

**LEWIS AND CLARK NATURAL RESOURCES DISTRICT (LCNRD)
RULES AND REGULATIONS FOR GROUND WATER MANAGEMENT**

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Ground Water Quantity

Chapter 1 – Authority and Purpose

- 1.1 Authority** - The following rules and regulations are adopted pursuant to the Nebraska Ground Water Management and Protection Act (the “Act”) Neb. Rev. Stat. §§ 46-701 to 46-754.
- 1.2 Purpose** – The purpose of the rules and regulations is to implement the Lewis and Clark Natural Resources District (LCNRD) Ground Water Management Plan, to develop procedures for the implementation of management practices, to conserve and protect ground water supplies, to prevent contamination of ground water, and to prevent inefficient or improper use of ground water.

In January 1986, LCNRD adopted its first Ground Water Management Plan as required by Neb. Rev. Stat. § 46.709. That plan featured a district goal to: “Preserve and maintain the natural quality and quantity of ground water for an indefinite period of time for the sustained use of the resource.” These rules and regulations are intended to continue preservation and maintenance of the district ground water goal. The plan was amended in July 1993 to further address ground water quality issues and again in October 2004 to focus on nitrate contamination issues within a defined boundary affecting seventy square miles in Knox County. These management area rules and regulations for ground water management were first enacted on August 1, 2014, revised on April 16, 2015, and this is the second revision to those rules and regulations.

Chapter 2 – Effective Date of These Rules and Regulations

- 2.1 Effective date** – These rules and regulations shall become effective January 31, 2021, when approved by the LCNRD Board of Directors, and shall remain in full force and effect until revised, repealed, amended or superseded.
- 2.2** All existing rules and regulations pertaining to ground water, shall remain in full force and in effect until revised, repealed, amended, or superseded.

Chapter 3 – Definitions Applying to These Rules and Regulations

- 3.1 Abandoned water well** – Abandoned water well shall mean any water well (1) the use of which has been completed or permanently discontinued, (2) which has been decommissioned as described in the rules and regulations of the Department of Health and Human Services (DHHS) Regulation and Licensure, and (3) for which the notice of abandonment required by Neb. Rev. Stat. § 46-602(2) has been filed with the Department of Natural Resources (DNR) by the licensed water well contractor or pump installation contractor who decommissioned the water well or by the water well owner if the owner decommissioned the water well.
- 3.2 Acre inch** – the amount of water covering (1) surface acre of land to a depth of one (1) inch.
- 3.2.1** One (1) acre inch is equal to twenty-seven thousand one hundred fifty-four (27,154) gallons.
- 3.3 Allocation** – the apportionment of ground water.

- 3.3.1** As related to water use for irrigation purposes, allocation shall mean – the allotment of a specified total number of acre-inches of irrigation water per irrigated acre per year or an average number of acre-inches of irrigation water per irrigated acre over any reasonable period of time.
- 3.4** **Aquifer** – a geological formation, group of formations, or part of a formation having pores or open spaces that contain sufficient saturated permeable material capable of yielding a significant quantity of water to satisfy a particular demand.
- 3.5** **Beneficial use** - use of water that is considered beneficial to humans as recognized by Nebraska law.
- 3.6** **Board of Directors** – the Board of Directors of LCNRD acting in its official capacity.
- 3.7** **Certified ground water use acre** – a ground water use acre certified by the Board of Directors for the application of ground water pursuant to these rules and regulations.
- 3.8** **Comingle** – when water from two or more water wells or water sources are combined.
- 3.9** **Confined aquifer** – ground water that is confined under pressure greater than atmospheric pressure by overlying relatively impermeable strata. Confined aquifers are also known as artesian or pressure aquifers.
- 3.10** **Decommission** – the act of filling, sealing and plugging of a water well cavity in accordance with the rules and regulations adopted pursuant to the Water Well Standards and Contractors' Licensing Act.
- 3.11** **District** – Lewis and Clark Natural Resources District
- 3.12** **District ground water level** – the average levels of the surface of the ground water table as determined in accordance with Chapter 9 of these rules and regulations.
- 3.13** **Flow meter** – Flow meter or meter shall mean a device of type and design approved by the Board of Directors and installed in connection with the use of a ground water well that, when properly installed, measures the total quantity and rate of ground water withdrawn.
- 3.14** **Government survey section** – a section of land approximately one (1) square mile in size as defined by the United States Government Department of Interior Bureau of Land Management Public Land Survey System (PLSS) of townships, ranges, sections, quarter sections, etc.
- 3.15** **Ground water or groundwater** – water that occurs, moves, seeps, filters or percolates through the ground under the surface of the land.
- 3.16** **Level I Management Area** – Level I Management Area or Level I MA shall mean all areas of the District designated for Level I management and regulation activities related to ground water quantity.
- 3.16.1** Level I MA includes all areas of LCNRD that are not designated as Level II or Level III MAs.
- 3.16.2** Maps showing the geographic area and the legal description of the District's MA are attached hereto as Figure 1 and Figure 2 and incorporated herein by reference.

- 3.17 Level II Management Area** – Level II Management Area or Level II MA shall mean an area designated for Level II management and regulation activities related to ground water quantity.
- 3.17.1** Level II MA includes all management and regulation activities of Level I MAs.
- 3.17.2** Level II MA includes only portions of the LCNRD as designated.
- 3.18 Level III Management Area** –Management Area or Level III MA shall mean an area designated for Level III MA management and regulation activities related to ground water quantity.
- 3.18.1** Level III MA includes all management and regulation activities of Level I MA and Level II MAs.
- 3.18.2** Level III MA includes only portions of the LCNRD as designated.
- 3.19 Ground water use acre** – Ground water use acre shall mean an acre of land that a ground water user wants to apply ground water to, pursuant to these rules and regulations.
- 3.20 Ground water use period** – Ground water use period shall mean a period of no less than one (1) calendar year designated by the Board of Directors for which an allocation is set.
- 3.21 Ground water transfer** - physical transfer of ground water from one parcel or tract to another under the control of a common landowner or other persons.
- 3.22 Ground water user** – a person or entity, who at any time, extracts, withdraws or confines ground water for any use by themselves or allows such use by other persons at a rate greater than fifty (50) gallons per minute. If the landowner and operator is not the same person, the term “ground water user” shall mean both the landowner and the operator.
- 3.22.1** Agricultural user - a ground water user that uses ground water for irrigation, recreation, wildlife or other uses that require the application of ground water to the surface of the land.
- 3.22.2** Municipal user - a ground water user that is an incorporated or unincorporated city or village, rural water district or sanitary improvement district that withdraws ground water from a water well to serve its customers for domestic purposes as it relates to human needs of health, fire control and sanitation.
- 3.22.3** Other user - a ground water user that uses ground water for purposes other than those described in the definitions of agricultural and municipal users.
- 3.22.3.1** Other user shall include a customer of a municipal user that uses ground water for commercial, industrial or manufacturing purposes.
- 3.23 High capacity well** – any water well designed and constructed to pump greater than 50 gallons per minute.
- 3.24 Illegal water well** – Illegal water well shall mean:
- 3.24.1** A water well operated or constructed without, or in violation of a permit required by these rules and regulations or by the Nebraska Ground Water Management and Protection Act or

- 3.24.2** A water well that is not properly registered in accordance with the provisions of Neb. Rev. Stat. §§ 46-602 to 46-604 or
- 3.24.3** A water well constructed or operated in violation of the Water Well Standards and Contractor Licensing Act or
- 3.24.4** A replacement water well constructed or operated in the place of a water well that has not been properly decommissioned in violation of the Water Well Standards and Contractor's Licensing Act or
- 3.24.5** A water well not in compliance with any other applicable laws of the State of Nebraska or with any provisions of these rules and regulations.
- 3.25** **Management area** – a geographic area designated by the Board of Directors for ground water management.
- 3.26** **Monitoring well** – a water well accessed and used by LCNRD or other public agency to measure fluctuations in the static water level of ground water within an aquifer.
- 3.27** **Observation well** – a water well that is designed and constructed to provide LCNRD ongoing hydrologic and ground water quality information. An observation well may have a permanent pump installed to withdraw ground water samples for analysis but is not intended for consumptive use.
- 3.28** **Operator** – a person, partnership, association, corporation, municipality or other entity which operates irrigated or dryland properties for the production of agricultural, horticultural, silvicultural, nursery products or aquaculture.
- 3.29** **Permit** – a document obtained from the LCNRD in accordance with these rules and regulation authorizing an activity.
- 3.29.1** Irrigated acre expansion permit – shall mean a document obtained, in accordance with these rules and regulations, authorizing the expansion of irrigated acres occurring after August 1, 2014.
- 3.29.2** Water well permit – a document obtained, in accordance with the Nebraska Ground Water Management and Protection Act and these rules and regulations, authorizing the construction or modification of a water well or its use.
- 3.30** **Person** – a natural person, personal representative, trustee, guardian, conservator, partnership, association, corporation, municipality, irrigation district, agency or political subdivision of the State of Nebraska, or a department, agency or bureau of the United States.
- 3.31** **Replacement water well** – shall have the same meaning as set forth in Neb. Rev. Stat. §46-601(2)(b) or current statute pertaining to the replacement of water wells. Replacement water well means a water well which is constructed to provide water for the same purpose as the original water well and is operating in accordance with any applicable permit from the LCNRD and any applicable rules and regulations of the LCNRD and, if the purpose is for irrigation, the replacement water well delivers water to the same tract of land served by the original water well

- 3.32 Saturated thickness** – the vertical height of a hydro geologically defined aquifer unit in which the pore spaces are 100% saturated with water. For unconfined, unconsolidated aquifers, the saturated thickness is equal to the difference in elevation between the bedrock surface and the water table.
- 3.33 Static Water Level (SWL)** – the level at which water stands in a water well when no water is being removed from the aquifer. SWL is expressed as the distance from the ground surface or measuring point near the ground surface to the water level in the well.
- 3.34 Stay** – An order by the Board of Directors that prohibits the development of new ground water uses including new high capacity wells constructed and equipped to pump or combined to pump greater than 50 gallons per minute, development of new or additional ground water uses and expansion of irrigated acres.
- 3.35 Test hole** – a hole or shaft, usually vertical, excavated in the earth for subsurface exploration to determine and record or log the depth to water, and the depth, color, character, thickness, size of material of the various geologic formations encountered.
- 3.36 Unconfined aquifer** – ground water that is under the pressure exerted by the overlying ground and by atmospheric pressure.
- 3.37 Variance** – Variance shall mean (a) the approval to act in a manner contrary to the existing rules or regulations from a governing body whose rule or regulation is otherwise applicable, (b) an approval to deviate from a restriction imposed under the rules and regulations of LCNRD.
- 3.38 Water well** – As defined in Neb. Rev. Stat. § 46-601.01 - Water well shall mean (a) any artificial opening or excavation made in the ground 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 fluid as defined in Neb. Rev. Stat. § 81-1502 into an underground water reservoir. (b) Water well includes any excavation made for any purpose if ground water flows into the excavation under natural pressure and a pump or other device is placed in the excavation for the purpose of withdrawing water from the excavation for irrigation. For such excavations, construction means placing a pump or other device into the excavation for the purpose of withdrawing water for irrigation. (c) Water well shall not include (i) 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 or (ii) any structure requiring a permit by the Department of Natural Resources used to exercise a surface water appropriation.

Chapter 4 – Groundwater Quantity Management Area (MA) – Management Options and Means Authorized

- 4.1** The Board of Directors hereby establishes a Level I Management Area (Level I MA) which includes the entire geographic area within the boundaries of LCNRD. LCNRD may by order and following a hearing held in accordance with Neb. Rev. Stat. § 46-712, manage the use of water in the management area for water quantity purposes by any of the following means, as provided in Neb. Rev. Stat. § 46-739.
- 4.1.1** Allocate the amount of ground water that may be withdrawn by ground water users;
- 4.1.2** Adopt a system of rotation for use of ground water;

- 4.1.3 Adopt well-spacing requirements more restrictive than those found in Neb. Rev. Stat. § 46-609 and § 46-651;
 - 4.1.4 Require the installation of devices for measuring ground water withdrawals from wells;
 - 4.1.5 May require water use reporting to the district for all water wells within all or part of the management area;
 - 4.1.6 Adopt a system which requires a reduction of irrigated acres;
 - 4.1.7 Limit or prevent the expansion of irrigated acres or otherwise limit or prevent increases in the consumptive use of ground water withdrawals from water wells used for irrigation or other beneficial purposes;
 - 4.1.8 It may require the use of best management practices;
 - 4.1.9 It may impose mandatory educational requirements designed to protect water quantity and stabilize or reduce the incidence of ground water depletion;
 - 4.1.10 It may require Board of Directors approval of ground water transfers of ground water off the land where the water is withdrawn;
 - 4.1.11 It may require, when conditions so permit, that new or replacement water wells to be used for domestic or other purposes shall be constructed to such a depth that they are less likely to be affected by seasonal water level declines caused by other water wells in the same area;
 - 4.1.12 It may close all or a portion of the management area to the issuance of additional permits or may condition the issuance of additional permits on compliance with other rules and regulations adopted and promulgated by the district to achieve the purpose or purposes for which the management area was designated;
 - 4.1.13 It may adopt and promulgate such other reasonable rules and regulations as are necessary to carry out the purpose for which a management area was designated.
- 4.2 In adopting, amending, or repealing any control authorized by subsection (1) of Neb. Rev. Stat. § § 46-739, 46-740, or 46-741, the Board of Directors considerations shall include, but not be limited to, whether it reasonably appears that such action will mitigate or eliminate the condition which led to designation of the management area or will improve the administration of the area.
- 4.3 If because of varying ground water uses, varying surface water uses, different irrigation distribution systems, or varying climatic, hydrologic, geologic, or soil conditions existing within a management area, the uniform application throughout such area, of one or more controls would fail to carry out the intent of the Nebraska Ground Water Management and Protection Act in a reasonably effective and equitable manner, the controls adopted by the District pursuant to Neb. Rev. Stat. § 46-739 may contain different provisions for different categories of ground water use or portions of the management area which differ from each other because of varying climatic, hydrologic, geologic, or soil conditions. Any differences in such provisions shall recognize and be directed toward such varying ground water uses or varying conditions. Except as otherwise provided in this section, if the Board of Directors adopts different controls for different categories of ground water use, those controls shall be consistent with Neb. Rev. Stat. § 46-613 and shall, for each such category, be uniform for all portions of the area which have substantially similar climate, hydrologic, geologic, and soil conditions.
- 4.4 The Board of Directors may establish different water allocations for different irrigation distribution systems.

- 4.5 Except as otherwise authorized by law, the Board of Directors shall make a replacement water well as defined in Neb. Rev. Stat. § 46-602, or as further defined in District rules and regulations, subject to the same provisions as the water well it replaces.
- 4.6 If the Board of Directors has included controls delineated in subsection (1) of Neb. Rev. Stat. § 46-739 in its management plan, but has not implemented such controls within two years, the District shall hold a public hearing, as provided in Neb. Rev. Stat. § 46-712, to determine whether to implement the controls presented.
- 4.7 In addition to the controls listed in subsection (1) of Neb. Rev. Stat. § 46-739, the Board of Directors may also adopt and implement one or more of the following measures if it determines that any such measures would help LCNRD and water users achieve the goals and objectives of the management area. It may sponsor non-mandatory educational programs and it may establish and implement financial or other incentive programs. As a condition for participation in an incentive program the Board of Directors may require water users or landowners to enter into and perform such agreements or covenants concerning the use of land or water as are necessary to produce the benefits for which the incentive program is established.
- 4.8 **Designated Management Sub-Areas in the LCNRD** - The District hereby establishes the following as designated sub-areas of management. The areas are geologically/hydrogeologically different, necessitating different methods of management and permitting to effectively monitor and manage them.
- 4.8.1 **Niobrara Chalk Bedrock Aquifer** (Figure 1) – a fractured, bedrock aquifer where potential for high rates of in-season decline is likely. The Niobrara Chalk Formation yields water primarily in north central Cedar County where it is not overlaid by Pierre Shale and where it has been weathered causing the fractures which yield water. Only a portion of the area where Niobrara Formation wells could be developed is represented in Figure 1. The Niobrara Formation extends beneath the primary aquifer formations across the entire District, except in areas where it is at or near the surface, and along the northeastern edge of the District, where the District borders the Missouri River. However, it only yields water in the areas where the Formation has been weathered. Test hole logs must be reviewed to determine whether a proposed well is to be developed in the Niobrara Formation.
- 4.8.2 **Dakota Sandstone Bedrock Aquifer** (Figure 1) – an ancient, confined, bedrock aquifer. Use of water from this aquifer has historically been for stock wells and other low capacity uses. More recent development within the formation has included high capacity irrigation wells. Water quality and quantity information and other aquifer characteristics of the Dakota Formation in LCNRD is limited. Monitoring and management is necessary to ensure its protection. Only a portion of the area where Dakota Formation wells could be developed is represented in Figure 1. The Dakota Sandstone Formation extends beneath the primary aquifer and other formations across the entire District, however the depth to the Dakota Formation varies widely across LCNRD.

- 4.8.3 Area of Limited Aquifer Development Potential** (Figure 2) – ground water regions with limited aquifer development potential and a higher probability for conflict between ground water users. The hydrogeology of the area is highly variable due to glaciation and in much of the designated area bedrock is at or near the surface (CSD 1979 – area represented in Figure 3) with little or no primary aquifer present. The region where there is little or no primary aquifer present and the land adjacent to it has limited potential for development of highly productive sand and gravel wells due to limited and highly variable, primary aquifer thickness and/or presence. This designation does not indicate ground water is not present – it specifies the potential to find an abundant source of ground water is limited when compared to the rest of the District. Due to this variability the entire “hatched” region on Figure 2 has been designated as the “Area of Limited Aquifer Development Potential”.
- 4.8.4 Remaining Areas including the Missouri River Ground Water Aquifer** (Figure 2) – The Remaining Area is comprised of the region located predominately south of the “Area of Limited Aquifer Development Potential”. Variable aquifer characteristics and the density of high capacity wells increases potential of in season pumping declines within the ground water systems accessed for irrigation. In season pumping in this region could impact irrigation wells, as well as domestic and stock wells.
- 4.8.4.1 Missouri River Ground Water Aquifer** (Figure 1) – The primary aquifer along the south side of the Missouri River comprised of the saturated clay, silt, sand and gravel deposits from the Missouri River. Water quality for domestic use in this aquifer is generally poor however it is used for stock wells and this aquifer generally yields sufficient quantities for irrigation.
- 4.8.5 Community Water System Protection Areas** (Figure 4) – Well Head Protection Areas for Public Water Systems located in LCNRD.

Chapter 5 –Irrigated Acre Expansion Permits and Water Well Permits

5.1 Irrigated acre expansion permits

- 5.1.1 Irrigated Acre Expansion Permit** - Any entity who intends to irrigate acres which do not have irrigated acre history according to Chapter 12, must apply for a permit to expand new acres irrigated by ground water. Completed applications and fees must be received by the close of business on the first Thursday of the month, or on the first business day after the first Thursday if the first Thursday is a holiday or if the office is closed for other reasons, to be considered by the Board of Directors at their monthly board meeting typically held on the third Thursday of the month.
- 5.1.1.1** Any person or entity who fails, or in the future fails to obtain a permit as required by Chapter 5 shall make application for a late permit on forms provided by the District and shall be subject to a cease and desist order until such time as the permit is obtained. The late permit application shall contain the same information as required by Chapter 5. The fee for a late permit application shall be established by and payable to the District (see Appendix B - Fee Schedule).

5.1.1.2 Any entity expanding irrigated acres through construction of a new or replacement well must also obtain a water well permit per Chapter 5.2.

5.1.2 Information required for all irrigated acre expansion permit or late irrigated acre expansion permit applications - forms shall be available at the office of the LCNRD, 608 North Robinson Ave, Hartington, Cedar County, Nebraska.

5.1.2.1 A non-refundable filing fee is required payable to LCNRD for all applications including late irrigated acre expansion permit applications. For a list of the current fee structure see Appendix B.

5.1.2.2 The application shall contain (a) the name and post office address of the applicant or applicants, (b) type of proposed irrigation, (c) proposed method of obtaining irrigation water, if the water source is from an existing well or surface water appropriation then the registration number or appropriation number must be included, if the acres to be irrigated will be under irrigation from a new well the water well permit number shall be referenced on the irrigation expansion permit application (d) the intended location by legal description, of the irrigated acre expansion (e) map or recent aerial photo with area to be irrigated delineated (f) proposed crop(s) to be produced on the acres and (g) such other information as LCNRD requires.

5.1.2.2.1 Additional information may be required and may include, but is not limited to, a test hole geophysical log, a hydrogeologic evaluation and/or ground water modeling analysis.

5.1.2.2.2 If LCNRD finds the application to expand irrigated acres is incomplete or needs corrections, it shall return the application to the applicant for any necessary corrections. Corrections must be made within sixty (60) days.

5.1.2.2.3 No refund of any application fees shall be made regardless of whether the permit to expand irrigated acres is approved, cancelled, or denied.

5.1.3 Irrigated acre expansion permit review – LCNRD staff will review complete applications received and compile all pertinent soil/ slope data, and hydrogeologic information provided by the applicant or available from well registrations and other sources. The information will be brought forth to the Board of Directors for consideration where upon a motion will be made to approve, deny or postpone the application. An application may be postponed if the Board of Directors feels additional information is needed to make a decision.

5.1.3.1 Using the best data available to the District, including any information submitted by the applicant as part of the irrigated acre expansion permit application, evidence must show that the proposed acres are of suitable soil capability class and soil slope where ground water application is determined to be a beneficial use of the ground water resource. Data must also show production demands of the well used to irrigate the acres will not have a significant negative impact to the long-term sustainability of the aquifer that serves as the primary source of water. Data must also show production demands of the well used to irrigate the acres will not negatively impact the ability of existing properly constructed,

maintained and operational registered wells served by the same primary aquifer to operate in a reasonable manner. Irrigated acre expansion permit applications meeting all the criteria set forth in this section shall be approved by the Board of Directors and those failing to meet the criteria shall be denied or approved with conditions as established by the Board of Directors.

5.1.3.2 LCNRD has developed a standardized method for evaluating and ranking irrigated acre expansion permit applications based upon criteria set forth in the LCNRD Water Well and Irrigated Acre Expansion Permit Ranking System (Appendix A) The main criteria considered includes (1) the thickness of aquifer formation, (2) calculated transmissivity of the aquifer formation, (3) well density of surrounding registered irrigation, domestic, livestock and public water supply wells, (4) the slope and agricultural capability classification of the soils to be irrigated, and (5) permit classes will be subject to the review criteria established for each ground water aquifer, as necessary, due to varying characteristics and LCNRD knowledge of each ground water aquifer.

5.1.4 Denial of an Irrigated Acre Expansion Permit - An application for a permit to expand irrigated acres in a management area shall be denied if the Board of Directors finds:

5.1.4.1 The application fails to meet the criteria set forth in Chapter 5.1.3.

5.1.4.2 The applicant refuses to agree to the terms in Chapter 5.1.5 (Requirements when an irrigated acre expansion permit is approved.)

5.1.4.3 An irrigated acre expansion permit application includes any intentionally misleading or falsified data.

5.1.4.4 The irrigated acre expansion permit application fails to meet ranking requirements established by the Board of Directors.

5.1.4.5 The proposed use of ground or surface water would not be a beneficial use for agricultural purposes.

5.1.4.6 Other reasons which could negatively impact ground water or soil resources where irrigated acre development is proposed.

5.1.4.7 In the case of a late irrigated acre expansion permit where the applicant did not act in good faith in failing to obtain a timely permit.

5.1.4.8 All permits shall be denied or approved with or without conditions attached not later than sixty (60) days after receipt by LCNRD of a complete and properly prepared application unless postponed by the Board of Directors.

5.1.5 When an irrigated acre expansion permit is approved – When a permit is approved the applicant shall have twenty-four (24) months after the date of the permit approval to irrigate the approved acres. If the applicant fails to irrigate the acres under the terms of the permit, the permit expires.

5.1.5.1 The applicant agree to allow LCNRD staff to conduct a field confirmation of the acres established for irrigation following approval of the irrigated acre expansion permit.

5.1.5.2 Acres approved as irrigated pasture or other non-row crop shall not be converted to irrigated row crop without obtaining a permit to do so.

5.1.5.3 An irrigated acre expansion permit issued shall specify all regulations and controls adopted by LCNRD relevant to irrigating approved acres.

5.1.6 If the applicant fails to complete the project under the terms of the irrigated acre expansion permit, LCNRD may cancel the permit and/or issue a ground water use cease and desist order.

5.2 Water well permits

5.2.1 Construction, decommissioning and temporary capping of water wells – Any person that owns or controls land upon which the construction, decommissioning or temporary capping of a water well is to be accomplished, shall accomplish such tasks in accordance with the Water Well Standards and Contractor Licensing Act and the regulations adopted pursuant thereto.

5.2.2 When a water well permit is required - Any person or entity who intends to construct any new or replacement water well on land which he or she owns or controls that falls within the following categories shall, before commencing construction, apply to and receive approval from LCNRD for a water well permit on forms provided by the District:

5.2.2.1 Any water well designed and constructed to pump, or modified to pump, more than 50 gallons per minute.

5.2.2.2 Any water well designed and constructed to pump 50 gallons per minute or less if such water well is commingled, combined, clustered, or joined with any other water well or wells or other water source serving a single purpose. Such wells shall be considered individually for the permitting purpose and require a permit for each well.

5.2.2.3 Any person or entity who fails or in the future fails to obtain a permit as required by subsection 5.2.2.1 or 5.2.2.2 shall cease and desist the use of such well until such time as a permit is obtained. Such person or entity may make an application for a late permit on forms provided by LCNRD. The late permit application shall contain the same information as required by Chapter 5.2.2 and 5.2.3.

5.2.3 Information required for all new, replacement, or late water well permit applications - permit application forms shall be available at the LCNRD office, 608 North Robinson Ave, Hartington, Cedar County, Nebraska. Completed applications and fees must be received by the close of business on the first Thursday of the month, or on the first business day after the first Thursday if the first Thursday is a holiday or if the office is closed for other reasons to be considered by the Board of Directors at their monthly board meeting typically held on the third Thursday of the month.

5.2.3.1 Non-refundable filing fees payable to the District are required payable for new, replacement, and late well permit applications to construct a water well. For a list of the current fee structure see Appendix B.

- 5.2.3.2** The application shall contain (a) name and post office address of the landowner(s) and tenant(s) (if applicable), (b) nature of the proposed use, (c) intended location including GPS coordinates of the proposed water well or other means of obtaining ground water, (d) intended size, type and description of the proposed water well and the estimated depth, if known, (e) estimated capacity in gallons per minute, (f) the acreage and location by legal description of the land for proposed ground water use, (g) a description of the proposed use if other than for irrigation purposes, (h) the registration number of the ground water well being replaced if applicable, (i) proposed crop(s) and or livestock use if applicable; (j) information based on aquifer as detailed in Chapter 5.2.5; and (k) other information as the District requires.
- 5.2.3.3** In order for a Replacement Well Permit to be approved, Irrigated Acre and/or Other Use Certification for all acres irrigated by the landowner and/or applicant (Chapter 12) is required to be submitted to the district.
- 5.2.3.4** Each application for a replacement water well proposed for construction in the same aquifer type as the well to be replaced may be approved by LCNRD staff upon receipt of a complete permit application. Replacement well permit applications are not required to be ranked if the well will be developed in the same aquifer type as the well being replaced.
- 5.2.3.3.1** If the proposed replacement well will be constructed in a different aquifer type than the well being replaced – it will not be considered a replacement well and must be considered a new permit application.
- 5.2.3.3.2** Each application for a replacement well permit must be accompanied with the following information:
- 5.2.3.3.2.1** The application shall contain (a) name and post office address of the landowner(s) and tenant(s) (if applicable), (b) nature of the proposed use, (c) intended location including GPS coordinates of the proposed water well or other means of obtaining ground water, (d) intended size, type and description of the proposed water well and the estimated depth, if known, (e) estimated capacity in gallons per minute, (f) the acreage and location by legal description of the land for proposed ground water use, (g) a description of the proposed use if other than for irrigation purposes, (h) the registration number of the ground water well being replaced, (i) proposed crop(s) or livestock use if applicable; (j) information based on aquifer as detailed in Chapter 5.2.5; and (k) other information as the District requires.
- 5.2.3.3.2.2** Replacement wells can only irrigate the same tract of land as the original well to be replaced.
- 5.2.3.4** If any of the proposed acres to be irrigated do not have irrigated acre history (Chapter 12.1) the application for a well permit must be accompanied by a permit to expand irrigated acres

(Chapter 5.1), the expansion permit must be approved by the Board of Directors, and the acres must be irrigated and certified as detailed in Chapter 12.

- 5.2.3.5 Each application for a new, replacement or late water well permit shall include or provide any additional information deemed necessary by the Board of Directors to determine compliance with these rules and regulations. Additional information may include, but is not limited to, a test hole geophysical log, a hydrogeologic evaluation and/or ground water modeling analysis.
- 5.2.3.6 If LCNRD finds the application for a new, replacement or late water well permit is incomplete or needs corrections, it shall return the application to the applicant for any necessary corrections. Corrections must be made within one hundred eighty (180) days or the application will expire. No refund of any application fees shall be made regardless of whether the water well permit is approved, denied or expired.
- 5.2.3.7 Each application for a new or late water well permit must be accompanied with documentation that a test hole, except in the case of applications for the Dakota Class, was drilled including the following information:
 - 5.2.3.7.1 Geographic coordinates of the test hole location except in the case of a Dakota Class permit application.
 - 5.2.3.7.2 The well location must be located within 100 feet of the test hole GPS coordinates as indicated on the well permit application.
 - 5.2.3.7.3 The water well permit application must include the acres to be irrigated outlined on a map or recent aerial photo.
 - 5.2.3.7.4 Additional water well permit information is required by Permit Class as outlined in Chapter 5.2.4.
 - 5.2.3.7.5 All required information must be received by the District for a permit to be considered for approval.

5.2.4 Water Well Permit Classes and Required Hydrogeologic Information – Any water well requiring a permit shall be required to provide certain hydrogeologic and/or water quality information, and/or other information before a water well permit may be approved. LCNRD shall provide guidelines for required information which shall be submitted to the Board of Directors with each water well permit application.

5.2.4.1 Niobrara Class Permit (also referred to as shale or chalk) applies to any proposed water well to be developed in and removing water from the Niobrara Ground Water Aquifer and which is required to have a permit according to Chapter 5.2.2. Water well permit requirements in addition to those outlined in Chapter 5.2.3 for the Niobrara Class include:

5.2.4.1.1 Geographic coordinates of test hole location.

5.2.4.1.2 A geologic/lithologic log of materials encountered with depth.

5.2.4.1.2.1 The geologic/lithologic log must clearly detail the depth, color, thickness and size of material of the various geologic formations encountered.

5.2.4.1.2.2 The geologic/lithologic log must include the measured depth to ground water from the ground surface before and after “test pumping” including the pumping rate and at least 120 minutes of “test pumping”.

5.2.4.2 Dakota Class Permit (also referred to as sandstone)— applies to any proposed water well to be developed in and removing water from the Dakota Ground Water Aquifer and which is required to have a permit according to Chapter 5.2.2. Well permit requirements in addition to those outlined in Chapter 5.2.3 for the Dakota Class include:

5.2.4.2.1 Proposed geographic coordinates of the well to be developed, required at the time of application.

5.2.4.2.2 Estimated static water level based on existing information prior to construction.

5.2.4.2.3 Following well construction, results of an irrigation water quality test conducted by a reputable lab on a water sample collected from the test hole to address potential mineral composition concerns with agricultural uses. The minimum accepted water quality evaluation is a standard irrigation suitability test plus iron and manganese content.

5.2.4.3 Area with Limited Aquifer Development Potential Class Permit - applies to any proposed water well located in the hatched area of Figure 2 designated as “Area with Limited Aquifer Development Potential”, of which no portion of the well will be constructed in the Niobrara or Dakota Bedrock Aquifers, and which is required to have a permit according to Chapter 5.2.2. Well permit requirements in addition to those outlined in Chapter 5.2.3 for the Area with Limited Aquifer Development Potential Class include:

5.2.4.3.1 Geographic coordinates of test hole location.

5.2.4.3.2 A geologic/lithologic log of materials encountered with depth.

5.2.4.3.2.1 The geologic/lithologic log must clearly detail the depth, color, thickness and size of material of the various geologic formations encountered. The geologic/lithologic log must include the measured depth to ground water from the ground surface.

5.2.4.3.3 In order to more easily define the “Area with Limited Aquifer Development Potential” due to the irregular shape of the area on Figure 2, the identified region has been squared off using one mile square sections as defined by the Public Land Survey System (PLSS). The entire section where a portion has been identified in

the Limited Area is considered part of the Area with Limited Aquifer Development Potential. Any section bordered on three sides by the designation will be included in the designated Area with Limited Aquifer Development Potential.

5.2.4.4 Remaining Area – Including the Missouri River Ground Water Aquifer Class Permit – applies to any proposed water well located outside of the hatched area, Figure 2 of which no portion of the well will be constructed in the Niobrara or Dakota Bedrock Aquifers, and which is required to have a permit according to Chapter 5.2.2. Well permit requirements in addition to those outlined in Chapter 5.2.3 for the All Other Regions Class include:

5.2.4.4.1 Geographic coordinates of test hole location.

5.2.4.4.2 A geologic/lithologic log of materials encountered with depth.

5.2.4.4.2.1 The geologic/lithologic log must clearly detail the depth, color, thickness and size of material of the various geologic formations encountered. The geologic/lithologic log must include the measured depth to ground water from the ground surface.

5.2.4.4.3 Any portion of a section which is not hatched on Figure 2 but where another portion of the section is included in the hatched area will be considered in the “Area with Limited Development Potential” Class for permitting purposes (Chapter 5.2.4.3). If the section where the well is to be located is bordered on three sides by the “Area with Limited Development Potential”, the section will be considered part of that region for permitting purposes.

5.2.4.5 Community Water System Protection Areas – permitting requirements for wells proposed in the Well Head Protection Areas of public supply wells are the same as for the regions where the proposed well is located; ie. Niobrara Class, Dakota Class, Area with Limited Aquifer Development Potential, or Remaining Area.

5.2.5 When a hydrogeologic evaluation is required - Any entity intending to modify any existing well or construct any new or replacement water well with an annual withdrawal of ground water greater than 500 acre-feet (equal to pumping ~310 gallons/min for 24hrs/days/year), such entity shall, in addition to the information and requirements for the well permit application in Chapter 5.2.2, 5.2.3, and 5.2.4 provide the District with a hydrogeologic evaluation illustrating the impact, if any, from the intended withdrawal on the static water level of the aquifer and on local ground water users.

5.2.6 Spacing of Water Wells – No water well requiring a permit under this chapter shall be constructed within 1000 feet of any public water supply well, within 600 feet of any other irrigation or commercial/industrial well under separate ownership, or within 300 feet of any domestic or stock well under separate ownership. Spacing requirements can be superseded by state requirements if they become more restrictive. No water well shall be constructed within the listed spacing requirements for any non-constructed wells with a valid permit.

- 5.2.6.1** In addition to LCNRD spacing requirements all pertinent state statutes for irrigation well spacing included in Neb. Rev. Stat. § 46.651 must be followed.
- 5.2.6.2 Replacement well spacing, special conditions** – A replacement well may be constructed no more than 50 feet from the original well if the original well is less than 600 feet from a domestic or stock well under different ownership.
- 5.2.6.3 Illegal water wells not protected** – Illegal water wells are not protected by the provisions of this rule.
- 5.2.6.4 Spacing for commingled water wells** – When water wells are commingled, combined, clustered, or joined and have a combined total capacity greater than fifty (50) gallons per minute, each water well shall comply with all provisions of Chapter 5.2.3.
- 5.2.7 Well permit review** – LCNRD staff will review the applications received and compile all pertinent hydrogeologic data, information provided by the applicant and other information that is readily available. The information will be brought forth to the Board of Directors for consideration where upon a motion will be made to approve, deny or postpone the application. An application may be postponed if the Board of Directors feels additional information is needed.
- 5.2.7.1** Using the best data available to the Board of Directors, including any information submitted by the applicant as part of the well permit application, evidence must show that the proposed well has the ability to meet or exceed the flow volume included on the permit application and produce enough water to support the purpose shown on the permit application. To ensure the water will be for a beneficial purpose, data must show the proposed acres to be irrigated are suitable for crop production under irrigation. Data must also show the well will not have a significant negative impact to the long-term sustainability of the aquifer that serves as the primary source of water for the proposed well. Data must also show the proposed well will not negatively impact the ability of existing properly constructed, maintained and operational registered wells served by the same primary aquifer to operate in a reasonable manner. Permit applications meeting all the criteria set forth in this section shall be approved by the Board of Directors and those failing to meet the criteria shall be denied or approved with conditions as established by the Board of Directors.
- 5.2.7.2** LCNRD has developed a standardized method for evaluating and ranking well permit applications based upon criteria set forth in the LCNRD's Water Well and Irrigated Acre Expansion Permit Ranking System (Appendix A) The main criteria considered includes (1) the thickness of aquifer formation, (2) calculated transmissivity of the aquifer formation, (3) well density of surrounding irrigation, domestic, livestock and public water supply wells, (4) the slope and agricultural capability classification of the soils to be irrigated, and (5) permit classes will be subject to the review criteria established for each region, as necessary, due to varying aquifer characteristics.
- 5.2.7.3** Any water well commingled, combined, clustered, or joined with two (2) or more other water wells or other water source for irrigation cannot irrigate more than 160 acres of ground.

- 5.2.8 When a water well permit is approved** – When a permit is approved the applicant shall commence construction of the water well after the date of permit approval. The permit will expire one (1) year after the approval date.
- 5.2.8.1 Flow meter required** – All new water wells designed and constructed to pump greater than fifty (50) gallons per minute or existing water wells modified to pump greater than fifty (50) gallons per minute, or combined in some way with a total pumping rate greater than fifty (50) gallons per minute, must be equipped with a flow meter prior to ground water withdrawal, see Chapter 13 for rules and regulations pertaining to flow meters.
- 5.2.8.2 Annual Ground Water use Reports** are required for wells where flow meters are required, see Chapter 14 for rules and regulations pertaining to Annual Ground Water use Reports.
- 5.2.8.3** After the water well is completed and filed with the Department of Natural Resources, the applicant agrees to allow LCNRD staff:
- 5.2.8.3.1** to collect a GPS (global positioning system) location of said well;
 - 5.2.8.1.2** to collect and analyze water samples from said well;
 - 5.2.8.1.3** to measure the pumping rate from said well under normal operating conditions;
 - 5.2.8.1.4** to allow LCNRD to add the approved well or wells to LCNRD’s water monitoring program for collecting static water level measurement data and/or water quality data as deemed necessary.
- 5.2.9 Denial of a Water Well Permit** - An application for a permit, replacement permit, or late permit for a water well shall be denied if the Board of Directors finds:
- 5.2.9.1** The application fails to meet the criteria set forth in Chapter 5.2.3.
 - 5.2.9.2** The location or operation of the proposed water well or other work would conflict with any regulations or controls adopted by LCNRD or of other applicable laws of the State of Nebraska.
 - 5.2.9.3** A water well permit application includes any intentionally misleading or falsified data.
 - 5.2.9.4** The water well permit application fails to meet a minimum ranking score established by the Board of Directors (if established).
 - 5.2.9.5** The proposed use would not be a beneficial use of water for domestic, agricultural, manufacturing, or industrial purpose.
 - 5.2.9.6** In the case of a late water well permit where the applicant did not act in good faith in failing to obtain a timely permit.
 - 5.2.9.7** Other reasons which could negatively impact ground water or soil resources where well development is proposed.

5.2.9.8 All permits shall be denied or approved with or without conditions attached not later than sixty (60) days after receipt by LCNRD of a complete and properly prepared application, unless postponed by the Board of Directors.

5.2.11 Construction/withdrawal prohibited – The Board of Directors may deny any water well permit application under this section based upon one or more of the following:

- 5.2.11.1** The proposed water well is shown by the hydrogeologic evaluation and/or other data and information to have a reasonable probability of adversely impacting the local aquifer and surrounding ground water wells with a higher preference of use.
- 5.2.11.2** The hydrogeologic evaluation does not conform with accepted methods, or the data used does not adequately represent actual hydrologic and/or hydrogeologic conditions.
- 5.2.11.4** The construction of the water well or increased ground water withdrawal would violate any other provisions of these rules and regulations.
- 5.2.11.5** The application fails to meet the minimum criteria set forth in Chapter 5.2.
- 5.2.11.6** Other reasons which could negatively impact ground water resources due to development of the proposed well.

5.2.12 Exempt wells – No permit shall be required for (a) test holes with an intended use of ninety (90) days or less, or (b) single water wells designed and constructed to pump fifty (50) gallons per minute or less.

5.2.12.1 New or replacement domestic and stock wells that are designed to pump 50 gallons per minute or less should be constructed to a depth that is less likely to be affected by seasonal water level declines caused by other water wells in the same area.

5.2.13 Permit not exemption from liability – The issuance of a permit by the District, as provided for in this rule, does not exempt the applicant from any liability which may result from the withdrawal of ground water.

5.2.14 A water well permit issued shall specify regulations and controls adopted by the District relevant to the construction or utilization of the proposed water well. The District shall transmit one copy of each permit issued to the Nebraska Department of Natural Resources, the permit applicant and the identified well contractor.

5.2.15 If the applicant fails to complete the project under the terms of the water well permit, the District may withdraw the water well permit.

Chapter 6 – Request for Variance

6.1 Variance Request – any person wishing to conduct activities covered by the Ground Water Quantity rules and regulations of LCNRD but where the activities would not be consistent with the rules and regulations must request a variance before engaging in such activities.

6.1.1 Information required for a variance – an application for a variance shall be made on forms provided by LCNRD. An application for a variance request shall include the following:

6.1.1.1 A citation to the rules for which the variance is requested.

6.1.1.2 A map or recent aerial photo showing the location of lands and/or water wells or valid and approved well permits that would be affected by the variance, if applicable.

6.1.1.3 An explanation as to why the variance is needed.

6.1.1.3.1 How the person making application for the variance would be affected if the variance is not granted; and

6.1.1.3.2 Alternatives considered, including why each alternative was rejected in lieu of a variance.

6.1.1.4 The name and address of all landowners adjacent to the location of the requested variance if deemed necessary.

6.1.1.5 A written waiver of objection signed by adjacent landowner(s) or water well owner(s) who would be directly affected by the granting of a variance if deemed necessary.

6.1.1.6 Any other information the person making the request shall deem relevant.

6.1.1.7 Any other information deemed necessary by the Board of Directors.

6.1.1.8 A non-refundable application fee (See Appendix B for the fee schedule) payable to the Lewis and Clark Natural Resources District.

6.2 Consideration of variance request by the Board of Directors - requests for variance shall be considered by the Board of Directors or a committee which has been delegated authority by the Board of Directors to approve or deny a variance on a case by case basis.

6.2.1 All variance requests must be approved or denied by the Board of Directors or delegated committee within sixty (60) days unless postponed.

6.2.2 When issuing a variance, the Board of Directors or delegated committee may include specific conditions which will be required as part of the permitting or drilling process.

6.2.3 Any variance granted under Chapter 6.1 will be valid for the same period of time allowed by the rule for which the variance is granted.

6.2.4 The applicant applying for a variance or his or her representative may appear before the Board of Directors to present the reasons for the variance request.

6.2.4.1 With prior notification to LCNRD, written testimony may be provided if the applicant cannot be present to meet with the committee.

Chapter 7 – Enforcement of rules and regulations

7.1 Enforcement of these rules and regulations – These rules and regulations will be enforced by cease and desist orders entered by the Board of Directors, in accordance with the Nebraska Ground Water

Management and Protection Act, located in Section A of the Lewis and Clark NRD rules and policies and/or by bringing an appropriate action in the district court in the county where the violation occurs. The matter may be referred to the appropriate County Attorney or Attorney General for criminal and/or civil enforcement.

Chapter 8 – Level I Management Area (Level I MA) - Determination and Requirements

8.1 Level I Management Area Determination –The entire District is designated as a Level I Management Area.

8.2 Level I Management Areas (Level I MA) – Requirements

8.2.1 Any entity which intends to construct any new or replacement water well designed to pump greater than fifty (50) gallons per minute or comingle wells for a combined capacity greater than fifty (50) gallons per minute on land which he or she owns or controls in LCNRD shall, before commencing construction, comply with the rules set forth in Chapter 5 – Irrigated Acre Expansion Permits and Water Well Permits.

8..2.2 Agricultural operators are encouraged to use irrigation scheduling, water conserving crops and/or cover crops, and/or other best management practices when managing acres served by ground or surface water irrigation.

8.2.3 Agronomists and crop consultants can provide valuable assistance when identifying potential improvements for ground water use. Employing the services of a reputable agronomist or crop consultant is recommended.

Chapter 9 – Level II Management Area (Level II MA) – Determination and Requirements

9.1 Level II Management Area (Level II MA) – Determination LCNRD may initiate Level II MA actions when the determination of LCNRD ground water levels represented by monitoring wells indicates the static water level elevation has dropped below 1991 ground water levels for a two consecutive year period using spring water level readings. When this trigger is actuated, LCNRD will take the actions listed in Chapter 9.2.

In areas not sufficiently represented by monitoring wells – if the staff and Board of Directors becomes aware of areas experiencing ground water level decline, including in-season declines, the areas will be further evaluated and a Level II MA designation may be made if deemed necessary by the staff and Board of Directors. When this trigger is actuated, LCNRD will take the actions listed in Chapter 9.2.

Flexibility is built into the triggers because of the complex hydrogeology of LCNRD. The current triggers may be too protective in some areas and may under-protect other areas. As knowledge of LCNRD’s hydrogeology increases, the triggering mechanisms will be modified to improve the effectiveness of ground water quantity protection efforts. LCNRD will develop unique triggers and actions for different regions of the District as more local hydrogeologic information becomes available.

9.2 Level II Management Area (Level II MA) Requirements - When the triggers in Chapters 9.1 are actuated the following actions will be implemented:

9.2.1 All Level I MA Requirements as set forth in Chapters 8 shall apply.

- 9.2.2** Increase the number of wells monitored in the area to determine the extent of the problem, and to serve as a base line for determining if the area included in the Level II MA should be modified and to obtain the hydrogeologic information necessary to delineate the Level II MA. The intensified monitoring program described below applies to the entire LCNRD. The actual monitoring program for each problem area may vary according to the local hydrogeologic characteristics of the area.
- 9.2.3** The Board of Directors will determine an initial area to be monitored. The shape and size of the area will change as more information is gathered. A minimum area of nine (9) square miles will be monitored.
- 9.2.4** The minimum number of monitoring sites will be approximately 50% of the number of registered irrigation wells in the area that are suitable for use as ground water level monitoring wells (taking into account criteria such as quality of well construction, total well depth and screened intervals). LCNRD will also consider using registered industrial, livestock, monitoring, observation, public water supply, and domestic wells that would be suitable as monitoring sites.
- 9.2.5** When deemed necessary by the Board of Directors and staff, a localized ground water model will be developed to further delineate the area to be monitored.
- 9.2.6** When deemed necessary LCNRD will install dedicated observation wells to collect additional geologic and static water level data.
- 9.2.7** The construction of new well(s) to be comingled or existing wells modified to be comingled for irrigation or stock use is not allowed in a Level II MA designation.
- 9.2.7** All new permitted wells approved and constructed may be added to LCNRD's monitoring well program if deemed necessary.
- 9.2.8 End Gun Use in Designated Level II Management Areas**
- 9.2.8.1** End guns are not allowed on any irrigation system installed as part of a new well permit or as a method to expand irrigated acres.
- 9.2.8.2** In order to conserve water, end gun use is strongly discouraged on any existing or replacement wells and irrigation systems.
- 9.2.9 Flow Meters in Designated Level II Management Areas**
- 9.2.9.1** All new wells, wells combined to pump greater than fifty (50) gpm, replacement wells and wells serving locations where corner systems are used; are required to have a fully functioning flow meter installed.
- 9.2.9.2** See Chapter 13 for rules and regulations pertaining to flow meter requirements.
- 9.2.9.3** Total annual ground water withdrawal reports will be required as detailed in Chapters 9.3 and 14.

9.2.9.4 All existing wells pumping greater than fifty (50) gpm or combined to pump greater than fifty (50) gpm (not serving corner systems) are strongly encouraged to install a flow meter.

9.2.9.5 Cost share may be provided by LCNRD to assist with the costs associated with flow meter purchase and/or installation.

9.2.10 Ground water use prohibited for irrigation purposes after October 1st each year.

9.2.10.1 The use of ground water for irrigation is prohibited after October 1st of each year unless the purpose is to start a cover crop, grass/pasture, or small grain.

9.2.10.2 If there is a valid reason, other than cover cropping, grass, small grain or other crop establishment, to irrigate after October 1st approval from LCNRD must be granted prior to irrigating.

9.2.11 Ground water use reports required - Ground water users pumping greater than 50 gallons per minute, except municipal wells, within established Level II MA areas are required to submit annual water use reports.

9.2.11.1 For wells where flow meters are required by Chapter 9.3, ground water withdrawal must be reported, including readings from the flow meter, crop irrigated, and other information as deemed necessary by the Board of Directors, on forms provided by LCNRD.

9.2.11.2 For wells where a flow meter is not installed, flow may be determined using an ultrasonic flow meter or other acceptable means. Ground water withdrawal, crop irrigated, and other information as deemed necessary by the Board of Directors, must be reported on forms provided by LCNRD.

9.2.11.3 10% of wells in the Level II MA will be checked for reporting accuracy each year.

9.2.11.4 Following the first year of Level II MA designation, ground water users will be asked to address and report water use inefficiencies of the well and/or irrigation system located in the designated Level II MA using Chapter 9.3 as a guide, however, not the only source of identifying inefficiencies.

9.2.11.6 LCNRD will report the ground water use per acre, per crop in the designated area following receipt of annual withdrawal reports.

9.2.11.7 See Chapter 14 for additional ground water use report requirements.

9.3 Irrigation Management following Level II MA designation

9.3.1 In the first year following Level II MA designation, all irrigation users withdrawing ground water from the established Level II MA must evaluate the ground water use efficiency of the well and irrigation system applying water withdrawn from the designated Level II MA. This evaluation may include, but is not limited to, analysis of sprinkler options, evaluation of pump efficiency, leak identification, and system efficiency.

9.3.1.1 Ground water users must report the identified inefficiencies and the mechanisms implemented or planned for implementation to improve ground water use efficiency.

9.3.2 All irrigation users within the established Level II MA are strongly encouraged to evaluate crop water use requirements vs. precipitation and ground water use for the crop year. If discrepancies exist in water use amounts, landowners are strongly encouraged to modify ground water use to match crop water use recommendations. Ground water users are strongly encouraged to adopt the identified modifications.

9.3.2.1 Ground water users must report the identified discrepancies in water use amounts vs. crop requirements, any modifications made to ground water use to match crop water use.

9.3.3 All irrigation users are strongly recommended to implement irrigation management tools and irrigation scheduling to improve ground water use efficiency. LCNRD may provide cost share to assist landowners with the cost of implementing approved methods of irrigation management.

9.3.3.1 Ground water users must report the irrigation management tools and irrigation scheduling practices that have been implemented.

9.3.4 Expansion of irrigated acres shall be allowed in a Level II MA. If a Level III MA is designated any acres that have not been irrigated prior to the effective date of the Level III MA shall be prohibited. This restriction shall apply even if an irrigated acre expansion permit had been issued by the Board of Directors prior to the implementation of the stay.

9.3.4.1 This rule must be made clear to permit applicants when applying for acre expansion during Level II MA designation.

9.4 **Level II MA rules and regulations** will remain in effect until conditions improve and they are dissolved by the Board of Directors.

Chapter 10 – Level III Management Area (Level III MA) – Determination and Requirements

10.1 Level III Management Area Determination - Level III MA – The Board of Directors may initiate the following actions when spring water level readings, following the second year of Level II MA designation, have not raised above the Level II trigger point in LCNRD monitoring wells identified in Chapter 9.

A Level III MA can be designated from all or a portion of a previously designated Level II MA. If aquifer conditions indicate the affected area is greater than the Level II MA and the area is adjacent to the existing Level II MA, the area identified can be designated a Level III MA without first being designated a Level II MA.

Level III MA designation may also be actuated if there is sufficient evidence the health of an aquifer is at risk due to in season irrigation pumping without first being designated a Level II MA.

10.2 Level III Management Area Requirements - When any of the triggers in Chapter 10.1 are actuated, all or part of the Level II MA will be designated a Level III MA and LCNRD will take the following actions:

10.2.1 All Level I MA requirements as set forth in Chapter 8 and all Level II MA requirements as set forth in Chapter 9 shall apply unless superseded by requirements in Chapter 10.

- 10.2.2** All wells pumping or combined to pump greater than fifty (50) gpm are required to have a fully functioning flow meter installed. See Chapter 13 for rules and regulations pertaining to flow meters.
- 10.3** **The closure to the issuance of any new permits** will be in effect for the entire Level III MA.
- 10.4** Annual ground water use allocations will be in effect as determined by the Board of Directors and set forth by Chapters 15, 16, and 17 of these rules and regulations.
- 10.5** Replacement wells will be allowed, however; the replacement well cannot be designed to pump greater than the registered pumping capacity of the original well.
- 10.5.1** Replacement wells must adhere to all Chapter 5 rules.
- 10.5.2** A replacement well can be relocated out of a Level III MA into a lesser Level MA however, Level III MA rules remain in effect on the replacement well until the Level III MA is dissolved by the Board of Directors.
- 10.6** Level III MA rules will remain in effect until the Level III MA is dissolved by the Board of Directors and the MA will be considered a Level I MA with conditions listed in 10.6.1.
- 10.6.1** Level I MA following Level III MA dissolution by the Board of Directors the following conditions will be added to the Level I MA requirements.
- 10.6.1.1** No end guns allowed.
- 10.6.1.2** New irrigation wells developed will be limited to irrigate no more than 125 total acres or the equivalent of the number of acres irrigated by a full swing pivot erected on one quarter section without an end gun present.
- 10.6.1.3** When a new well is developed the irrigation pump must be set to 80% or less of the total pumping capacity documented during tested pumping and provided to LCNRD.
- 10.6.1.4** The construction of new well(s) to be comingled or existing wells modified to be comingled for irrigation or stock use is not allowed.

Chapter 11 – Ground Water Transfer Variance

- 11.1** Any person who intends to transfer ground water more than one mile (5280 feet) from an existing well or proposed well location, shall apply for a variance on forms provided by LCNRD.
- 11.1.1** A non-refundable application fee (See Appendix B – Fee Schedule) payable to LCNRD shall accompany all requests for ground water transfer variances to cover costs associated with its preparation and review.
- 11.2** **Transfers for Agricultural Users** - The Board of Directors will consider a request for a ground water transfer variance by an Agricultural User as defined in Chapter 3, when the following criteria are met:

- 11.2.1 Ground water transfer variances will not have a significant adverse effect any other water user;
 - 11.2.2 Ground water transfer variance is consistent with all applicable statutes and LCNRD rules and regulations, including criteria to review new water well permit applications of Chapter 5.2 and irrigated acre expansion of Chapter 5.1 in order to evaluate aquifer characteristics and soil capability class and slope suitability for irrigation with the best information available;
 - 11.2.3 Will only be considered if the well where withdrawal will occur is/will be registered with DNR;
 - 11.2.4 The total transfer from the source tract shall not apply ground water to more than one-hundred sixty (160) acres on the receiving tract and no more than a combined total of three-hundred twenty (320) acres between the source track and receiving track;
 - 11.2.6 Is in the public interest.
- 11.3 Transfers for livestock producers** - The withdraw and transfer of ground water within LCNRD for the sole purpose of providing water to range livestock does not require a transfer permit as long as the following condition is met:
- 11.3.1 The capacity of the water well or series of water wells connected for such purposes does not exceed fifty (50) gallons per minute.
- 11.4 Transfer of ground water is prohibited when Level II MA triggers have been met and a management area defined unless already existing.
 - 11.5 Chapter 11 shall not exempt a person from the provisions of applicable state laws regarding ground water transfer.
 - 11.6 Ground water transfers authorized by municipalities are exempt from Chapter 11 requirements.
 - 11.7 The Board of Directors may revoke a ground water transfer variance if the ground water user does not comply with the provisions of Chapter 11 including any conditions placed on the ground water transfer variance at the time of issuance.

Chapter 12 – Certification of Ground Water Use Acres and Water Well Use

- 12.1 Except as otherwise provided herein, no acres will be irrigated with ground water unless those acres have been certified for irrigation by LCNRD. Any irrigated acres that are not certified on or before December 31, 2024, or later date if deemed necessary by the Board of Directors, will not be allowed to have ground water applied to them for any purpose, unless an application is made and approved according to Chapter 5.1 to expand irrigated acres. Ground water use Acre Certification and water well use must meet the following requirements:
 - 12.1.1 Acres that have been irrigated at least one (1) time during the growing season between the calendar years of 2004 and 2015 shall receive full certification credit and will be certified provided documentation described in Chapter 12.1.5 is provided as required.

- 12.1.2** Acres that were irrigated prior to 2004 will not be considered for certification except for those cases detailed in Chapter 12.1.3.
- 12.1.2.1** Acres that have not been irrigated between 2004 and 2015, and do not meet the criteria in Chapter 12.1.3 must make an application to expand irrigated acres (Chapter 5.1) for those acres to be considered for certification by the Board of Directors.
- 12.1.3** Acres with documented irrigated history but currently enrolled with the Conservation Reserve Program (CRP), Conservation Reserve Enhancement Program (CREP), Environmental Quality Incentive Program (EQIP) or other federal, state or local conservation program that would prevent the landowner from irrigating, as described by Chapter 12.1.1 shall receive 100 % certification for the total amount of irrigated acres should they choose to proceed with the certification process with the following conditions:
- 12.1.3.1** Acres must be certified by December 31, 2024 or date approved by the Board of Directors.
- 12.1.3.2** Proof of historical use shall be by submission of information specified in Chapter 12.1.5 and had the means to irrigate during that time period.
- 12.1.4** Acres irrigated by multiple water sources may not be duplicated and certified with each source in the acre certification process. Each well used to irrigate the acres must be identified on the certification.
- 12.1.5** The following is required in order to complete the certification process:
- 12.1.5.1** Certification forms provided by LCNRD must be completed and signed by the landowner or power of attorney
- 12.1.5.2** Landowner and tenant contact information.
- 12.1.5.3** Confirmation historically irrigated acres were irrigated on or between 2004 and 2015.
- 12.1.5.4** Location of historically irrigated acres by legal description to the nearest quarter or quarter-quarter section and outlined on a map or recent aerial photo
- 12.1.5.5** The total number of historically irrigated acres.
- 12.1.5.6** The last calendar year of active irrigation.
- 12.1.5.7** The DNR registration number(s) of any ground water wells(s) associated with the irrigation of the land to be certified.
- 12.1.5.8** Identification of any other sources of irrigation water other than ground water.
- 12.1.5.9** If relevant, documented proof of enrollment in any local, state, or federal conservation programs as described in Chapter 12.1.3.

- 12.1.5.10** A copy of the property tax statement, or other documentation from the county assessor showing irrigated acres, or certification of irrigated acres from the Farm Service Agency (FSA) may be required.
- 12.1.5.10.1** A person can grant approval to allow LCNRD access to irrigated acre information from FSA.
- 12.1.5.11** For tax exempt ground water use acres, the ground water user shall provide available documentation as deemed necessary by the District.
- 12.1.5.12** A person must update well registration with the Nebraska Department of Natural Resources (DNR) indicating current ownership and LCNRD acre assessment of the irrigation well based on District acre certification.
- 12.1.5.13** Any other information deemed necessary by the Board of Directors.
- 12.2** Certification of irrigated acres will be complete upon submission to the Board of Directors of the following items:
- 12.2.1** Completed LCNRD provided certification form.
- 12.2.2** Property tax statement or FSA irrigated acre certification showing irrigated acres if requested.
- 12.2.3** The Board of Directors will certify tax exempt ground water use acres based on available information.
- 12.2.4** Current ownership and LCNRD acre assessment and the registration or well identification numbers of the irrigation wells irrigating those acres have been provided to the Nebraska Department of Natural Resources.
- 12.3** The Board of Directors may consider adjustment to certified ground water use acres based on evidence presented by the ground water user.
- 12.4** The Board of Directors will consider certification of ground water use acres at monthly Board meetings.
- 12.5 Pooling of ground water use acres for irrigated acre purposes** – The certified ground water use acres which are under the control of two or more agricultural users served by the same water well shall be pooled unless the ground water withdrawn by each agricultural user is measured by a different flow meter.
- 12.5.1** The pooling agreement shall designate the water well(s) and ground water use acres included in the pool. The pooling agreement shall also designate the person(s) responsible for all reporting of ground water withdrawal and other information required by the District should allocation or reporting be required.
- 12.5.2** All agricultural users with ground water use acres included in the pooling agreement must sign the agreement.

- 12.5.3 Certified ground water use acres which have exhausted their allocation shall not be added to a pooling agreement.
- 12.6 **Other ground water users** – By December 31, 2025, or date designated by the Board of Directors, other ground water users must report the following information to LCNRD if the well(s) is rated to remove more than fifty (50) gallon per minute:
 - 12.6.1 The water wells under the user’s control.
 - 12.6.2 The purpose of the ground water withdrawal.
 - 12.6.3 Historic annual ground water withdrawal, if known.

Chapter 13 – Water Measurement and Flow Meter Requirements

- 13.1 **Flow meter required** – Any new, replacement, or existing water well designed and constructed to pump greater than fifty (50) gallons per minute, or existing water wells modified to pump greater than fifty (50) gallons per minute, or water wells combined in some way to pump greater than fifty (50) gallons per minute, must be equipped with a flow meter prior to ground water withdrawal: if any of the following conditions are met:
 - 13.1.1 Well construction was approved on or after the effective date of these rules and regulations or was a well pumping or combined to pump more than 50 gpm on or after August 1, 2014.
 - 13.1.2 It is an existing water well located within a designated Level III MA and meets requirements as outlined in Chapter 10.
 - 13.1.3 Allocations become effective as outlined in Chapters 15, 16 and 17.
- 13.2 Ground water withdrawal measured from connected wells – Ground water withdrawals from water wells that are connected by a common pipeline may be measured by the use of one flow meter, provided the total ground water withdrawal is measured.
- 13.3 All flow meters installed must be approved – Any flow meter installed to comply with these rules must be selected from a list approved by the Board of Directors, and must meet or exceed the following minimum specifications, except for public water supply wells regulated under the Nebraska Department of Health and Human Services Title 179, Chapter 22.
 - 13.3.1 LCNRD will maintain a list of flow meter models and/or brands approved for use in LCNRD for the purposes of this rule. This list may be viewed in the LCNRD office at 608 North Robinson Ave, Hartington, Nebraska or available on the LCNRD website at lcnrd.nebraska.gov.
 - 13.3.2 The meter manufacturer must have detailed written instructions for the installation and operation of the flow meter and for the frequency and methods for maintaining the flow meter.
 - 13.3.3 Flow meters must be accurate to within plus-or-minus two percent (+/- 2%) of the flow meter reading.

- 13.3.4** Flow meters shall have a clearly readable indicator to record and display the total volume of withdrawal, which shall measure in units of gallons or acre-inches, and shall clearly and visibly display any multiplier needed to convert the meter reading to the correct total volume of ground water withdrawal. The totalizer shall be non-resettable.
 - 13.3.5** Each flow meter totalizer shall have sufficient range to record the total volume of water expected to be withdrawn over at least a one (1) year period.
 - 13.3.6** Flow meters shall be installed according to the manufacturer's specifications and calibrated to pipe size so the expected flow rate and pressure are within the manufacturer's design parameters for the flow meter. The meter size, serial number and the direction of flow shall be clearly stamped on the body of the meter. The inside pipe diameter for which the meter has been calibrated shall be clearly shown on the meter to the nearest 0.001 of an inch.
 - 13.3.7** Flow meters, especially the register and meter head, shall be protected from the weather, livestock, and other potential sources of damage.
 - 13.3.8** The Board of Directors will consider approval of flow meters installed prior to the implementation of these rules and regulations on a case by case basis.
- 13.4 Flow meter maintenance and repair** – LCNRD may inspect flow meters for proper installation and operation.
- 13.4.1** The ground water user shall be responsible for maintenance, repair and/or replacement of a malfunctioning flow meter or improperly installed flow meter.
 - 13.4.1.1** Maintenance must be completed according to the schedule recommended by the manufacturer.
 - 13.4.2** Records of the flow meter readings must be kept by the ground water user when a flow meter is removed for offsite service or replacement.
 - 13.4.3** When a flow meter is removed for repair at a time when the ground water user desires to withdraw ground water, a temporary flow meter may be installed.
 - 13.4.3.1** LCNRD approved methods of determining ground water consumption may be used if a flow meter is not available or cannot be readily installed when repairs are necessary.
 - 13.4.3.2** The flow meter must be replaced no later than the next ground water use season.
 - 13.4.4** The flow meter service provider shall certify in writing that a flow meter meets the manufacturer's specifications following repairs or calibration.
 - 13.4.4.1** The ground water user shall provide LCNRD with a copy of the certification.
- 13.5 Sealing of flow meters** – Flow meters may be sealed by LCNRD to prevent tampering.
- 13.5.1** LCNRD may consider whether or not to seal a flow meter when circumstances indicate doing so may cause unnecessary inconvenience for the ground water user or LCNRD.

- 13.5.2** Removal of a seal must be approved – The seal on a flow meter shall not be removed without prior approval from LCNRD.
- 13.6** Random inspection of flow meters – LCNRD shall have access at all reasonable times to randomly inspect installed flow meters.
- 13.7** A flow meter may be removed for off season storage, where applicable.
- 13.7.1** In order to prevent ground water contamination when a flow meter is removed, the pipe opening must be covered in such a manner as to provide a water tight seal.
- 13.8 Penalty for failure to comply** – A ground water user that fails to report, or falsely reports ground water withdrawal, removes a seal from a flow meter, damages or interferes with the operation of a flow meter, neglects to perform required maintenance, or allows another person to do so, shall be:
- 13.8.1** Subject to cease and desist of ground water use until requirements for flow meter operation, use, and/or reporting are met in situations where a flow meter is required.
- 13.8.2** Subject to forfeiture of allocation or other penalty as the Board of Directors so determines, if the well is located in an area where a Level III MA has been designated.

Chapter 14 – Annual Ground Water Use Reports

- 14.1 Ground water use reports** for wells where flow meters are required by Chapter 5.2.8.1.
- 14.1.1** Ground water use reports are required for all wells pumping or combined to pump more than 50 gallons per minute constructed on or after the effective date of these rules and regulations or irrigation wells and replacement irrigation wells constructed after August 1, 2014 as outlined in Chapter 5.2.8.1.
- 14.1.2** Ground water use reports are required for wells located within a designated Level II and/or Level III MA, as outlined in Chapter 9 and 10.
- 14.2** Prior to the next growing season, all agricultural ground water users shall report the ground water withdrawal from each water well, where a flow meter is required or where a Level II or III MA has been declared for the calendar year.

Chapter 15 – Allocation to Agricultural Users – Following Level III MA Designation

- 15.1** Amount of ground water allocated – The allocation for the first ground water use period (to be designated by the Board of Directors) in a Level III MA will be set after considering: (1) the relationship between ground water wells within the subarea; (2) whether ground water levels are declining; (3) historical irrigation use as established in Level II MA; and (4) such other factors as the Board of Directors determines may be relevant to the appropriate amount of water to be withdrawn. The first allocation will be established by September 1st prior to the next growing season.
- 15.1.1** The allocation will be set by amendments to these rules and regulations in accordance with the requirements of state law.

- 15.2** When an agricultural user does not withdraw all of his or her allocation of ground water during a ground water use period, the unused portion cannot be carried over to the next ground water allocation period.
- 15.3** Ground water withdrawn in excess of agricultural user's allocation will be reduced by 25% from the amount of ground water allocated for the next ground water use period and the equivalent of the excess use from the previous allocation year shall be deducted from his or her next ground water use period allocation.
- 15.4** When the control of certified ground water use acres is conveyed to a different agricultural user during a ground water use period, the remaining allocation balance for said acres shall also be conveyed to the new agricultural user.
- 15.5.1** If the ground water use acres are in a pooling agreement, the affected agreements must be amended as provided in Chapter 12.5.
- 15.6** Acres Reduction Variance – A ground water user may request that LCNRD use a reduction in ground water use acres as an alternative to ground water allocation. The Board of Directors may consider such requests on a case by case basis.

Chapter 16 – Conservation for Municipal Users – Following Level III MA Designation

- 16.2** LCNRD recommends municipal users adopt administrative procedure that allows the municipal user to require water conservation practices and restrict the water use of its customers.
- 16.3** LCNRD recommends municipal users develop a conservation information and education plan designed for its customers and begin implementation of the plan.

Chapter 17 – Allocation to Other Users - Following Level III MA Designation

- 17.1** Allocation for other users shall be established by September 1st for the first ground water use period after considering:
- 17.1.1** the relationship between ground water wells in the subarea
 - 17.1.2** the quantity of ground water used annually in the last two (2) year period during the Level II MA designation;
 - 17.1.3** the purpose for which the ground water is to be used;
 - 17.1.4** an explanation of operation methods, including water conservation features, for of the identified water use;
 - 17.1.5** an estimate of the water use per unit of production, if applicable;
 - 17.1.6** other factors the Board of Directors determines necessary.
- 17.2** Conservation procedures required – after implementation of this rule, the other user shall submit to LCNRD an adopted procedure that defines how the other user will conserve ground water.

- 17.2.1** The other user shall provide the Board of Directors documentation of adopted conservation procedures.
- 17.3** New or modified operations requiring additional ground water – If, at any time, any other user desires to start a new operation or modify an existing operation that will require a new or additional allocation, he or she shall request such an increase. The request shall include:
- 17.3.1** The quantity of ground water desired annually.
- 17.3.2** The purpose for which the ground water is to be used.
- 17.3.3** An explanation of operation methods, including water conservation features, for of the identified water use.
- 17.3.4** An estimate of the water use per unit of production, if applicable.
- 17.3.5** Other information requested by the Board of Directors.
- 17.4** The new allocation will be set by amendments to these rules and regulations by September 1st in accordance with the requirements of state law.
- 17.5** When a user does not withdraw all of his or her allocation of ground water during a ground water use period, the unused portion cannot be carried over to the next ground water allocation period.
- 17.6** Ground water withdrawn in excess of other user’s allocation will be reduced by 25% from the original amount of ground water allocated and the equivalent of the excess use from the previous allocation year shall be deducted from his or her next ground water use period allocation.
- 17.7** When the control of any other user’s withdrawal is conveyed to a different ground water user during a ground water use period, the remaining allocation balance for the ground water use period shall also be conveyed to the new ground water user.

Chapter 18 – Level III MA Ground Water Wells and Irrigated Acre Stay of Development

- 18.1** In a Level III MA the Board of Directors shall issue a stay on well permits, well construction, and expansion of irrigated acres. Before stays are enacted, LCNRD shall conduct a minimum of one (1) public meeting to offer statements on the need and to accept testimony from the public.
- 18.1.1** A Board of Director issued stay on new well construction and/or expansion of irrigated acres shall be provided by publication once each week for three consecutive weeks in at least one (1) newspaper of local circulation.
- 18.1.2** Construction of any new well shall be prohibited on the effective date of Level III MA designation unless construction had commenced prior to that publication date. This restriction shall apply even if a well permit had been issued by the Board of Directors prior to the implementation of a stay.
- 18.1.3** Expansion of irrigated acres shall be prohibited on the effective date of Level III MA designation unless irrigation had commenced prior to that publication date. This restriction

shall apply even if an irrigated acre expansion permit had been issued by the Board of Directors prior to the implementation of a stay.

18.1.3.1 This rule must be made clear to permit applicants when applying for acre expansion during Level II MA designation.

18.1.4 Certification of irrigated acres shall be accomplished following procedure outlined in Chapter 12.

18.1.5 All stays will be in effect until Level III MA designation is dissolved by the Board of Directors.

Chapter 19 – Angled and Horizontal High Capacity Wells

19.1 Well permit applications received for angled or horizontal high capacity wells may be subject to analysis by a consulting engineering firm to determine potential impacts to other ground water users.

Chapter 20 – Miscellaneous

20.1 Severability – If a rule or part of a rule herein is declared invalid or unconstitutional by a state or federal court such declaration will not affect the validity or constitutionality of the remaining rules or portions thereof.

Legend

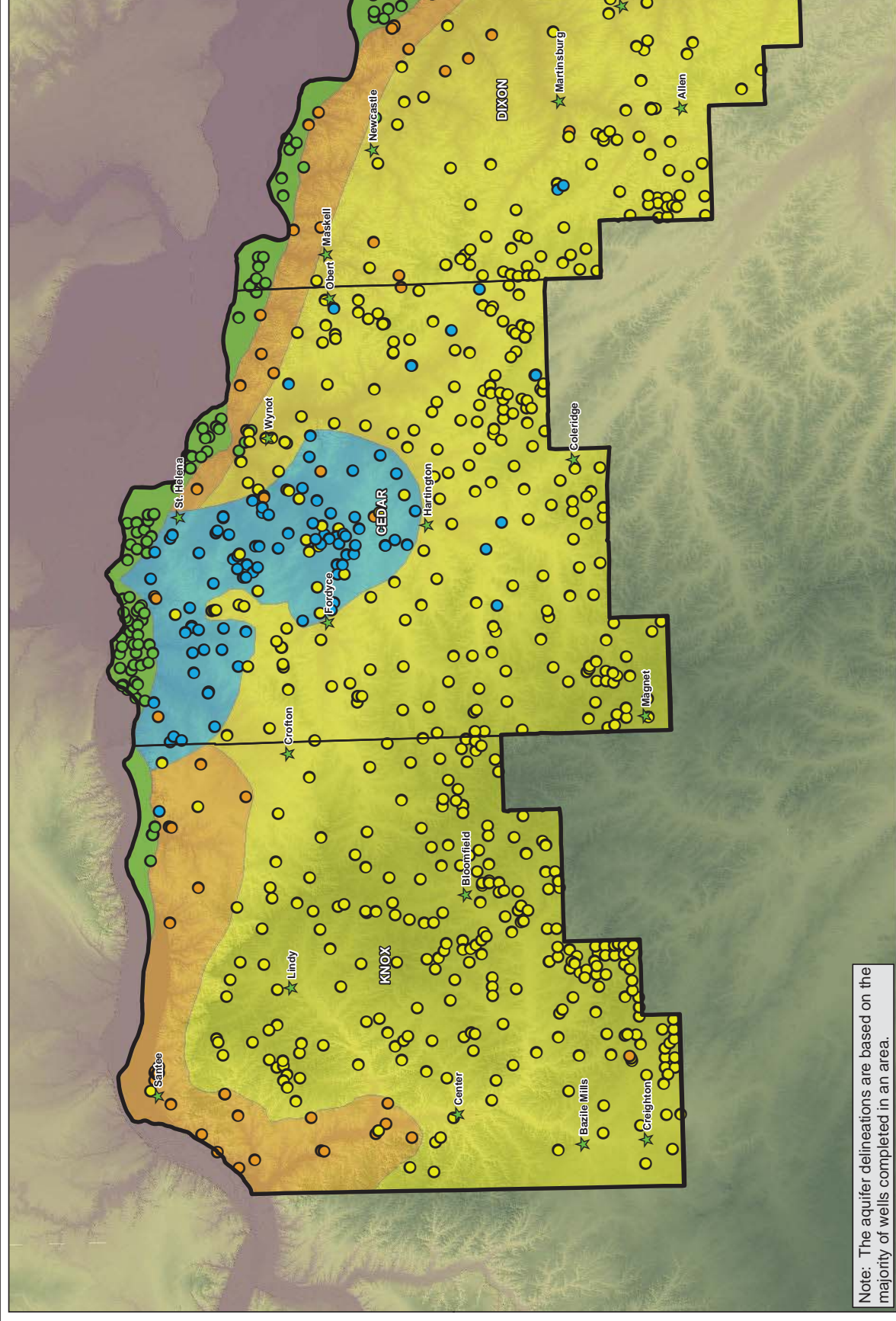
- City
- NRD Boundary
- County

Aquifer Delineation

- Missouri River Alluvium
- Undifferentiated Sand and Gravel
- Bedrock (Nebraska)
- Bedrock (Dakota)

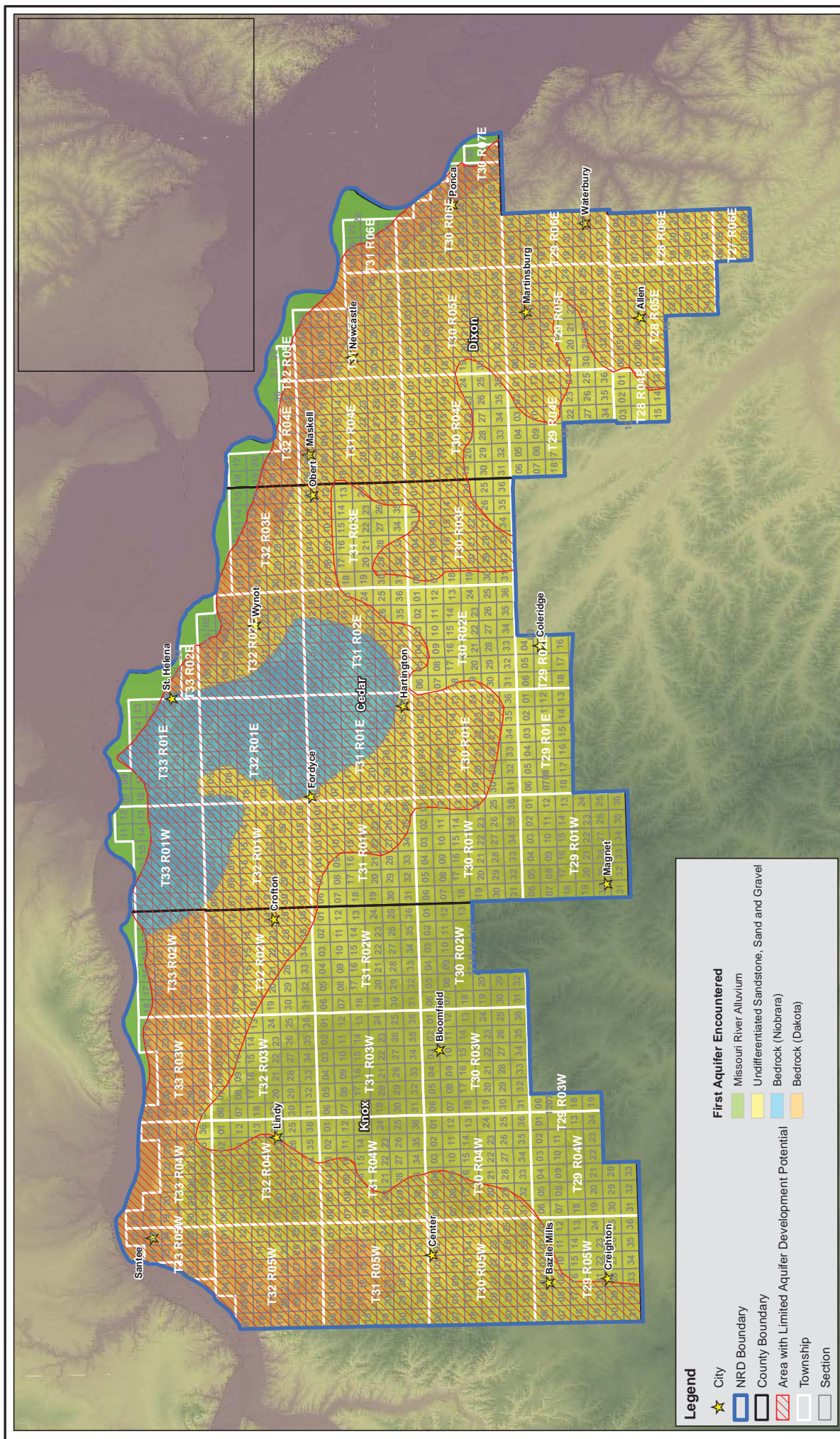
DNR Registered Well with Aquifer Designation

- Missouri River Alluvium
- Undifferentiated Sand and Gravel
- Bedrock (Nebraska)
- Bedrock (Dakota)



Note: The aquifer delineations are based on the majority of wells completed in an area.

PROJECT: 013-0132	Sources: UNL - CSD; Test Hole DNR - City, County, Major Highway, NRD Boundary, Registered Well USGS - Stream Hillshade - Developed from DNR DEM Aquifer Delineation - Interpreted from DNR and CSD well logs.			AQUIFER DELINEATION MAP Lewis and Clark Natural Resources District Northeast, Nebraska		FIGURE 1
DRAWN BY: RD						
DATE: August 14, 2013						



Legend

- ★ City
- ▭ NRD Boundary
- ▭ County Boundary
- ▨ Area with Limited Aquifer Development Potential
- ▭ Township
- ▭ Section

First Aquifer Encountered

- ▭ Missouri River Alluvium
- ▭ Undifferentiated Sandstone, Sand and Gravel
- ▭ Bedrock (Niobrara)
- ▭ Bedrock (Dakota)

PROJECT: 013-0132
 DRAWN BY: RD
 DATE: August 14, 2013

Sources:
 Hilstade - Developed from DNR DEM

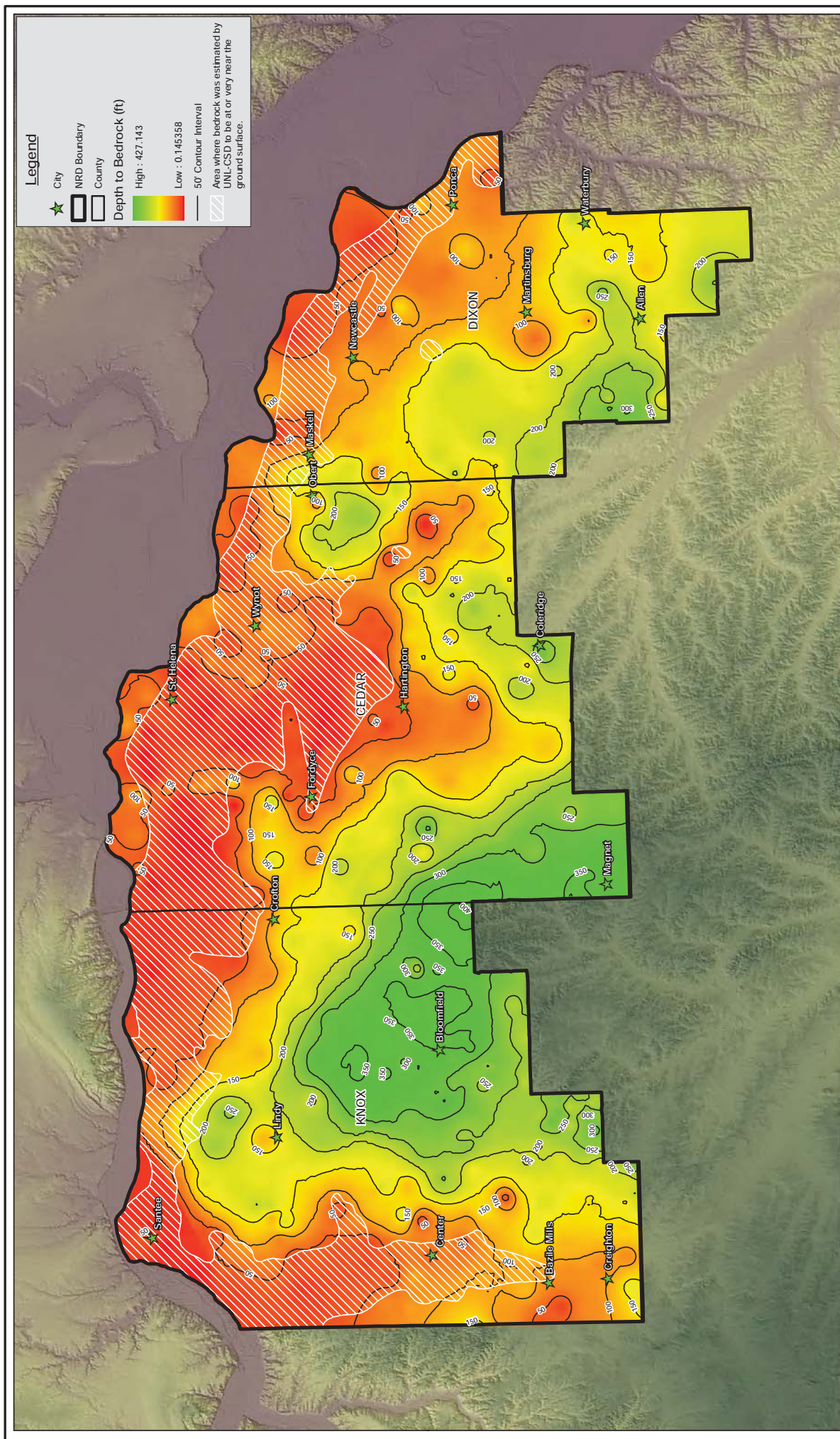
Scale: 1:316,800
 2.5 0 2.5 5 7.5 Miles

PRELIMINARY SUBAREA DELINEATION MAP
 Lewis and Clark Natural Resources District
 Northeast, Nebraska

OLSSON ASSOCIATES

FIGURE 2

M:\orgis\olsson_gis_files\fig 1 - Prelim Subarea Delineation v10.mxd User: asudbeck



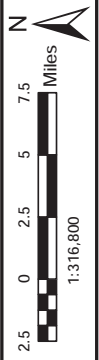
Legend

- ★ City
- ▭ NRD Boundary
- ▭ County
- Depth to Bedrock (ft)
- High : 427,143
- Low : 0,145358
- 50' Contour Interval
- ▨ Area where bedrock was estimated by UNL-CSD to be at or very near the ground surface.

FIGURE
3

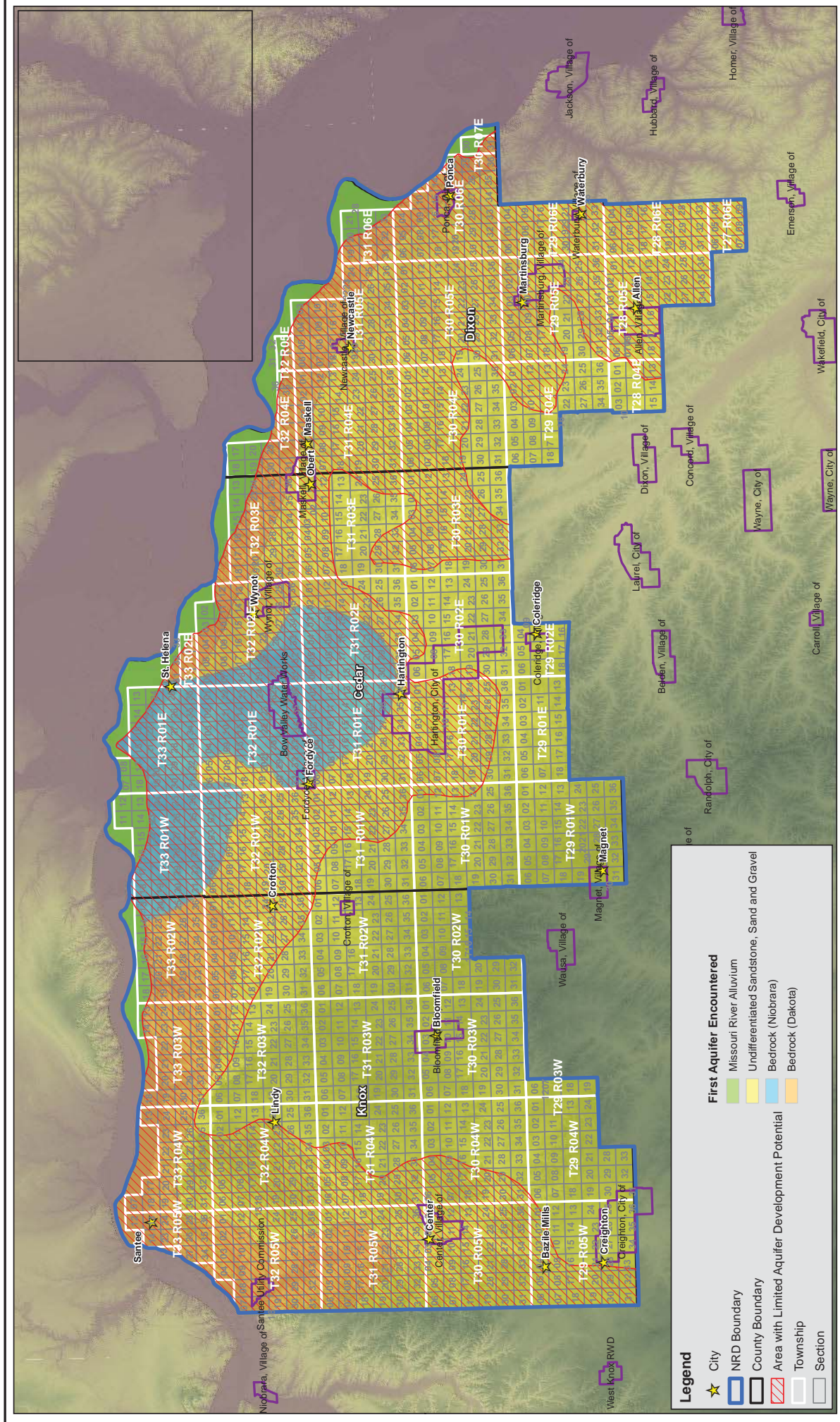


DEPTH TO BEDROCK MAP
Lewis and Clark Natural Resource District
Northeast, Nebraska



Sources:
 UNL - CSD; Test Hole
 DNR; City, County, Major Highway, NRD Boundary, Registered Well
 USGS; Stream
 Hillshade - Developed from DNR DEM
 Depth to Bedrock - Interpreted from DNR and CSD Well logs.

PROJECT: 009-1684_101_101001
 DRAWN BY: RD
 DATE: June 24, 2010



Legend

- ★ City
- City Boundary
- NRD Boundary
- County Boundary
- Area with Limited Aquifer Development Potential
- Township
- Section

First Aquifer Encountered

- Missouri River Alluvium
- Undifferentiated Sandstone, Sand and Gravel
- Bedrock (Niobrara)
- Bedrock (Dakota)

PROJECT: 013-0132
 DRAWN BY: RD
 DATE: August 14, 2013

Sources:
 Hlstrade - Developed from DNR DEM

Scale: 1:316,800
 2.5 0 2.5 5 7.5 Miles

PRELIMINARY SUBAREA DELINEATION MAP
 Lewis and Clark Natural Resources District
 Northeast, Nebraska

OLSSON ASSOCIATES

FIGURE 4

Lewis and Clark NRD

Irrigated Acre Expansion and Well Permit Ranking Methodology

Appendix A

Well/Groundwater Ranking Methodology

Goal: To continue to allow high capacity well development without creating impacts, conflicts or interference with neighboring water well users. Wells developed in sands and gravels will be ranked using the following criteria.

Permit applications for wells proposed in the Niobrara or Dakota Formations will consider the well density within 6,000 feet of the proposed well (Steps 3, 4, and 5) and determine whether there is a potential impact to the existing groundwater uses. Test pumping results will be reviewed for wells proposed in the Niobrara Formation. A water quality test is required for wells proposed in the Dakota Formation.

Main Criteria

1. Thickness of Primary Aquifer Formation
2. Calculated Transmissivity
3. Irrigation Well Density
4. Public Water Supply Well Density
5. Domestic, Livestock & “Other” Well Density
6. Irrigation Best Management Practices
 - a. Soil Moisture Monitoring Equipment

1. Thickness of Primary Aquifer Formation

- a. 1 point for each foot of primary aquifer thickness beginning with 0 points at 10 feet of thickness.
- b. Example – 18 feet of aquifer thickness equals 8 points (18ft – 10 ft).
- c. Maximum point value of 100.

2. Calculated Transmissivity

- a. The testhole log submitted will be reviewed and scored by comparing the testhole geologic entry to the estimated equivalent hydraulic conductivity table based upon work at the University of Nebraska Conservation and Survey by E.C. Reed and R. Piskin. (see Appendix A – Hydraulic Conductivity Table).
- b. The hydraulic conductivity value for each geologic entry is then multiplied by the number of feet of thickness of the material as shown in the equation.

i. $T = K * b$ (1)

where T = transmissivity, gpd/ft

K = hydraulic conductivity, ft/day

b = saturated thickness, ft

- c. The corresponding “T” values for each layer of material are then added together and multiplied by 7.48 gal/ft³ to get T_{eff}, the effective transmissivity.
- d. 1 point is scored for each 1,000 gpd/ft of transmissivity rounded to the nearest integer.
- e. Maximum point value of 100.

3. Irrigation Well Density

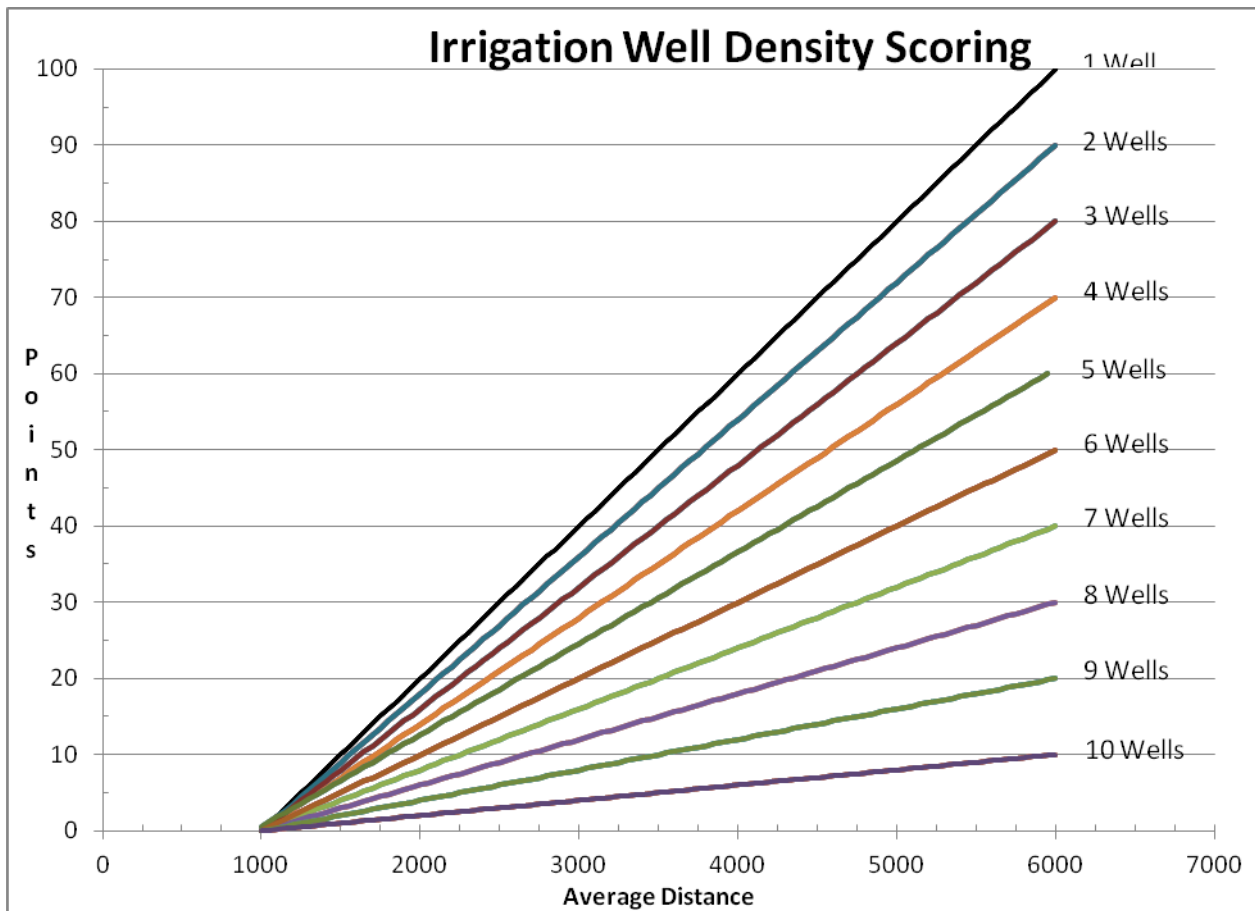
a. The irrigation well density is the distance away from the proposed irrigation well in relation to all other irrigation wells located within a 6,000 foot radius. The point value is calculated using the following equation:

$$i. \text{ Points} = [0.02 - [(n - 1) * (0.002)] * d - (22 - (2 - n))] \quad (2)$$

where n = number of irrigation wells

d = average distance of all irrigation wells within 6,000 feet

- ii. As the number of wells increases the maximum total point value decreases by 10 points for each additional well within the 6,000 foot radius
- iii. Maximum point value of 100 and minimum point value of 0
- iv. A zero point score is automatically assigned for 11 or more neighboring irrigation wells within the 6,000 foot radius
- v. Graphical representation of Equation (2)



4. Public Water Supply Well Density

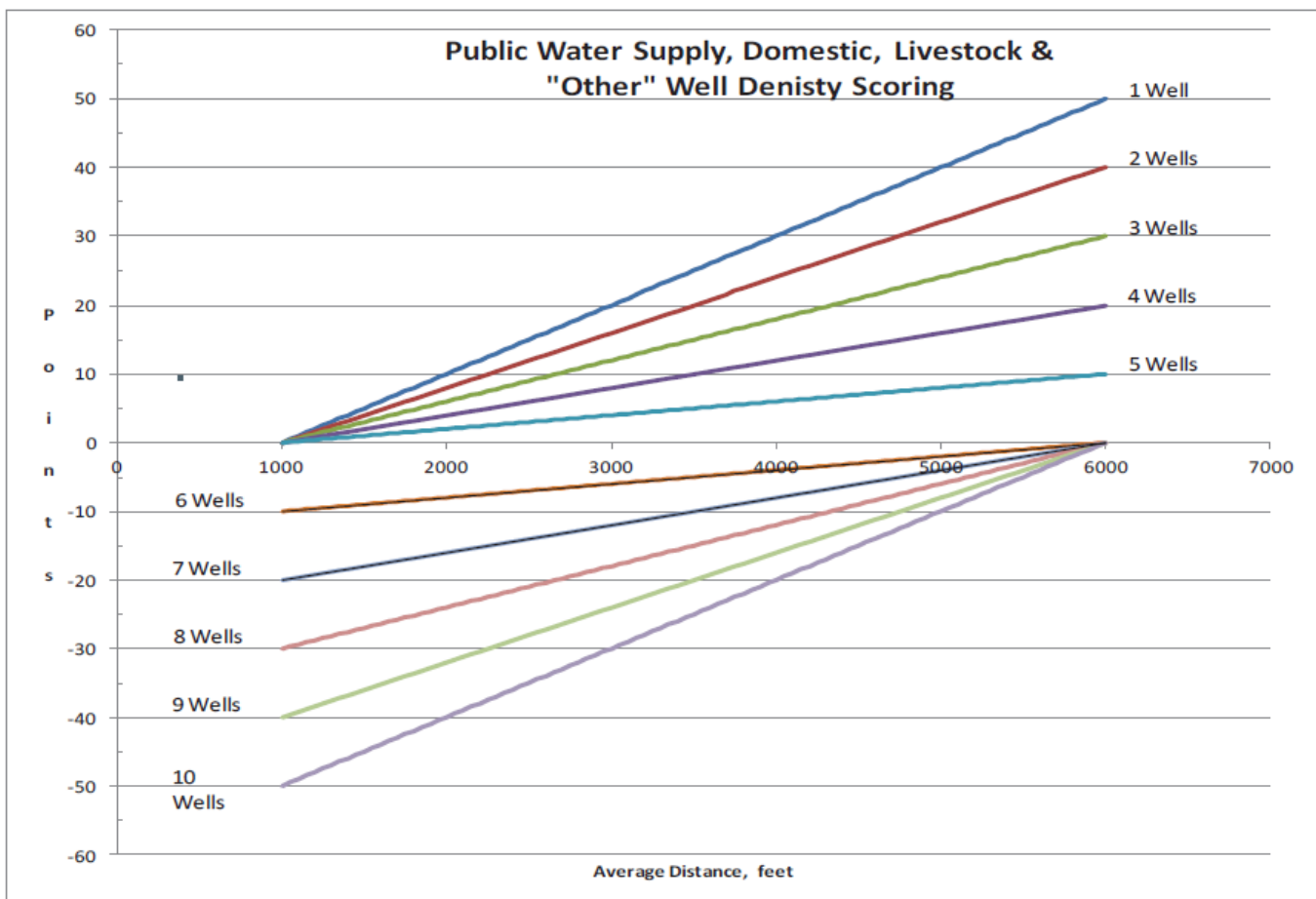
a. The public water supply well density is the distance away from the proposed irrigation well in relation to public supply wells located within a 6,000 foot radius. The point value for 1 to 5 public water supply wells located within a 6,000 foot radius is calculated using the following equation:

$$i. \text{ Points} = [[0.01 - [(n-1) * (0.002)]] * d - (12 - (2 * n))] \quad (3)$$

Where n = number of public water supply wells

d = average distance of all public water supply wells within a 6,000 foot radius

- ii. As the number of wells increases the maximum total point value decreases by 10 points for each additional well within the 6,000 foot radius
- iii. Maximum positive point value of 50
- b. The point value for 6 or more public water supply wells located within a 6,000 foot radius is calculated using the following equation:
 - i. $Points = [0.002 * (n - 5) * (d)] - (12 * (n - 5))$ (4)
Where n = number of public water supply wells
d = average distance of all public water supply wells within a 6,000 foot radius
 - ii. Maximum negative point value of 50
 - iii. Graphical representation of Equations (3) and (4)



5. Domestic, Livestock, and "Other" Well Density

- a. The domestic, livestock and "other" well density is also calculated using equations (3) and (4) in the public water supply well density.

Following is an example worksheet on how a well permit application would be scored according to the above methodology.

Example Data

Testhole Log

Material	From, ft	To, ft	K	T
Top soil	0	2		
Fine sand, tan	8	34		
Sand with clay/silt, brown	34	50		
Sand fine-medium, brown	50	54	53	212
Sand medium-course, tan	54	82	74	2072
Sand, with clay	82	104	6	132
Clay, yellow	104	120		

$T_{\text{effective}}$ in gpd/ft = 18,072

Ranking System Worksheet

Criteria	Maximum Points	Value	Units	Point Value
1. Thickness of Primary Aquifer Formation	100	54	feet	54
2. Transmissivity	100	18,072	gallons per day per foot	18
3. Irrigation Well Density	100	4595	average distance, feet 7 # of wells	29
4. Public Water Supply Well Density	50	2256	average distance, feet 2 # of wells	10
5. Domestic & Livestock Well Density	50	4955	average distance, feet 3 # of wells	24
6. Irrigation Management				25
Soil Moisture Monitoring	25			
	425	Total Score		160

Estimated Hydraulic Conductivity from Particle Size Descriptions

Grain Size	Degree of Sorting			Silt Content		
	Poor	Moderate	High	Slight	Moderate	Very
Clay and silt:						
Clay	0.0					
Silt, slightly clayey	1.3					
Silt, moderately clayey	2.7					
Silt, very clayey						
Silt; loess; sandy silt						
Sand and gravel:						
Very fine sand	13	20	27	23	19	13
Very fine to fine sand	27	27		24	20	13
Very fine to medium sand	36	41-47		32	27	21
Very fine to coarse sand	48			40	31	24
Very fine to very coarse sand	59			51	40	29
Very fine sand to fine gravel	76			67	52	38
Very fine sand to medium gravel	99			80	66	49
Very fine sand to coarse gravel	128			107	86	64
Fine sand	27	40	53	33	27	20
Fine to medium sand	53	67		48	39	30
Fine to coarse sand	58			53	43	32
Fine to very coarse sand	70			60	47	35
Fine sand to fine gravel	88			74	59	44
Fine sand to medium gravel	114			94	75	57
Fine sand to coarse gravel	145			107	87	72
Medium sand	67	80	94	64	51	40
Medium to coarse sand	74	94		72	57	42
Medium to very coarse sand	84			71	61	49
Medium sand to fine gravel	103			84	68	52
Medium sand to medium gravel	131			114	82	66
Medium sand to coarse gravel	164			134	108	82
Coarse sand	80	107	134	94	74	53
Coarse to very coarse sand	94	134		94	75	57
Coarse sand to fine gravel	116			107	88	68
Coarse sand to medium gravel	147			114	94	74
Coarse sand to coarse gravel	184			134	100	92
Very coarse sand	107	147	187	114	94	74
Very coarse sand to fine gravel	134	214		120	104	84
Very coarse sand to medium gravel	170			147	123	99
Very coarse sand to coarse gravel	207			160	132	104
Gravel						
Fine gravel	160	214	267	227	140	107
Fine to medium gravel	201	334		201	167	134
Fine to coarse gravel	245			234	189	144
Medium gravel:	241	321	401	241	201	160
Medium to coarse gravel	294	468		294	243	191
Coarse gravel	334	468	602	334	284	234

The table above shows the estimated hydraulic conductivities values from an unpublished and undated paper by E.C. Reed and R. Piskin as it was published in "Hydrogeology of Parts of the Twin Platte and Middle Republican Natural Resources Districts, Southwestern Nebraska" by J. W. Goeke, J. M. Peckenpaugh, R. E. Cady, and J. T. Dugan, Nebraska Water Survey Paper No. 70, April 1992, published through the Conservation and Survey Division, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln.

Irrigated Acre Expansion Permit Methodology

Goal: To continue to allow groundwater use for irrigation where its use is determined to be beneficial.

Main Criteria:

1. Groundwater ranking criteria described in the “Well/Groundwater Ranking Methodology” above
2. Irrigated Capability Classification
3. Soil Slope and Conservation Planning
4. Crop History and Conservation Planning

1. Groundwater/Well ranking criteria described above.

- a. Groundwater ranking criteria as described above must be met when proposed acres for irrigation expansion will be established using existing well(s).

2. Irrigated Capability Classification

- a. When 33 percent or more of the acres proposed for irrigation are of an Irrigated Capability Class of “6e” or greater, the proposed acres will be further evaluated (see 3. Soil Slope, Crop History and Conservation Planning).
- b. Irrigated Capability Class – Definitions (see table A)

3. Soil Slope, Crop History and Conservation Planning

- a. When 33 to 50 percent of the acres proposed for irrigation are of an Irrigated Capability Class of 6e or greater and a slope of 12% or greater, using 2012 LiDAR imagery, an approved conservation plan from the Natural Resources Conservation Service for those acres is required prior to the approval of a permit for groundwater application when other requirements are met. Conservation plans must be followed to maintain permit requirements.
- b. When more than 50 percent of the acres proposed for irrigation are of an Irrigated Capability Class of 6e or greater and a slope of 12% or greater a permit will be approved if or when the following conditions are met.
- c. A signed affidavit filed at the County Courthouse is required for permit approval.
 1. If the proposed acres are grass or pasture and will remain grass or pasture, the acres are eligible for permit approval to apply groundwater when other conditions are met.
 2. If the proposed acres have at least one year of recorded row crop history between 2004 and 2014 (could include alfalfa or small grain), the acres are eligible for permit approval with an approved and signed conservation plan.
 3. If the proposed acres were grass or pasture between 2004 and 2014 without recorded crop history, in those years, the acres are not eligible for permit approval to apply groundwater.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forestland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have slight limitations that restrict their use.

Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, e, w, s, or c, to the class numeral, for example, 2e. The letter e shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; w shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); s shows that the soil is limited mainly because it is shallow, droughty, or stony; and c, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by w, s, or c because the soils in class 5 are subject

to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, forestland, wildlife habitat, or recreation.

USDA – Land Capability Classification

January 31, 2021

**Lewis and Clark Natural Resources District - Fee Schedule for the
Management Area Rules and Regulations for Groundwater Quantity Management**

Appendix B

Fee Type	Typical	Late
Expand Irrigated Acres Permit Application	\$50.00	\$250.00
Water Well Permit Application	\$50.00	\$250.00
Variance Request	\$100.00	
Groundwater Transfer Permit	\$100.00	