NE0206369 for the Class 1 non-hazardous waste injection well.

The permit for Underground Injection includes standard and specified conditions, which must be followed to remain in compliance with the aforementioned Statutes and Rules and Regulations. Monitoring and testing reports are required on a periodic basis, and are set forth in specific conditions of the permit.

Issuance of the modified Class 1 injection well permit is in accordance with expected activities at the Crow Butte Uranium Facility, which currently operates within conditions set forth in Underground Injection Control Permit Number NE0122611. Crow Butte Resources, Inc. will remain responsible for conditions set forth in existing, current permits, and all other duties and responsibilities under the Nebraska Environmental Protection Act, as amended, or any Rules and Regulations promulgated pursuant thereto.

Sincerely,

Michael J. Linder
Director

ML/DLM/rd
cbr/clas1/permit/revis00.doc

NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY
PERMIT FOR CLASS 1 NON-HAZARDOUS WASTE INJECTION WELL

In compliance with the Nebraska Environmental Protection Act, Neb. Rev. Stat. Secs. 81-1501, 81-1502, 81-1504 through 81-1510 and 81-1527 (Reissue 1994), the Nebraska Administrative Procedure Act (Reissue 1987, cum. supp. 1992), and the Nebraska Department of Environmental Quality Title 122, Rules and Regulations for Underground Injection and Mineral Production Wells,

Crow Butte Resources, Inc.
1670 Broadway, Suite 3450
Denver, Colorado 80202
(303) 830-3549

is authorized to operate a Class 1 non-hazardous waste injection well associated with an in-situ uranium mining operation. The formation receiving injected waste fluids shall be restricted to the Morrison and Sundance Formations, Jurassic Age Formations, which have been demonstrated to be located below the lowermost underground source of drinking water. In addition, the Morrison and Sundance Formations exhibit water quality that is not considered under State and Federal Regulations to be underground sources of drinking water due to measured concentrations of their total dissolved solids.

Crow Butte Resources, Inc. currently operates the in-situ commercial uranium facility (Crow Butte facility) near Crawford, Nebraska. The mailing address and telephone number for the facility is P.O. Box 169, Crawford, Nebraska 69339, (308) 665-2215.

The injection well is located in the Northwest Quarter of Section 19, Township 31 North, Range 51 West, Dawes County, Nebraska. All injection, testing, monitoring, and reclamation activities will be conducted in accordance with requirements and conditions set forth in parts herein.

Financial surety has been established to cover costs associated with administration, operation, abandonment, and reclamation of the well as required in Nebraska Title 122, Rules and Regulations for Underground Injection and Mineral Production Wells, Chapter 37.

The permittee shall comply with all conditions in this permit, State and Federal regulations governing Class 1 non-hazardous waste injection wells, and the requirements of the Nebraska Department of Environmental Quality.

This Revised permit became effective on October 30, 2000 and shall remain effective through September 29, 2004, unless it is revoked and reissued, or terminated. This permit is hereby modified to include adjustments to parameter limitations reflective of current and anticipated operations at the facility.

Signed this 30th day of October 2000

Michael J. Linder
Director

Part I. SPECIFIC PERMIT CONDITIONS

A. General Description of Permitted Activity

1. This permit is for a Class 1 non-hazardous waste injection well located in the SE¼, NW¼, Section 19, Township 31 North, Range 51 West, Dawes County, Nebraska.

2. This permit is for a Class 1 non-hazardous waste injection well associated with an in-situ uranium facility. The uranium facility produces a volume of wastewater in excess of what can be re-introduced to the ore zone as part of the mining and restoration activities. The operation of the injection well allows for disposal of excess wastewater and may eliminate the need for additional evaporation ponds. The rate of injection will generally be constant on a daily basis, but may vary depending on processing operations at the Crow Butte facility. The wastewater will be pumped into the injection well, and introduced into the Morrison and Sundance Formations at depths approximately 3,528 to 3,855 feet below Kelly Bushing (12 feet above ground elevation). Continuous recording devices will be installed to monitor injection pressure, flow rate and volume, and the pressure on the annulus between the tubing and the long string casing. The injection pressure at the wellhead plus the hydrostatic pressure will not exceed the fracture pressure of the injection zones. The Mechanical Integrity of the injection well will be demonstrated at least once every two years during the life of the well as required in Nebraska Title 122, Chapter 16.

3. This permit does not authorize any wastewater discharge to the land surface or to surface waters of the State of Nebraska. Wastewater that is to be discharged to the surface will be regulated under a separate permit.

B. Notice of Intent to Operate

Prior to operation of the injection well the permittee must submit a notice of completion of construction to the Director containing the following information:

1. A well completion report for the injection well.

2. A diagram of the as-built construction of the injection well.

3. Physical and Chemical data needed to calculate or demonstrate the integrity and validity of the injection well operation. Such data include but may not be limited to:
   a. The physically determined values for Transmissivity and Hydraulic Conductivity of the Morrison and Sundance Formations.

   b. The physical determination of the Total Dissolved Solids (TDS) content of the Morrison and Sundance Formations.

   c. The physically measured values for the temperature and formation pressure of the Morrison and Sundance Formations.

   d. Delineation of the actual confinement interval established from designation of recognized formation log tops.

4. Calculations for: Pressure Increase Due to Injection, Theis Equation Calculations, Radius of Fluid Displacement, Maximum Surface Injection Pressure, Morrison and Sundance Formation Fracture Pressure, Anticipated Surface Injection Pressure, and Radius of Pressure Response for the injection well and receiving formations utilizing the physically measured and determined values in parts (B) (1.), (2.), and (3.) above.

5. A precalculated amount of cement necessary to complete the well along with well records demonstrating the presence of adequate cement to prevent fluid migration behind casing.

6. The results of testing which demonstrate the mechanical integrity for the injection well by:

   a. Setting a packer immediately above the completion interval and a packer or well head at ground surface. The space between the two will then be pressurized to at least 125% of maximum operating pressure specified in Part II, C of this permit. The pressure must be held for a period of at least 20 minutes maintaining 90% of the original pressure to pass the test.

   OR

   b. Putting on an air tight well head and pressurizing the well with air to force the water column down the casing to a level where the air pressure is equal to 125% of the maximum operating pressure. The air pressure will be maintained and observed for a period of 20 minutes. The pressure must be held for a period of 20 minutes maintaining 90% of the pressure to pass the test.

7. An evaluation of the compatibility of the proposed injection fluids with fluids in the proposed injection horizons (under prevailing physical conditions).

8. In addition the permittee shall have available on site for review upon request any other pertinent information which they have compiled, such as:

   a. All available geological and geophysical logging and testing on the well.

   b. The results of the formation testing program.

   c. Compatibility of injected materials with fluids in the injection zones and the minerals in both the injection zones and the confining zone; or,

   d. Information that the Director may require in consultation with the permittee.

Part II. INJECTION LIMITATIONS, MONITORING, REPORTING, AND TESTING REQUIREMENTS

A. The permittee is authorized to inject non-hazardous liquid waste consisting of process wastewater and restoration water generated in Nebraska at a Crow Butte Uranium facility. Injection of wastes generated at other facilities is prohibited.

B. Such injection shall be controlled, limited, and monitored by the permittee as specified in this permit. All monitoring reports are to be submitted to the Nebraska Department of Environmental Quality no later than 28 days after the last day of the month for which the monitoring data are being reported. Monitoring reports and other information required by this permit shall be directed to:

Nebraska Department of Environmental Quality
UIC Program, Ground Water Unit
Suite 400, The Atrium
1200 "N" Street
P.O. Box 98922
Lincoln, Nebraska 68509-8922

C. Operational Parameters and Limitations

Injection and Operational Parameters	Injection or Parameter Limitation	Measurement or Sample Frequency	Reporting Requirements	Analysis or Measurement Type
Injection Pressure (pounds per square inch gauge)	650 psig	N/A	Monthly	Continuous Recording Device
Maximum Daily Injection Volume (gallons per day)	Report	N/A	Monthly	Continuous Recording Device
Maximum Daily Injection Rate (gallons per minute)	Report	N/A	Monthly	Continuous Recording Device
Average Daily Injection Rate (Annualized) (gallons per minute)	Report	N/A	Monthly	Continuous Recording Device
Minimum Allowable Operating Annulus Pressure (pounds per square inch gauge)	150 psig Above Injection Pressure	Daily	Monthly	Gauge or Continuous Recording Device
Calcium	Report	Weekly	Monthly	Monthly Composite
Chloride	40,000 mg/l	Weekly	Monthly	Monthly Composite
Sulfate	10,000 mg/l	Weekly	Monthly	Monthly Composite
Sodium	40,000 mg/l	Weekly	Monthly	Monthly Composite
Alkalinity	4,100 mg/l	Weekly	Monthly	Monthly Composite
pH (Standard Units)	5.0 – 9.5*	Weekly	Monthly	Monthly Average
Radium	5,000 pCi/l	Weekly	Monthly	Monthly Composite
Uranium	25 mg/l	Weekly	Monthly	Monthly Composite
Vanadium	50 mg/l	Weekly	Monthly	Monthly Composite
Arsenic	5 mg/l	Weekly	Monthly	Monthly Composite
Barium	100 mg/l	Weekly	Monthly	Monthly Composite
Cadmium	1 mg/l	Weekly	Monthly	Monthly Composite
Chromium	5 mg/l	Weekly	Monthly	Monthly Composite
Lead	5 mg/l	Weekly	Monthly	Monthly Composite
Mercury	0.2 mg/l	Weekly	Monthly	Monthly Composite
Selenium	1 mg/l	Weekly	Monthly	Monthly Composite
Silver	5 mg/l	Weekly	Monthly	Monthly Composite

* The injection of wastewater may be accompanied with the addition of an anti-scalant and/or biocide to inhibit precipitates and scale from developing in the injection well.

Samples taken in compliance with the injection requirements specified above shall be taken at the following locations:

Injection fluid; at a sampling outfall between the processing plant and the injection well.

Samples shall be analyzed in accordance with Part IX. Y. of this permit.

D. The monthly average, maximum and minimum values taken from the continuous recordings for the month for injection flow rate and volume, wellhead annulus pressure and wellhead injection pressure shall be reported in the monthly monitoring report submitted to the NDEQ.

E. The monitoring of the pressure buildup in the injection zones and the static fluid level shall be conducted annually including, at a minimum, a shut down of the well for a time sufficient to record the formation pressure in the injection interval, and conduct a valid observation of the pressure fall-off curve for the injection interval. A plan for this test shall be submitted to the NDEQ for review and approval prior to conducting the test. The test shall not commence until approval of the test plan has been obtained from the NDEQ. The test results and interpretation of this test shall be submitted to the NDEQ within thirty (30) days of completion of the test.

F. The following shall also be reported to the NDEQ by the permittee:

1. Any well treatment procedures used, including those associated with normal maintenance and malfunction correction, and all well workovers shall be reported to the NDEQ within thirty (30) days of completion. A well treatment plan or workover plan shall be submitted to the NDEQ for review and approval prior to commencement of a well treatment or workover. No well treatment or workover shall commence until the permittee has obtained approval for the well treatment or workover plan from the NDEQ.

2. Immediate notification to the NDEQ of all spills associated with the operation of the injection well or its appurtenances.

3. The results and interpretation of mechanical integrity tests and any other tests or logs of the injection well or injection zones within thirty (30) days of completion.

4. A written description and explanation of any noncompliance with operating limitations as specified by this permit for wellhead injection pressure, injection flow volume, or injection limits occurring during the month being reported shall be submitted with the monthly monitoring report.

5. When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the NDEQ, the permittee shall submit such facts or corrected information to the NDEQ within five (5) days of becoming aware of the circumstances.

Part III. MECHANICAL INTEGRITY TESTING

A mechanical integrity test (MIT) to check for internal mechanical integrity shall be conducted at least once every two (2) years. The internal MIT is to check for significant leakage in the casing, tubing, and packer. Whenever the NDEQ believes that because of a downhole problem the continued use of the well constitutes a threat to human health, or the fresh and/or usable waters or the soils of the State, or the release of injected fluid into an unauthorized zone is occurring, the permittee shall be required to immediately cease injection and conduct a MIT. If determined necessary by the NDEQ, a MIT shall be conducted when there has been a well workover. A MIT plan shall be submitted to the NDEQ for review and approval prior to conducting any MIT. No MIT work shall commence until approval of the MIT has been obtained from the NDEQ. The internal MIT shall be witnessed by the NDEQ. If the well fails an MIT, the requirements of Section IV. Part B. of this permit shall be implemented by the permittee. The results and interpretation of a MIT shall be submitted to the NDEQ within thirty (30) days of test completion.

Part IV. ANNULUS PRESSURE DECLINE, ANNULUS LIQUID LOSS, ANOMALOUS OPERATIONAL DATA, LOSS OF MECHANICAL INTEGRITY

A. If the annulus pressure declines 20% or more below normal operating pressure, or loss of annulus liquid indicating a loss of mechanical integrity occurs, or anomalous operational data indicating a loss of mechanical integrity occurs, the permittee shall notify the NDEQ within twenty-four (24) hours of becoming aware of the circumstances, and the permittee shall immediately investigate and identify the cause of the annulus pressure decline, annulus liquid loss or anomalous operational data. The results of this investigation shall be reported to the NDEQ within twenty-four (24) hours of completion. If the well appears to be lacking mechanical integrity, the permittee shall:

1. Immediately cease injection of waste fluids;

2. Take all steps required by the NDEQ to determine the presence or absence of mechanical integrity. If the well is determined to have mechanical integrity, injection may resume after the permittee has obtained authorization from the NDEQ to resume injection.

B. If a loss of mechanical integrity is determined pursuant to Part III of this permit, the permittee shall:

1. Immediately cease injection of waste fluids;

2. Notify the NDEQ within twenty-four (24) hours of the determination;

3. Take all steps determined necessary by the NDEQ to determine whether there may have been a release of injection fluids into any unauthorized zone. This may include the need for an external MIT to check for significant fluid movement through vertical channels adjacent to the wellbore. If there is evidence there may have been a release into an unauthorized zone, the permittee shall verbally notify the NDEQ within twenty-four (24) hours of determination. A written notice shall also be provided to the NDEQ within five (5) days of the determination including a report describing all aspects of the release;

4. Comply with any immediate corrective or remedial action specified by the NDEQ. If it is determined necessary by the NDEQ, the permittee shall submit to the NDEQ a remediation and corrective action plan and implementation schedule for review and approval. Work shall not commence until approval of the remediation and corrective action plan has been obtained from the NDEQ;

5. Restore and demonstrate mechanical integrity to the NDEQ. A plan for any well workover or mechanical integrity test shall be submitted to the NDEQ.

6. Resume injection only upon authorization from the NDEQ.

Part V. PLUGGING, ABANDONMENT

A. The well shall be plugged and abandoned upon reaching the end of its useful life or when determined necessary by the NDEQ to protect human health, or the fresh and/or usable waters or soils of the State. The permittee shall notify the NDEQ at least sixty (60) days prior to plugging and abandonment of the well. In addition to the notice, the permittee shall submit a plugging and abandonment plan to the NDEQ for review and approval. The permittee shall conform to all plugging and abandonment requirements of State and Federal regulations and the NDEQ. The well shall be plugged in a manner that will not allow the movement of fluids into or between sources of fresh and/or usable water or allow the movement of injected fluids out of the injection zones. Plugging and abandonment work shall not commence until approval of the plugging and abandonment plan has been obtained from the NDEQ. The report of plugging and abandonment and related information shall be submitted to the NDEQ within thirty (30) days after completion of the plugging operation.

B. The permittee shall reclaim all disturbed land surfaces to conserve the soil and water resources in the affected area of the injection well. The USDA Soil Conservation Service shall be consulted for technical assistance in reclaiming the land surface. Topsoil shall be reapplied to the natural contoured surface of the land, and the soils re-seeded with an appropriate seed mixture.

Part VI. FINANCIAL RESPONSIBILITY FOR PLUGGING AND ABANDONMENT

The permittee shall maintain financial responsibility and financial resources to close, plug, and abandon the injection well and appurtenances in a manner required by the NDEQ. This requirement includes the costs for reclaiming disturbed land surfaces associated with the injection well. The permittee currently demonstrates financial assurance through the use of an irrevocable standby letter of credit. Financial assurance documents shall be revised and updated when required by the NDEQ.

Part VII. CONSTRUCTION REQUIREMENTS

A. The well shall be cased and cemented such that: 1) injected fluids and fluids in the injection zones or other formation fluids do not cause deterioration of the water quality of fresh and/or usable water zones, 2) the loss of fresh and/or usable water due to downward migration is prevented, 3) the release of injected fluids into an unauthorized zone is prevented, and 4) corrosion will be prevented from compromising these measures.

B. Borehole, casing, tubing and cement specifications for injection well:

Bore Hole Size	Casing or Tubing Size & Material	Weight lbs/ft	Casing Seat Depth	Type of Cement & Additives	Minimum Number of Sacks of Cement*
14¾"	10¾"	40.5	824'	Lite + 50/50 Pozmix	382
9 7/8"	7"	23.0	3925'	Lite + 50/50 Pozmix	719
N/A	2 3/8" to 5 ½"	as appropriate	N/A	N/A	N/A

Packer Type: Baker Model A-3, AL-2 or equivalent
Packer Seating Depth: 3450 to 3510 feet'
*May be converted to barrels.
N/A = Not Applicable

C. Type of Annulus Fluid: Brule or Chadron Formation water containing scaling and corrosion inhibitors. Minimum Operation Annulus Pressure: 150 PSIG above injection pressure.

D. Injection fluids will be introduced into the Morrison and Sundance Formations through perforations in the casing from 3528 to 3855 feet. All depths indicated have been measured below the land surface from 12 feet above ground elevation (Kelly bushing) at the injection well.

Part VIII. SPILL PREVENTION AND CONTAINMENT

The injection well will be equipped with high level sensing instruments as a means of spill prevention. Lined ponds will be used for spill containment. The lined ponds must be constructed as per the requirements of the NDEQ, and must be approved prior to construction and operation.

Part IX. STANDARD PERMIT CONDITIONS

A. Duty to Comply: The permittee shall comply with all conditions of this permit, Federal and State laws and regulations. Any permit noncompliance constitutes a violation of the appropriate act or regulations, and is grounds for enforcement actions or for permit termination, revocation and reissuance, modification, or denial of a permit renewal application.

B. Duty to reapply: If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. An application to renew this permit shall be filed with the NDEQ at least one hundred eighty (180) days prior to its expiration date.

C. Duty to Cease or Reduce Activity: It shall not be an acceptable defense for a permittee in an enforcement action to declare or claim that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. Duty to Mitigate: The permittee shall take all reasonable steps to minimize or correct any adverse impact to the environment resulting from noncompliance with this permit, including additional monitoring as necessary to determine the nature and impact of a noncomplying discharge or injection, and the necessary actions to be taken based on monitoring.

E. Proper Operation and Maintenance: The permittee shall at all times properly operate and maintain all facilities and systems of monitoring, treatment, and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems when necessary to maintain compliance with the conditions of the permit.

F. Property Rights: This permit does not convey any property rights of any sort, or any exclusive privilege.

G. Duty to Provide Information: The permittee shall furnish to the NDEQ within a reasonable time, any information which the NDEQ may request to determine whether cause exists for modifying, revoking, reissuing or terminating the permit, or to determine compliance with this permit. The permittee shall also furnish to the NDEQ, upon request, copies of reports and information required to be kept by this permit.

H. Inspection and Right of Entry: The permittee shall allow the Director, or any authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this permit;

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

3. Inspect any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit;

4. Sample or monitor for the purpose of assuring permit compliance or as otherwise authorized by appropriate Rules and Regulations, any substances or parameters at any location.

I. Samples, Measurements, and Records:

1. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

2. The permittee shall retain records of all monitoring information, including calibration and maintenance records, and all continuous monitoring instrumentation records, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least five (5) years from the date of sample, measurement, report, or application. This period may be extended by request of the NDEQ at any time.

3. The permittee shall retain records concerning the nature and composition of all injected fluids until five (5) years after the completion of any plugging and abandonment procedures. The NDEQ may require the owner or operator to deliver the records to the NDEQ at the conclusion of the retention period.

4. Records of monitoring information shall include:

a. The date, exact place, and time of sampling or measurements;

b. The individual(s) who performed the sampling or measurements;

c. The date(s) analyses were performed;

d. The individual(s) who performed the analyses;

e. The analytical sampling and preservation techniques or methods used; and

f. The results of such analyses.

J. Signatory Requirements: All permit applications, reports required by this permit, or other information requested by the NDEQ shall be signed and certified in accordance with the requirements of Nebraska Title 122 Rules and Regulations for Underground Injection and Mineral Production Wells, Chapter 24.

K. Monitoring and Records: All monitoring requirements shall be in accordance with those stated in Nebraska Title 122, Rules and Regulations for Underground Injection and Mineral Production Wells, Chapter 18.

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of all the volume and nature of the monitored discharge or injection. All samples shall be taken at the monitoring points specified in this permit unless otherwise specified. Monitoring points shall not be changed without notification to and the approval of the NDEQ.

2. Mechanical Integrity

The permittee shall demonstrate mechanical integrity at least once every two years during the life of the well as required herein and in Nebraska Title 122, Chapters 16 and 18. The NDEQ shall be notified at least five days prior to any mechanical integrity testing.

L. Transfer of Permit: This permit is not transferable to any person except after notice and approval by the NDEQ. The NDEQ may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the appropriate Rules and Regulations. In some cases, modification and reissuance is mandatory. The existing permittee shall notify the NDEQ at least ninety (90) days in advance of the proposed transfer date. The notice shall include a written agreement between the existing and new permittee containing a specific date for transfer of permit responsibility, coverage and liability between them, and demonstrate that financial requirements will be met by the new permittee. The new permittee shall submit to the NDEQ at least ninety (90) days prior to the proposed transfer date a new permit application including the financial assurance documents guaranteeing that resources are available to properly plug, abandon, and reclaim the well and surrounding affected lands.

M. Emergency Reporting: The permittee shall verbally report to the NDEQ any noncompliance which may endanger human health or the environment within twenty-four (24) hours of becoming aware of the circumstances. A written submission shall also be provided within five (5) days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, corrective action taken, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. The permittee shall comply with any corrective or remedial action required by the NDEQ.

N. Operation Requirements:

1. The operator of the well shall not allow the movement of fluid containing any contaminant into any formation or aquifer not permitted to receive fluid by this permit. The operator shall have the burden of showing that the requirements of this paragraph are met.

2. If any water quality monitoring of an aquifer indicates the movement of any contaminant into any formation or aquifer not permitted to receive fluids by this permit, the operator shall take such action as required by the NDEQ, including taking the well out of service, closure of the well, or plugging and abandonment of the well.

O. Permit Modifications and Terminations: After notice and opportunity for a hearing, this permit may be modified, revoked and reissued, or terminated in whole or in part during its term for cause as provided, but not limited to those set forth in Nebraska Title 122, Chapter 27. The permittee shall furnish to the NDEQ, within a reasonable amount of time, any information which the NDEQ may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish, upon request, copies of all records required to be kept by this permit.

P. Severability: The provisions of this permit are severable, and if any provision of this permit and any circumstance is held invalid, the application of such provision to other circumstances and the remainder of the permit shall not be affected as stated in Nebraska Title 122, Chapter 40.

Q. Change in Wastestreams: Any facility changes or process modifications which may result in new, different or altered wastestreams or an increase in wastestream volumes or an increase in concentration of pollutants shall be reported to the NDEQ at least one hundred eighty (180) days before such changes.

R. Anticipated Noncompliance: If for any reason, the permittee will be unable to comply with permit requirements, the permittee shall give advance notice to the NDEQ. The notice shall include the reason for the anticipated noncompliance and a description of steps taken to reduce, eliminate, and prevent reoccurrence of the noncompliance. Upon receiving proper notice from the permittee, the NDEQ may grant for a specified time a temporary waiver to a permit requirement for the purpose of testing and treating the well, or for conducting a well workover, or to protect human health or the environment.

S. Plugging and Abandonment: Plugging and abandonment shall be done in accordance with Nebraska Title 122, Chapter 36. Prior to abandonment the permittee shall notify the Director seven days before commencing plugging and abandonment. Plugging shall conform to the following standards:

1. A plugging and abandonment plan shall be submitted to the NDEQ for approval. The permittee shall follow the plugging and abandonment plan as approved by the Director.

2. Prior to abandoning the injection well, the well shall be plugged with cement or other approved plugging material in a manner which will prohibit the movement of fluids out of the injection zones into or between underground sources of drinking water.

T. Financial Responsibility: The permittee shall secure and maintain in full force and effect at all times a performance bond or other form of financial security in a form acceptable to the Director. This bond or financial security will provide for proper plugging and abandonment of the injection well, and surface reclamation. This permit shall not become effective until the permittee secures a performance bond or other form of financial security acceptable to the Director in the appropriate amount.

U. Permit changes: This permit may be modified, revoked and reissued, or terminated for cause by the NDEQ (Nebraska Title 122, Chapters 27 and 28) or upon filing of a request by the permittee. The permittee shall furnish to the Director any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit. Such information may also be requested by the Director to determine compliance with the permit. Upon request by the Director, the permittee shall also furnish copies of records required to be kept by the permit.

V. Property Rights: The issuance of this permit does not convey any property right of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of a person's rights, nor any infringement of Federal, State, or local laws or regulations.

W. Confidential Information: Information determined by the Director to be confidential shall be managed in accordance with Nebraska Title 122, Chapter 25.

X. Averaging of Measurements: Calculations for all limitations which require averaging, shall utilize an arithmetic mean unless otherwise specified by the Director in this permit.

Y. Test Procedures: Test procedures for the analysis of pollutants which are required to be monitored by this permit, unless otherwise specified by the Director, shall conform to the latest edition of the following references:

1. Standard Methods for the Examination of Water and Wastewaters, 19th Edition, 1995, American Public Health Association. New York, NY 10019

2. A.S.T.M. Standards, Part 11, American Society for Testing and Materials, Philadelphia, PA 19103

3. Methods for Chemical Analysis of Water and Wastes, March 1979, Environmental Protection Agency Water Quality Office, Analytical Quality Control Laboratory NERC, Cincinnati, Ohio 45268

Appendix H
Nebraska Department of Environmental Quality
Authorization for Underground Injection and Mineral Production Wells
Permit NE0122611

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STATE OF NEBRASKA

DEPARTMENT OF ENVIRONMENTAL QUALITY
Suite 400, The Atrium
1200 'N' Street
P.O. Box 98922
Lincoln, Nebraska 68509-8922
Phone (402) 471-2186

COPY

Mike Johanns
Governor

Mr. Steve Collings, President
Crow Butte Resources, Inc.
1670 Broadway, Suite 3450
Denver, CO 80202

RE: Permit Number: NE0122611

Dear Mr. Collings:

Pursuant to the Nebraska Environmental Protection Act, Neb. Rev. Stat. Secs. 81-1501, 81-1502, 81-1504 through 81-1510 and 81-1527 (Reissue 1994), the Nebraska Administrative Procedure Act, Neb. Rev. Stat. Secs. 84-901 through 84-903, 84-905 through 84-920 (Reissue 1995) and the Nebraska Department of Environmental Quality, Title 122, Rules and Regulations for Underground Injection and Mineral Production Wells, we are modifying and enclosing to Crow Butte Resources, Inc. an Underground Injection Control (UIC) Permit for underground injection wells.

The enclosed modified UIC permit for Underground Injection and Mineral Production includes specific and standard conditions, which must be followed to remain in compliance with the requirements of the aforementioned Statutes and Rules and Regulations. Monitoring reports set forth in the standard conditions are required on a periodic basis.

Issuance of an UIC permit by the Department of Environmental Quality does not relieve Crow Butte Resources, Inc. of other duties and responsibilities under the Nebraska Environmental Protection Act, as amended, or any Rules and Regulations promulgated pursuant thereto.

Sincerely,

Michael J. Linder
Director

ML/dlm

Enclosure

DEPARTMENT OF ENVIRONMENTAL QUALITY
AUTHORIZATION FOR UNDERGROUND INJECTION AND MINERAL PRODUCTION WELLS

In compliance with the Nebraska Environmental Protection Act, Neb. Rev. Stat. Secs. 81-1501, 81-1502, 81-1504 through 81-1510 and 81-1527 (Reissue 1994) and the Nebraska Administrative Procedure Act, Neb. Rev. Stat. Secs. 84-901 through 84-903, 84-905 through 84-920 (Reissue 1995) and the Rules and Regulations pursuant thereto,

Crow Butte Resources, Inc.

is authorized to conduct a Class III uranium mining operation consisting of underground injection and mineral production wells. The injection and production shall be limited to the basal sandstone portion of the Chadron Formation using wells arranged in injection well patterns located in:

Township 31 North, Range 52 West, Section 11; S½NE¼, N½SE¼, SE¼SE¼: Section 12; SW¼,S½NW¼, NW¼SE¼,S½SE¼: Section 13; E½, E½NW¼, NE¼SW¼, NW¼NW¼: Section 24; NE¼NE¼: Township 31 North, Range 51 West, Section 18; SW¼, S½NW¼, NW¼NW¼, S½SE¼, NW¼SE¼: Section 19 all, Section 20; SW¼: Section 30; NE¼, NE¼SE¼, NE¼NW¼: and Section 29; W½, Dawes County, Nebraska.

These wells shall be located in a portion of the approximately 2840 acre Nebraska Department of Environmental Quality permit area boundary. The location of these wells shall be limited to the area shown on Figure 1 and shall not extend beyond that area. The permit also includes the area required for all monitor wells.

All mining, stabilization, restoration, and reclamation activities will be conducted in accordance with the monitoring requirements and other conditions set forth in parts hereof.

Financial Surety amounts for the commercial operation have been established to account for costs associated with the operation and decommissioning of the existing ponds, buildings, equipment, and well fields.

This permit became effective on April 23, 1990 and is hereby modified. This permit shall remain effective through the life of the facility, unless it is revoked and reissued, or terminated. The Director shall review the permit at least once every five years to determine whether it should be modified, revoked and reissued, terminated, or a minor modification made.

Signed this 9th day of March 2001

Michael J. Linder
Director

Part I. SPECIFIC PERMIT CONDITIONS

A. General Description of Permitted Activity

1. This permit is for a mining operation located in Township 31 North, Range 52 West, Section 11; S½NE¼, N½SE¼, SE¼SE¼: Section 12; SW¼, S½NW¼, NW¼SE¼, S½SE¼: Section 13; E½, E½NW¼, NE¼SW¼, NW¼NW¼: Section 24; NE¼NE¼: Township 31 North, Range 51 West, Section 18; SW¼, S½NW¼, NW¼NW¼, S½SE¼, NW¼SE¼: Section 19 all, Section 20; SW¼; Section 30: NE¼, NE¼SE¼, NE¼NW¼; Section 29: W½, Dawes County, Nebraska.

2. This permit is for an in-situ uranium mine comprised of approximately 2840 acres consisting of contiguous injection well patterns within the permit boundary. The production zone is the basal sandstone unit of the Chadron Formation. The top of this unit of the Chadron Formation ranges from an approximate depth of 800 feet at the southern permit boundary to 250 feet at the northern permit boundary. Elevations range from approximately 3040 feet to 3570 feet above mean sea level. Excess water withdrawal (lixiviant bleed) will provide control of leachate movement. Monitor wells will provide horizontal and vertical surveillance of ground water quality thereby demonstrating confinement. The mining consists of injection of a sodium carbonate/ bicarbonate solution along with an oxidant (oxygen or hydrogen peroxide) to the uranium-bearing formation through a pattern of injection wells. The uranium is solubilized by the lixiviant and this solution is pumped from the recovery wells to the processing plant where the uranium is extracted by ion exchange. The lixiviant is then reconstituted with leaching agents and recycled to the well field for reinjection. Ion exchange will be used in the processing plant and the yellow cake will be shipped from the facility.

B. Notice of Intent to Operate

Prior to operation of each mine unit or any part thereof the permittee must submit a notice of completion of construction to the Director with the following information:

1. A scaled map indicating the location of all monitoring, production, injection wells and known archeological sites.

2. A well completion report for all injection and/or production well(s).

3. A statement that each Class III well or group of wells utilizing a positive displacement pump shall be equipped with both high and low pressure safety switches which will shut down the pump in case of pressure increase over the authorized pressure or sudden pressure loss.

4. A well completion report for all monitor well(s).

5. The baseline sampling data used to determine the Upper Control Limits (UCLs) and the designation of these limits.

6. The baseline sampling data used to determine the restoration values and the permittee's recommendation for wells to be designated as restoration wells in that mine unit.

7. The results of testing which demonstrates the mechanical integrity for all wells by:

   a. Setting a packer immediately above the completion interval and a packer or well head at ground surface. The space between the two will then be pressurized to at least 125% of maximum operating pressure specified in Part II, A, 1 of this permit. The pressure must be held for a period of 20 minutes maintaining 90% of the original pressure to pass the test.

   OR

   b. The use of the casing cementing pressure/single point resistivity method of MIT for Class III uranium wells.

   In addition to either a or b the permittee shall also provide:

   c. A precalculated amount of cement/bentonite grout or bentonite grout to fill the annular space of the well along with well records demonstrating the presence of adequate grouting material to prevent fluid migration.

   AND

   d. Any other data gathered for the injection and production wells.

8. In addition the permittee shall have available on site for review upon request any other pertinent information which they have compiled, such as:

   a. All available geological and geophysical logging and testing on the well(s).

   b. The results of the formation testing program.

   c. Compatibility of injected materials with fluids in the injection zone and the minerals in both the injection zone and the confining zone.

Or so much of said information as the director may require in consultation with the permittee. The Notice of Intent to Operate for each mine unit or partial mine unit shall be submitted at least thirty days prior to any injection. Within thirty days from the receipt of the Notice of Intent to Operate the Director shall give written approval or state such steps necessary to receive approval.

C. **Liquid Waste Streams Resulting from the Permitted Activity Include**:

1. **Lixiviant Bleed** - excess fluid pumped from the well field to control lixiviant movement.

2. **Precipitation circuit bleed** - excess from ion exchange, elution, and precipitation.

3. **Filter backwash** - water used to remove solids from filters.

4. **Waste treatment brine** - reverse osmosis or other conventional waste water treatment processing wastes.

5. **Laboratory waste** - waste from routine chemical laboratory procedures and processes.

6. **Process building sump waste** - waste generated by general clean up of facilities, pump leakage, or wash down.

D. Disposal of Waste

1. All of the liquid waste streams shall be collected and retained in the lined evaporation ponds, or disposed of in a permitted deep disposal well as approved by the Department. This permit does not authorize any wastewater discharge to the land surface or surface water of the State of Nebraska. Land application or surface discharges of wastewater must be regulated through a separate permit.

2. Radioactive solids will be disposed of as per NRC License SUA-1534.

3. Nonradioactive solids - solid and semisolid wastes will be disposed of at a licensed landfill site in accordance with Neb. Rev. Stat. 81-1516 (Reissue 1994).

E. Development Drilling and Abandonment of Uncased Holes.

This permit allows development drilling within the permit area for the purpose of determining new mine unit locations. The permittee shall notify the Department at least ten (10) days prior to any development drilling within the permit area.

1. Upon completion of a development hole, the hole shall be plugged with an approved abandonment mud in a manner which will prohibit the movement of fluids out of the injection zone or between underground sources of drinking water. The product sheet must state the product is an abandonment mud (mud). The mud shall be mixed through a hopper and meet the following criteria:

   a. A viscosity of at least 20 seconds/qt. above the Total Depth (T.D.) viscosity to exceed 60 seconds/qt. (using a Marsh funnel), and

   b. A mud density of at least 8.7 lbs/gal.

   The mud shall be circulated through the hole until it is returning to surface. If the formation pressure is such that the density of the mud is not sufficient to hold the plug in place, an alternative abandonment method will need to be submitted to the Department for approval prior to abandoning the hole.

2. An approved hole plug shall be placed six feet below the land surface followed by cement which has been mixed with water to within two feet of the land surface. The top two feet of the hole shall be filled with dirt into which a hole marker, showing section, township, and range shall be placed.

3. The topsoil will be removed and stockpiled separately from the rest of the pit material. Upon completion of the hole the pit will be filled and the dirt mounded to allow for subsidence. The pit will then be leveled, topsoil replaced and the entire site reseeded with an approved seed mixture.

4. A hole abandonment report shall be included with the quarterly report. It shall include the T.D. viscosity (seconds/qt.), the abandonment viscosity (second/qt.), the mud density (lbs/gal.), and the amount and kind of approved abandonment product used to plug each hole.

Part II. INJECTION LIMITATIONS MONITORING REQUIREMENTS AND DETERMINATION OF RESTORATION

A. Injection Limitations

1. Injection Well Limitations

Commencing on the date of approval of the Notice of Intent to Operate and lasting through the permit expiration date the permittee is authorized to inject sodium carbonate/bicarbonate and an oxidant or a restoration reductant to the wells designated as injection wells. (See Notice of Intent to Operate.) Such injection shall be limited as specified in Tables 2.1 and 2.2:

TABLE 2.1: INJECTION WELL REQUIREMENTS

INJECTION CHARACTERISTICS	INJECTION LIMITATIONS	MONITORING REQUIREMENTS	
	Maximum Limits	Measurement Frequency	Sample Type
Well Head	100 PSIG	Once/day	Manifold Gauge
Injection Fluid			
Chloride	≤ 5000 mg/l	Once/day	24 Hr. Composite
Sulfate	≤ 5000 mg/l	Once/day	24 Hr. Composite
Sodium	≤ 6000 mg/l	Once/day	24 Hr. Composite
Alkalinity	≤ 4100 mg/l	Once/day	24 Hr. Composite
pH	6 ≤ pH ≤ 10.5	Once/day	Grab
Bleed Rate	None	Once/day	Totalizer Meter

TABLE 2.2: MINING REQUIREMENTS

INJECTION RATES		
Production Flow (maximum)	Restoration Flow (minimum)	Total Flow
4830 gpm	670 gpm	5500 gpm*

**The total injection rate at the facility shall be calculated using a 24-hr daily average.*

Sample(s) taken in compliance with the injection requirements specified in Tables 2.1 and 2.2 shall be taken at the following location(s):

a. Injection pressure; from a gauge on manifold.

b. Injection totalizer; from flow meter downstream of filters after chemicals are added but before oxidant addition.

c. Injection fluid; downstream from filter after chemicals are added but before oxidant addition.

2. **Mine Unit Limitations**

The permittee shall have no more than five mine units in the mining stage at any given time.

The permittee shall not have more than five mine units in restoration (excluding those units in stabilization) at any given time.

The permittee shall not have more than three mine units constructed in advance of the active mining.

3. **Archaeological and Historical Limitations**

The permittee shall not conduct mining activities or cause other modifications within a 100 foot radius of the six archaeological or architectural sites that could qualify for the national register without written approval from the Nebraska State Historical Society. This written approval must be supplied to the Department thirty days prior to any development or construction activity within the area. The permittee is responsible for any additional field investigations, which may be required for Historical Society approval. These six sites are listed and described in Subsection 4.8 of

Crow Butte Uranium Project
Application and Supporting Environmental
Report for State of Nebraska
Underground Injection Control Program
Commercial Permit
November 1987

as: 25DW112, 25DW114, 25DW192, 25DW194, 25DW198, and 25DW00-25

4. **Pump Test Limitations**

The permittee shall not construct any mine units outside the area of influence of the pump tests shown in Figure 2 of this permit. If mine units are required outside this area the permittee must conduct another pump test to demonstrate continued confinement and hydrologic conditions. The data from this test shall be submitted to the Department and receive approval prior to any construction.

B. Monitoring Requirements

1. Monitoring Wells

During the period beginning with approval of Notice of Intent to Operate and lasting through restoration and stabilization of a mine unit, the permittee shall monitor all wells designated as monitor wells as specified in Table 2.3:

TABLE 2.3: MONITORING WELL REQUIREMENTS

MONITORING REQUIREMENTS Upper Control Limit*				
Monitoring Characteristics	**Sampling Frequency**	**Single Parameter****	**Multiple Parameter****	**Sample Type**
Chloride	Biweekly	mg/l	mg/l	Grab
Sulfate	Biweekly	mg/l	mg/l	Grab
Sodium	Biweekly	mg/l	mg/l	Grab
Conductivity	Biweekly	umhos/cm	umhos/cm	Grab
Alkalinity (as $CaCO^3$)	Biweekly	mg/l	mg/l	Grab
Water Level	Biweekly	Reported to the nearest 0.1 foot from land surface.		
Barometric Pressure	Biweekly			

* *If a single parameter Upper Control Limit (UCL) is exceeded or if two or more multiple parameter UCLs are exceeded for a particular well, the permittee shall collect a verification sample within 24 hours from the time the first analysis is available. If the second sample does not indicate exceeded UCLs, a third sample shall be taken within 48 hours of the time the first sample was taken.*

If the second or third samples indicate an exceeded UCL, the well in question shall be placed on excursion status and monitored on a weekly basis. The permittee shall notify the Department by telephone within 24 hours from the time the confirmation sample was taken. The permittee shall mail to the Department the laboratory data from all the samples and a plan of corrective action. This data shall be postmarked within five days from the time the confirmation sample was taken. In the event neither the second nor third samples indicate exceeded UCLs then the well shall be returned to its regular sampling frequency.

At such time as three consecutive one-week samples are below the exceeded UCL, the excursion status shall be removed from the well. Weekly sampling shall continue for an additional three weeks. If the UCL is not exceeded then biweekly sampling shall resume. Should an excursion occur, a formal report shall be submitted with the quarterly report containing all lab data and the results of the corrective actions taken. If corrective actions have not been effective within 90 days of the excursion confirmation, the injection of fluid shall be terminated in the affected area. Resumption of injection shall require a written approval by the Director.

***Upon receipt of pertinent data and prior to operation, the UCLs for the monitor wells shall be calculated using one of the following methods:*

- *Determine the maximum recorded value from preoperational sampling and multiply the value by 1.20 to calculate the multiple parameter value.*

- *For those monitor wells where the baseline average of the indicator parameter is 50 mg/l or less, the multiple parameter UCL shall be calculated as equal to 20 percent above the maximum concentration measured for the parameter, baseline average for the parameter plus 5 standard deviations, or baseline average plus 15 mg/l.*
- *Multiply the multiple parameter value by 1.20 to calculate the single parameter value.*

These values will be rounded off to the nearest unit.

Sample(s) taken in compliance with the monitoring requirements specified above shall be taken at the well head.

2. Evaporation Ponds

Upon initial pond operation and until approval of the Director to cease, the permittee shall monitor the evaporation pond leak detection systems and the evaporation pond freeboards as specified in Table 2.4:

TABLE 2.4: EVAPORATION POND REQUIREMENTS

MONITORING CHARACTERISTICS	SAMPLING FREQUENCY
Fluid Level	Weekly*
Freeboard	Weekly

**Upon determination of elevated fluid levels or other conditions indicative of a leak into the underdrain system, the permittee shall notify the Department immediately and conduct daily monitoring until occurrences causing the leaks into the underdrain system have been corrected, and the results from daily monitoring or sample analyses substantiate the corrective actions. Such information shall be reported to the Department. If corrective actions require the pumping of the contents of one evaporation pond into another, the minimum freeboard levels are waived until such time as the corrective actions have succeeded, and the evaporation pond can be placed back into service.*

Measurements taken in compliance with the monitoring requirements specified in Table 2.4 shall be taken from the detection system and at the pond.

With the exception of specific monitoring requirements in this permit, all monitoring of the ponds and the detection systems shall be in accordance with the NRC License SUA - 1534.

Upon initial pond operation and until approval of the Director to cease the permittee shall monitor the evaporation pond monitor well(s) as specified in Table 2.5:

TABLE 2.5: EVAPORATION POND MONITORING WELL REQUIREMENTS

MONITORING CHARACTERISTIC		SAMPLING FREQUENCY	SAMPLE TYPE
Conductivity	umhos/cm	Quarterly	Grab
Chloride	mg/l	Quarterly	Grab
Alkalinity (as $CaCO^3$)	mg/l	Quarterly	Grab
Sodium	mg/l	Quarterly	Grab
Sulfate	mg/l	Quarterly	Grab

Sample(s) taken in compliance with the monitoring requirements specified in Table 2.5 shall be taken at the well head.

C. Restoration Determination

Upon construction of a new mine unit the permittee shall designate and sample one baseline restoration well per four acres within the mine unit for all the parameters listed in the restoration table (Table 2.6). All the premining sampling must be at least 300 ft. from any active mine unit (not to include the R&D well field).

1. Designation of Restoration Wells

Within each mine unit a minimum of one injection or production well per acre shall be designated as a restoration well. There shall be a minimum of ten restoration wells per mine unit. The production well of each standard injection well pattern shall be designated as the restoration well. If there is more than one standard injection well pattern per acre, the production or injection well which is centrally located shall be designated as the restoration well. Any monitor well which has an excursion will automatically become an additional restoration well. The designation of the baseline restoration wells must be included with the Notice of Intent to Operate for the mine unit. The designation of the remaining restoration wells shall be included in the restoration plan submitted for that mine unit.

2. Establishment of Restoration Parameters

a. Those parameters which have numerical ground water standards established in Title 118 or other established documents must be restored to the standard value unless the standard is exceeded by the mean of the preoperational sampling values (baseline mean). The restoration value for parameters whose baseline mean exceeds the standard shall be equal to the mine unit mean plus two standard deviations (see Table 2.6).

b. If no standard exists for a parameter listed on the restoration table (Table 2.6), a wellfield average of the preoperational sampling data shall be assigned. Normal statistical procedures will be used to obtain this average. All three values obtained from Part II, C. shall be averaged to obtain the assigned restoration value (see Table 2.6).

c. Prior to any mining in the mine unit the permittee must submit these values to the Department for approval. All data to verify the selection of these wells shall be submitted.

TABLE 2.6: RESTORATION TABLE

PARAMETERS WITH GROUND WATER STANDARDS		PARAMETERS SET ON WELLFIELD AVERAGES
Element	**Standard**	**Element**
Ammonia (NH^4 as N)	10.0 mg/l	Calcium (Ca)**
Arsenic (As)	0.05 mg/l	Total Carbonate*
Barium (Ba)	1.0 mg/l	Potassium (K)**
Cadmium (Ca)	0.005 mg/l	Magnesium (Mg)**
Chloride (Cl)	250 mg/l	Sodium (Na)**
Copper (Cu)	1.0 mg/l	Total Dissolved Solids (TDS)***
Fluoride (F)	4.0 mg/l	
Iron (Fe)	0.3 mg/l	
Mercury (Hg)	0.002 mg/l	
Manganese (Mn)	0.05 mg/l	
Molybdenum (Mo)	1.0 mg/l	
Nickel (Ni)	0.15 mg/l	
Nitrate as N (NO^3)	10.0 mg/l	
Lead (Pb)	0.05 mg/l	
Radium (Ra)	5.0 pCi/l	
Selenium (Se)	0.05 mg/l	
Sulfate (SO^4)	250.0 mg/l	
Uranium (U)	5.0 mg/l	
Vanadium (V)	0.2 mg/l	
Zinc (Zn)	5.0 mg/l	
pH	6.5 – 8.5	

All parameters listed as parameters with numerical ground water standards (Title 118 or other sources) are subject to change based on the procedure outlined in Part II, C, 2 of this permit.

** Total carbonate shall not exceed 50% of the total dissolved solids value.*

*** One order of magnitude above baseline mean shall be used as a restoration value for some parameters due to the ability of some major ions to vary one order of magnitude depending on pH.*

**** The restoration value for Total Dissolved Solids shall be the baseline mean plus one standard deviation.*

3. Restoration Procedure

At the cessation of mining in each mine unit the permittee shall notify the Department in writing, and shall proceed to establish the post-mining water quality for all the parameters listed on the restoration table (Table 2.6) of this permit for the designated restoration wells. The permittee may accomplish this by collecting a sample of the lixiviant injected into the mine

unit to be representative of the post mining water quality. These samples may be split between a lab of the permittee's choice and a lab of the Department's choice.

The permittee shall submit in writing a restoration plan including a stabilization period of at least six months for that mine unit, and after Department approval shall commence restoration. Prior to approval of the restoration plan, the Department may require the installation of additional wells to evaluate the success of the restoration efforts. When the permittee determines that restoration is complete they shall sample and complete an analysis of all designated restoration wells for all the parameters listed in the restoration table. These samples must be split between a lab of the permittee's choice and a lab of the Department's choice. Results of these samples shall be submitted to the Department.

4. Restoration Determination and Stabilization

a. Restoration Parameters Achieved

If the restoration procedure has returned the wellfield average of the restoration parameters to concentrations at or below the parameters approved by the Department, the permittee shall notify the Department that they are initiating stabilization. This notification shall include data supporting the fact that the restoration parameters have been achieved. The Director shall respond in writing by either accepting or denying the initiation of stabilization. If at any time during stabilization the Director deems it necessary, he or she may extend the stabilization period by notifying the permittee in writing. During stabilization, the permittee will monitor all designated restoration wells on a monthly basis for all the parameters listed on the restoration table. At the end of the stabilization period, the permittee shall submit this data and may request that the wellfield be considered restored. The Director shall, in writing, extend the stabilization or, require further restoration, or accept the restoration of the mine unit.

b. Restoration Parameters Not Achieved

If the restoration parameters are not met after application of best available technology, the permittee shall provide for the Department's approval a written justification for alternate values.

This justification shall include all available water quality data for the mine unit in question, a narrative discussing the restoration techniques including demonstration of best available technology, and a justification of the need to alter the parameter(s). The adoption of an alternate value shall not in and of itself indicate a failure to successfully restore the mine unit.

In determining whether the restoration table (Table 2.6) should be altered the Department shall consider the following:

(1) Uses for which the ground water was suitable at baseline quality levels;

(2) actual existing use of the ground water in the area prior to and during the mining;

(3) potential for future use of the ground water at baseline quality and at proposed restoration parameters;

(4) the effort made by the permittee to restore the ground water to the restoration parameters;

(5) the availability of existing technology to restore the ground water to the restoration parameters; and

(6) the potential harmful effects of levels of particular parameters.

If the Department determines that:

(a) Reasonable efforts have been made giving consideration to (1) through (6) above; and

(b) the formation water present in the aquifer would be suitable for any use for which it was reasonably suited to prior to mining; or

(c) further restoration efforts would consume energy, water, or other natural resources of the State without providing a corresponding benefit to the State,

the Department may adopt the alternate value(s) and inform the permittee in writing.

If the Department determines, with cause, that alternate values are not justified, then written denial of alternate values shall be sent to the permittee. The permittee shall then submit a second restoration plan detailing further restoration and after approval, shall commence restoration.

When the permittee determines that subsequent restoration is complete the permittee shall sample and complete an analysis of all designated restoration wells for all the parameters listed in the restoration table. These samples shall be split between a lab of the permittee's choice and a lab of the Department's choice. Results of these samples shall be submitted to the Department. Restoration determination shall begin again as outlined in Part II. C.

PART III. WELL CONSTRUCTION, SPACING, SAMPLING AND REPORTING

A. Well Construction Requirements

All wells shall be constructed in accordance with Section 10.2 of:

Crow Butte Uranium Project
Application and Supporting Environmental
Report for State of Nebraska
Underground Injection Control Program
Commercial Permit
November 1987

or subsequent approved submittals.

1. General Requirements

a. Wells which are completed using bentonite grout as a sealing material must utilize a cement basket at or near the base of the casing to help support the column of grout. The casing shall extend as close to the bottom of the hole as possible before emplacement of the bentonite grout. In addition, placement of the bentonite grout must be accomplished through the use of a tremie pipe.

b. Any Injection/Production well which is completed or intended to be completed by underreaming the casing must use cement or cement/bentonite grout as a sealing material.

c. The permittee shall notify the Department at least five days prior to well construction. Each well must be shown to be functionally operational prior to its use.

d. All wells contructed are subject to the mechanical integrity requirements contained in sections I and IX of this permit. In addition to these requirements, any well which has had a rig workover performed on it must pass a mechanical integrity test prior to being placed back into service. Workovers performed with a pulling unit are exempt from this requirement.

2. Cement/Grout Specifications

a. All cement will be ASTM Type I, II or API Class B or G and meet the following criteria:

i. A density of no less than 11.5 lbs/gal.

b. A bentonite grout shall be mixed as close to possible to a concentration of 1.5 lb. bentonite per gallon of water (1 qt. polymer per 100 gallons of water may need to be premixed to prevent the clays from hydrating prematurely) and meet the following criteria:

i. A density of no less than 9.2 lbs/gal.

B. Spacing Requirements

1. Production Zone Monitoring Wells

Production zone monitor wells shall be screened through the entire aquifer thickness with a screen-to-blank ratio of at least 1.

Production zone monitor wells shall be spaced no greater than 300 feet from a mine unit and no greater than 400 feet between the wells and located so as to detect excursions.

2. Shallow Monitoring Wells

Shallow monitor wells shall be screened through the entire sand unit. The permittee shall notify the Department at least five days prior to well construction. The Notice of Intent to Operate shall include well completion reports for these wells. Approval of the initial well construction shall be given with the Notice of Intent to Operate. All wells must be shown to be functionally operational prior to initiation of the mining.

Shallow monitor wells shall be completed in the first continuous and water-bearing sandstone unit overlying the production zone. These wells shall be equally distributed throughout the mine unit, with one well for every four acres included in the mine unit.

C. Monitor Well Sampling Procedures

1. Mine Unit

a. Measure water level.

b. Pump or airlift to evacuate at least one casing volume and allow pH and conductivity to stabilize prior to sampling;

c. Samples shall be held field filtered and preserved in accordance with the U.S. Environmental Protection Agency's Approved Methods for Sampling and Sample Preservation of Water and Wastewater.

2. Evaporation Pond Monitoring Wells

a. Measure water level.

b. Pump, airlift or bail to evacuate at least one casing volume and allow pH and conductivity to stabilize prior to sampling.

c. Samples shall be held and preserved in accordance with the U.S. Environmental Protection Agency's Approved Methods for Sampling and Sample Preservation of Water and Wastewater.

D. **Preoperational Sampling of Newly Constructed Wells**

1. **Restoration Wells**

A minimum of one baseline restoration well per four acres will be sampled for all the parameters listed on the restoration table (Table 2.6). All premining sampling must be done at least 300 feet from any active mine unit (not to include R&D well field). Each well must be sampled a minimum of one time in a manner and at a depth representative of the aquifer to be affected by mining fluids in that area of the mine unit. If there are anomalous sample analyses within a mine unit the Department may require additional sampling prior to any mining in that particular mine unit.

2. **Monitor Wells**

All monitor wells shall be sampled for all the parameters listed on the restoration table (Table 2.6). All premining sampling must be done at least 300 feet from any active mine unit (not to include R&D wellfield). If there is a significant variability between samples the Department may require additional sampling prior to any mining in that particular mine unit.

E. **Reporting Requirements**

1. Reporting shall be done quarterly unless otherwise specified. Reporting periods shall be January-March, April- June, July-September, and October-December.

2. Reporting of monitoring results gathered during reporting periods shall be summarized and reported to the Department no later than the 28th day of the month following the end of the reporting period. Copies of the results shall be kept on site for inspection by the Department.

3. Quarterly reporting must be submitted on or before April 28, July 28, October 28, and January 28.

Signed copies of these reports shall be submitted to the Department at the following address:

Nebraska Department of Environmental Quality
P.O. Box 98922
Lincoln, NE 68509

IV. PLUGGING AND ABANDONMENT OF CASED HOLES

A. **General**

1. The proposed plugging and abandonment plan shall be submitted to the Department for approval. The Director will review any revised, updated, or additional plugging and abandonment plans.

2. Plugging and abandonment shall be done in accordance with Title 122 Chapter 36. Prior to abandonment the permittee shall notify the Director seven days before commencing plugging and abandonment.

3. Prior to abandonment, all wells shall be plugged with cement or other approved plugging material in a manner which will prohibit the movement of fluids out of the injection zone into or between underground sources of drinking water.

B. Cement Specifications

A cement or grouting material meeting the following specifications shall be used in all well completion procedures conducted under this permit:

1. All cement will be ASTM Type I, II or API Class B or G and have a minimum density of 11.5 lbs/gal.

2. All Bentonite grout will have a Marsh funnel viscosity which exceeds 60 seconds/qt, and a minimum density of 9.2 lbs/gal.

C. Surface Reclamation

The permittee shall reclaim all disturbed land surfaces to conserve the soil and water resources in the affected areas. The Natural Resources Conservation Service shall be consulted for technical assistance in reclaiming the land surface including appropriate seed mixtures. Topsoil from the ponds and building areas shall be removed, stockpiled, and seeded during the operation, and reapplied to the contoured surface. A total reclamation plan including the seed mixture will be submitted to the Department for approval at least 60 days prior to commencement of reclamation. Pond reclamation and decommissioning/decontamination shall be in accordance with NRC License SUA - 1534.

PART V. OTHER PERMITS AND LICENSES

The permittee shall have all other permits and licenses as required by the Department and other state, federal, or local agencies.

PART VI. CORRECTIVE ACTION

A. Lixiviant Movement

1. Increasing the overrecovery rate,

2. Reordering the wellfield,

3. Cease injection of lixiviant or whatever action is necessary to recall the lixiviant.

B. Shallow Aquifers

Anytime a shallow aquifer may be affected by a mining solution release, the permittee must submit a corrective plan of action to the Department for approval.

This plan should follow the steps outlined in NDEQ Title 118 – Ground Water Quality Standards and Use Classification, Appendix A.

C. **Surface Water**

Anytime surface water is affected by a mining solution release, the permittee must submit a corrective plan of action to the Department for approval.

PART VII. PERMIT DEFINITIONS

A. **Permit Area**

The area as shown in Figure 1.

B. **Mine Unit**

The area identified as a mine unit at the time of submittal of the Notice of Intent to Operate as approved by the Department.

C. **Application**

The document entitled, Crow Butte Uranium Project, Dawes County, Nebraska, certified November 9, 1987, meets the conditions of Chapter 11, Title 122, Rules and Regulations for Underground Injection and Mineral Production Wells.

D. **Zone of Endangering Influence**

That zone described in Title 122, Chapter 10, Part 001.02.

E. **Area of Review**

That area as shown in Figure 4.2-1 of the application as identified in Part VII. C..

PART VIII. FINANCIAL STATEMENT

Evidence of financial responsibility in the form of a letter of credit or other form satisfactory to the Department in accordance with Chapter 37, Title 122, Rules and Regulations for Underground Injection and Mineral Production Wells, shall be provided to the Department in an amount which is equal to or greater than the total costs indicated in the Surety Cost Estimate document submitted by the permittee. The Department shall review the financial responsibility annually to ensure its adequacy.

PART IX. STANDARD PERMIT CONDITIONS

A. **Monitoring and Records**

All monitoring requirements shall be in accordance with those stated in Title 122, Chapter 18.

1. **Representative Sampling**

Samples and measurements taken as required herein shall be representative of all the volume and nature of the monitored discharge or injection. All samples shall be taken at the monitoring points specified in this permit unless otherwise specified. Monitoring points shall not be changed without notification to and the approval of the Department.

2. **Mechanical Integrity**

The permittee shall demonstrate mechanical integrity at least once every five years during the life of the well(s) as required herein and in Title 122, Chapters 16 and 18. The Department shall be notified at least five days prior to any mechanical integrity testing.

3. **Test Procedures .**

Test procedures for the analysis of pollutants which are required to be monitored by this permit, unless otherwise specified by the Director, shall conform to the latest edition of the following references:

Standard Methods for the Examination of Water and Wastewaters, 18th Edition, 1992, American Public Health Association. New York, NY 10019

A.S.T.M. Standards, Part 11, American Society for Testing and Materials, Philadelphia, PA 19103

Methods for Chemical Analysis of Water and Wastes, March 1979, Environmental Protection Agency Water Quality Office, Analytical Quality Control Laboratory NERC, Cincinnati, Ohio 45268

4. **Additional Monitoring by the Permittee**

If the permittee monitors any parameter more frequently than required using approved testing procedures or procedures specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the Mining Monitoring Report. Such increased frequency shall also be indicated.

5. **Averaging of Measurements**

Calculations for all limitations which require averaging shall utilize an arithmetic mean unless otherwise specified by the Director in this permit.

6. **Retention of Records**

The permittee shall retain all records in accordance with Title 122, Chapter 18.

B. Plugging and Abandonment

Plugging and abandonment shall be done in accordance with Title 122, Chapter 36. Prior to abandonment the permittee shall notify the director seven days before

commencing plugging and abandonment activities. Plugging shall conform to the following standards:

1. A plugging and abandonment plan shall be submitted to the Department for approval.

2. Prior to abandonment of boreholes and wells, the boreholes and wells shall be plugged with cement or other approved plugging material in a manner which will prohibit the movement of fluids out of the injection zone into or between underground sources of drinking water.

C. Financial Responsibility

The permittee shall secure and maintain in full force and effect at all times a performance bond or other form of financial security in a form acceptable to the Director. This bond or financial security will provide for proper plugging and abandonment of the permitted wells, restoration of the aquifer, and surface reclamation. This permit shall become invalid if the permittee does not maintain a performance bond or other form of financial security acceptable to the Director in the appropriate amount.

D. Reporting Requirements

1. Evaporation Pond Operation

A minimum of five feet of freeboard shall be maintained in the commercial evaporation ponds during normal operations. A minimum of three feet of freeboard shall be maintained in the R & D ponds during normal operations. The permittee shall immediately notify the Department when the freeboard decreases to less than the specifications.

Should any abrupt change in the water depth occur or a leak be detected in the evaporation pond liner, the Department will be immediately notified. The pond fluids will be evacuated as soon as practicable to another location approved by the Director, and the pond seal repaired. A determination of the extent of any subsurface contamination shall be made and a report submitted to the Director within 30 days after the leak is detected. The report shall also contain the permittee's plan for corrective action.

All other reporting requirements shall be in accordance with Title 122, Chapter 19.

2. Signatory Requirements

All signatory requirements shall be in accordance with Title 122, Chapter 24.

3. Modification, Revocation, and Reissuance of Permit

Administer as required by Title 122, Chapter 27.

4. Permit Transfer

Administer as required by Title 122, Chapter 26.

5. **Confidential Information**

Address as required by Title 122, Chapter 25.

E. **General Conditions**

1. **Compliance**

Administer as required by Title 122, Chapter 39. It shall not be a defense for a permittee in an administrative enforcement action to claim that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of the permit.

2. **Duty to Mitigate**

The permittee shall take all reasonable steps to minimize or correct any adverse impact to the environment resulting from noncompliance with this permit, including accelerated or additional monitoring as necessary to determine the nature and impact of the noncompliance.

3. **Property Rights**

The issuance of this permit does not convey any property right of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of a person's rights, nor any infringement of federal, state or local laws or regulations.

4. **Severability**

Administer as required by Title 122, Chapter 40.

5. **Right of Entry**

Inspection and Right of Entry shall be in accordance with Title 122, Chapter 14.

6. **Maintenance**

The permittee shall at all times properly install, operate and maintain all facilities and systems of treatment and control (and related appurtenances) to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance.

7. **Permit Changes**

This permit may be modified, revoked and reissued, or terminated for cause by the Department (Title 122, Chapters 27 and 28) or upon filing of a request by the permittee. The permittee shall furnish to the Director any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit. Such information may also be requested by the Director to determine

compliance with the permit. Upon request by the Director, the permittee shall also furnish copies of records required to be kept by the permit.

F. General Definitions

All definitions except those listed below shall be those in Title 122, Chapter 1.

Abandonment Mud – A product made specifically for the abandonment of boreholes of wells.

Bentonite Grout - A slurry mixture comprised primarily of water and Bentonite (Montmorillonite) which is emplaced into the void space of boreholes, or annular space of wells, or internal volume of cased wells for purposes of consolidation and elimination of permeability.

Bimonthly - Once every other month.

Biweekly - Once every other week.

Cement - A slurry mixture comprised primarily of water and Portland Cement which is emplaced into the void space of boreholes, or annular space of wells, or internal volume of cased wells for purposes of consolidation and elimination of permeability.

Cement/Bentonite Grout - A combination of Cement and Bentonite to make a grout.

Composite Sample - A combination of individual samples obtained at regular intervals over a period of time. Examples include the volume of an individual sample proportional to a flow rate during a sample period (flow composite), or a constant volume sample collected at equal time intervals during a composite period (time composite).

Discharge - When used without qualification, means a discharge of a pollutant(s).

Excursion - The presence of an exceeded upper control limit contained in this permit.

Freeboard - The vertical distance between the normal operational level of the surface of a liquid and the top of the side walls in a conduit, lagoon cell, tank, or evaporation pond.

Lixiviant - Leach solution injected into the ore body which is used to oxidize, complex, and solubilize the uranium ore.

Mining Monitoring Report - The forms approved by the Director and used to report the monitoring results by the permittee.

Waters of the State - All waters within the jurisdiction of this state including streams, lakes, ponds, impounding reservoirs, marshes, wetlands, water courses, waterways, wells, springs, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface and underground, natural or artificial, public or private, situated wholly or partly within, or bordering upon the state.

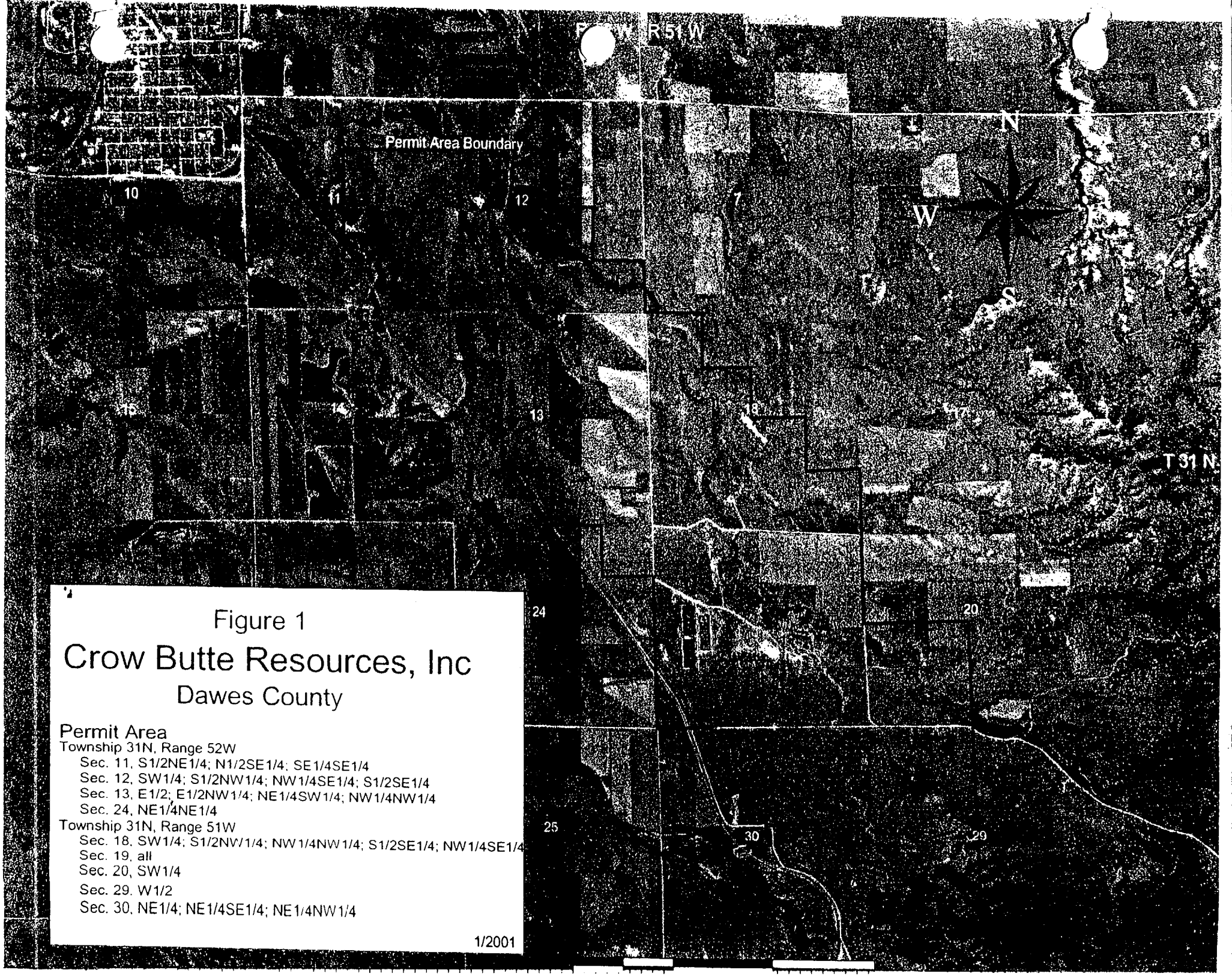

Figure 1

Crow Butte Resources, Inc

Dawes County

Permit Area

Township 31N, Range 52W

Sec. 11, S1/2NE1/4; N1/2SE1/4; SE1/4SE1/4
Sec. 12, SW1/4; S1/2NW1/4; NW1/4SE1/4; S1/2SE1/4
Sec. 13, E1/2; E1/2NW1/4; NE1/4SW1/4; NW1/4NW1/4
Sec. 24, NE1/4NE1/4

Township 31N, Range 51W

Sec. 18, SW1/4; S1/2NW1/4; NW1/4NW1/4; S1/2SE1/4; NW1/4SE1/4
Sec. 19, all
Sec. 20, SW1/4
Sec. 29, W1/2
Sec. 30, NE1/4; NE1/4SE1/4; NE1/4NW1/4

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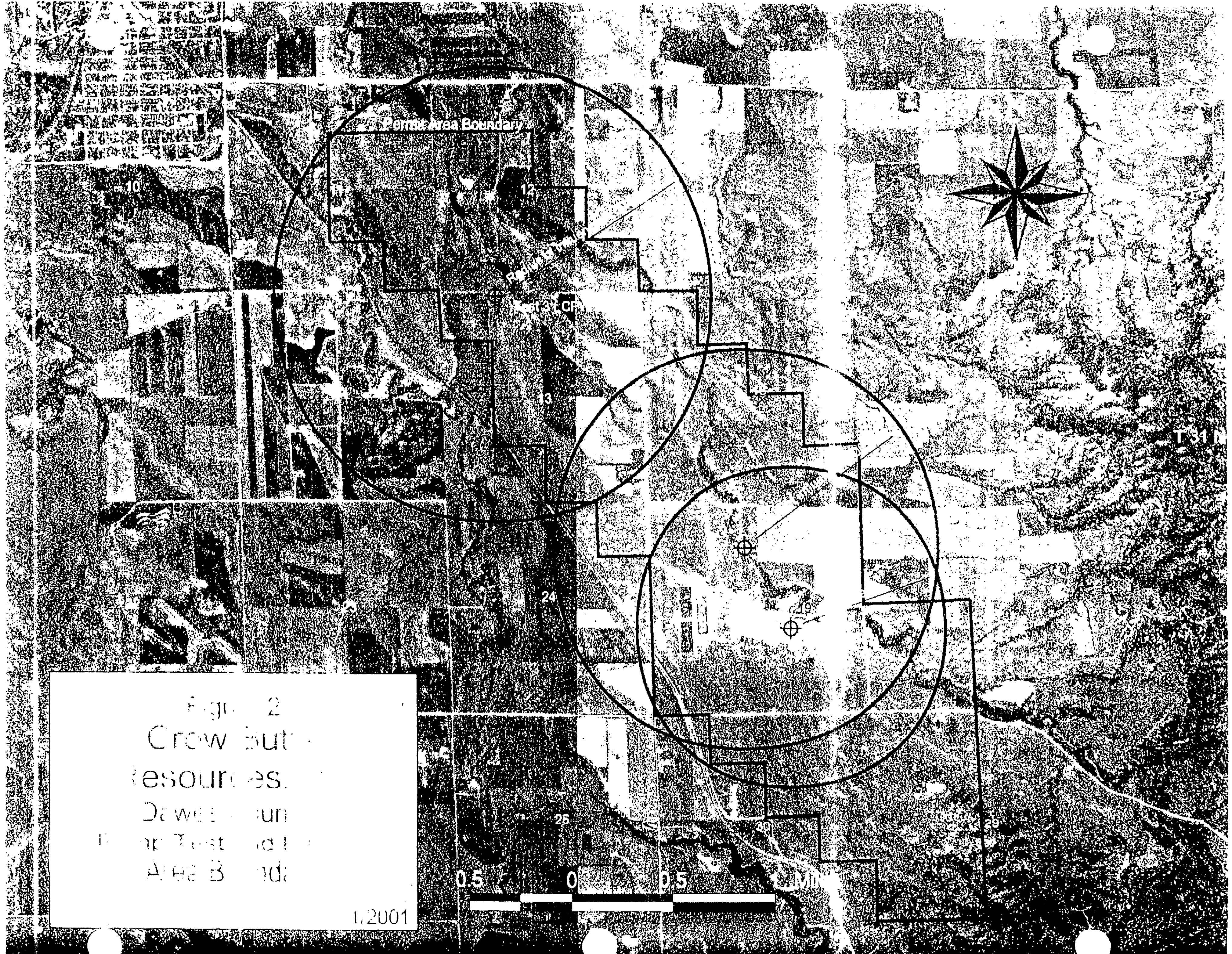
Permit Area Boundary
10
12
13
24
25
29
T 31
0.5
0
0.5
Crew But
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/2001