

Deuel County Rural Development Site Analysis

A Study by
First District Association of Local Governments

Funded by the South Dakota Value Added Agriculture Subfund

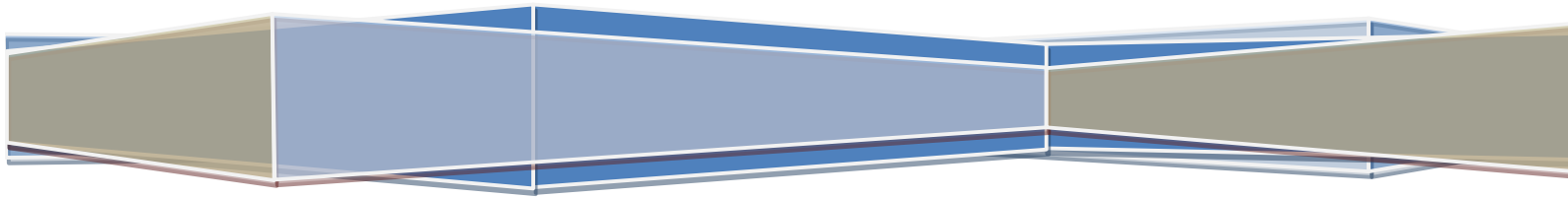


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SUMMARY

As part of the South Dakota Department of Agriculture's (SDDA) efforts to enhance economic development opportunities and better support local control of development, the County Site Analysis Program (Program) was developed in the summer of 2013. The Program assists participating counties in identifying potential rural properties with site development opportunities. The analysis and subsequent report will provide local leaders with information and research-based resources to foster well informed decisions regarding the future of their respective regions. It also helps identify and plan for potential challenges that may arise should those opportunities be pursued.

In implementing the Program, SDDA is working closely with South Dakota's Planning and Development Districts. The First District Association of Local Governments (First District) and Planning and Development District III (District III) developed a methodology for a feasibility analysis that focuses on identifying locations for rural economic development. The methodology addresses the feasibility of locations for the development of concentrated animal feeding operations, agricultural processing and storage facilities, and other agriculturally-related commercial/industrial development. The analysis took into consideration local zoning and State permitting requirements along with the availability of infrastructure necessary to accommodate certain rural economic development projects.

Utilizing Geographic Information System (GIS) technology, the First District identified **96** sites within Deuel County that met the minimum site assessment standards of the concentrated animal feeding operations (CAFO) analysis and **0** sites that met the minimum standards of the Agriculturally-related Industrial Development (AID) analysis. These sites complied with local zoning ordinances and were in close proximity to infrastructure necessary to support the previously identified economic development activities.

Identifying and evaluating potential sites for development is the first step in planning for economic development in rural Deuel County. While this report focuses on the **96** specific sites (96 CAFO, 0 AID) matching the site assessment criteria standards, it became apparent each site also possesses its own unique set of site characteristics which present both advantages and constraints. There were many other sites in the county which complied with the county's zoning regulations but lacked the necessary infrastructure. Upgrading infrastructure identified as necessary to support rural economic development projects may increase the number of sites within the county possessing potential for development.

Infrastructure needs for CAFOs vary dependent upon species as the needs of AID projects also vary. Minimum thresholds for each criterion were utilized to establish the "Best" classification of sites. Those sites designated as "Best" sites were those not limited by any of the criteria considered. Sites not meeting the minimum criteria required of the "Best" sites were subsequently identified as "Good" or "Better". Sites may not be suitable for all CAFO and AID developments but may be limited to specific operations due to conditions limiting the site's development potential. An example of limiting conditions could be the availability of water volume at an identified CAFO site. Water demand for a 3,000 head dairy is approximately five times greater than the needs of a 5,000 head sow operation even though each operation is in excess of 2,000 animal units and will be subject to the same zoning regulations. Therefore, a 5,000 head sow operation may be located upon a site classified as "Good" or "Better" if the limiting factor was water availability.

The analysis found that one of the limiting factors in reviewing development potential of properties within Deuel County for a “Better” or “Best” CAFO site is the availability of quality potable water. Access to a centralized water source such as rural water was a key criterion in the site analysis process. However, the rural water systems noted that if a significant water user (CAFO or AID) would locate in the county; they would explore ways to provide water to the proposed development. Therefore, the analysis does not make the claim that the only sites for CAFO development in Deuel County be relegated to the specific sites identified herein.

In addition to the availability of quality potable water, the primary limiting factor in identifying AID sites was access to rail. This is due to the incidence of no rail lines being located within Deuel County. Therefore, no site within the county met the minimum requirements to be considered eligible for an AID classification. It should be noted that while no sites met the parameters of this AID analysis, AID sites that do not require rail access were identified in a separate analysis (See Appendix 1).

The site assessment process was limited in scope to include undeveloped parcels and did not consider expansion of existing CAFOs or commercial/industrial uses. In addition to this limited scope, minimum values were utilized in ranking each site with regards to zoning requirements and infrastructure demands. No attempt was made to rank each site within the three identified classifications. The uniqueness of each criterion identified in Table 1 warrants a comprehensive review of the potential impact each may have upon a subject property. This study is intended as the first step of a multi-faceted development process potentially leading to more specific site evaluations such as Phase 1 Environmental Assessments, engineering plans, development cost analysis, etc.

Identification of each site’s relative advantages and constraints provides decision-makers with useful information for assessing the development potential of each site. The information contained herein has the potential to streamline the marketing process thereby reducing timelines, financial expenditures and labor costs. Local governments, landowners, economic development groups and state agencies such as the Department of Agriculture or Governor’s Office of Economic Development all benefit from the rural site development analysis. These entities now have access to a marketing tool based on proactive planning efforts. In addition, the report may assist local governments in updating their comprehensive plans, zoning ordinances and permitting procedures while also increasing local awareness of potential development opportunities. The findings of this report will assist in determining the potential role each site may play in supporting economic development and should be considered when planning for future projects within Deuel County.

The remainder of the report has been divided into two sections. Section 1 provides an overview of the criteria utilized as part of the Rural Site Development Analysis while Section 2 explains the methodology incorporated into the review phase and identifies the “Good”, “Better”, and “Best” hierarchy.

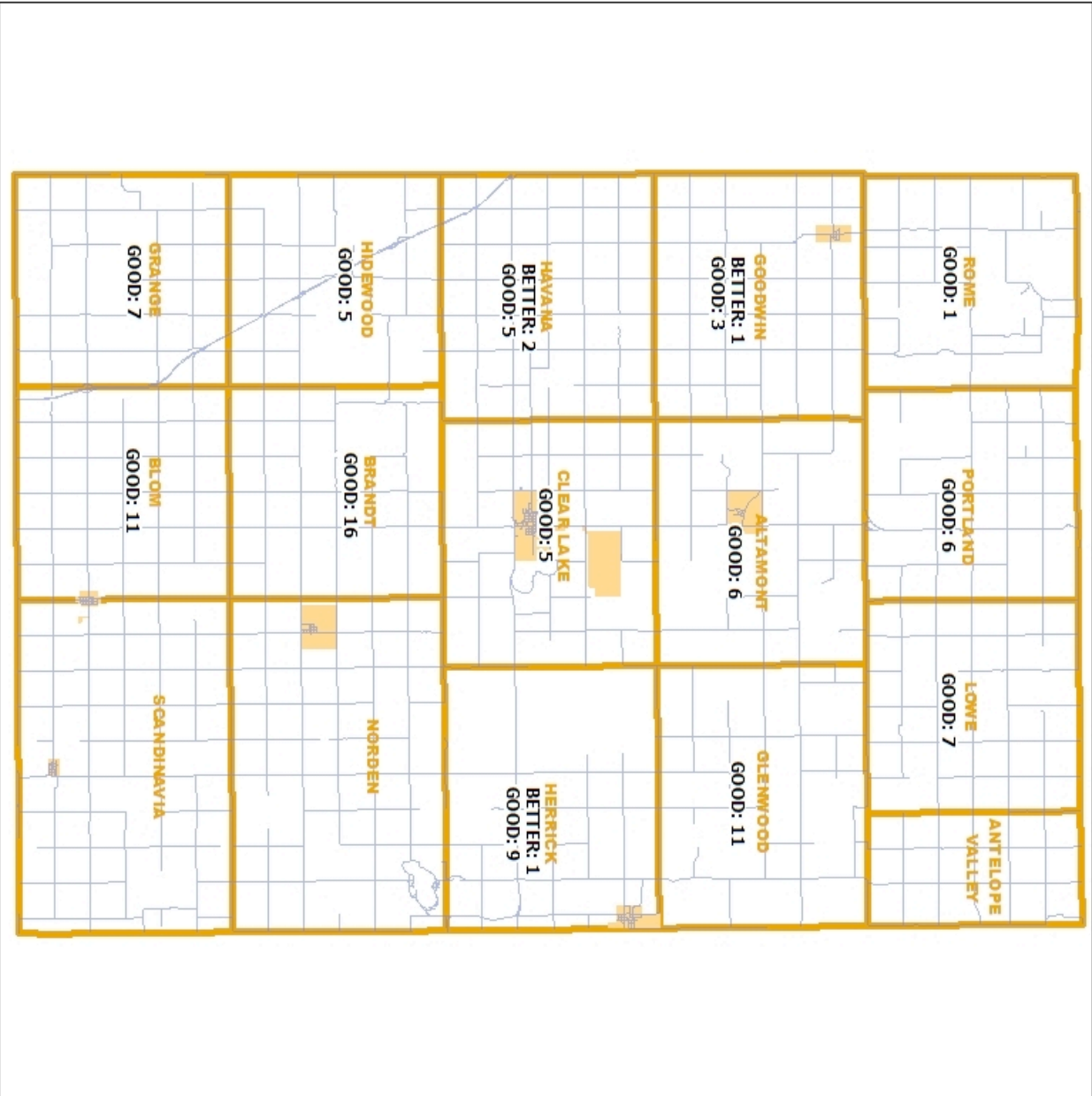
As previously mentioned, there were 96 sites within Deuel County which met the minimum standards for inclusion as potential Concentrated Animal Feeding Operation (CAFO) sites and 0 sites met the minimum standards for agriculturally-related industrial development (AID) site analysis. The following map provides information at a township level regarding the number of “Good”, “Better” and “Best” CAFO sites.

Deuel County CAFO Sites 2014



Legend
 City/Limits
 Townships

TOWNSHIP	BEST	BETTER	GOOD
ALTAMONT	0	0	6
ANTELOPE VALLEY	0	0	0
BLOM	0	0	11
BRANDT	0	0	16
CLEAR LAKE	0	0	5
GLENWOOD	0	0	11
GOODWIN	0	1	3
GRANGE	0	2	7
HAYANA	0	2	3
HERRICK	0	1	9
HIDEWOOD	0	0	5
LOWE	0	0	7
NORDEN	0	0	0
PORTLAND	0	0	6
ROME	0	0	1
SCANDINAVIA	0	0	0



SECTION 1: SITE ASSESSMENT CRITERIA

Deuel County Location Map



The analysis methodology developed for this study utilized an established set of criteria deemed critical to further development of the subject properties while specifically addressing the suitability of a site for either a CAFO or an AID.

Sites possessing all of the criteria identified as critical within the analysis will be those most sought by potential developers. The occurrence of these sites may be somewhat rare. Therefore sites under consideration for either a CAFO or AID may meet the majority of criteria, but will be lacking in several specific areas. Any sites not meeting all the criteria may be burdened with a limitation thus requiring more specific analysis. In these cases, the feasibility of developing the site is highly dependent upon the identified limitation(s). Earlier, an example of a potential site limitation was discussed regarding the demand for water. In that situation, the lack of water in the volume necessary for a dairy lent the site to be more likely developed as a swine facility. This example did not explore potential alternatives to the water shortage. The absence of adequate rural water volume at the site may require upsizing of the water infrastructure or securing an alternative water source. All of which hold the potential to mitigate this constraint thereby facilitating the proposed development. In other cases, however, failure to meet certain criteria, such as access to a quality road network, may result in a situation where development of the site becomes economically unfeasible. The site assessment criteria, depending upon whether or not the site is for a CAFO or AID project, have been divided into three major categories to include:

LAND USE REGULATIONS

- a. Alignment with Local and Regional Plans
- b. Compliance with Local Zoning Regulations
- c. Minimum Lot Area

I. ENVIRONMENTAL

- a. Potential Environmental Constraints - Aquifer

II. INFRASTRUCTURE

- a. Water Supply
- b. Electrical Supply
- c. Transportation Networks – Access to State and/or County Roads and Rail

LAND USE REGULATIONS

Economic development planning in Deuel County must be conducted in concert with the county's overall economic development goals. All development activities, including those specifically related to agriculture need to be accomplished within the parameters set forth in local and regional planning documents. Land use or development guidance is traditionally provided via local documents such as Comprehensive Plans, Zoning Ordinances, Policies, Mission Statements and other local economic development plans and initiatives.

Comprehensive Land Use Plan

The 2004 Deuel County Comprehensive Land Use Plan supports large scale animal agricultural development and agriculturally-related commercial and industrial development in order to ensure an adequate supply of sites are available for future development in the county. The need to plan for CAFO and agriculturally-related commercial/industrial development is supported by the 2004 plan, which states:

Areas of Development Stability (Ag-zoned Property)

Areas identified for development stability or agricultural uses shall be managed in such a way as to promote these uses and prevent premature intensification of other land uses. Land in this area shall be regulated so as to limit non-farm residential and urban density development through the use of minimum lot sizes and other regulations.

It should be noted that if agricultural lands are not protected through land use controls their optimum utilization will diminish in disproportion to the amount of area reverting to urban use. Thus, much of the remaining economic potential of the land, in terms of agricultural production, is lost.

Agricultural Preservation Policies

- Preserve agricultural lands and protect the rural area from uses which interfere with and are not compatible with general farming practices.

Miscellaneous Policies

- Regulate concentrated animal feeding and processing operations to protect environmental quality and minimize conflicts with human activities.

Commercial/Industrial Land Use

Although the rural area may experience pressure to provide locations for both commercial and industrial development, it is the intent of Deuel County to encourage commercial and industrial development to occur within municipalities and the confines of unincorporated villages and developed lakes, thereby preserving agricultural lands for agriculture production. The exception would be to consider commercial and industrial ventures that directly support agricultural production.

Commercial and Industrial Development Goal

- It is the goal of Deuel County to encourage the continuation of agricultural production, while promoting cost effective, value added agricultural processing efforts.

Commercial and Industrial Development Policies

- Promotion or encouragement should be given to agricultural production and processing activities that benefit the agriculture industry.
- County regulations should protect the property rights and promote the economic opportunities of farm operators.
- Commercial and industrial development should take advantage of existing utility networks and transportation systems.
- The locations, capacities and relationships of public infrastructure systems should be reviewed as part of development proposals requiring county permission.
- The Deuel County Planning Commission should encourage the redevelopment and reuse of existing business locations.
- Commercial and industrial development, such as value added Ag industries should be compatible with adjacent land uses.
- Commercial and Industrial development projects should take place in designated industrial parks or already developed highway locations.
- Commercial and industrial developments which can be accommodated in an incorporated or unincorporated municipality shall be discouraged in the unincorporated areas of the county.

- Discourage commercial and industrial development in the rural area unless the uses are directly supportive of agricultural operations.

Zoning

Ideally, economic developers seek sites that are zoned and eligible for specific uses. The need to pursue a zoning change or conditional use permit introduces an additional step in the development process that may increase development timeframes and costs. It also increases the uncertainty that the project can proceed given that zoning changes are referable and that a super majority vote of the County's Board of Adjustment is required for a conditional use permit.

The rural areas of Deuel County are reserved for agricultural uses. Even certain agricultural uses result in externalities which require case by case review. Concentrated animal feeding operations are one of those uses. The scope of agricultural operations has increased. In the same way grain farmers are choosing to spread their expenses over more acres to generate a small return over more acres, numerous livestock producers are choosing to accept smaller gains over larger numbers of animals to stay in business. Deuel County recognizes that a diverse agricultural industry, relying on cash crop and animal agriculture, promotes a sustainable, balanced agricultural economy. Concentrated animal feeding operations create local demand for crops grown in the area, provide fertilizer for surrounding land, and yield a raw product which is, in some cases, directly sold to local residents.

General CAFO Policies in the Deuel County Zoning Ordinance:

- Deuel County supports the creation and expansion of concentrated animal feeding operations in rural areas.
- Operations of less than 500 animal units which are not situated over a shallow aquifer or wellhead protection area should be allowed by-right, provided minimum management practices are employed.
- All CAFOs are required to comply with applicable state and federal regulations.
- All manure spreading within Deuel County requires appropriate separation from property lines, rights-of-way, specific water features, and various different land uses.
- CAFOs of greater than 1,000 animal units should meet minimum requirements of the South Dakota DENR General Permit.
- CAFOs of 500 to 999 animal units should meet minimum standards established by the Natural Resource conservation Service for CAFO construction, manure and nutrient management.
- Protect existing CAFOs from encroachment of non-agricultural or residential uses by requiring any new construction within one-half mile for an existing CAFO to waive the right to protest any future expansion of the specified CAFO at the existing location.

Concentrated Animal Feeding Operation Setbacks

Deuel County utilizes graduated setback requirements based upon the size of the CAFO. For example, a 3,000 head dairy is required to observe a minimum setback of **2,640 feet** from established residences, commercially-zoned properties, and churches. Regarding setbacks from municipalities, the same 3,000 head dairy would be required to meet a setback of **5,720 feet** and **500 feet** from lakes, rivers and streams considered fisheries. For the purpose of this analysis, setbacks were applied to all of the above with the exception of churches as GIS data was not readily available. While it is possible that some of the sites identified in the analysis as good, better, or best may be impacted due to the possibility that a church is located within one-half mile of a proposed CAFO site, it is believed that the incidence is minimal. All 96 CAFO sites in the analysis are currently zoned in Deuel County as agricultural and all or a portion of the legally described parcels, according to the best available data, further meet the required setback and lot area requirements.

Commercial/Industrial Development

There is very little commercial/industrial activity at the county level of a specific business district nature. Deuel County restricts commercial and industrial zoning to areas adjacent to county and state hard surface roads. Further, the County does not have any permitted uses within the commercial and industrial zoning districts. Rather all uses are required to obtain a conditional use permit.

Buildable Parcel

One criterion deemed necessary to facilitate development of either a CAFO or an AID was land area. A parcel of 40 buildable acres was set as the minimum for consideration within the analysis. In order to be considered, the property must have consisted of 40 contiguous acres and able to support development upon all 40 acres. Parcels without 40 buildable acres were not considered in the final analysis.

ENVIRONMENTAL

The location of shallow aquifers in relation to potential development sites was included in the analysis. In reviewing shallow aquifers it is critical to note that they are included in the analysis for two distinct and very different reasons. Shallow aquifers may be utilized as a potential water source to support development. These same aquifers are vulnerable to pollution due to their proximity to the surface and must be protected via setbacks and development limitations.

Prior to or contingent upon acquiring a parcel it is assumed other environmental factors potentially affecting the property would be addressed via a Phase I Environmental Assessment or similar process. It is recommended that developers consider undertaking such an inquiry prior to executing a major commitment to a particular location.

Deuel County's Zoning regulations do not allow CAFOs with over 1,000 animal units and certain industrial uses to be located over the shallow aquifer or in wellhead protection zones. None of the 96 CAFO sites identified by the analysis was located over the shallow aquifer or within a wellhead protection zone.

INFRASTRUCTURE

The term infrastructure is broad though in the context of property development the term includes essential services such as water, sewer, electrical, telecommunications, and roads. With regards to the rural site analysis process; access to quality roads, electrical capacity and water supply were deemed essential and identified as site selection criteria.

Transportation

Access to quality roads was identified as critical to determining the development potential of a parcel. The proximity of a potential development site to either a state or county road was established as one of the parameters in conducting the rural site analysis. In addition to utilizing the South Dakota Department of Transportation's road layer to identify roads and surface types, local experts were consulted to assist in identifying the road network. First District requested the Deuel County Highway Superintendent to identify segments of the county road system inadequate to support a CAFO or AID. Sites accessed only by township roads were eliminated from the CAFO analysis and all potential AID sites abutting non hard surfaced roads and located greater than one-half mile from a hard surface road were also eliminated from the analysis.

A potential development site's proximity to certain road types impacted its designation. Those parcels abutting hard surface roads were consistently ranked higher than those served by gravel roads. In reviewing CAFO sites, parcels adjacent to a county or state hard surface road were designated "Better" or "Best" for transportation resources. Parcels adjacent to county gravel roads were designated "Good". Regarding AID sites, parcels adjacent to a county or state hard surface road were designated "Best" and those parcels within one-half mile of a county or state hard surface road were designated "Good" or "Better".

Access to rail was also considered to be an important factor in locating an AID site. Parcels adjacent to rail were designated "Best". Parcels within one-half mile of rail were designated "Better" and those parcels within one mile of rail were designated "Good".

Electric Supply

Access to 3-phase power was designated as a site characteristics criterion for both CAFO and AID development. First District contacted Hamlin-Deuel Electric Cooperative, the primary provider of electricity in the rural area of the county, to obtain the location and capacity of the 3-Phase infrastructure within the county. All parcels whether for CAFO or AID development adjacent to a 3-phase power line were designated "Best" for electricity resources. Whereas, parcels within one-half mile of a 3-phase power line were designated "Better" and those within 1 mile of a 3-phase power line were designated "Good".

Water Supply

The ability to secure information regarding rural water distribution networks and capacity proved to be the most complex and difficult component of the infrastructure analysis. Due to this complexity, water resources were evaluated differently than transportation and electric infrastructure. While transportation and electric infrastructure were classified based solely upon proximity to roads and 3-phase power, the analysis of rural water systems first required the evaluation of the water systems based upon each system's supply and distribution capacities.

Development sites were then selected based upon the proximity to water service. The classifications with regards to water supply and their respective criteria are as follows:

1. "Best"
 - a. CAFO - If the rural water system had sufficient supply and distribution (104 gallons per minute for a CAFO see below) in a specific geographic area, that area was designated as "Best" for water resources.
 - b. AID - If the rural water system had sufficient supply and distribution (285 gallons per minute for an AID site see below) in a specific geographic area, that area was designated as "Best" for water resources.
2. "Better" - In those geographic areas of the county where the rural water system had a sufficient supply of water but inadequate distribution lines, or vice versa.
3. "Good" - In the event, the rural water system had neither supply or distribution within a geographic area a "Good" designation was applied to those areas that were within 2 miles but not closer than ½ mile from a shallow aquifer.

Upon defining the ranking criteria these parameters were utilized to evaluate potential CAFO and AID sites within Deuel County. Potential CAFO development sites adjacent to a rural water system with the supply and distribution capacity of 104 gallons per minute were classified as "Best" for water resources. Parcels adjacent to a rural water system with the supply but not distribution capacity of 104 gallons per minute, or vice versa were classified as "Better". Any sites identified as "Good" for water resources required those parcels to lack a central water source and be within 2 miles but not closer than ½ mile from a shallow aquifer.

Due to the varying demands of potential uses a separate set of criteria was utilized to rank potential AID sites. Parcels adjacent to a rural water system with the supply and distribution capacity of 285 gallons per minute were classified as "Best" for water resources. Any parcels adjacent to a rural water system with the supply but not distribution capacity of 285 gallons per minute, or vice versa were classified as "Better". Those sites ranked as "Good" included parcels which lacked a central water source and were within 2 miles but not closer than ½ mile from a shallow aquifer.

The site analysis sought to address whether or not the rural water system serving the region had excess water treatment capacity (supply) and their ability to serve potential properties (distribution). In order to address the issue of supply each rural water system was requested to identify their surplus treatment capacity. In addition, each system was requested to notate on a map those geographic areas to which 104 gallons per minute could be accommodated as well as those areas where 20.8 gallons per minute could be supplied. These capacities are necessary to accommodate a 3,000 head dairy or 5,000 head sow operation, respectively. Food and animal processing facilities require an average of 285 gallons per minute therefore rural water providers were asked to note those areas where this volume is available.

As noted earlier in an effort to conduct the most accurate analysis, the First District contacted and requested location and capacity information from the three rural water providers within Deuel County. Brookings-Deuel Rural Water System provides water to most of the rural county residents with the exception of the Sioux Rural Water System which provides water to west-central Deuel County and Kingbrook Rural Water system which provides water to a small area

in the southwest of the corner of the county. All of the rural water providers stated that they had areas within their system with sufficient distribution infrastructure to deliver the minimum required amounts of water for AID and CAFO development requiring lower water needs. While the Sioux Rural Water System stated that the system may have an adequate supply of water depending upon the actual location of a proposed CAFO or AID, the Brookings-Deuel Rural Water system noted that it does have available supply of treated water to meet the minimum water delivery requirements. None of the systems could commit to meeting the minimum CAFO “Best” requirement of 104 gallons per minute without the system being evaluated by their engineer and/or improvements being made; thereby also eliminating the potential for an AID site meeting the “Best” requirement of 285 gallons per minute. For these reasons, the analysis was unable to designate any CAFO or AID development site as “Best” in Deuel County.

SECTION 2: RESEARCH AND METHODOLOGY

This section describes the methodology utilized to evaluate the suitability of potential sites for either CAFO or AID development.

Step 1: Research on Site Characteristics

Based on the general site assessment criteria established in Section 1 of this report, specific site characteristics necessary for determining the suitability of a potential site were developed. Table 1 lists the criteria identified as being necessary in order to conduct analysis of the potential sites. Utilizing these criteria as a guide, a variety of research methods were employed to compile the GIS data sets used in the analysis. This included the examination of local, regional, and state planning documents and existing GIS data layers.

Table 1: Site Characteristics Criteria

CAFO Criteria	Ag-related Commercial/Industrial Criteria
County Zoning Setback Requirements	Location of Communities
Location of Rural Residences & Communities	Existing Zoning Districts
Existing Zoning Districts	Location of Shallow Aquifer
Location of Shallow Aquifer	Access to County and State Road Network
Access to County and State Road Network	Proximity to three-phase Electrical Supply
Proximity to three-phase Electrical Supply	Proximity to Water Supply
Proximity to Water Supply	Capacity of Water Supply
Capacity of Water Supply	Proximity to Rail
	Proximity to Municipality

Step 2: Evaluation of Site Characteristics Criteria

After developing the data sets in Table 1, the analysis identified those site locations that:

1. Complied with zoning and aquifer protection guidelines; and
2. Are in close proximity to infrastructure necessary to support either CAFO or AID development.

Concentrated Animal Feeding Operation (CAFO)

The GIS analysis removed all parcels within the county from consideration that:

1. Did not have direct access to either a county or state road network;
2. Were not within one mile of three phase electric power;
3. Were completely located over a shallow aquifer/well-protection area;
4. Did not meet the one-half mile setback from existing residences, churches, businesses and commercially zoned areas;
5. Did not meet the one-mile setback from municipalities; and
6. Did not contain a buildable footprint of at least forty (40) acres.

After applying the local zoning and buildable footprint requirements to each site, the availability of necessary infrastructure was incorporated into the analysis. The general location of available water, electric and road infrastructure was applied to the remaining sites to establish a good, better, and best hierarchy of potential development sites. The result was the identification of **96** CAFO sites that fell into the design standards of one of the following three development standards:

Good Sites (92 sites) – Sites that were determined to be “Good” sites met the following criteria:

- Site is adjacent to any state or county hard surfaced road or county gravel road
- Site is within one mile of three phase power
- Site meets Deuel County concentrated animal feeding operation setback requirements and aquifer protection guidelines
- Site is adjacent to rural water area designated BEST or BETTER, or within 2 miles but not closer than ½ mile from shallow aquifer (GOOD)
- Site contains 40 acres of developable ground

Better Sites (4 sites) – Sites that were determined to be “Better” sites met the following criteria:

- Site is adjacent to any state or county hard surfaced road
- Site is within one-half mile of three phase power
- Site meets Deuel County concentrated animal feeding operation setback requirements and aquifer protection guidelines
- Site is adjacent to rural water area designated BEST or BETTER
- Site contains 40 acres of developable ground

Best Sites (0 sites) – Sites that were determined to be “Best” sites met the following criteria:

- Site is adjacent to any state or county hard surfaced road
- Site is adjacent to three phase power
- Site meets Deuel County concentrated animal feeding operation setback requirements and aquifer protection guidelines
- Site is adjacent to rural water area designated as BEST
- Site contains 40 acres of developable ground

Agriculturally-related Industrial Development (AID)

The GIS analysis removed all parcels within the county from consideration that:

1. Were not within one half mile of a state or county hard surfaced road;
2. Were not within one mile of three phase electric power;
3. Were not within one mile of rail;
4. Were completely located over a shallow aquifer/well-protection area;
5. Were within ¼ mile of a community of less than 1,000 people;
6. Were within ½ mile of community with more than 1,000 people;
7. Did not contain a buildable footprint of at least forty (40) acres.

After applying the locational criteria and buildable footprint requirements to each site, the availability of necessary infrastructure was incorporated into the analysis. The general location of available water, electricity, road, and rail infrastructure and the proximity to a municipality was applied to the remaining sites to establish a good, better, and best hierarchy of potential development sites. The result was the identification of **0** AID sites that fell into the design standards of one of the following three development standards:

Good Sites (0 sites) – Sites that were determined to be “Good” sites met the following criteria:

- Site is within one-half mile of a state or county hard surfaced road
- Site is within one mile of three phase power
- Adjacent to rural water area designated BEST or BETTER, or within 2 miles but not closer than ½ mile from shallow aquifer (GOOD)
- Site contains 40 acres of developable ground
- Within one mile of rail

Better Sites (0 sites) – Sites that were determined to be “Better” sites met the following criteria:

- Site is within one-half mile of a state or county hard surfaced road
- Site is within one-half mile of three phase power
- Site is adjacent to rural water area designated BEST or BETTER
- Site contains 40 acres of developable ground
- Site is within one-half mile of rail
- Site is in the comprehensive land use plan identified for future commercial/industrial development but not yet appropriately zoned

Best Sites (0 sites) – Sites that were determined to be “Best” sites met the following criteria:

- Site is adjacent to a state or county hard surfaced road
- Site is adjacent to three phase power
- Site is adjacent to rural water area designated BEST
- Site contains 40 acres of developable ground
- Site is adjacent to rail
- Site is zoned for commercial/industrial development

Step 3: Site Development Recommendations

Based on the analysis, **96** sites were classified as Good, Better, or Best for CAFO development and **0** sites were classified as Good, Better, or Best for AID development (see Deuel County Potential CAFO Development Sites Map).

While this study only identifies those sites that met the required locational criteria for the analysis, it should be noted that other sites within the county may be satisfactory for CAFO and AID development even if they are located on a township road or do not have necessary infrastructure (rail, water, power) within close proximity. (See Appendix 1)

APPENDIX 1: ALTERNATE “GOOD” AID SITES

Since the parameters of the study excluded all potential AID sites within Deuel County, an alternate analysis of potential AID sites was developed for the County. The principal limiting factor in the above analysis was proximity to rail. In this analysis, proximity to rail was removed from the Ag-related Commercial/Industrial Site Characteristics Criteria identified in Table 1 (page 12). The GIS analysis then removed all parcels within the county from consideration that:

1. Were not within one half mile of a state or county hard surfaced road;
2. Were not within one mile of three phase electric power;
3. Were completely located over a shallow aquifer/well-protection area;
4. Were within $\frac{1}{4}$ mile of a community of less than 1,000 people;
5. Were within $\frac{1}{2}$ mile of community with more than 1,000 people;
6. Did not contain a buildable footprint of at least forty (40) acres.

After applying the locational criteria and buildable footprint requirements to each site, the availability of necessary infrastructure was incorporated into the analysis. The general location of available water, electricity and road infrastructure and the proximity to a municipality was applied to the remaining sites to establish an alternate classification of potential “good” AID sites:

Alternate Good Sites (471 sites) – Sites that were determined to be “Alternate Good” sites met the following criteria:

- Site is within one-half mile of a state or county hard surfaced road
- Site is within one mile of three phase power
- Adjacent to rural water area designated BEST or BETTER, or within 2 miles but not closer than $\frac{1}{2}$ mile from shallow aquifer (GOOD)
- Site contains 40 acres of developable ground

Deuel County Alternate AID Sites 2014

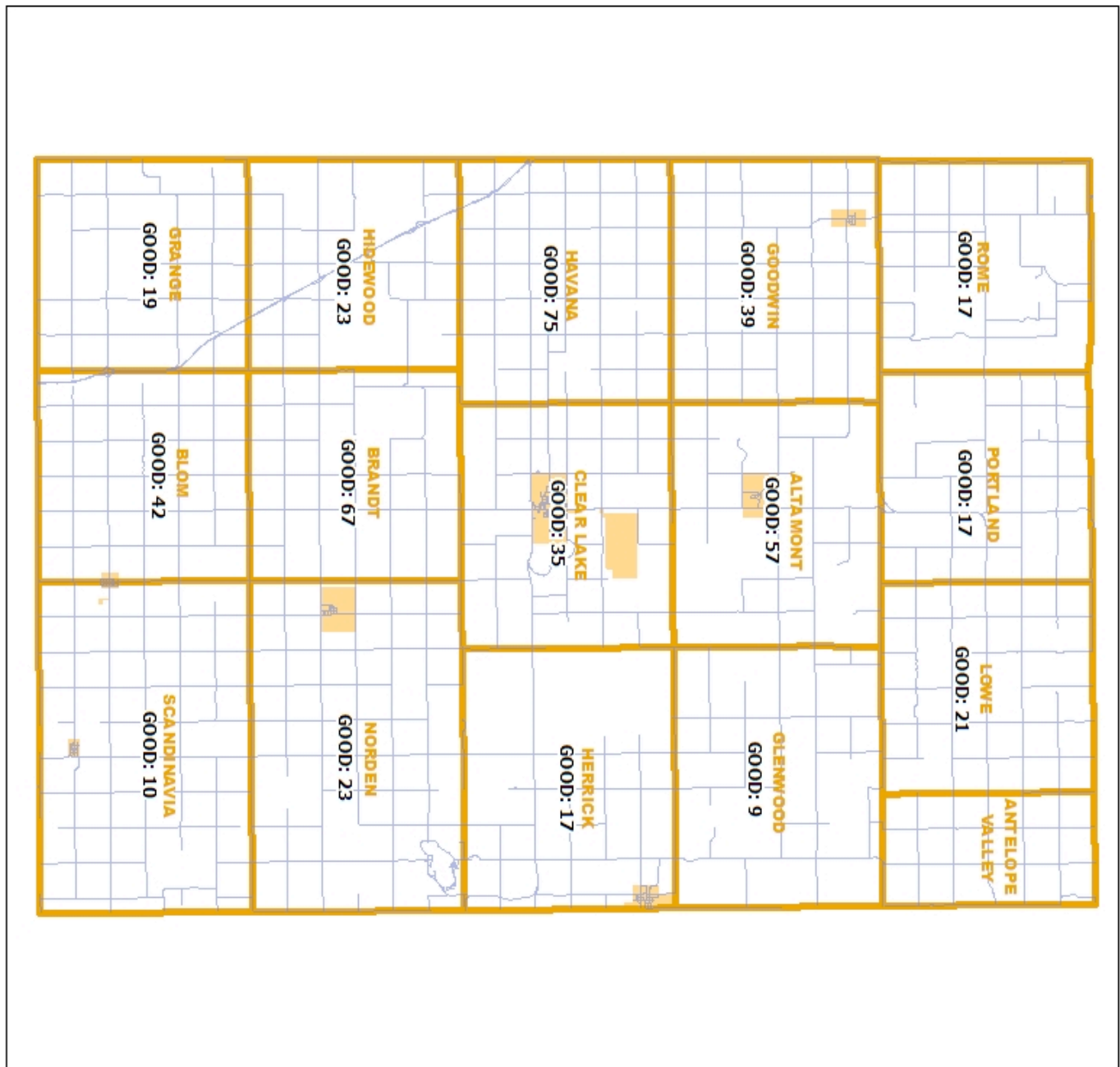


Legend

Townships

City Limits

TOWNSHIP	BEST	BETTER	GOOD
ALTA MONT	0	0	57
ANTELOPE VALLEY	0	0	0
BLOM	0	0	42
BRANDT	0	0	67
CLEAR LAKE	0	0	35
GLENWOOD	0	0	9
GOODWIN	0	0	39
GRANGE	0	0	19
HAVANA	0	0	75
HERRICK	0	0	17
HIDEWOOD	0	0	23
LOWE	0	0	21
NORDEN	0	0	23
PORTLAND	0	0	17
ROME	0	0	17
SCANDINAVIA	0	0	10



SECTION 3: CONTACT INFORMATION

First District Association of Local Governments

Executive Director: Todd Kays
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Rural Water Systems

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Gene Wilts
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Kingbrook Rural Water System Inc
Randy Jencks
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Sioux Rural Water System Inc.
Heath Thompson
Phone: 605-882-1321

Electric Providers

H-D Electric Cooperative
General Manager: Matt Hotzler
Phone: 605-8744-2121

Other Resources - Aquifer

First Occurrence of Aquifer Materials in Deuel County, South Dakota
Department of Environment and Natural Resources
Division of Financial and Technical Assistance
Geological Survey Aquifer Materials Map 7
Anne R. Jensen, 2001
http://www.sdgs.usd.edu/pubs/pdf/AM-07_20010629.pdf