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Agricultural Economics Report No. 328 April 1995

Potential Local Socioeconomic Impacts of the Proposed ProGold Processing Plant

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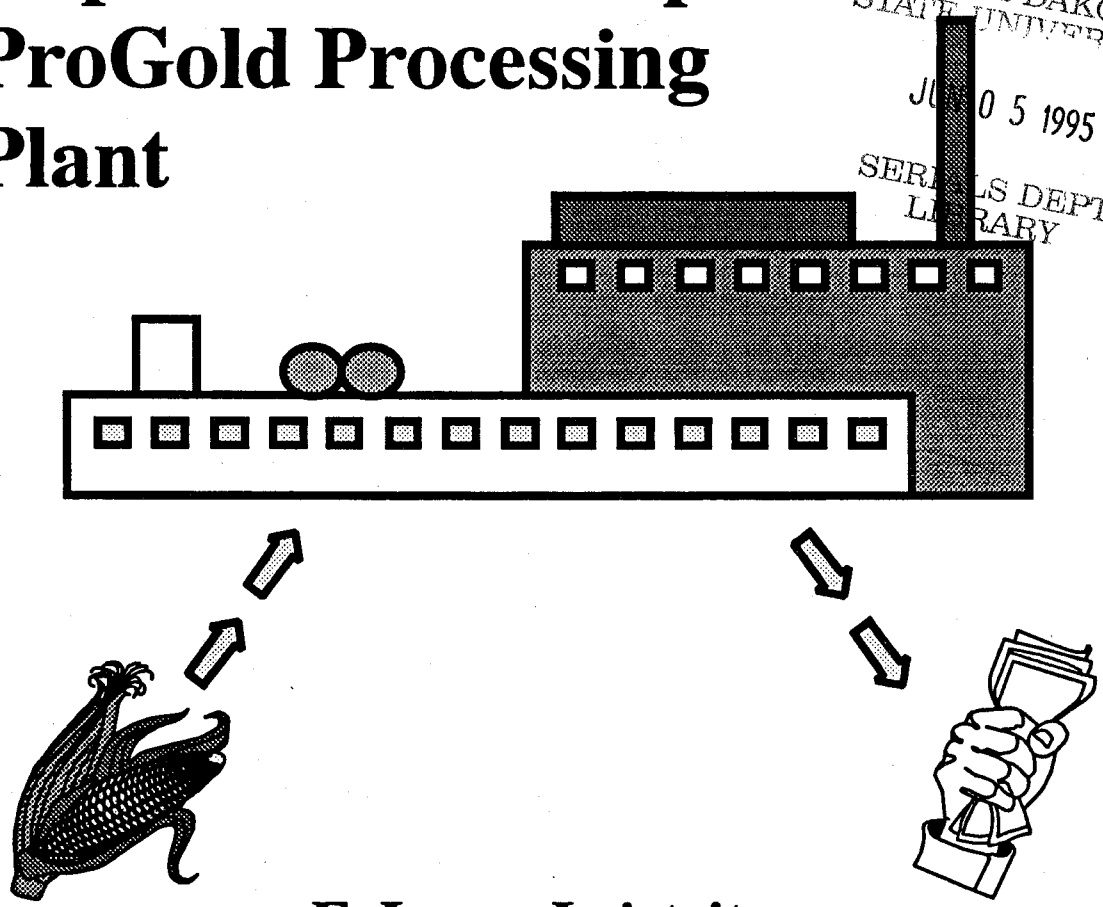

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HIGHLIGHTS

Additional processing of agricultural commodities has often been advocated as a high priority economic development strategy for North Dakota and the Upper Midwest region. An agricultural processing facility that has recently been proposed for development in North Dakota is the ProGold Limited Liability Company's corn wet milling plant. This plant would process more than 25 million bushels of corn annually, potentially producing corn syrups, starch, corn gluten feed, corn gluten meal, and corn germ. Construction of the $261 million dollar plant is expected to begin before June 1, 1995 at a site near Wahpeton. Construction will take about 19 months, with about 1,000 construction workers being employed at the peak of activity. Once in operation, the plant will employ about 150 persons. The purpose of this study is to provide an assessment of the local socioeconomic impacts of construction and operation of the ProGold plant.

The analysis of the potential socioeconomic impacts of the ProGold project highlights the substantial economic benefits that expanded agricultural processing can offer. Construction of the facility is estimated to increase the gross receipts of firms and incomes of households in the area by about $295 million and to create about 2,850 secondary jobs, in addition to the construction work force that is projected to peak at about 1,000. Once the facility is in operation, it is expected to generate a total economic impact of about $251 million annually. During operation, about 2,700 secondary jobs are estimated to be created throughout the region of influence, in addition to the 150 workers who will be employed by the plant directly.

While the ProGold project will produce substantial economic benefits for the local area, and indeed for the entire region, it also can be expected to lead to population immigration and to some increases in service demands. Development of the ProGold project at the Wahpeton site could mean an increase in Richland County's population of about 810 at the peak of construction and about 650 on a permanent basis. Cass County, North Dakota, and Wilkin County, Minnesota, would also be expected to experience some population growth. The population influx will create additional needs for housing and for public services such as schools. Richland County is expected to need about 445 additional housing units and/or construction worker accommodations in 1996 and about 325 housing units in 1999. Richland County schools could anticipate about 140 additional students in 1996 and about 135 in 1999 as a result of ProGold development. Most of these effects would occur in or near Wahpeton.

Other development projects in Richland County can be expected to add to the local impacts of ProGold. When the cumulative impacts of these projects are considered, Wahpeton is projected to have a population influx of about 1,380 by 1996 and 1,140 additional residents on a permanent basis. This would imply that Wahpeton will need about 660 housing units and construction worker accommodations in 1996 and about 480 additional housing units during the projects' operational period. The cumulative impacts of the Richland County projects would also imply that the Wahpeton schools would need to accommodate about 250 new students at the construction peak in 1996 and about 240 on a permanent basis.

The ProGold project is one of the largest construction projects to be developed in North Dakota since the period of intensive coal development during the late 1970s and early 1980s. The experience of communities in dealing with those projects points out the need for advance planning to meet the needs of the immigrating workers and their families and for timely impact analysis to provide a basis for that planning. It also points to the desirability of a project monitoring system to provide up-to-date information if project schedules and staffing depart substantially from those initially projected. With appropriate planning and impact management efforts, areas like Richland County can experience the benefits of development while avoiding the problems often associated with unplanned growth.

Potential Local Socioeconomic Impacts of the Proposed ProGold Corn Processing Plant

F. Larry Leistritz[1]

Additional processing of agricultural commodities within the Upper Midwest region has often been advocated as an economic development strategy. If agricultural commodities currently shipped out of the region could be processed at facilities located within the area, additional jobs and income and an expanded tax base could result. One such agricultural processing facility that has recently been proposed is the ProGold Limited Liability Company's (ProGold) corn wet milling plant. This facility would process more than 25 million bushels of corn annually, potentially producing corn syrups, starch, corn gluten feed, corn gluten meal, and corn germ. Construction of the $261 million plant is expected to take about 19 months, with about 1,000 construction workers being employed at the peak of activity. Once in operation, the plant would employ about 150 persons directly, as well as creating several hundred new jobs indirectly through multiplier effects (Leistritz et al. 1994d). At the time this study was conducted, ProGold was considering locations near Wahpeton and Hankinson, North Dakota, and Big Stone City, South Dakota.[2]

The prospect of the ProGold plant being located in North Dakota raises a number of questions for the communities near the proposed sites. Some of these relate to the adequacy of local and regional labor pools to fill the project-related jobs. If a substantial number of these jobs are taken by persons from outside the area, the potential impacts of relocating workers and their families on housing and community infrastructure in the host community(s) may become a concern. These impacts will depend in large measure on the demographic characteristics of relocating workers (e.g., age, marital status, family size) and on their residential location pattern. In addition to the direct effects of the plant and its workers, additional local impacts may result from the secondary economic effects of the facility and the additional jobs created in a variety of trade and service activities as a consequence. The extent of these secondary effects will, in part, depend on the extent to which the project purchases inputs and services from local suppliers. If plant construction and operation lead to the relocation of substantial numbers of people to nearby communities, a variety of public services and facilities may be affected. These public service effects may, in turn, lead to fiscal impacts for local governments.

In order for area communities to adequately deal with the demands associated with a new industrial development project and its work force, an effective community planning process is essential. Such a planning effort in turn requires timely and reliable information concerning the potential local impacts of the facility. In the absence of such information, plans may be formulated and actions taken based on faulty assumptions, which may lead either to communities being unprepared to accommodate the project-related work force and population or to over building of housing and public facilities. Past experience with large-scale development of energy resources in North Dakota offers not only examples of effective planning to cope with project effects but also examples of substantial over building and consequent long-term fiscal problems for affected communities (Leistritz and Murdock 1988). Timely impact analysis was an important factor in the more successful cases (Leistritz 1994b).

---

[1]Leistritz is professor, Department of Agricultural Economics, North Dakota State University, Fargo.

[2]On March 14, 1995, after the analysis had been completed and the report was ready to go to press, ProGold announced that the Wahpeton site had been selected. Construction is expected to begin before June 1, 1995.

The **purpose** of this study is to provide an assessment of the local socioeconomic impacts of construction and operation of the ProGold corn wet milling plant. Projections of local economic, demographic, public service, and fiscal impacts are developed for communities that appear likely to experience substantial effects. Two sets of projections are developed, one of which assumes that the facility is sited near Wahpeton and the other assuming that the site near Hankinson is selected. These projections are designed to assist local officials and others in determining the significance of the potential impacts, in terms of the ability of local systems (economic, public service, fiscal) to absorb the project-induced effects. When impacts are identified which seem likely to strain the capacity of local systems, impact management alternatives for resolving these problems will be discussed.

The impact projection phase of the project utilizes the microcomputer economic-demographic assessment model (MEDAM), an integrated model specifically designed for projecting economic, demographic, public service, and fiscal impacts of large industrial or resource development projects (Coon et al. 1993, Leistritz et al. 1994c). The model incorporates the features that have been found to be most effective in analyzing impacts of large-scale projects located in rural areas (Leistritz 1994a, Leistritz and Murdock 1981).

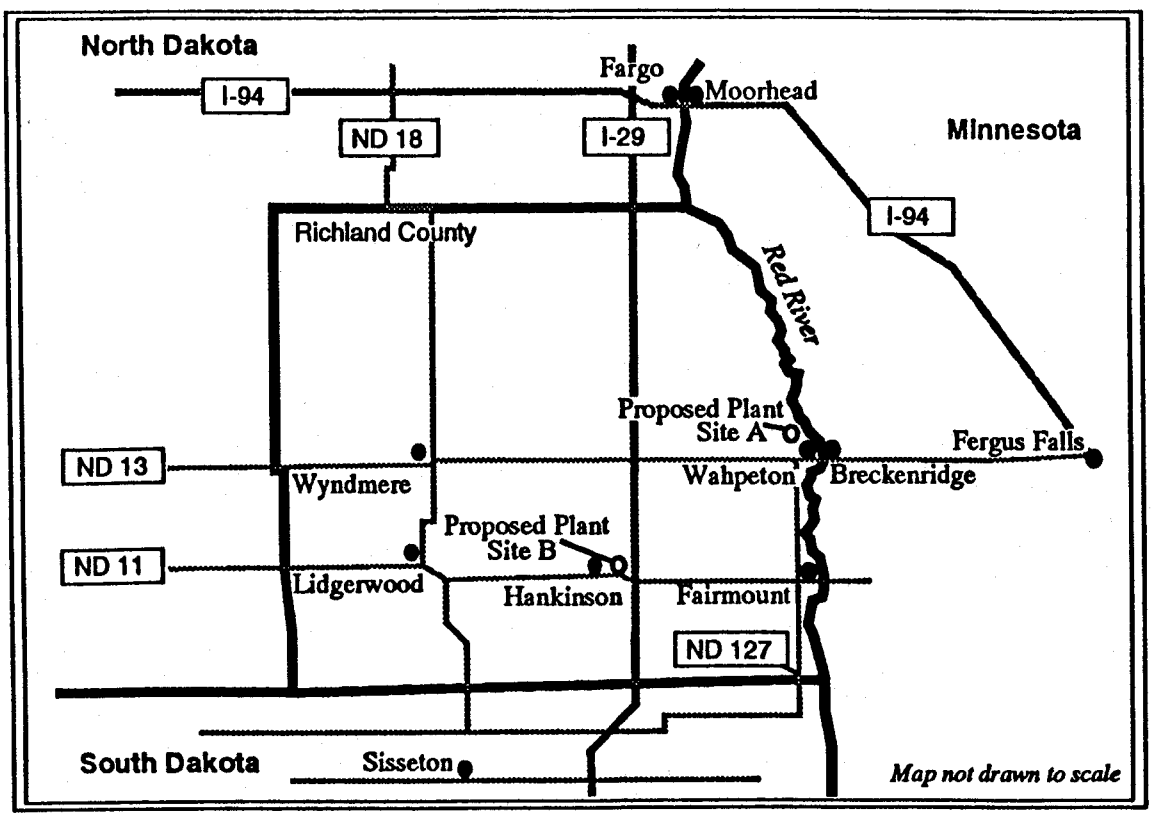
The remainder of this report is organized into four sections. The first briefly describes the site area and the communities that appear likely to be affected by the project. The next presents impact projections for the ProGold project. Then, the potential cumulative impacts of ProGold and other Richland County projects are presented. Impact management alternatives are discussed in the final section.

Site Area Characteristics

In the fall of 1994, ProGold narrowed the list of potential plant sites to three: (a) a location about 4 miles north of Wahpeton, (b) a site about 1 mile east of Hankinson, and (c) a site near Big Stone City, South Dakota. This study addresses the potential impacts if the facility were located near Wahpeton (Site A) or, alternatively, near Hankinson (Site B). Both of these sites are located in Richland County, North Dakota (see map on page 3). Communities within daily commuting distance of the two sites include Breckenridge, Minnesota (only 5 miles from Site A), Fergus Falls, Minnesota (30 miles from site A), the Richland County communities of Fairmount, Lidgerwood, and Wyndmere, and the Fargo-Moorhead metropolitan area. A summary of the distance of these communities from the proposed sites is presented below.

Miles from proposed sites to:

	Site A	Site B
Wahpeton	4	27
Hankinson	30	1
Fairmount	19	12
Lidgerwood	43	13
Wyndmere	28	26
Breckenridge, MN	5	28
Fergus Falls, MN	30	53
Fargo-Moorhead	59	64



Region of Influence of Corn Processing Plant

Population

Population trends for the counties and communities located in proximity to the potential sites are summarized in Table 1. Richland County's population grew by about 6 percent during the 1970s but has fallen about 7 percent since 1980. Wahpeton, with a 1990 population of 8,751, grew substantially (28 percent) during the 1970s, but lost about 3.5 percent of its population from 1980 to 1990. A special census conducted in the fall of 1994 revealed that Wahpeton's population has grown during the early 1990s; the census count was 9,127, an increase of 4.3 percent from 1990. Among the smaller Richland County communities, Fairmount, Hankinson, and Wyndmere experienced moderate growth during the 1970s but have lost population since 1980. Lidgerwood has lost population steadily since 1970.

Breckenridge, in Wilkin County, Minnesota, had a population of 3,708 in 1990, down 5 percent from its 1980 level. Wilkin County's population fell about 11 percent during the 1980s.

Fergus Falls, in Otter Tail County, Minnesota, had a population of 12,362 in 1990. This town's population has been relatively stable since 1970.

Cass County, North Dakota, and Clay County, Minnesota, constitute the Fargo-Moorhead MSA (Metropolitan Statistical Area), which had a total population of 153,296 in 1990 (Table 1). Cass and Clay Counties have both recorded steady growth since 1970. During the 1970s, the MSA's population grew by 14 percent, while the population growth during the 1980s was more than 11 percent.

TABLE 1
POPULATION OF CORN PLANT AREA CITIES AND COUNTIES, 1970-1992

County/City	Population				Change, 1980-90	
	1970	1980	1990	1992[a]	No.	Percent
Richland County, ND	18,089	19,207	18,148	17,842	-1059	-5.5
Fairmount	412	480	427	445	-53	-11.0
Hankinson	1,125	1,158	1,038	1,012	-120	-10.4
Lidgerwood	1,000	971	799	822	-172	-17.7
Wahpeton	7,076	9,064	8,751	9,127[b]	-313	-3.5
Wyndmere	516	550	501	456	-49	-8.9
Wilkin County, MN	9,389	8,454	7,516	7,449	-938	-11.1
Breckenridge	4,200	3,909	3,708	3,713	-201	-5.1
Cass County, ND	73,653	88,247	102,874	106,559	14,627	16.6
Fargo	53,365	61,383	74,111	77,052	12,728	20.7
West Fargo	5,161	10,099	12,287	12,660	2,188	21.7
Clay County, MN	46,585	49,327	50,422	51,006	1,095	2.2
Moorhead	29,687	29,998	32,295	32,778	2,297	7.7
Otter Tail County, MN	46,097	51,937	50,714	51,137	-1,223	-2.4
Fergus Falls	12,443	12,519	12,362	12,449	-157	-1.3

(a) Values are estimates.
(b) Special census conducted in fall of 1994.

Employment

Two major employment centers located near the proposed sites are Wahpeton and Fargo-West Fargo. Recent surveys conducted by Job Service North Dakota provide the most current information available concerning the composition of employment and recent trends in these centers (Table 2).

A local employment survey conducted by Job Service North Dakota showed 6,110 wage and salary employees at work in Wahpeton as of May 12, 1993. This represents an increase of 13 percent from the 5,405 employees reported in May of 1991 (Job Service North Dakota 1993). *Manufacturing* was by far the largest industry with 2,367 employees -- 38.7 percent of the total. *Manufacturing* also recorded the largest employment gain with 532 additional jobs since 1991, a gain of 29 percent. Seven of the eight major industries in Wahpeton had employment increases from 1991 to 1993.

A local employment survey conducted by Job Service North Dakota showed 63,302 wage and salary employees at work in Fargo and West Fargo as of July 12, 1994, an increase of 5.8 percent from the figure two years previous. *Services* was the largest industry with 18,951 employees, followed by *retail trade* with 12,381. This reflects the role of Fargo as a major regional trade and service center. *Manufacturing* with 5,698 employees and *construction* with 4,370 workers are also significant industries, and both showed substantial employment gains. All eight major industries had employment gains from 1992 to 1994.

TABLE 2
EMPLOYMENT BY INDUSTRY, FARGO (1994) AND WAHPETON (1993), AND EMPLOYMENT CHANGE (LAST TWO YEARS)

	Fargo		Wahpeton	
Industry	Employment (1994)	Employment Change 1992-94	Employment (1993)	Employment Change 1991-93
	No.	%	No.	%
Total	63,302	+5.8	6,110	+13.0
Construction	4,370	+15.4	243	+18.5
Manufacturing	5,698	+9.8	2,367	+29.0
Transportation Communications & Utilities	4,007	+10.9	311	+9.5
Wholesale Trade	5,368	+4.6	170	+5.6
Retail Trade	12,381	+6.4	843	+5.2
Finance, Insurance, & Real Estate	4,671	+9.1	134	+8.1
Services	18,951	+3.0	839	+12.6
Government	7,856	+0.9	1,203	-3.8

Source: Job Service, North Dakota (1993, 1994)

The data in Table 2 indicate that Richland and Cass Counties have a substantial employment base, with a sizeable pool of experienced manufacturing and construction workers as well as an established trade and service infrastructure. However, the employment gains recorded in recent years also imply that the area may have relatively few unemployed persons or potential labor force entrants.

Housing

Communities near the proposed plant sites appear to have only limited amounts of available housing. The Wahpeton-Breckenridge area has a housing shortage, stemming from past expansions by the area's major manufacturers, and several new housing developments are in various stages of planning or development (Priebe 1994, Daugherty 1994). The smaller communities like Hankinson may have a few housing units available for sale or rent, but reliable information is not readily available on the quantity, quality, and availability of vacant/rental housing there.

An immediate need during plant construction will be work-week accommodations for construction workers. Motels and RV sites are typically utilized heavily by temporary construction workers. A telephone survey conducted in December 1994 revealed that Richland County communities have a total of 157 motel rooms and about 35 RV sites (Table 3), while Breckenridge has an additional 42 motel rooms and Fergus Falls has 293 motel rooms and 45 RV sites. Oakes (in Dickey County, ND) has 96 rooms and 18 RV sites. Motel occupancy averaged 65 percent in 1994.

TABLE 3
MOTEL ROOMS AND RV SITES IN OR NEAR IMPACT AREA COMMUNITIES, 1994

	Motels		
Town	Rooms, 1994	Occupancy, 1994[a]	RV Sites With Hookups
	No.	%	No.
Wahpeton	126	68	12
Hankinson	9	35	8
Lidgerwood	12	75	15
Oakes	96	48	18
Wyndmere	10	95	0
Breckenridge	42 [b]	53	0
Fergus Falls	293 [c]	69	45
Total	588	65	98

[a] Weighted average of those that reported occupancy rates.
[b] One motel could not be contacted.
[c] One motel would not disclose the number of rooms.

Retail Trade

Retail sales for Richland County's four largest towns for 1990-1993 are summarized in Table 4. Wahpeton, classified as a complete shopping center (Bangsund et al. 1991), had adjusted taxable sales of $63.5 million in 1993, up about 2 percent from the 1990 level. The smaller communities of Hankinson, Lidgerwood, and Wyndmere (each classified as a minimum convenience center) had 1993 sales ranging from $3.5 million to $4.5 million.

TABLE 4
RETAIL SALES AND PULL FACTORS FOR SELECTED COMMUNITIES IN LOCAL IMPACT AREA, 1990-1993

Town	Adjusted Taxable Sales (1993 dollars)				Percent Change, 1990-1993	Pull Factor 1993
	1990	1991	1992	1993		
Hankinson	5,030,586	4,265,702	4,192,122	3,450,065	-31.4	0.29
Lidgerwood	6,020,561	6,167,619	5,089,340	4,528,268	-24.8	0.48
Wahpeton	62,442,711	58,056,092	60,805,198	63,491,398	1.7	0.72
Wyndmere	4,233,666	4,156,245	3,505,907	3,608,464	-14.8	0.62

School Enrollments

Enrollments in the Wahpeton, Hankinson, Fairmount, and Lidgerwood school districts for 1980-1993 are summarized in Table 5. Wahpeton's 1993 enrollment was 1,739 which represented an increase of 4 percent from the 1990 level. Hankinson had 388 students in 1993, up 21 students or 6 percent from 1990. Lidgerwood had 273 students in 1993, a drop of 3 students from 1990, while Fairmount had 169, a decrease of 12 from 1990.

Law Enforcement

The Richland County Sheriff's Department has 8 sworn officers and 1 office deputy. The Wahpeton Police Department employs 12 sworn police officers and 2 civilian employees. The city of Hankinson contracts with the Richland County Sheriff's Department for law enforcement services. Two deputies live in Hankinson. One deputy patrols the city of Hankinson; the second patrols outside the city but fills in when the primary deputy is off duty.

Medical Facilities

Wahpeton and Breckenridge have 3 medical clinics (with about 30 doctors), 4 chiropractic clinics, 10 dentists, and 6 optometrists. The St. Francis Medical Center and Home (located in Breckenridge) has a 95-bed acute care facility and a 124-bed skilled care facility. The St. Francis Medical Center has recently completed a $2.3 million renovation.

TABLE 5
ENROLLMENT OF SELECTED RICHLAND COUNTY SCHOOL DISTRICTS AND COUNTY TOTAL, 1980-1993

Year	Fairmount	Hankinson	Lidgerwood	Wahpeton	County Total
1980	165	376	368	1,367	2,572
1985	146	386	315	1,476	2,605
1990	181	367	276	1,668	2,801
1991	181	376	268	1,696	2,839
1992	179	374	272	1,696	2,865
1993	169	388	273	1,739	2,929

Source: North Dakota Department of Public Instruction

Ambulance Services Inc., which serves the Wahpeton area, is a 24-hour a day, 7-day a week service, with 12 to 15 part-time trained emergency medical technicians.

The Oakes Professional Clinic operates in the Hankinson Clinic building two days per week and in the Lidgerwood Clinic three days per week. The clinic is staffed by a Board Certified physician and a physician's assistant. Dental and chiropractic care are also available in Hankinson.

The Hankinson Volunteer Ambulance Service provides service to Hankinson, Great Bend, Mantador, and eight townships. Of the Service's 17 members, 11 are certified EMTs and one is an EMT-I. The remaining five members are CPR certified drivers.

Potential ProGold Project Impacts

The proposed ProGold corn wet milling plant will be a large-scale industrial facility with a grind capacity of about 72,000 bushels of corn per day. When in full operation, the plant will process 25.2 million bushels of corn annually and employ about 150 workers. The construction phase is expected to take about 19 months, with total expenditures of about $261 million and a peak workforce of about 1,000. Construction is scheduled to begin in the spring of 1995 and to be completed late in 1996, with the facility assumed to be in full operation in 1997. Once the plant is in full operation, it is expected to have operating expenses of about

$117.1 million annually. In addition, the annual profit distribution to the ProGold members has been assumed to total $30.6 million. (ProGold is a partnership of Golden Growers Cooperative, American Crystal Sugar Company, and Minn-Dak Farmers Cooperative. The profit distribution will result in dividends to the farmer-owners of the three cooperatives.)

Project Expenditures

The total cost of constructing the ProGold plant is estimated to be about $261 million, but only a portion of this cost represents expenditures to entities within the project's region of influence (generally defined as eastern North Dakota, northwestern Minnesota, and northeastern South Dakota). For example, plant equipment alone will amount to about $70 million, virtually all of which will be purchased outside the region. Information on construction expenditures by type and the percentage of each category likely to represent payments to entities within the region was obtained from ProGold officials. These expenditures were then allocated to the input-output sectors of the MEDAM model (Table 6). The plant construction expenditures that are expected to be received by entities within the region total about $113.6 million, or about 43.5 percent of the total plant construction expenditures.

Information on operation expenses by type and the percentage of each category likely to be expended within the region was obtained from ProGold, and the regional expenditures were allocated to the input-output sectors (Table 6). Expenditures to the *agriculture, crops* sector reflect the fact that, if the ProGold plant were not present in the region, corn growers could sell their grain to other markets (probably outside the region). On the other hand, the plant's corn purchases can be expected to have a positive effect on regional corn prices (Johnson 1994); this price enhancement effect is reflected in the estimates reported here. Expenditures to the *households* sector include both salaries and wages for plant employees and the profit distribution to ProGold members. (It is assumed that 80 percent of the profits distributed ultimately are reflected in dividends to the farmer-owners of the cooperatives.) The annual plant operations expenditures in the region total $75.8 million, or about $505,500 per direct job. This is a substantially higher level of regional expenditures per direct job than is typical for rural manufacturing facilities. The high level of expenditures is attributable to (1) the capital-intensive nature of the facility, (2) the project's positive impact on regional corn prices, and (3) the distribution of profits to farmer-owners within the region.

Direct Workforce

The construction of the plant is expected to require about 1,800,000 hours of construction craft workers. In addition, a number of management employees, vendor personnel, maintenance employees, and outside inspectors will be involved. The total workforce is expected to peak at about 1,000 workers. The crafts for which the demand will be greatest will include pipefitters, electricians, ironworkers, millwrights, and cement finishers. The operations workforce is expected to total 150 workers.

TABLE 6
ESTIMATED DIRECT NEW EXPENDITURES IN REGION OF INFLUENCE BY PROGOLD CORN PROCESSING PLANT

Input-Output Sector	Plant Construction	Plant Operation (annual)
	----- $000 -----	
Agriculture, crops		11,770
Construction		3,000
Transportation		1,200
Communications and utilities		9,420
Agricultural processing and misc. manufacturing		11,630
Retail trade	57,600	
Finance, insurance, and real estate	4,000	500
Business and personal services		50
Professional and social services		200
Households	52,000	37,560
Government		500
Total	$113,600	$75,830

A major factor that will determine the nature of the local socioeconomic impacts associated with the ProGold project is the extent to which the new jobs will be filled by persons relocating from outside the area. With respect to the project construction workforce, factors that would favor a relatively high rate of local recruitment include the relatively large population and labor force living within commuting distance of the proposed North Dakota sites (the estimated 1992 population of Richland, Wilkin, Otter Tail, Cass, and Clay Counties combined was almost 234,000). Forces that may limit the ability to hire construction workers locally include (1) limited availability of key crafts within the regional labor market, (2) other construction projects that may compete for available workers, and (3) very low regional unemployment.

Of the estimated 1,800,000 hours of construction craft labor estimated to be required, pipefitters account for 28 percent, electricians for 25 percent, ironworkers for 17 percent, millwrights and cement finishers for 8 percent each, and carpenters for 6 percent. Among these crafts, pipefitters, iron workers, millwrights, and cement finishers are generally in short supply in the regional labor market (Daugherty 1994).

Other construction projects in the region may limit the availability of workers even in the crafts that are more common in the region (e.g., electricians, carpenters, equipment operators). Some projects that are worthy of note include:

1. Minn-Dak sugarbeet plant expansion -- construction activity at the site north of Wahpeton will begin in 1995 and be completed in 1998, with 1996 being the year with the greatest amount of expenditures (Groneman 1994). While precise estimates of the work force requirements have not been released, a construction work force of 150 to 200 by 1996 appears plausible.

2. PrimeBoard/PrimeWood expansion -- The new PrimeBoard plant in Wahpeton will be completed in March-April of 1995. Once operational, the plant will employ 35 workers within one year. WCCO Belting is another PrimeWood subsidiary that is expanding. They have 40 workers now, but this will grow to 70 to 100 during the peak season, once their plant addition is complete. PrimeWood Transportation Services is a third PrimeWood subsidiary that is expanding; they are primarily hiring truck drivers (Shorma 1994).

3. Proposed new casino in southern Richland County -- The proposed site for the casino is along I-29 about eight miles south of the Hankinson interchange (i.e., just north of the South Dakota border). According to the best information available at the time of this writing, construction of the casino may begin early in the spring of 1995 and be completed sometime in the fall. Once operational, the casino's permanent work force is expected to grow to 700 within one year (Dietze 1995).

4. Fargo area construction projects -- A number of new projects, together with expansions by existing firms, will add to the demand for both construction workers and factory and office employees over the next few years (Braaten-Grabanski 1994). Notable among these are:

   a. Marvin Windows factory -- Construction of the new plant will begin in 1995. The plant will ultimately be a 150,000 sq. ft. facility. The first stage of plant operation will employ 45-50 permanent workers, with a projected work force of 200 within two years.

   b. Cargill financial center -- A new office building to house the center will be built in 1995. Cargill will employ 45 people by early to mid-1995 and plans for a staff of 250-300 eventually.

   c. Expansions planned by a number of area manufacturers (25-30), most of which will involve some construction labor and most of which will eventually lead to additional permanent workers.

   d. Construction of new Fargo water treatment plant, a $40 million project (Knutson 1995).

   e. Construction of the new Ramada Plaza Suites and Conference Center, a $15 million project (Knutson 1995).

5. Economic development projects in Richland, Ransom, and Sargent Counties -- The most notable of these are (a) expansion of the Melroe plant at Gwinner, (b) Fargo Assemblyplant at Lisbon, (c) Northland Truss plant at Abercrombie, and (d) the new Burkel Turkey Farms operation near Wyndmere. The Melroe expansion is expected to result in at least 100 new jobs at the Gwinner plant during 1995. The other three projects together appear likely to result in about 100 new jobs in 1995. (Fargo Assembly and Northland Truss each employed about 40 workers as of December 1994 [Rustad 1994].)

These projects appear likely to result in a relatively high demand for both construction craft workers and for factory operations workers over the next two years.

The labor demand resulting from the proposed corn plant and the other projects just reviewed must be viewed in the context of the current labor market situation in Richland County and the surrounding area. Unemployment rates are quite low. In October, 1994, Richland County reported 2.9 percent of its labor force unemployed, while Cass County's rate was only 1.6 percent. Tight labor market conditions appear to be prevailing through most of North Dakota (statewide unemployment rate was 2.6 percent in October 1994) and the Upper Midwest region (Daugherty 1994).

In view of these factors, it appears that a substantial portion of the project construction jobs will be filled by nonlocal workers. Further, to the extent that some local residents take jobs associated with construction of the corn plant, most of these will likely have been previously employed within the area, and the jobs they vacate will often be filled by persons who relocate from outside the region. Based on these considerations, it is assumed that **80** percent of the corn plant construction work force will be made up of workers from outside the region. These workers will either relocate to the site area or will require single-status housing during the work week.

The factors that will influence the extent to which plant operation jobs will be filled by local workers are similar to those that will affect the construction phase of the project. In addition, it appears likely that a substantial percentage of jobs in plant operation will require persons with special training and/or experience which are unlikely to be found in the local labor pool. For example, when Cargill built a large corn processing plant near Eddyville, Iowa, a high percentage of the operations workers were brought in from outside the area (Vetter 1994). ProGold estimates that 25 percent of the operations jobs could not be filled by area residents because of special training or experience requirements. The other 75 percent could be filled by area residents, but current labor market conditions make it likely that most local workers will be transferring from other jobs and that many will be replaced by in-migrants. Based on these considerations, it is assumed that **70** percent of the operations work force will be made up of relocating (nonlocal) workers.

The secondary jobs (i.e., those created indirectly as a result of expenditures by the facility, its work force, and its suppliers) also will be filled partly by nonlocal workers and partly from the local labor pool. It is assumed that **60** percent of the secondary jobs will be filled by nonlocal workers.

Economic Impacts

Input-output coefficients incorporated within the MEDAM model were used to estimate the secondary and total economic impacts of plant construction and operation. The $113.6 million in direct impacts during the construction period result in an additional $181.4 million in secondary impacts for a total, one-time construction impact of $295 million (Table 7). The $75.8 million in annual direct impacts associated with plant operation lead to an additional $175.4 million in secondary impacts, for a total annual impact of $251 million. This includes $89.9 million of additional *household* sector gross receipts (gross business volume), which indicates that personal incomes of residents of the region would be increased by about $89.9 million each year during plant operation. Other sectors receiving substantial impacts include *retail trade* ($51.1 million annually during plant operation and $114.8 million during the construction period), *agriculture* ($27.9 million annually during plant operation), *manufacturing* ($24.1 million annually during operation), and *communications and utilities* ($16.6 million annually during operation).

TABLE 7
ESTIMATED DIRECT,
SECONDARY AND TOTAL ECONOMIC IMPACT FROM CORN PROCESSING PLANT

Input-Output Sector	Plant Construction			Plant Operation (annual)		
	Direct	Secondary	Total	Direct	Secondary	Total
				$000		
Agriculture, crops and livestock		12,228	12,228	11,770	16,080	27,850
Construction		6,985	6,985	3,000	5,922	8,922
Transportation		1,131	1,131	1,200	808	2,008
Communication and utilities		9,062	9,062	9,420	7,162	16,582
Manufacturing and agricultural processing		5,053	5,053	11,630	12,435	24,065
Retail trade	57,600	57,178	114,778	0	51,097	51,097
Finance, insurance, and real estate	4,000	12,634	16,634	500	11,388	11,888
Business and personal services		4,570	4,570	50	4,219	4,269
Professional and social services		7,023	7,023	200	5,804	6,004
Households	52,000	56,767	108,767	37,560	52,344	89,904
Government		8,314	8,314	500	7,590	8,090
Other[a]		454	454	0	513	513
Total	113,600	181,400	295,000	75,830	175,362	251,192
Secondary Employment (FTE)		2,851			2,701	

[a] Includes nonmetal mining, coal mining, thermal-electric generation, petroleum exploration/extraction, and petroleum refining.

Plant operation is estimated to create about 2,700 secondary jobs in other sectors of the regional economy (Table 8). Sectors with substantial employment gains include *retail trade*, *professional and social services*, *business and personal services*, and *communications and public utilities*. About 2,850 secondary jobs are expected to result from the one-time impacts associated with plant construction; these jobs are spread over the two years of the construction period (1995 and 1996).

TABLE 8
ESTIMATED SECONDARY EMPLOYMENT RESULTING FROM CONSTRUCTION AND OPERATION OF CORN PROCESSING PLANT

Input-Output Sectors	Number of Secondary Jobs: Plant Construction	Number of Secondary Jobs: Plant Operation
Construction	106	136
Transportation	72	128
Communications and public utilities	100	183
Retail trade	990	441
Finance, insurance, and real estate	142	101
Business and personal service	269	251
Professional and social service	447	382
Other[a]	725	1,079
Total	2,851	2,701

[a] Includes agriculture, nonmetal mining, agricultural processing/miscellaneous manufacturing, and government.

The MEDAM model provides impact estimates annually for the first five years of project development, and then every five years for 20 years. The impacts associated with construction of the ProGold project are expected to occur during 1995 and 1996. Impacts associated with plant operation are expected to begin in 1997 and to continue through 2019, the last year for which projections are developed. A summary of estimated project-related employment for the period 1995-2019 is presented in Table 9.

TABLE 9
EMPLOYMENT ASSOCIATED WITH PROGOLD PLANT CONSTRUCTION AND OPERATIONS, 1995-2019

Year	Direct: Construction	Direct: Operational	Secondary
	------ workers ------		
1995	650	0	1,072
1996	1,000	120	1,779
1997	0	150	2,701
1998	0	150	2,701
1999	0	150	2,701
2004	0	150	2,701
2009	0	150	2,701
2014	0	150	2,701
2019	0	150	2,701

Demographic Effects

To estimate the effects of a project like the ProGold plant on an area's population, it is necessary to estimate the percentage of the project-related workers who will relocate to the area (or conversely, to estimate the percentage of the new jobs that can be filled by the area's unemployed or by local residents who enter the labor force). As previously discussed, because of the very low level of unemployment in the area and the likelihood that other projects in the region will be placing additional demands on the local labor pool, it has been assumed that 80 percent of the construction jobs, 70 percent of the operations jobs, and 60 percent of the secondary jobs will be filled by nonlocal workers (see Table 10).

Another critical assumption concerns the percentage of nonlocal construction workers who will bring families to the area. Because of the temporary nature and typically short duration of many construction jobs, nonlocal workers often choose not to relocate their families but rather to seek work-week accommodations near the project site, returning to their permanent residences on weekends when possible (Leistritz and Murdock 1986). The tendency for a majority of the nonlocal construction workers to choose not to relocate their families has been reported in connection with construction of the Dakota Growers pasta plant near Carrington (Bradberry 1994) and also in regard to pipeline construction in the Grafton area (Mandt 1994). In view of these trends, it was assumed that only 25 percent of the nonlocal construction workers would bring families to the area.

A third factor that is important in determining the community-level impacts of a project is where the relocating workers choose to live. The residential location assumptions that were developed for the two sites are summarized in Table 10. With respect to Site A (near Wahpeton), it was assumed that about 42 percent of the construction workers would reside in Richland and Wilkin Counties and that 50 percent would find accommodation in the Fargo-Moorhead area, with the other 8 percent residing elsewhere. This type of commuting pattern would be consistent with experience with large-scale coal development projects in western North Dakota, as well as other large industrial projects (Leistritz and Murdock 1986).

The Site A operations workers were assumed to live primarily in Wahpeton (45 percent) and Breckenridge (20 percent), with lesser numbers living in the smaller towns of Richland and Wilkin Counties. About 7 percent were assumed to commute from Fargo-Moorhead. The distribution pattern for the secondary workers was estimated to be quite different. A large portion of the secondary economic effects are projected to arise from the plant's profits, most of which will be distributed to the farmer-owners of the three cooperatives. Because of the wide dispersal of these individuals, it was assumed that 40 percent of the secondary employment would be outside the five-county area (Table 10).

Site B construction workers were expected to reside primarily in Richland and Cass Counties. About 12 percent were assumed to find accommodation in the Hankinson area, 10 percent in Lidgerwood, Fairmount, and Wyndmere, about 13 percent in Wahpeton, and 50 percent in the Fargo area (Table 10). Many of the operations workers are expected to prefer to live in Hankinson or the immediate area because of its proximity to the plant site.

TABLE 10
DEMOGRAPHIC PARAMETERS USED IN IMPACT ASSESSMENT FOR PROGOLD PLANT

Percentage of each worker type who will be nonlocal:

Construction	80.0%
Operation	70.0%
Secondary	60.0%

Percentage of nonlocal construction workers who will bring families to the area --25%

Residential Location by Worker Type	Construction Workers	Operation Workers	Secondary Workers
		- - - - - - - - percent - - - - - - -	
Site A:			
Counties			
Richland	28	55	16.5
Wilkin	14	31	7.5
Cass	35	5	30.0
Clay	15	2	5.0
Otter Tail	8	2	1.0
Other counties	0	0	40.0
Towns			
Wahpeton	22	45	15.0
Breckenridge	10	20	5.5
Fargo	35	5	30.0
Moorhead	15	2	5.0
Fergus Falls	8	2	1.0
Fairmount	2	4	0.5
Site B:			
Counties			
Richland	35	75	17.0
Cass	50	15	35.0
Other counties	15	10	48.0
Towns			
Hankinson	12	37	8.0
Lidgerwood	5	8	1.0
Fairmount	2	4	0.5
Wyndmere	3	3	0.5
Wahpeton	13	18	7.0
Fargo	50	15	35.0

Lidgerwood and Fairmount may also attract operations workers if housing is available. About 18 percent of the operations workers are projected to live in the Wahpeton area, while about 15 percent will commute from Fargo. A few workers in each category are assumed to live in other nearby counties, including Roberts County, South Dakota, and Wilkin and Traverse Counties, Minnesota.

A summary of the projected residential location of the project-related workforce is presented in Table 11 for 1996, when the construction work force will peak, and for 1999, a typical year of plant operation. It should be noted that Table 11 represents workers in all of the project-related jobs, including those that are filled by current residents of the region. Assuming Site A is chosen, in 1996 Richland County is expected to be the place of residence of about 280 construction workers, 66 operations personnel, and 294 secondary workers, for a total of 640 project-related employees. Wilkin County would be the residential location of 140 construction workers, 37 operations personnel, and 310 total employees. Cass County would have 350 construction workers, 534 secondary jobs, and a total of 890 project-related employees. The large number of secondary jobs in Cass County reflects the role of Fargo as the major retail and service center for the region. Clay County would have 150 construction workers and 241 total project-related employees, while Otter Tail County would have 80 construction workers and 100 total employees.

If Site A is chosen, the 1999 projections indicate that Richland and Wilkin Counties will be the residence of most of the operations workers and each will also have a substantial number of secondary jobs. Cass County will be the location of slightly more than 800 workers.

If Site B is chosen, the project impacts will be concentrated more heavily in Richland and Cass Counties (Table 11). The 1996 projections indicate that 350 of the 1,000 construction workers will reside in Richland County, while 500 will reside in Cass County. (The other 150 are expected to be dispersed among a number of communities in adjacent counties.) The 1999 projections indicate that 113 of the 150 operations workers will reside in Richland County, which will also have more than 450 project-related secondary jobs. Cass County will be the place of residence of 23 operations workers and about 945 secondary workers.

TABLE 11
WORKERS[a] BY TYPE AND RESIDENCE, 1996 AND 1999, PROGOLD PLANT SITES A AND B

Site/Year/County	Worker Type			
Site A:	Construction	Operation	Secondary	Total
Regional Impact:				
1996	1,000	120	1,779	2,899
1999	0	150	2,701	2,701
Richland County:				
1996	280	66	294	640
1999	0	83	446	529
Wilkin County:				
1996	140	37	133	310
1999	0	47	203	250
Cass County:				
1996	350	6	534	890
1999	0	8	810	818
Clay County:				
1996	150	2	89	241
1999	0	3	135	138
Otter Tail County:				
1996	80	2	18	100
1999	0	3	27	30
Site B:				
Regional Impact:				
1996	1,000	120	1,779	2,899
1999	0	150	2,701	2,851
Richland County:				
1996	350	90	302	742
1999	0	113	459	572
Cass County:				
1996	500	18	623	1,141
1999	0	23	945	968

[a] The figures in this table refer to **all** workers of a given type, without regard to their origin (local vs. nonlocal).

The population implications of project construction and operation are presented in Tables 12 and 13. Table 12 summarizes projected in-migrating population associated with Site A while Table 13 shows the same information for Site B. Under Site A assumptions, the project will result in a total of 3,436 persons in-migrating to the region by 1996 (at the peak of construction) and 3,211 by 1999. The construction phase population growth would include roughly 800 new residents in Richland County, about 400 in Wilkin County, slightly more than 1,000 in Cass County, about 300 in Clay County, and 125 in Otter Tail County (Table 12). Wahpeton would gain about 680 new residents by 1996, Breckenridge about 280, and Fargo slightly over 1,000. Once the facility is operational, Richland County will have gained about 650 new residents, Wilkin County about 310, and Cass County about 890. Under these assumptions, Wahpeton could anticipate about 580 new residents, Breckenridge about 220, and Fargo about 890.

TABLE 12
IMMIGRATING POPULATION BY WORKER TYPE AND COUNTY/CITY OF RESIDENCE,
PROGOLD PLANT SITE A

Region/County/City/Year	Worker Type			Total		
	Construction	Operation	Secondary	Male	Female	Total
Regional Impact:						
1996	1,280	247	1,909	2,139	1,297	3,436
1999	0	310	2,901	1,786	1,425	3,211
Richland County:						
1996	359	137	314	512	298	810
1999	0	170	477	359	288	647
Wilkin County:						
1996	179	76	142	252	145	397
1999	0	95	217	172	140	312
Cass County:						
1996	446	14	577	657	380	1,037
1999	0	16	869	494	391	885
Clay County:						
1996	192	2	97	196	95	291
1999	0	2	148	84	66	150
Otter Tail County:						
1996	102	2	21	86	39	125
1999	0	2	28	17	13	30
Wahpeton:						
1996	281	110	287	426	252	678
1999	0	140	437	318	259	577
Fairmount:						
1996	28	8	7	30	13	43
1999	0	14	16	16	14	30
Breckenridge:						
1996	130	48	106	180	104	284
1999	0	64	158	123	99	222
Fargo:						
1996	446	14	577	657	380	1,037
1999	0	16	869	494	391	885
Moorhead:						
1996	192	2	97	196	95	291
1999	0	2	148	84	66	150
Fergus Falls:						
1996	102	2	21	86	39	125
1999	0	2	28	17	13	30

Under Site B assumptions, Richland County would have about 960 additional residents at the peak of construction in 1996 while Cass County would experience an influx of about 1,350 persons. Hankinson could be the residence of almost 400 new residents while Lidgerwood could gain about 110, Fairmount and Wyndmere about 50 each, Wahpeton almost 350, and Fargo about 1,350. During plant operation, Hankinson could anticipate 350 new long-term residents, Lidgerwood 50 to 60, Wahpeton about 260, and Fargo about 1,060 (Table 13).

TABLE 13
IMMIGRATING POPULATION BY WORKER TYPE AND COUNTY/CITY OF RESIDENCE,
PROGOLD PLANT SITE B

Region/County/City/Year	Worker Type			Total		
	Construction	Operation	Secondary	Male	Female	Total
Regional Impact:						
1996	1,280	247	1,909	2,139	1,297	3,436
1999	0	310	2,901	1,786	1,425	3,211
Richland County:						
1996	446	186	325	610	347	957
1999	0	233	493	400	326	726
Cass County:						
1996	642	39	671	866	486	1,352
1999	0	45	1,017	592	470	1,062
Hankinson:						
1996	154	92	152	246	152	398
1999	0	117	230	192	155	347
Lidgerwood:						
1996	66	21	21	70	38	108
1999	0	25	28	29	24	53
Fairmount:						
1996	28	8	7	30	13	43
1999	0	14	16	16	14	30
Wyndmere:						
1996	40	5	7	38	14	52
1999	0	8	16	14	10	24
Wahpeton:						
1996	167	42	135	221	123	344
1999	0	56	204	144	116	260
Fargo:						
1996	642	39	671	866	486	1,352
1999	0	45	1,017	592	470	1,062

The population impacts can be placed in perspective by comparing the population increases projected to be associated with ProGold construction (1996) and operation (1999) with the 1990 population of some of the affected jurisdictions. Under Site A assumptions, Richland County is expected to have a population increase of about 810 in 1996. This would be about 4.5 percent of the county's 1990 population. In 1999, the county population impact of 647 persons would be about 3.6 percent of the 1990 population. Wahpeton is projected to gain 678 people (7.7 percent) in 1996 and 577 (6.6 percent) in 1999. Under Site B assumptions, Richland County's population impacts are 957 (5.3 percent) in 1996 and 726 (4.0 percent) in 1999. Hankinson's relative impacts are projected to be more substantial, amounting to 398 people (39.3 percent) in 1996 and 347 (34.3 percent) in 1999.

The in-migrating population associated with construction and subsequent operation of the ProGold plant will require housing and a variety of public services and facilities. In the subsequent sections, the implications of the project for housing, schools, and other public services are discussed. Specific projections are provided for those counties and cities for which the level of in-migration appears to be large enough to potentially require impact management planning:

Site A -- Richland County, Wilkin County, Cass County, Wahpeton, and Breckenridge

Site B -- Richland County, Cass County, Hankinson, Lidgerwood, and Wahpeton

Housing Impacts

One of the most obvious implications of the population influx associated with construction and operation of the ProGold plant will be a need for housing or work-week accommodations for the workers and, in many cases, their families. The MEDAM model estimates the housing units that will be required to accommodate the in-migrating (relocating) project-related population, based on coefficients that specify the housing type preferences of workers of each type. The coefficients used in this analysis are shown in Table 14. These coefficients indicate, for instance, that only 10 percent of the in-migrating construction workers will desire single-family houses, while 30 percent would prefer apartments. About 30 percent of the construction workers would prefer mobile home (including RV and travel trailer) accommodations, and 30 percent will be housed in motels, rented rooms, and similar work-week accommodations. Similar interpretations apply to the coefficients for the other worker types.

TABLE 14
HOUSING REQUIREMENTS BY WORKER TYPE

Worker Type	Housing Type			
	Single-Family Houses	Multi-Family Apartments	Mobile Homes[a]	Other[b]
	----------percent----------			
Construction	10.0	30.0	30.0	30.0
Operations	60.0	25.0	15.0	0.0
Secondary	40.0	40.0	15.0	5.0

[a] For construction workers, this category will include RVs and travel trailers.
[b] For construction workers, this category will include motels. For secondary workers, this category will include younger workers who live with their parents.

The housing requirements projected to be associated with ProGold construction and operation at Sites A and B are summarized in Table 15. In 1996, assuming Site A is selected, an estimated 445 housing units would be required in Richland County, 220 in Wilkin County, and 605 in Cass County. Wahpeton would need to accommodate about 375 workers or families while Breckenridge would need about 155 additional units. During the transition from plant construction to operation, the total number of units needed would decrease while the demand for single-family houses would increase. The demand for multi-family housing would change only slightly, while the demand for mobile home and other housing would drop substantially.

If Site B is selected, the new housing requirements will be primarily in Richland and Cass Counties, consistent with the distribution patterns of the project-related workers and population discussed previously (Table 15). To accommodate the projected population for 1996, Hankinson

would need 63 single-family houses, 71 apartment units, 47 mobile home/RV spaces, and 33 motel rooms or similar accommodations. With the transition to plant operation, the demand for single-family houses would increase to 75, while the demand for apartments would decrease by 10 units. The demand for mobile home/RV and other accommodations would decrease from a total of 80 units for these two classes combined to 31 units.

TABLE 15
HOUSING REQUIREMENTS ASSOCIATED WITH PROGOLD DEVELOPMENT, SITES A AND B, 1996 AND 1999

Site/County/City/Year	Housing Type: Single-Family Houses	Multi-Family Apartments	Mobile Home	Other	Total Units
Site A					
Richland County:					
1996	120	149	100	76	445
1999	142	121	49	13	325
Wilkin County:					
1996	59	73	50	38	220
1999	69	57	23	6	155
Cass County:					
1996	159	213	133	100	605
1999	197	195	74	24	490
Wahpeton:					
1996	105	126	83	61	375
1999	125	109	43	12	289
Breckenridge:					
1996	41	51	36	27	155
1999	49	41	16	4	110
Site B					
Richland County:					
1996	139	173	120	93	525
1999	157	130	53	14	354
Cass County:					
1996	197	272	178	139	786
1999	236	231	87	28	582
Hankinson:					
1996	63	71	47	33	214
1999	75	62	25	6	168
Lidgerwood:					
1996	12	18	15	13	58
1999	11	8	3	1	23
Wahpeton:					
1996	49	65	44	35	193
1999	56	50	20	6	132

School Impacts

Among the various public services likely to be affected by growth and development, the public schools are often of greatest concern. At least two factors explain the high level of interest in the effects on schools: (1) the high priority placed on primary and secondary education by state and local leaders and (2) the substantial portion of local government expenditures that the public schools typically represent.

Projections of the impact of construction and operation of the ProGold plant on school enrollments, that were developed for both Site A and Site B assumptions, are summarized in Table 16. Under the Site A scenario, Richland County would have an increase in primary and secondary school enrollments of 137 in 1996 and 134 in 1999. The 1999 project-related students would be concentrated in grades K-8 (102 out of the 134 students, or 76 percent, would be in these grades). About 88 percent of the increase in Richland County school enrollments would occur in Wahpeton. In the same year, Wilkin County is estimated to have 64 additional primary and secondary students as a result of the ProGold project, and Cass County could have about 180 additional students.

Under the Site B assumptions, Richland County would have 150 more primary and secondary students in 1999, of which 72 would be in Hankinson and 53 in Wahpeton. Hankinson had an average enrollment of 388 in 1993, so the new students resulting from the plant would represent an increase of 19 percent. The corresponding figure for Wahpeton, with public school enrollment of 1,739 in 1993, would be 3 percent. On the other hand, under Site A assumptions, Wahpeton would have an enrollment impact of about 6.8 percent.

TABLE 16
SCHOOL ENROLLMENT INCREASES ASSOCIATED WITH PROGOLD DEVELOPMENT,
SITES A AND B, 1996 AND 1999

Site/County/City/Year	School Enrollment Increase K-8	9-12	Total
Site A			
Richland County:			
1996	105	32	137
1999	102	32	134
Wilkin County:			
1996	52	16	68
1999	49	15	64
Cass County:			
1996	132	41	173
1999	135	43	178
Wahpeton:			
1996	89	20	109
1999	90	28	118
Breckenridge:			
1996	36	8	44
1999	35	11	46
Site B			
Richland County:			
1996	123	38	160
1999	114	36	150
Cass County:			
1996	168	52	220
1999	162	52	214
Hankinson:			
1996	53	12	65
1999	55	17	72
Lidgerwood:			
1996	12	2	14
1999	9	3	12
Wahpeton:			
1996	44	9	53
1999	40	13	53

Public Service Impacts

Impacts of the in-migrating population on a variety of public service dimensions are estimated by the MEDAM model, using a series of per capita rates applied to the in-migrating population for each affected jurisdiction. The rates used to estimate additional requirements and demands on medical services, social services, law enforcement, fire protection, water, and solid waste are shown in Table 17. The impact estimates that result when these rates are applied to the in-migrating population associated with ProGold development under Site A and Site B assumptions are shown in Table 18.

TABLE 17
RATES USED TO ESTIMATE PROJECT-RELATED SERVICE REQUIREMENTS

Type	Unit Rates
Medical:	
Physicians/population	1 per 3,125
Hospital beds/population	1 per 250
Social Services:	
Workers/population	1 per 2,000
Law Enforcement:	
Law officers/population	1 per 676
Total workers/population	1 per 515
Crimes:	
Total (annual)/population	1 per 38
Percent violent	2.2%
Percent property	97.8%
Fire Protection:	
Fire fighters/population	1 per 2,439
Trucks/population	1 per 10,000
Pumpers/population	1 per 10,000
Water:	
Daily consumption (gallons/person)	190
Solid Waste:	
Daily total (pounds/person)	4.4

The estimates presented in Table 18 indicate that the total regional impact of the ProGold plant construction on medical services would be sufficient to require the services of 1.1 additional physicians and 13.7 hospital beds in 1996, while the additional regional population associated with plant operation would require about 1.0 physicians and 12.8 hospital beds in 1999. In 1999, the region would also need about 1.6 additional social workers, 4.8 law enforcement officers and 6.2 total law enforcement workers, and 4.8 additional fire fighters. The additional regional population would require about 610,090 gallons of water and produce about 14,128 pounds of solid waste daily.

Under Site A assumptions, Richland County's additional population would require about 0.3 additional physicians and 3.2 additional hospital beds in 1996 and about 0.2 physicians and 2.6 hospital beds in 1999. Richland County would need about 0.4 social workers (of the regional requirement of 1.7) in 1996 and would require about 1.2 additional law enforcement officers (out of the region's requirement of 5.1). Richland County could anticipate about 21 additional crimes in 1996. The interpretation of other estimates in Table 18 is similar.

TABLE 18
PUBLIC SERVICE REQUIREMENTS ASSOCIATED WITH PROGOLD DEVELOPMENT, SITE A AND SITE B, 1996 AND 1999

Region/County/City/Year	Medical Services		Social Workers	Law Enforcement		Crimes			Fire Departments			Water Consumption	Solid Waste
	Physicians	Hospital Beds		Officers	Total Workers	Total	Violent	Property	Fighters	Trucks	Pumpers	-gallons/day-	-lbs/day-
	number												
Total Regional Impact:													
1996	1.1	13.7	1.7	5.1	6.7	90.7	2.0	88.7	5.1	0.3	0.3	652,840	15,118
1999	1.0	12.8	1.6	4.8	6.2	84.8	1.9	82.9	4.8	0.3	0.3	610,090	14,128
Site A													
Richland County:													
1996	0.3	3.2	0.4	1.2	1.6	21.4	0.5	20.9	1.2	0.1	0.1	153,900	3,564
1999	0.2	2.6	0.3	1.0	1.3	17.1	0.4	16.7	1.0	0.1	0.1	122,930	2,847
Wilkin County:													
1996	0.1	1.6	0.2	0.6	0.8	10.5	0.2	10.3	0.6	0	0	75,430	1,747
1999	0.1	1.2	0.2	0.5	0.6	8.2	0.2	8.1	0.5	0	0	59,280	1,373
Cass County:													
1996	0.3	4.1	0.5	1.5	2.0	27.4	0.6	26.8	1.5	0.1	0.1	197,030	4,563
1999	0.3	3.5	0.4	1.3	1.7	23.4	0.5	22.8	1.3	0.1	0.1	168,150	3,894
Wahpeton:													
1996	0.2	2.7	0.3	1.0	1.3	17.9	0.4	17.5	1.0	0.1	0.1	128,820	2,983
1999	0.2	2.3	0.3	0.9	1.1	15.2	0.3	14.9	0.9	0.1	0.1	109,630	2,539
Breckenridge:													
1996	0.1	1.1	0.1	0.4	0.6	7.5	0.2	7.3	0.4	0	0	53,960	1,250
1999	0.1	0.9	0.1	0.3	0.4	5.9	0.1	5.7	0.3	0	0	42,180	977
Site B													
Richland County:													
1996	0.3	3.8	0.5	1.4	1.9	25.3	0.6	24.7	1.4	0.1	0.1	181,830	4,211
1999	0.2	2.9	0.4	1.1	1.4	19.2	0.4	18.7	1.1	0.1	0.1	137,940	3,194
Cass County:													
1996	0.4	5.4	0.7	2.0	2.6	35.7	0.8	34.9	2.0	0.1	0.1	256,880	5,949
1999	0.3	4.2	0.5	1.6	2.1	28.0	0.6	27.4	1.6	0.1	0.1	201,780	4,673
Hankinson:													
1996	0.1	1.6	0.2	0.6	0.8	10.5	0.2	10.3	0.6	0	0	75,620	1,751
1999	0.1	1.4	0.2	0.5	0.7	11.9	0.2	9.0	0.5	0	0	65,930	1,527
Lidgerwood:													
1996	0	0.4	0.1	0.2	0.2	2.9	0.1	2.8	0.2	0	0	20,520	475
1999	0	0.2	0.0	0.1	0.1	1.4	0	1.4	0.1	0	0	10,070	233
Wahpeton:													
1996	0.1	1.4	0.2	0.5	0.7	9.1	0.2	8.9	0.5	0	0	65,360	1,725
1999	0.1	1.0	0.1	0.4	0.5	6.9	0.2	6.7	0.4	0	0	49,400	1,144

The relative impacts on law enforcement for Richland County and Wahpeton are projected to be small, compared to present service levels. Under Site A assumptions, the county would require a total of 1.2 additional officers (county and city combined) in 1996, which would be a 6 percent increase from the 20 officers presently employed by the Richland County Sheriff's Office and Wahpeton Police Department. The requirement for an additional 1.6 total personnel would be a 7 percent increase from the present level of 23. Wahpeton is projected to require 1 additional officer (8 percent) and 1.3 additional total law enforcement personnel (9 percent) in 1996. Under Site B assumptions, Richland County could require 1.4 additional officers (7 percent) and 1.9 added total personnel (8 percent) in 1996. For Wahpeton, the 1996 requirements are estimated to be 0.5 additional officers (4 percent) and 0.7 added total personnel (5 percent).

The relative law enforcement impacts for Hankinson, assuming Site B, could be substantial. The estimated requirement for 0.6 additional officers in 1996 and 0.5 in 1999 represents increases of 60 and 50 percent, respectively, from the current level of service.

Fiscal Impacts

The fiscal impact component of MEDAM develops estimates of a project's effects on the revenues and expenditures of state and local governments (counties, municipalities, and school districts). Estimates of changes in public sector revenues are based on changes in (1) income -- personal income tax, (2) business receipts -- corporate income tax, (3) retail sales -- sales tax, (4) property value -- property tax, and (5) population -- highway, liquor, and tobacco taxes and user fees (Coon et al. 1993). State transfer payments to local governments are estimated from changes in population and school enrollments. Estimates of capital costs for new public facilities (if required) are based on the estimated needs of the in-migrating population. Capital costs that cannot be funded from current revenues are assumed to be amortized over 20 years at 7 percent. Changes in operating expenses for the various levels of government are estimated based on changes in population or school enrollments. The impact estimation procedure is based on the experience of communities that were affected by large-scale coal development, as well as other types of industrial and resource development (Leistritz and Murdock 1987, Leistritz et al. 1981).

Estimates of the effects of the ProGold project on state government revenues and expenditures are summarized in Table 19. The state is expected to receive substantial additional revenues from sales and use tax, personal income tax, and corporate income tax, as well as from highway taxes. In a typical year of plant operations (e.g., 1999), the ProGold project is expected to result in $2.4 million in sales and use tax revenues, $1.2 million in personal income tax revenues, and $0.3 million in corporate income tax revenues. It should be noted that the revenue estimates in Table 19 do not include any state tax payments that may be made directly by ProGold. Rather, these estimates reflect taxes resulting from the project's multiplier effects within the state economy.

TABLE 19
CHANGES IN STATE TAX REVENUES AND EXPENDITURES RESULTING FROM DEVELOPMENT OF PROGOLD CORN PROCESSING PLANT, SITES A AND B

	Tax Revenues[a]				Expenditures							
Year	Sales and Use Tax	Personal Income Tax	Corporate Income Tax	Other State Taxes[b]	Education Transfers	Highway Maintenance	General Government Transfers	Highway Transfers	Other Transfers[c]	Net Fiscal Balance	Capital Expenditures[d]	Net Fiscal Balance After Capital Expenditures
							$000					
1995	2,087	509	198	438	542	88	688	122	29	1,833	566	1,267
1996	3,227	905	315	759	966	152	1,193	211	50	2,754	566	2,188
1997	2,366	1,169	389	710	1,060	142	1,115	197	57	2,172	0	3,262
1998	2,366	1,169	389	710	1,060	142	1,115	197	57	2,172	0	3,262
1999	2,366	1,169	389	710	1,060	142	1,115	197	57	2,172	0	3,262
2000-2019 (annually)	2,366	1,169	389	710	1,060	142	1,115	197	57	2,172	0	3,262

[a] Tax revenues do not include taxes that may be paid directly by the ProGold facility.
[b] Includes highway taxes, cigarette and tobacco taxes, and liquor and beer taxes.
[c] Includes personal property tax replacement and cigarette and tobacco tax transfers.
[d] State capital investment for highway improvements are spread equally over the first two years of project construction.

Estimated changes in the revenues and expenditures of Richland County government associated with ProGold development, assuming Site A, are summarized in Table 20. Additional revenues come from local property taxes and from state transfers (primarily highway fund transfers). The tax revenues do not include taxes that may be paid by ProGold directly[3]. Rather, the property tax revenues shown in Table 20 reflect estimates of additional revenues from taxes collected on new residential and commercial properties that would be developed as a result of ProGold.

During a typical year of plant operations (e.g., 1999), Richland County government is estimated to receive about $131,000 in additional local property tax revenue and $30,000 in added state transfers. Additional expenditures would include about $39,000 for general government operations, $33,000 for road maintenance, $17,000 for health and human services, and $27,000 for other county government functions. Subtracting the added expenditures from the added revenues gives a net fiscal balance before debt service of about $44,000, which implies that the added county revenues associated with growth will exceed the added expenditures by about $44,000 annually. In addition to current expenses for county government operations, Richland County is estimated to incur capital costs of about $141,900 for road improvements. The debt service column of Table 20 reflects the amortization of this initial capital cost (assumed to be incurred in 1995) at 7 percent over 20 years. The net fiscal balance after debt service during a typical year of plant operation will be about $30,600.

TABLE 20
CHANGES IN REVENUES AND EXPENDITURES FOR RICHLAND COUNTY RESULTING FROM DEVELOPMENT OF PROGOLD CORN PROCESSING PLANT, SITE A

	Revenues		Expenditures						
Year	Property Taxes[a]	State Transfers	General Government	Roads	Health and Human Services	Other[b]	Net Fiscal Balance	Debt Service[c]	Net Fiscal Balance After Debt Service
					$000				
1995	65	19	26	21	11	16	08		8.0
1996	124	36	49	41	22	35	14	13.4	0.6
1997	131	30	39	33	17	27	44	13.4	30.6
1998	131	30	39	33	17	27	44	13.4	30.6
1999	131	30	39	33	17	27	44	13.4	30.6
2000-2015 (annually)	131	30	39	33	17	27	44	13.4	30.6
2016-2019 (annually)	131	30	39	33	17	27	44	0.00	44.0

[a] Tax revenues do not include taxes that may be paid directly by the ProGold facility.
[b] Includes law enforcement, education, emergency services, environment, and miscellaneous.
[c] Assumes that capital expenditures of $141,900 for roads are incurred in the first year of project construction and amortized over 20 years at 7 percent.

[3]Because the property taxes to be paid to local governments by ProGold were still under negotiation at the time this analysis was completed, they are not included here. Similarly, taxes that may be paid to the state by ProGold are not included. Hence, tax revenues shown in Table 20 and elsewhere represent conservative estimates of total revenues.

TABLE 21
CHANGES IN REVENUES AND EXPENDITURES FOR WAHPETON CITY GOVERNMENT RESULTING FROM DEVELOPMENT OF PROGOLD CORN PROCESSING PLANT, SITE A

	Revenues				Expenditures						
Year	Local Property Taxes	User Fees	Special Assessments	Other Revenues[a]	General Government	Public Safety	Public Works	Other Expenditures[b]	Net Fiscal Balance	Debt Service[c]	Net Fiscal Balance After Debt Service
						$000					
1995	63	100	24	11	29	37	87	16	28	00.0	28
1996	119	186	45	20	53	69	163	31	54	17.0	37
1997	130	158	38	16	45	58	138	27	75	17.0	58
1998	130	158	38	16	45	58	138	27	75	17.0	58
1999	130	158	38	16	45	58	138	27	75	17.0	58
2000-2015 (annually)	130	158	38	16	45	58	138	27	75	17.0	58
2016-2019 (annually)	130	158	38	16	45	58	138	27	75	00.0	75

[a] Includes highway fund transfers, cigarette and tobacco tax transfers, and personal property tax replacement.
[b] Includes health and welfare, culture and recreation, and miscellaneous expenditures.
[c] Assumes that capital expenditures of $180,100 for streets are incurred in the first year of project construction and amortized over 20 years at 7 percent. Capital expenditures for water, sewer, and solid waste are assumed to be funded from special assessments and user fees.

Estimated changes in revenues and expenditures for Wahpeton city government, assuming Site A, are summarized in Table 21. Major revenue sources include local property taxes, user fees, and special assessments. Capital expenditures for sewer, water, and solid waste facilities are assumed to be funded from special assessments and user fees. Capital expenditures for street improvements (estimated to total about $180,100) are assumed to be incurred during the first year of project construction (1995) and amortized over 20 years at 7 percent. For a typical year of plant operation (e.g., 1999), the city will have a net fiscal balance of about $75,000 before debt service and $58,000 after debt service.

Estimated changes in revenues and costs of the Wahpeton school district are summarized in Table 22. Additional revenues come from local property taxes (about 53 percent) and state transfers (about 47 percent). During a typical year of plant operation (e.g., 1999), the district's additional, project-related revenues would total about $410,000 while its additional operating costs would total about $394,000, for a balance of revenues over operating costs of about $16,000. However, if capital expenditures for school expansion are required, the district's financial picture would be less favorable. Assuming that capital expenditures of about $1 million may be required (roughly $7,600 per new elementary student and $12,000 per new high school student), the annual debt service requirement would be about $96,200 for 20 years. This would result in a net fiscal balance after debt service for a typical year of plant operation of about -$80,200. The figures in Table 22 do not include any taxes that may be paid to the Wahpeton school district directly by the ProGold plant. These payments may offset part or all of the $80,200 annual deficit, but to the extent that they do not do so, the probable consequence would be some increase in local tax rates.

TABLE 22
CHANGES IN REVENUES AND EXPENDITURES FOR WAHPETON SCHOOL DISTRICT RESULTING FROM DEVELOPMENT OF PROGOLD CORN PROCESSING PLANT, SITE A

	Revenues		School Operating Costs				
Year	Local Property Taxes[a]	State Transfers	K-8	9-12	Net Fiscal Balance	Debt Service[b]	Net Fiscal Balance After Debt Service
				$000			
1995	105	93	146	45	7		7.0
1996	199	189	297	92	-1	96.2	-97.2
1997	218	192	300	94	16	96.2	-80.2
1998	218	192	300	94	16	96.2	-80.2
1999	218	192	300	94	16	96.2	-80.2
2000-2015 (annually)	218	192	300	94	16	96.2	-80.2
2016-2019 (annually)	218	192	300	94	16	0	16.0

[a] Tax revenues do not include taxes that may be paid directly by the ProGold facility.

[b] Assumes that capital expenditures of $1,021,401 are incurred in the first year of project construction and amortized over 20 years at 7 percent.

Estimated changes in revenues and expenditures of Richland County government associated with ProGold development at Site B are summarized in Table 23. During a typical year of plant operations, the net fiscal balance after debt service would be about $32,000.

TABLE 23
CHANGES IN REVENUES AND EXPENDITURES FOR RICHLAND COUNTY RESULTING FROM DEVELOPMENT OF PROGOLD CORN PROCESSING PLANT, SITE B

	Revenues		Expenditures						
Year	Property Taxes[a]	State Transfers	General Government	Roads	Health and Human Services	Other[b]	Net Fiscal Balance	Debt Service[c]	Net Fiscal Balance After Debt Service
					$000				
1995	74	21	30	25	13	21	8	0	8
1996	145	42	58	48	26	39	16	16	0
1997	145	33	44	37	20	30	48	16	32
1998	145	33	44	37	20	30	48	16	32
1999	145	33	44	37	20	30	48	16	32
2000-2015 (annually)	145	33	44	37	20	30	48	16	32
2016-2019 (annually)	145	33	44	37	20	30	48	0	48

[a] Tax revenues do not include taxes that may be paid directly by the ProGold facility.
[b] Includes law enforcement, education, emergency services, environment, and miscellaneous.
[c] Assumes that capital expenditures of $167,700 for roads are incurred in the first year of project construction and amortized over 20 years at 7 percent.

Changes in estimated revenues and expenditures for Hankinson and Wahpeton city governments associated with ProGold development at Site B are shown in Table 24. During a typical year of plant operation, Hankinson would have a net fiscal balance after debt service of about $35,000 while Wahpeton would have a net fiscal balance of about $25,000.

TABLE 24

CHANGES IN REVENUES AND EXPENDITURES FOR HANKINSON AND WAHPETON CITY GOVERNMENT RESULTING FROM DEVELOPMENT OF PROGOLD CORN PROCESSING PLANT, SITE B

	Revenues				Expenditures						
City/Year	Local Property Taxes	User Fees	Special Assessments	Other Revenues[a]	General Government	Public Safety	Public Works	Other Expenditures[b]	Net Fiscal Balance	Debt Service[c]	Net Fiscal Balance After Debt Service
						$000					
Hankinson:											
1995	34	54	13	5	15	20	47	9	15	0	15
1996	70	109	26	12	31	40	96	18	31	10	21
1997	77	95	23	10	27	35	83	15	45	10	35
1998	77	95	23	10	27	35	83	15	45	10	35
1999	77	95	23	10	27	35	83	15	45	10	35
2000-2015 (annually)	77	95	23	10	27	35	83	15	45	10	35
2016-2019 (annually)	77	95	23	10	27	35	83	15	45	0	45
Wahpeton:											
1995	33	53	13	5	15	19	46	9	14	0	14
1996	58	94	23	9	27	35	83	15	25	9	16
1997	59	71	17	8	20	26	62	12	34	9	25
1998	59	71	17	8	20	26	62	12	34	9	25
1999	59	71	17	8	20	26	62	12	34	9	25
2000-2015	59	71	17	8	20	26	62	12	34	9	25
2016-2019	59	71	17	8	20	26	62	12	34	0	34

[a] Includes highway fund transfers, cigarette and tobacco tax transfers, and personal property tax replacement.

[b] Includes health and welfare, culture and recreation, and miscellaneous expenditures.

[c] Assumes that capital expenditures of $105,700 for Hankinson and $91,400 for Wahpeton are incurred in the first year of project construction and amortized over 20 years at 7 percent. Capital expenditures for water, sewer, and solid waste are assumed to be funded from special assessments and user fees.

Estimated changes in revenues and expenditures for the Hankinson and Wahpeton school districts associated with ProGold development at Site B are summarized in Table 25. Both districts show small positive net fiscal balances before debt service and negative balances after debt service. For the Hankinson district, tax payments by the ProGold plant could offset part or all of the negative net fiscal balance.

TABLE 25
CHANGES IN REVENUES AND EXPENDITURES FOR HANKINSON AND WAHPETON SCHOOL DISTRICTS RESULTING FROM DEVELOPMENT OF PROGOLD CORN PROCESSING PLANT, SITE B

	Revenues		School Operating Costs				
Year/City	Local Property Taxes[a]	State Transfers	K-8	9-12	Net Fiscal Balance	Debt Service[b]	Net Fiscal Balance After Debt Service
				$000			
Hankinson:							
1995	57	50	78	24	4	0	4
1996	117	113	178	55	-2	58	-60
1997	130	116	183	57	7	58	-51
1998	130	116	183	57	7	58	-51
1999	130	116	183	57	7	58	-51
2000-2015 (annually)	130	116	183	57	7	58	-51
2016-2019 (annually)	130	116	183	57	7	0	7
Wahpeton:							
1995	55	48	75	23	4	0	4
1996	98	93	146	45	0	46	-46
1997	98	86	135	42	7	46	-39
1998	98	86	135	42	7	46	-39
1999	98	86	135	42	7	46	-39
2000-2015	98	86	135	42	7	46	-39
2016-2019	98	86	135	42	7	0	+7

[a] Tax revenues do not include taxes that may be paid directly by the ProGold facility.
[b] Assumes that capital expenditures of $620,000 for Hankinson and $492,000 for Wahpeton are incurred in the first year of project construction and amortized over 20 years at 7 percent.

Potential Cumulative Impacts of ProGold and Other Richland County Projects

As discussed in the previous section, the development of the ProGold project will not occur in isolation. Rather, several other projects are either presently underway in Richland County or scheduled to begin in the near future. In this section, the cumulative impacts of these projects together with the ProGold plant are addressed. The cumulative impact projections assume that the following projects are developed in Richland County:

1. Minn-Dak Farmers Cooperative sugarbeet plant expansion
2. Dakota Magic casino
3. Burkel turkey farm
4. PrimeBoard manufacturing plant
5. WCCO Belting plant expansion
6. Northland Truss plant expansion

TABLE 26
ESTIMATED DIRECT NEW EXPENDITURES IN REGION OF INFLUENCE BY PROGOLD CORN PROCESSING PLANT AND OTHER RICHLAND COUNTY PROJECTS

Input-Output Sector	1995	1996	1997	1998-2019
			$000	
Agriculture, crops	0	0	11,770	11,770
Construction	22,559	29,919	21,473	4,250
Transportation	281	1,293	4,055	4,829
Communications and utilities	1,469	1,762	11,306	11,354
Agricultural processing and misc. manufacturing	0	0	11,630	11,630
Retail trade	27,5183	6,944	5,105	5,419
Finance, insurance, and real estate	5,779	8,428	7,514	7,220
Business and personal services	147	152	203	207
Professional and social services	104	105	303	298
Households	27,336	47,760	52,378	53,050
Government	26	29	531	535
Total	85,219	126,392	126,268	110,562

Representatives of each of these projects provided data concerning anticipated direct employment and expenditures. These data were combined with the information for the ProGold project; the estimated direct expenditures for the seven projects combined are shown in Table 26. The years 1995-1997 represent the period of project construction or expansion while 1998 marks the beginning of a relatively stable operations phase. The direct expenditures for the seven projects combined peak at $126.4 million in 1996 and stabilize at about $110.6 million annually in 1998.

The combined direct, secondary, and total impacts of the seven projects for 1996 and 1999 are summarized in Table 27. In 1996, the direct impacts of $126.4 million result in secondary impacts of $211.4 million, for a total regional economic impact of $337.9 million. In 1999, the direct impacts of $110.6 million lead to secondary impacts of $244.7 million, for a total impact of $355.2 million annually.

TABLE 27
ESTIMATED DIRECT, SECONDARY AND TOTAL ECONOMIC IMPACT FROM CORN PROCESSING PLANT AND OTHER RICHLAND COUNTY PROJECTS, 1996 AND 1999

	1996			1999		
Input-Output Sector	Direct	Secondary	Total	Direct	Secondary	Total
			$000			
Agriculture, crops and livestock	0	11,394	11,394	11,770	19,259	31,029
Construction	29,919	7,908	37,827	4,250	8,389	12,639
Transportation	1,293	1,281	2,574	4,829	1,160	5,989
Communication and utilities	1,762	10,229	11,991	11,354	10,574	21,928
Manufacturing and agricultural processing	0	4,959	4,959	11,630	13,979	25,609
Retail trade	36,944	65,192	102,186	5,419	72,130	77,549
Finance, insurance, and real estate	8,428	14,250	22,678	7,220	16,052	23,272
Business and personal services	152	5,248	5,400	207	6,064	6,271
Professional and social services	105	7,778	7,883	298	8,381	8,679
Households	47,760	72,270	102,030	53,050	76,534	129,584
Government	29	9,600	9,629	535	11,413	11,948
Other[a]	0	1,326	1,326	0	728	728
Total	126,392	211,435	337,878	110,562	244,663	355,226

[a] Includes nonmetal mining, coal mining, thermal-electric generation, petroleum exploration/extraction, and petroleum refining.

The projects result in substantial levels of direct and secondary employment (Table 28). Construction employment peaks at 1,255 in 1996 while operations employment stabilizes at 1,147 in 1998. Secondary employment peaks at 4,426 in 1997 before stabilizing at 3,996 in 1998.

TABLE 28
EMPLOYMENT ASSOCIATED WITH PROGOLD PLANT AND OTHER RICHLAND COUNTY PROJECTS CONSTRUCTION AND OPERATIONS, 1995-2019

	Direct		
Year	Construction	Operational	Secondary
	------ workers ------		
1995	1,025	879	2,360
1996	1,255	1,011	3,586
1997	175	1,125	4,426
1998	25	1,147	3,996
1999	25	1,147	3,996
2004	25	1,147	3,996
2009	25	1,147	3,996
2014	25	1,147	3,996
2019	25	1,147	3,996

Demographic parameters used in the cumulative impact analysis are summarized in Table 29. The assumptions regarding the percentage of workers who will be hired locally and the percentage of nonlocal construction workers who will bring families to the area are the same as for the ProGold analyses presented earlier. The assumptions regarding residential location are similar to those used in the preceding analyses, but some modifications were deemed appropriate in light of the location of some of the other projects. In particular, with Site A assumptions, 33 percent of the total operations workers were assumed to live in "other counties" (Table 29). This reflects the fact that Dakota Magic casino, which accounts for the substantial majority of all operations workers for the combined projects, is located very close to the South Dakota border and a substantial number of its workers are expected to live in South Dakota. With Site B assumptions, 34 percent of the operations workers live in "other counties".

TABLE 29
DEMOGRAPHIC PARAMETERS USED IN IMPACT ASSESSMENT FOR PROGOLD PLANT AND OTHER RICHLAND COUNTY PROJECTS

Percentage of each worker type who will be nonlocal:

Construction	80.0%
Operation	70.0%
Secondary	60.0%

Percentage of nonlocal construction workers who will bring families to the area -- 25%

Residential Location by Worker Type	Construction Workers	Operation Workers	Secondary Workers
Site A:		- - - - - - - - percent - - - - - - -	
Counties			
Richland	29.0	45.0	15.0
Wilkin	13.0	6.0	5.0
Cass	35.0	14.0	30.0
Clay	14.0	2.0	5.0
Otter Tail	7.5	0.0	1.0
Other counties	1.5	33.0	44.0
Towns			
Wahpeton	23.0	30.0	10.0
Breckenridge	10.0	5.0	3.0
Fargo	35.0	14.0	30.0
Moorhead	14.0	2.0	4.0
Hankinson	4.0	10.0	3.0
Wyndmere	1.0	2.0	1.0
Site B:			
Counties			
Richland	34.6	47.5	20.0
Wilkin	5.9	2.4	5.0
Cass	46.7	16.0	35.0
Other Counties	12.8	34.1	40.0
Towns			
Hankinson	11.0	28.0	8.0
Lidgerwood	4.0	3.0	1.0
Fairmount	2.0	2.0	0.5
Wyndmere	3.0	3.0	0.5
Wahpeton	12.0	11.0	7.0
Fargo	45.0	15.0	35.0

TABLE 30
WORKERS[a] BY TYPE AND RESIDENCE, 1996 AND 1999, PROGOLD PLANT
SITES A AND B PLUS OTHER RICHLAND COUNTY PROJECTS

Site/County/Year	Worker Type			
Site A:	Construction	Operation	Secondary	Total
Regional Impact:				
1996	1,255	1,011	3,586	5,852
1999	25	1,147	3,996	5,168
Richland County:				
1996	364	455	538	1,357
1999	7	516	599	1,122
Wilkin County:				
1996	163	61	179	403
1999	3	69	200	272
Cass County:				
1996	439	142	1,076	1,657
1999	9	161	1,199	1,369
Clay County:				
1996	176	20	179	375
1999	4	23	200	227
Otter Tail County:				
1996	94	0	36	130
1999	2	0	40	42
Site B:				
Regional Impact:				
1996	1,255	1,011	3,586	5,852
1999	25	1,147	3,996	5,168
Richland County:				
1996	434	480	717	1,631
1999	9	545	799	1,353
Wilkin County:				
1996	74	24	179	277
1999	1	28	200	229
Cass County:				
1996	586	162	1,255	2,003
1999	12	184	1,399	1,595

[a] The figures in this table refer to **all** workers of a given type, without regard to their origin (local vs. nonlocal).

A summary of the projected residential location of the combined project-related work force in 1996 and 1999 is presented in Table 30. A comparison of the values in Table 30 with those in Table 11 reveals the substantial increase in total project-related workers that results from considering the effects of the other Richland County projects. The project-related workforce in 1996 totals 5,852 -- more than twice the number when ProGold was considered alone. In 1999, the project-related workers total 5,168 which is 91 percent more than for ProGold alone. Under Site A assumptions, Richland County is expected to be the place of residence of 1,357 workers in 1996 and 1,122 in 1999, each of which is more than twice the estimate when the ProGold project was considered alone. Under Site B assumptions, somewhat larger numbers of workers are expected to live in Richland County -- 1,631 in 1996 and 1,353 in 1999.

The population implications of development of ProGold and the other six projects are summarized in Tables 31 and 32. Table 31 summarizes projected immigrating population associated with Site A and the other projects while Table 32 shows the same information for Site B. Under Site A assumptions, the combined projects result in a total of 7,545 persons migrating into the region by 1996 (at the peak of construction) and 6,683 by 1999. (Comparable figures for the estimated impact of ProGold alone are found in Table 12.) The construction phase population growth would include about 1990 new residents in Richland County, 530 in Wilkin County, 2010 in Cass County, 460 in Clay County, and 160 in Otter Tail County. Once the projects are operational, Richland County could anticipate about 1,710 new residents, Wilkin County about 360, Cass County about 1,630, Clay County about 270, and Otter Tail County about 50.

TABLE 31
IMMIGRATING POPULATION BY WORKER TYPE AND COUNTY/CITY OF RESIDENCE, PROGOLD PLANT SITE A AND OTHER RICHLAND COUNTY PROJECTS

	Worker Type			Total		
Region/County/City/Year	Construction	Operation	Secondary	Male	Female	Total
Regional Impact:						
1996	1,608	2,082	3,855	4,447	3,098	7,545
1999	31	2,358	4,294	3,682	3,001	6,683
Richland County:						
1996	468	939	579	1,168	818	1,986
1999	6	1,062	644	932	780	1,712
Wilkin County:						
1996	209	125	195	330	199	529
1999	3	144	216	200	163	363
Cass County:						
1996	561	294	1,156	1,215	796	2,011
1999	8	333	1,290	905	726	1,631
Clay County:						
1996	227	41	195	298	165	463
1999	3	48	216	149	118	267
Otter Tail County:						
1996	121	0	41	111	51	162
1999	1	0	44	26	19	45
Wahpeton:						
1996	369	627	386	822	560	1,382
1999	5	707	429	622	519	1,141
Breckenridge:						
1996	159	107	114	238	142	380
1999	2	118	129	137	112	249
Fargo:						
1996	561	294	1,156	1,215	796	2,011
1999	8	333	1,290	905	726	1,631
Moorhead:						
1996	227	41	153	274	147	421
1999	3	48	174	126	99	225
Hankinson:						
1996	66	210	114	224	166	390
1999	0	235	129	198	166	364
Wyndmere:	14		41	56	40	96
1996	0	41	44	51	41	92
1999		48				

Under Site B assumptions, Richland County could anticipate about 2,320 additional residents at the peak of construction in 1996 while Cass County would have an influx of about 2,440 (Table 32). Hankinson would be the likely residence of about 1,070 workers and accompanying persons, while Wahpeton would gain about 700 and Fargo about 2,390. During project operation, Richland County would have about 1,980 additional residents with about 1,000 living in Hankinson and about 560 in Wahpeton.

TABLE 32
IMMIGRATING POPULATION BY WORKER TYPE AND COUNTY/CITY OF RESIDENCE, PROGOLD PLANT SITE B AND OTHER RICHLAND COUNTY PROJECTS

	Worker Type			Total		
Region/County/City/Year	Construction	Operation	Secondary	Male	Female	Total
Regional Impact:						
1996	1,608	2,082	3,855	4,447	3,098	7,545
1999	31	2,358	4,294	3,682	3,001	6,683
Richland County:						
1996	558	989	770	1,367	950	2,317
1999	8	1,117	858	1,084	899	1,983
Wilkin County:						
1996	93	48	195	203	133	336
1999	0	57	216	150	123	273
Cass County:						
1996	752	334	1,350	1,484	952	2,436
1999	10	377	1,502	1,050	839	1,889
Hankinson:						
1996	178	586	309	616	457	1,073
1999	2	659	342	545	458	1,003
Lidgerwood:						
1996	66	64	41	105	66	171
1999	0	69	44	62	51	113
Fairmount:						
1996	31	41	21	56	37	93
1999	0	48	24	39	33	72
Wyndmere:						
1996	47	64	21	80	52	132
1999	0	69	24	50	43	93
Wahpeton:						
1996	192	228	274	416	278	694
1999	2	257	298	307	250	557
Fargo:						
1996	722	314	1,350	1,451	935	2,386
1999	10	357	1,502	1,038	831	1,869

TABLE 33
HOUSING REQUIREMENTS ASSOCIATED WITH PROGOLD DEVELOPMENT,
SITES A AND B, 1996 AND 1999 AND OTHER RICHLAND COUNTY PROJECTS

Site/County/City/Year	Housing Type: Single-Family Houses	Multi-Family Apartments	Mobile Homes	Other	Total Units
Site A					
Richland County:					
1996	349	296	183	103	931
1999	362	236	110	20	728
Wilkin County:					
1996	81	93	61	44	279
1999	77	61	26	7	171
Cass County:					
1996	352	388	217	137	1,094
1999	356	318	127	38	839
Wahpeton:					
1996	236	208	133	80	657
1999	241	157	73	13	484
Breckenridge:					
1996	57	65	45	33	200
1999	53	40	18	5	116
Hankinson:					
1996	72	56	33	15	176
1999	77	49	23	4	153
Site B					
Richland County:					
1996	409	360	219	126	1,114
1999	422	289	131	26	868
Cass County:					
1996	416	470	271	179	1,336
1999	414	371	148	45	978
Hankinson:					
1996	199	152	89	42	482
1999	212	134	64	11	421
Lidgerwood:					
1996	26	26	18	13	83
1999	24	16	8	1	49
Wahpeton:					
1996	119	115	71	44	349
1999	120	90	39	9	258

The immigrating population associated with the construction and operation of the ProGold plant and other Richland County projects will require housing and a variety of public services. Projected housing requirements are shown in Table 33. Under Site A assumptions, Richland County would require accommodations for about 930 workers, some with families, at the peak of construction (1996) while Cass County would need to accommodate about 1,090 workers and Wilkin County about 280. Within Richland County, Wahpeton would need housing for about 660 workers, and Hankinson could expect about 180. During operation, Richland County would need about 730 additional housing units with about 480 needed in Wahpeton and 150 in Hankinson. During the transition from construction to operation, the total number of units will decrease, but the demand for single-family housing will increase slightly in most communities. The demand for multi-family housing will decrease about 20 percent in Richland County while the demand for mobile homes and other accommodations will decrease substantially.

Under Site B assumptions, Richland County will require about 1,110 additional housing units or other accommodations at the peak of construction and about 870 during operation. Hankinson would require about 480 units during construction and 420 during operation, while Wahpeton would need about 350 additional units during construction and 260 during operation (Table 33).

Projections of school enrollment increases associated with development of the ProGold plant and other Richland County projects are summarized in Table 34. Under the Site A scenario, Richland County would have a total enrollment increase of 376 in 1996 and 360 in 1999. Wahpeton would have about 248 additional students in 1996 and 240 in 1999 while Hankinson could expect 74 in 1996 and 77 in 1999. With the Site B scenario, Richland County would have about 437 additional students in 1996 and 416 in 1999. Hankinson could anticipate 205 in 1996 and 212 in 1999 while Wahpeton would gain about 122 in 1996 and 117 in 1999.

Other public service requirements are based on per capita rates (see Table 17), so the requirements associated with the cumulative impacts of the seven projects are projected to be similar in nature to those projected for ProGold alone, but larger in magnitude in proportion to the additional immigrating population. A summary of key impacts of each of the six projects (other than ProGold) is provided in Appendix Table 1.

TABLE 34
SCHOOL ENROLLMENT INCREASES ASSOCIATED WITH PROGOLD DEVELOPMENT, SITES A AND B AND OTHER RICHLAND COUNTY PROJECTS, 1996 AND 1999

Site/County/City/Year	School Enrollment Increase K-8	9-12	Total
Site A:			
Richland County:			
1996	287	88	376
1999	275	85	360
Wilkin County:			
1996	70	21	91
1999	57	18	74
Cass County:			
1996	277	87	364
1999	252	80	332
Wahpeton:			
1996	197	51	248
1999	183	57	240
Breckenridge:			
1996	50	11	61
1999	39	12	52
Hankinson:			
1996	58	16	74
1999	59	18	77
Site B:			
Richland County:	334	103	437
1996	317	99	416
1999			
Cass County:			
1996	331	104	435
1999	293	93	386
Hankinson:			
1996	160	45	205
1999	162	50	212
Lidgerwood:			
1996	22	5	27
1999	18	6	24
Wahpeton:			
1996	97	25	122
1999	89	28	117

Estimates of the combined effects of the projects on state government revenues and expenditures are summarized in Table 35. Additional state tax revenues from all sources are estimated to total about $8.8 million in 1996. After estimated increases in state expenditures are subtracted, the projects are still estimated to generate state tax revenues in excess of expenditures of about $1.8 million. During a typical year of operation (e.g., 1999) the state's annual surplus of revenues over expenditures would be about $2.2 million.

The estimated fiscal impacts of the combined projects on Richland County government and on the cities and school districts would be expected to follow patterns similar to those discussed earlier for the ProGold project alone. Both revenues and expenditures would be greater because of the larger numbers of immigrating people, but the relationships of revenues and expenditures would be similar.

Impact Management Alternatives

The purpose of this section of the report is to identify some of the more salient impact issues that have been revealed by the projections examined in previous sections and to suggest some possible alternatives for dealing with these issues. While the construction and operation of any major project can be expected to cause changes in many aspects of the nearby communities and their economic and social systems, the following areas appear likely to be substantially affected by development of the ProGold plant:

1. Local and regional labor supply
2. Housing
3. Public facilities, particularly schools

Further, planning to cope with the growth resulting from the ProGold plant is complicated by the presence of several other projects in the area. If all of these projects are developed as presently scheduled, the combined effects on some communities could be substantially greater than those associated with ProGold alone.

Labor Supply

As noted earlier, the advent of ProGold and the several other projects that may be developed in Richland County comes at a time when the area's unemployment rates are quite low and area employers are already experiencing difficulty in filling certain types of jobs. Shortages of workers for skilled and semi-skilled positions such as welders and assembly line machine operators have been reported not only in Wahpeton but also in Fargo-Moorhead and throughout west central Minnesota (Integrated Research Group 1994). The demands of ProGold and other new and expanding employers can be expected to exacerbate the situation.

TABLE 35

CHANGES IN STATE TAX REVENUES AND EXPENDITURES RESULTING FROM DEVELOPMENT OF PROGOLD CORN PROCESSING PLANT, SITES A AND B AND OTHER RICHLAND COUNTY PROJECTS

	Tax Revenues[a]				Expenditures							
Year	Sales and Use Tax	Personal Income Tax	Corporate Income Tax	Other State Taxes[b]	Education Transfers	Highway Maintenance	General Government Transfers	Highway Transfers	Other Transfers[c]	Net Fiscal Balance	Capital Expenditures[d]	Net Fiscal Balance After Capital Expenditures
	$000											
1995	3,217	986	416	1,444	1,726	250	1,963	348	76	1,701	1,242	459
1996	4,731	1,560	610	1,928	2,314	333	2,619	464	105	2,994	1,242	1,752
1997	3,864	1,802	652	1,864	2,241	322	2,531	448	112	2,353	0	2,353
1998	3,591	1,685	566	1,708	2,314	295	2,320	411	103	2,178	0	2,178
1999	3,591	1,685	566	1,708	2,314	295	2,320	411	103	2,178	0	2,178
2000-2019 (annually)	3,591	1,685	566	1,708	2,314	295	2,320	411	103	2,178	0	2,178

[a] Tax revenues do not include taxes that may be paid directly by the ProGold facility and other projects.

[b] Includes highway taxes, cigarette and tobacco taxes, and liquor and beer taxes.

[c] Includes personal property tax replacement and cigarette and tobacco tax transfers.

[d] State capital investment for highway improvements are spread equally over the first two years of project construction.

The Richland County area is better suited than many to cope with increasing labor demands because of the substantial population base of the surrounding region. As noted earlier, the estimated 1992 population of Richland, Wilkin, Otter Tail, Cass, and Clay Counties was almost 234,000. As a result, the area has a substantial labor pool with a sizable number of persons entering the labor force annually. For example, in Cass and Richland Counties alone, it appears that more than 1,600 persons annually have been entering the labor force in recent years. For the 5-county area, the number of new labor force entrants probably exceeds 2,800 annually. Only a fraction of this number would be needed to meet the needs of expanding Richland County firms.

An important resource of this area in meeting the labor needs of expanding firms is its technical colleges. The North Dakota State College of Science (NDSCS) and the Northwest Technical College in Moorhead both offer programs in many of the areas that have been identified as being in high demand. The NDSCS also offers training tailored to specific employer needs, sometimes conducted on-site.

Housing Supply

Closely related to the labor supply issue is the supply of housing, particularly in Wahpeton. Local sources report that a substantial percentage of the current work force of Wahpeton's major employers live in other communities and commute to work. While some commuting is expected in rural areas, it appears that Wahpeton has been suffering a shortage of housing in the price range that would be affordable to rank-and-file plant workers. This problem is not unique to Wahpeton; a statewide housing study conducted in 1992 revealed that almost 26 percent of renters statewide were experiencing affordability problems, along with about 7 percent of homeowners (Browne, Bortz, and Coddington 1992). This study also identified housing shortages in communities that had been successful in attracting large employers as a priority problem.

In order to address the affordability of home ownership, the study suggested the following strategies be considered:

1. Continue the successful North Dakota Housing Finance Authority (NDHFA) first-time homebuyer program, which provides mortgage funds at more favorable than market terms to first time home buyers who qualify.

2. Encourage greater use of the NDHFA downpayment loan program, which is designed to complement the first time homebuyer program.

3. Develop a below market interest rate manufactured housing financing program for low and moderate income purchasers and work with existing lenders to increase options for purchasers of manufactured housing and lots.

To address the problems of meeting growing demands for housing in communities experiencing economic development, the study suggested the following strategies:

1. Create a housing impact task force composed of representatives from the banking community, FmHA, ND Department of Economic Development and Finance, NDHFA, and the ND Office of Intergovernmental Assistance to provide immediate program information to economically developing communities.
2. Inform manufactured housing providers of business opportunities in growth communities.

3. Make rural multi-family housing construction a priority for low income housing tax credits allocation.

Public Infrastructure Needs

The projections reviewed previously help identify areas where additional public infrastructure investments may be needed. In general, the largest infrastructure investment requirements appear to be in the areas of education and transportation. Because much of the transportation investment will likely be provided by the state, the public schools appear to be the service area requiring the greatest local investment. Both Hankinson and Wahpeton may need to consider major expansions of their school facilities. In neither case can the need for expansion be attributed solely to ProGold development, but in each community ProGold will be a major factor affecting the need for school expansion. The fiscal impact analysis also indicates that school districts will be the local government units that will experience the greatest financial pressure as a result of ProGold related growth. Clearly, the public schools will be an area requiring concerted community planning.

Cumulative Impacts of Multiple Projects

Growth management in Richland County is complicated by the presence of several major projects, which together could have substantial impacts on communities like Wahpeton and Hankinson. Further, a degree of uncertainty is associated with each of these projects, such that it is difficult for local officials and community leaders to determine the outlook for growth and change in their communities.

This situation is not without precedent. In fact, a similar situation existed in Mercer County and the surrounding area during the period of intensive coal development that occurred during the late 1970s and early 1980s. Two large coal-fired power plants and a coal gasification plant were slated for construction in Mercer County, with overlapping construction schedules. Some degree of uncertainty was associated with the construction schedule and work force requirements of each project, which posed a challenge for local planning and growth management. As a result, a project monitoring system was initiated. The central feature of the monitoring system was a periodic report of the number of construction and permanent workers employed at each project. In addition, information about worker demographics and residential patterns was obtained.

Reliable information about work force numbers and residential location, together with projections of future changes in these parameters, can provide a firm foundation for ongoing local planning to meet growth needs. In cases where project schedule and/or work force levels depart substantially from those on which impact projections have been based, updated projections may be in order. In view of the number and magnitude of the projects affecting Richland County, a project monitoring system should be considered as part of the overall growth management effort.

Conclusions and Implications

Additional processing of agricultural commodities has often been advocated as a high priority economic development strategy for North Dakota and the Upper Midwest region. The analysis of the potential socioeconomic impacts of the ProGold project highlights the substantial economic benefits that expanded agricultural processing can offer. Construction of the facility is estimated to increase the gross receipts of firms and incomes of households in the area by about $295 million and to create about 2,850 secondary jobs, in addition to the construction work force that is projected to peak at about 1,000. Once the facility is in operation, it is expected to generate a total economic impact of about $251 million annually. During operation, about 150 workers will be employed by the plant directly, and about 2,700 secondary jobs are estimated to be created throughout the region of influence.

While the ProGold project will produce substantial economic benefits for the local area, and indeed for the entire region, it also can be expected to lead to population immigration and to some increases in service demands. Development of the ProGold project at the Wahpeton site could mean an increase in Richland County's population of about 810 at the peak of construction and about 650 on a permanent basis. Cass County, North Dakota, and Wilkin County, Minnesota, would also be expected to experience some population growth. The population influx will create additional needs for housing and for public services such as schools. Richland County is expected to need about 445 additional housing units and/or construction worker accommodations in 1996 and about 325 housing units in 1999. Richland County schools could anticipate about 140 additional students in 1996 and about 135 in 1999 as a result of ProGold development. Most of these effects would occur in or near Wahpeton.

Other development projects in Richland County can be expected to add to the local impacts of ProGold. When the cumulative impacts of these projects are considered, Wahpeton is projected to have a population influx of about 1,380 by 1996 and 1,140 additional residents on a permanent basis. This would imply that Wahpeton will need about 660 housing units and construction worker accommodations in 1996 and about 480 additional housing units during the projects' operational period. The cumulative impacts of the Richland County projects would also imply that the Wahpeton schools would need to accommodate about 250 new students at the construction peak in 1996 and about 240 on a permanent basis.

The ProGold project is one of the largest construction projects to be developed in North Dakota since the period of intensive coal development during the late 1970s and early 1980s. The experience of communities in dealing with those projects points out the need for advance planning to meet the needs of the immigrating workers and their families and for timely impact analysis to provide a basis for that planning. It also points to the desirability of a project monitoring system to provide up-to-date information if project schedules and staffing depart substantially from those initially projected. With appropriate planning and impact management efforts, areas like Richland County can experience the benefits of development while avoiding the problems often associated with unplanned growth.

References

Bangsund, Dean A., F. Larry Leistritz, Janet K. Wanzek, and Holly E. Bastow-Shoop. 1991. ***North Dakota Trade Areas: An Overview.*** Agr. Econ. Rpt. No. 265. Fargo: North Dakota Agricultural Experiment Station.

Braaten-Grabanski, Joan. 1994. Telephone interview, December 29. Fargo: Fargo-Cass County Economic Development Corporation.

Bradberry, Bill. 1994. Telephone interview, December 16. Sioux City, IA: Younglove Construction.

Browne, Bortz, and Coddington, Inc. 1992. ***North Dakota Housing Needs Assessment.*** Bismarck: North Dakota Housing Finance Authority.

Coon, Randal C., Rita R. Hamm, and F. Larry Leistritz. 1993. ***North Dakota Microcomputer Economic-Demographic Assessment Model (MEDAM): User's Guide and Technical Description.*** Agr. Econ. Software Series No. 8. Fargo: North Dakota Agricultural Experiment Station.

Daugherty, Ronald A. 1994. Telephone interview, December 28. Wahpeton: Job Service North Dakota.

Dietze, Fred. 1995. Telephone interview. Hankinson, ND: Dakota Magic Casino.

Groneman, John. 1994. Telephone interview, December 27. Wahpeton: Minn-Dak Farmers Cooperative.

Integrated Research Group. 1994. ***Study of Skilled Labor Shortages and Training Needs in West Central Minnesota.*** Fargo: Integrated Research Group.

Job Service North Dakota. 1994. ***Employment Profile, Fargo Job Service.*** Fargo: Fargo Job Service.

Job Service North Dakota. 1993. ***Employment Profile, Wahpeton Job Service.*** Wahpeton: Wahpeton Job Service.

Johnson, Demcey. 1994. "Impact of North Dakota Ethanol Plants on Corn Price." Unpublished paper. Fargo: North Dakota State University, Department of Agricultural Economics.

Knutson, Jonathan. 1995. "Ramada Tops Fargo's 1995 Building List." ***The Forum*** January 7, p. B1.

Leistritz, F. Larry. 1994a. "Economic and Fiscal Impact Assessment." ***Impact Assessment*** 12(3): 305-317.

Leistritz, F. Larry. 1994b. "Integrating Impact Assessment into the Policy Process: The Case of Energy Development in North Dakota." ***Journal of EIA*** 3(2): 15-24.

Leistritz, F. Larry, Randal C. Coon, and Rita R. Hamm. 1994c. "A Microcomputer Model for Assessing Socioeconomic Impacts of Development Projects." ***Impact Assessment*** 12(4): 373-384.

Leistritz, F. Larry, Jay A. Leitch, and Dean A. Bangsund. 1994d. ***Economic Impact of the Northern Corn Processor's Cooperative Proposed Corn Wet Milling Facility***. AE94007. Fargo: North Dakota Agricultural Experiment Station.

Leistritz, F. Larry, and Steve H. Murdock. 1988. "Financing Infrastructure in Rapid Growth Communities: The North Dakota Experience," pp. 141-154 in ***Local Infrastructure Investment in Rural America***, T. Johnson, B. Deaton, and E. Segarra, eds. Boulder, CO: Westview Press.

Leistritz, F. Larry, and Steve H. Murdock. 1987. "Local Fiscal Impacts of Large-Scale Projects: Use of Impact Models as Planning and Policy Analysis Tools." ***Socio-Economic Planning Sciences*** 21 (1): 9-17.

Leistritz, F. Larry, and Steve H. Murdock. 1986. "Impact Management Measures to Reduce Immigration Associated with Large-Scale Development Projects." ***Impact Assessment Bulletin*** 5(2): 32-49.

Leistritz, F. Larry, and Steve H. Murdock. 1981. ***The Socioeconomic Impact of Resource Development: Methods for Assessment.*** Boulder, CO: Westview Press.

Leistritz, F. Larry, Norman E. Toman, Steve H. Murdock, and John de Montel. 1981. "Cash Flow Analysis for Energy Impacted Local Governments -- A Case Study of Mercer County, North Dakota." ***Socio-Economic Planning Sciences*** 15: 165-174.

Mandt, Dawn. 1994. Telephone interview, December 7. Grafton: Red River Regional Council.

North Dakota Department of Public Instruction. ***North Dakota Education Directory,*** various issues. Bismarck.

Priebe, Jane. 1994. Personal interview, December 6. Wahpeton: Wahpeton Economic Development.

Rustad, Irv. 1994. Telephone interview, December 29. Fargo: Lake Agassiz Regional Council.
Shorma, Tom. 1994. Telephone interview, December 14. Wahpeton: Team Marketing Inc.

Vetter, Gene. 1994. Telephone interview, December 13. Eddyville, IA: Economic development consultant.