Davison County Rural Development Site Analysis

A Study by
Planning & Development District III

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 and the availability of infrastructure necessary to accommodate certain rural economic development projects.

Utilizing Geographic Information System (GIS) technology, District III identified **27** sites within Davison County that met the minimum standards of the Concentrated Animal Feeding Operation (CAFO) analysis and **8** 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 the 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 Davison County. While this report focuses on **35** specific sites (CAFO: 27, and 8 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 primary limiting factor in reviewing a property's development potential is the availability of quality potable water. The same is true with agriculturally-related industrial developments which also require a reliable source of high quality water. Access to a centralized water source such as rural water was identified as a key component in the site analysis process. Davison Rural Water System (DRWS) based in Mitchell, Hanson Rural Water System (HRWS) based in Emery and Aurora-Brule Rural Water System (ABRWS) in Kimball provide rural water to the properties within Davison County. A brief description of the area served by the three systems is as follows:

- DRWS - Serves a majority of the county with the exception of the areas noted below;
- HRWS - Serves a three mile corridor along Highway 42 and west of Highway 37; and
- ABRWS – Serves approximately the western 1/3 of Davison County

At this time, none of the systems are able to determine the level of service available to the identified sites. It is assumed all three may be in position to provide service with requests reviewed at the time of application for service.

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, soil borings, and business plans.

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 Davison 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 details the methodology incorporated into the review phase and indentifies the "Good", "Better", and "Best" hierarchy.

As previously mentioned, there were **27** sites within Davison County which met the minimum standards for inclusion as potential Concentrated Animal Feeding Operation (CAFO) sites and **8** sites met the minimum standards for Agriculturally-related Industrial Development (AID) site analysis. The following maps are of Davison County and illustrate the 35 identified sites rated as "Good", "Better" and "Best" CAFO and AID sites by township.

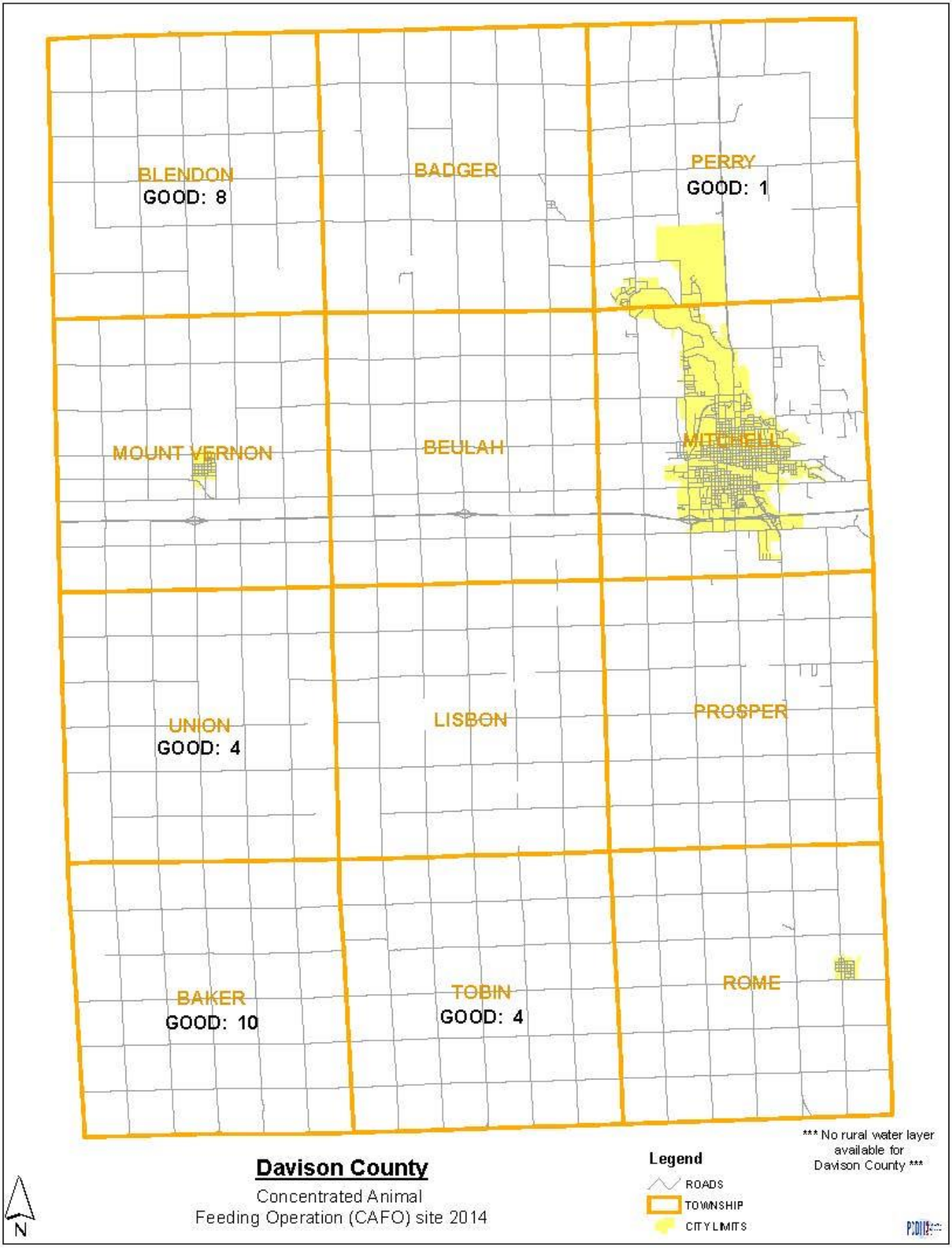

BLENDON
GOOD: 8
BADGER
PERRY
GOOD: 1
MOUNT VERNON
BEULAH
MITCHELL
UNION
GOOD: 4
LISBON
PROSPER
BAKER
GOOD: 10
TOBIN
GOOD: 4
ROME
*** No rural water layer available for Davison County ***
Davison County
Concentrated Animal Feeding Operation (CAFO) site 2014
Legend
ROADS
TOWNSHIP
CITY LIMITS
N

Table 1:

Potential CAFO Sites

TOWNSHIP NAME	BEST	BETTER	GOOD
UNION	0	0	4
PROSPER	0	0	0
LISBON	0	0	0
BAKER	0	0	10
ROME	0	0	0
BLENDON	0	0	8
BADGER	0	0	0
PERRY	0	0	1
MITCHELL	0	0	0
MOUNT VERNON	0	0	0
BEULAH	0	0	0
TOBIN	0	0	4

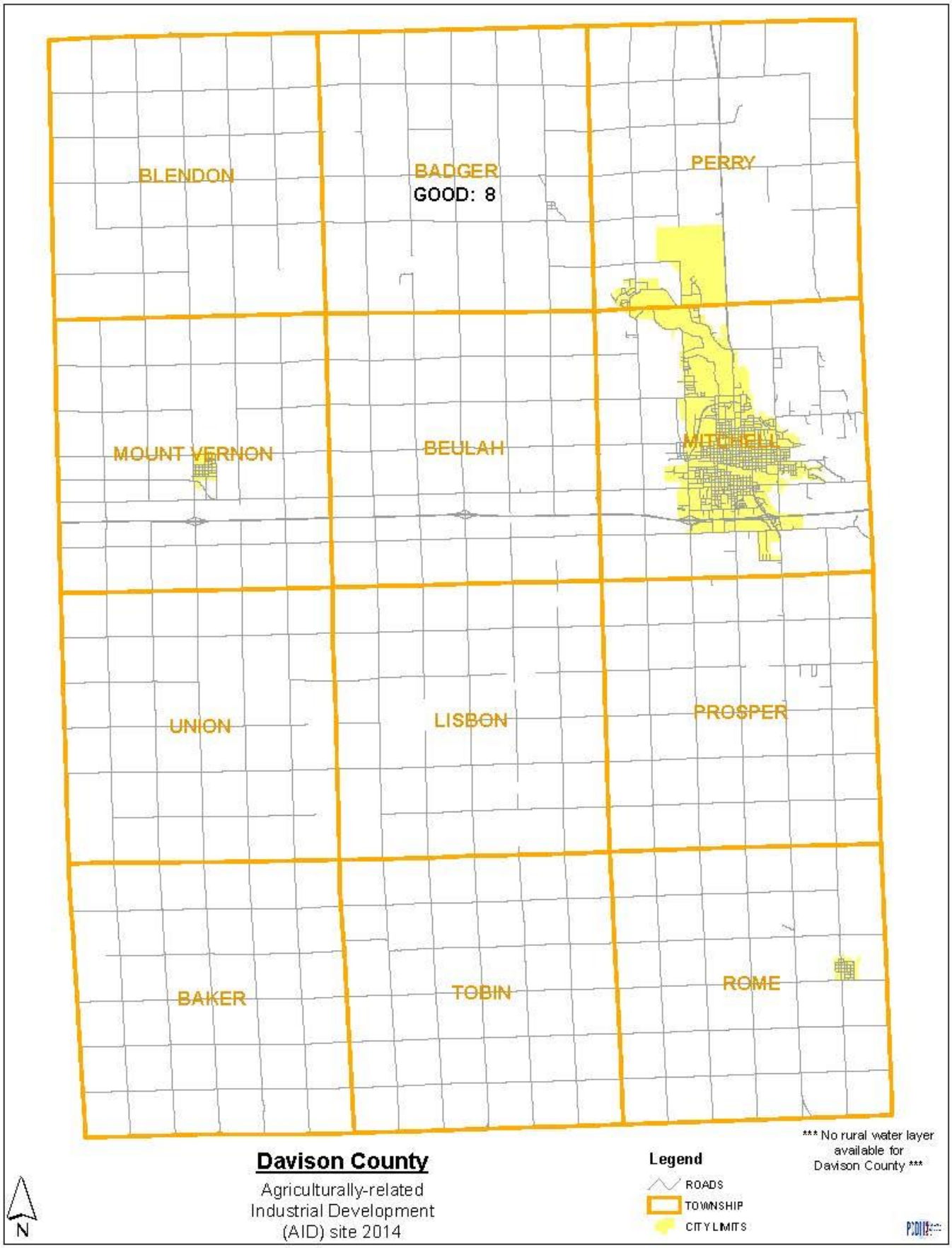

BLENDON
BADGER
GOOD: 8
PERRY
MOUNT VERNON
BEULAH
MITCHELL
UNION
LISBON
PROSPER
BAKER
TOBIN
ROME
Davison County
Agriculturally-related
Industrial Development
(AID) site 2014
Legend
ROADS
TOWNSHIP
CITY LIMITS
*** No rural water layer
available for
Davison County ***
N

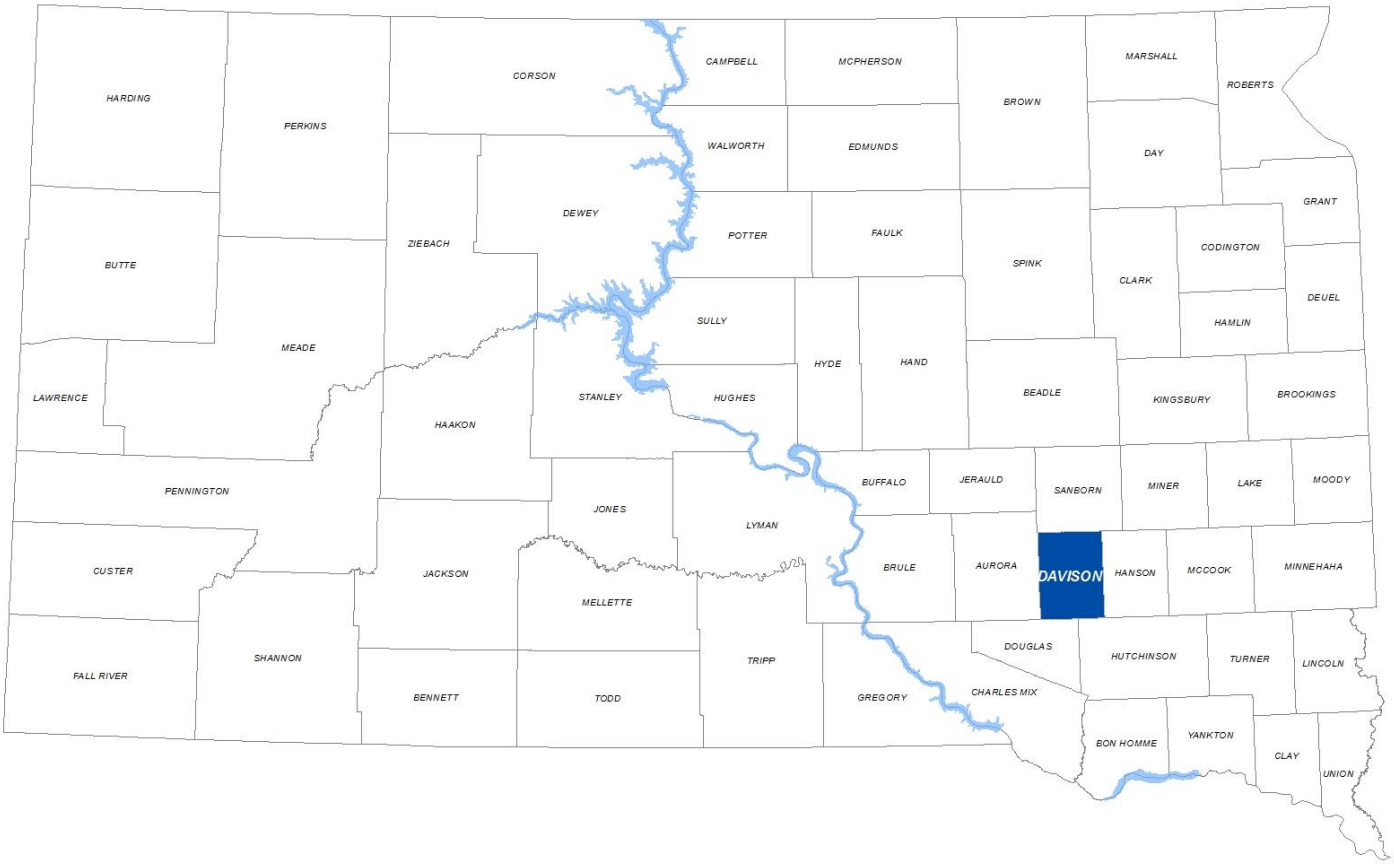
Table 2:

Potential AG Industrial Development Sites

TOWNSHIP NAME	BEST	BETTER	GOOD
UNION	0	0	0
PROSPER	0	0	0
LISBON	0	0	0
BAKER	0	0	0
ROME	0	0	0
BLENDON	0	0	0
BADGER	0	0	8
PERRY	0	0	0
MITCHELL	0	0	0
MOUNT VERNON	0	0	0
BEULAH	0	0	0
TOBIN	0	0	0

SECTION 1: SITE ASSESSMENT CRITERIA

Davison 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:

I. LAND USE REGULATIONS

a) Alignment with Local and Regional Plans
b) Compliance with Local Zoning Regulations
c) Buildable Parcel

II. ENVIRONMENTAL

a) Potential Environmental Constraints - Aquifer

III. INFRASTRUCTURE

a) Transportation Networks – Access to Federal/State Roads and Rail
b) Electrical Supply
c) Water Supply

I. LAND USE REGULATIONS

Economic development planning in Davison 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

Davison County is currently in the process of updating its Comprehensive Plan. At this time it is expected the current goals, objectives, and policies addressing agricultural development will remain constant if not gravitating towards fostering even further agricultural related development within the county. Chapter II of the Davison County Comprehensive Plan provides background information with the later pages focusing on economic issues within the county. Davison County's leadership recognized the importance of agriculture to the local, regional, and state economies and devoted seventy-five (75) percent of the economic discussion to agriculture. Chapter III within the 1999 Comprehensive Plan is dedicated to goals and objectives which also includes policies. There were four (4) subsections within the Chapter addressing various subjects of which two, environmental protection and agriculture are pertinent to this study. Each subsection identifies one overall goal from which objectives and policies are derived. The goals for agriculture and economic development are as follows:

- It is the goal of Davison County to avoid development in areas that:
  - Are environmentally fragile or unique;
  - Consist of prime agricultural land;
  - Present health and safety standards to county residents; and
  - Could degrade or otherwise negatively impact neighboring property.

- It is the goal of Davison County to encourage the continuation of family farming, while promoting cost effective, value added manufacturing and other economic diversification efforts.

These goals address many of the challenges which face a majority of the state's counties. Davison County is attempting to address the challenges by proactive actions such as this study. In reviewing the 1999 Comprehensive Plan, it is clear that Davison County recognizes the importance of large scale animal agricultural development and agriculturally-related commercial and industrial development. The issue of agricultural development is further addressed within the goals, objectives, and policies presented within Chapter III.

Areas of Development Stability (Ag-zoned Property)

Davison County is bisected from west to east by Firesteel Creek which forms Lake Mitchell. The James River passes through the northeast and east central sections of the county. This river encompasses vast floodplains while creating scenic vistas thus establishing a potential for residential development pressure. The riparian areas and bluffs are not conducive to agricultural uses with the exception of grazing thus leaving the remainder of the county open for agricultural pursuits. The majority of the county is zoned AG-Agriculture which discourages small lot development and preservation of large open spaces. These areas should continue to be managed in such a way as to promote agricultural uses and prevent scattered development and expansion of conflicting land uses. Land use controls such as minimum lot sizes and closely defined permitted and conditional uses within zoning districts along with other regulations should be utilized to preserve areas for continued agricultural related development

A failure to preserve agricultural lands through land use controls will diminish their optimum utilization resulting in a shift towards more "urban" uses. Once lands are consumed for uses other than agriculture the remaining agricultural production potential of the land, as well as those in proximity is lost in terms of an being an agriculture based economic generator.

Agricultural Preservation Policies

As noted earlier, Chapter III of the 1999 Davison County Comprehensive Plan addressed goals and objectives to also include policies. There was one (1) objective and two (2) policies specifically related to agriculture within the environmental protection section. The overall tone within the agriculture discussion focuses upon two items:

- The need to preserve individual rights while promoting agriculture related opportunities.
- Conservation of prime agricultural lands.

Preservation of agricultural lands is specifically addressed within Objective 1 of the environmental protection section and its accompanying policy. Davison County has incorporated these goals into its land use regulations by utilizing large lot zoning, limiting rural residential areas, and severely limiting single lot developments.

Miscellaneous Policies

There were a total of three (3) objectives addressing economic development. One (1) of these dealt directly with agriculture. The remaining two (2) addressed impacts of potential large scale development. These objectives and their respective activities or policies are as follows:

- Objective 1. Preferences should be given to agricultural production and processing activities that directly benefit the farming and local agribusiness economies.
    - Activity 1-A - County regulations must preserve individual property rights while promoting the economic opportunities of farm operators and other current county agricultural operators.

- Activity 1-B - The conservation of prime agricultural land should be a consideration in land use decisions.

- Objective 2. Higher density development such as commercial, industrial and concentrated animal feeding should take advantage of existing utility networks and transportation systems.

  - Policy 2-A. The locations, capacities and relationships of public infrastructure systems should be reviewed as part of development proposals requiring county review.

  - Policy 2-B. The redevelopment and reuse of existing business locations should be encouraged by local development officials.

  - Policy 2-C. The County should promote the development of agriculture business related processing and manufacturing facilities within the rural areas conducive to such activity.

- Objective 3. Intense development similar to commercial, industrial and concentrated animal feeding should be compatible with adjacent land uses.

  - Activity 3-A - These types of projects should take place in designated industrial parks or already developed highway locations, whenever possible.

  - Activity 3-B - Developers should be encouraged to reserve "buffer" areas between different land uses, to minimize the potential for conflict.

Concentrated Animal Feeding Operations

The majority of the land mass, over ninety (90) percent, within Davison County is reserved for agricultural uses. That being said, not all agricultural activities are equal with each operation having its own unique qualities. There are those times when the uniqueness of an operation my merit further review and consideration. Historically it is the larger animal feeding operations which have spurred the public interest and scrutiny thus demanding more oversight and control by the local governmental units. CAFO's are identified as a "conditional use" within many zoning ordinances thereby requiring additional documentation, public hearings and approval prior to construction and subsequent operation.

Agriculture is ever changing with the number of farms decreasing and the sizes of operations increasing. According to the USDA Census of Agriculture there were 552 farms in the county in 1974, this has decreased each year to 481 in 1982, 464 in 1987, 429 farms in 1997, and 406 in 2007. At the same time the average farm size has increased from 521 acres in 1978 to 688 acres in 2007. Agriculture in South Dakota as in other states is becoming a case study in the "economies of scale" model. Grain farmers are dividing their overhead costs by additional acres thus generating a smaller return per acre though increased total profit. The same model is being applied to the livestock industry where livestock producers are choosing to accept smaller gains over larger numbers of animals in pursuit of stability and greater profits. Davison County recognizes that a diverse agricultural industry, relying on cash crop and animal agriculture, promotes a sustainable and balanced agricultural economy. This crop and livestock balance is not as evident within the 2007 Census of Agriculture data which notes the value of agricultural products in Davison County. In 2007, the value of livestock and poultry was $31,692,000 and crops were $46,449,000, a difference of $14.7 million in favor of crops. A more even balance is noted when reviewing earlier reporting periods where differences of value were $3 to $8 million. Concentrated Animal Feeding

Operations create local demand for crops grown in the area, provide fertilizer for surrounding land, and yield a value added product which is, in some cases, directly sold to local residents.

Concentrated Animal Feeding Operation (CAFO) Policies:

In addition to the general agricultural land preservation policies previously discussed, the county drafted two policies dealing directly with the issue of concentrated animal feeding operations. Knowing that there is a need for such operations and there are greater than average size cattle and swine operations located in the county, the following three policies or activities were included within the County's Comprehensive Plan.

- Activity 1-A - County regulations must preserve individual property rights while promoting the economic opportunities of farm operators and other current county agricultural operators.

- Policy 2-C - The County should promote the development of agriculture business related processing and manufacturing facilities within the rural areas conducive to such activity.

- Activity 3-B - Developers should be encouraged to reserve "buffer" areas between different land uses, to minimize the potential for conflict.

Davison County has incorporated these policies into its land use regulations by utilizing agricultural easements, residential buffers, and CAFO waivers within its zoning ordinance. These policies clearly identify the county's position on CAFO's and its support of the creation and expansion of concentrated animal feeding operations in rural areas.

The Davison County Zoning Ordinance is based upon goals, objectives, and policies noted within the Comprehensive Plan. The policies addressing agriculture preservation and CAFOs are the foundation for the requirements set forth within the zoning ordinance sections addressing animal feeding operations which include:

- All CAFOs are required to comply with applicable state and federal regulations;

- CAFOs of greater than 500 animal units should meet minimum requirements of the South Dakota DENR General Permit;

- CAFOs of greater than 500 animal units shall obtain a Storm Water Permit for Construction Activities;

  - CAFOs and their respective waste facilities of greater than 500 animal units shall comply with the following setbacks:

    - Public Wells — 2,640 feet
    - Private Wells — 250 feet
    - Producers Wells — 150 feet
    - Lakes, Rivers, Streams Classified as Drinking Water Supply — 1,320 feet
    - Lakes, Rivers, Streams Classified as Fisheries — 500 feet
    - All Public Road Right-of Ways — 300 Feet
    - Designated 100 Year Floodplain — Prohibited
    - All Property Lines Delineating a Change in Ownership — 300 feet

- CAFOs and their respective waste facilities of greater than 500 animal units shall be located no closer than one (1) mile from any incorporated municipality or residentially zoned area;

- CAFOs and their respective waste facilities of greater than 500 animal units shall be located no closer than one-half (.5) mile from any church, commercially zoned area, or residential dwelling;

- CAFOs of greater than 500 animal units shall transport animal waste in leak proof transportation equipment for land application.

- CAFO Animal Waste Facilities will be reviewed by the Board of Adjustment. Upon review additional design and site development specifications may be required.

- CAFOs of greater than 500 animal units shall prepare a facility management plan;

- All manure application within Davison County requires appropriate separation from property lines, rights-of-way, specific water features, and various different land uses depending upon the method of application;

- CAFOs should be situated with access to roads capable of handling potential traffic volumes associated with the use without increasing the cost of maintaining those roads; and

Commercial/Industrial Land Use

Due to the current property tax schedule, land values and limited access to large open lots many rural areas experience pressure to provide locations for both commercial and industrial development. With the exception of the areas immediately abutting municipalities it is the intent of Davison County to encourage commercial and industrial development to occur within municipalities, thereby preserving agricultural lands for agriculture production. Those areas lying outside municipalities to include the area west of Mitchell abutting Old Highway 16 are best described as “Agriculture - Commercial”. These areas primarily host commercial and industrial ventures which directly support agricultural production.

Commercial and Industrial Development Goal

There were numerous goals, objectives and policies relating to economic issues within the Davison County Comprehensive Plan, all of which have been reiterated in earlier sections of this report. A summation of several statements would be to encourage the continuation of agricultural production, while promoting cost effective, value added agricultural processing efforts.

Commercial and Industrial Development Policies

The Davison County Comprehensive Plan notes the importance of agriculture to the regional economy. The impact of agriculture is not lost upon the county’s leadership who has drafted zoning regulations which include the following two statements.

- Preferences should be given to agricultural production and processing activities that benefit the agriculture industry; and

- County regulations should protect the property rights and promote the economic opportunities of farm operators.

Zoning

Ideally, economic developers seek sites that are already 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.

Concentrated Animal Feeding Operation Development

For the purpose of this analysis, setbacks were applied to all of the above noted items. All **27** CAFO sites under analysis in Davison County are currently zoned 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

As stated earlier, almost all commercial and industrial activity outside municipalities and within Davison County is dedicated to the support of agriculture activities. The most recent and majority of commercial and industrial activities are occurring south and west of the City of Mitchell. All current and future commercial and industrial development will be regulated to areas adjacent to county and state hard surface roads. At this time, all commercial or industrial development outside of municipal jurisdiction is limited to the previously indentified areas to include immediately south and west of Mitchell.

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.

II. 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. Davison County has a large shallow aquifer covering the central part of the county, thus eliminating a large number of potential sites, especially AID sites. There may be more AID sites based on minimum impact with non environmental conditions removing shallow aquifers from the analysis.

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.

III. 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 indentified 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. District III requested the Davison County Highway Superintendent (Russel "Rusty" Weinberg) 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".

Electric Supply

Access to 3-phase power was designated as a site characteristics criterion for both CAFO and AID development. District III contacted Central Electric Cooperative, Northwestern Energy and East River Electric, the primary providers of electricity to the rural areas of Davison 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 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 Davison 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 either the supply or distribution capacity of 285 gallons per minute 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, Davison RWS is the primary water supplier to rural properties within Davison County with the Aurora-Brule and Hanson systems provided service in limited areas. In an effort to conduct the most accurate analysis all three providers was contacted and requested to provide distribution system and capacity information to Planning District III for inclusion in the analysis. At this time the data has not been made available therefore the water supply analysis for both CAFO and AID sites is incomplete; although, it is assumed water service to a specific project would be considered on a case by case basis. Since the water system could not commit to meeting the minimum CAFO “Best” requirement of 104 gallons per minute, it thereby also eliminated 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 ‘Better” or “Best” in Davison County.

SECTION 2: RESEARCH AND METHODOLOGY

This section describes the methodology utilized to evaluate the suitability of potential sites for either CAFO development or agriculturally-related commercial/industrial economic 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 3 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 3: 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.

<u>Concentrated Animal Feeding Operation (CAFO)</u>

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;
4. Did not meet the one mile setback from existing residences;
5. Did not meet the two 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 **27** CAFO sites that fell into the design standards of one of the following three development standards:

Good Sites (27 sites) – Sites that were determined to be "Good" sites met the following minimum 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 Davison 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
- Site not closer than ½ mile from shallow aquifer

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

- Site is adjacent to any state or county hard surfaced road
- Site is within one-half mile of three phase power
- Site meets Davison 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
- Site not closer than ½ mile from shallow aquifer

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

- Site is adjacent to any state or county hard surfaced road
- Site is adjacent to three phase power
- Site meets Davison County concentrated animal feeding operation setback requirements and aquifer protection guidelines
- Site is adjacent to rural water area designated BEST
- Site contains 40 acres of developable ground
- Site not closer than ½ mile from shallow aquifer

Agriculturally-related Commercial/Industrial Development (AID)

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

1. Were not within one half mile of a county or state road network;
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;
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 location 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 **8** sites that fell into the design standards of one of the following three development standards:

Good Sites (8 sites) – Sites that were determined to be "Good" sites met the following minimum criteria:

- Site is within one-half mile of a state or county hard surfaced road
- Site is within one mile of three phase power
- Site 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
- Site not closer than ½ mile from shallow aquifer

Better Sites (0 sites) – Sites that were determined to be "Better" sites met the following minimum 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
- Site not closer than ½ mile from shallow aquifer

Best Sites (0 sites) – Sites that were determined to be "Best" sites met the following minimum 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
- Site not closer than ½ mile from shallow aquifer

Step 3: Site Development Recommendations

Based on the analysis, **27** sites were classified as Good, Better, or Best for CAFO development and **8** sites were classified as Good, Better, or Best for AID development (see Davison County CAFO Development Site Map and Davison County Potential AID Development Sites Map).

Since there was insufficient rural water information, the analysis was unable to identify any CAFO or AID site as “Better” or “Best” based upon the required water characteristics criteria. However, the analysis and maps contained herein do identify sites as being potentially “Good” based on meeting the necessary characteristics criteria of each hierarchical category with the exclusion of water. These “potential sites” could possibly meet the hierarchical category standards if and when additional information regarding rural water capacity becomes available.

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.

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Other Resources - Aquifer

First Occurrence of Aquifer Materials in Davison County, South Dakota
Department of Environment and Natural Resources
Division of Financial and Technical Assistance
Geological Survey Aquifer Materials Map 16
Layne D. Schulz and Kyle N. Smith, 2004
http://www.sdgs.usd.edu/pubs/pdf/AM-16_20040609.pdf