FEATURE 12: WATER CONSERVATION

Description

This water conservation feature was developed to help evaluate the contribution that a long term sustainable water conservation program would make towards meeting the future water needs of the Red River Valley study area. This feature may be evaluated independently, or can be used in conjunction with other features to help reduce the severity of projected water supply shortages.

The water conservation program envisioned for this feature represents a balanced program, intended to be implemented and maintained on a long term basis, while being continually modified to best address the individual conservation goals of each municipality. Short term, crisis oriented water conservation measures were not considered for this feature, but are addressed separately under the Drought Contingency Planning feature. While several generally applicable water conservation measures are discussed, no attempt is made to identify specific measures for any municipality. It is left to each municipality to evaluate their individual circumstances and develop a water conservation program that address their specific needs and opportunities to conserve water.

It is estimated that through planned water conservation programs, water demand by the municipalities in the study area can be reduced by an average of 15 percent from the demands projected by Reclamation for the year 2050 on table 38 of the Red River Valley, Water Needs Assessment, Phase I, Part A, (Water Needs Assessment). This can be accomplished by a three pronged conservation program that: 1) maintains future residential and commercial water use at their present levels, 2) reduces projected industrial water use by 15% while maintaining projected levels of output, and 3) reduces or maintains public water use and water losses to 10 percent of total water treated.

Along with the above conservation targets, municipalities should consider ways of reducing future demand for outdoor water use, such as lawns, parks and golf courses. This can help to significantly reduce peak water demands on their systems and also reduce some of the water supply and distribution system problems during drought periods.

The general methodology was to identify and evaluate present water use levels of the municipalities in the valley by customer types or sectors. The present use of each sector was evaluated for potential conservation opportunities and then projected out to the year 2050 using Reclamation's population and industrial growth projections.

The water use sectors chosen for this evaluation are: Residential and Commercial users, Industrial users, and Unbilled uses (Public use, leakage and meter slippage). These sectors were chosen for conformity to the Phase I, Part A Report and the availability of billed water use data for each of the major municipalities. Each of these water user sectors is discussed in more detail.

Residential and Commercial Use: Residential use includes water for normal household purposes, including drinking, food preparation, bathing, flushing toilets, washing clothes and watering yards and gardens. Commercial uses typically include water for motels, restaurants and office buildings. For this analysis commercial use will also include water for civilian and military institutions (hospitals, universities and military installations). Residential commercial and institutional users are combined for this analysis because data provided by many municipalities did not differentiate between these sectors, and when they did, each municipality tended to define the categories differently. For example, in some cases apartments and trailer parks are classified as commercial and in other cases as residential. Residential and Commercial water usage was examined over the most recent 6 to 12 year period, depending on available data, to determine the current water use level, identify trends for each municipality, and evaluate potential conservation savings.

National trends for public supplied water showed a steady increase in per capita use from the 1950's up to around 1980. Since then water use per capita has remained almost constant according to U. S. Geological Survey Circular 1200, *Estimated Use of Water in the United States in 1995*. Water use trends by municipalities in the valley have tracked these national trends. While the population of municipalities in the valley has been increasing over the last decade, water use per capita has remained almost unchanged.

Residential and commercial water use in the region presently reflects a conservative level of water use relative to the rest of the United States. According to Reclamation's Technical Memorandum "Projection of M&I Water Demands", 1982 (Technical Memorandum), the projected per capita residential and commercial demand for North Dakota for the year 2000 is 95 gpcd and 25 gpcd respectively, for a total of 120 gpcd. This is 22 percent lower than the projected year 2000 per capita water use for the "West" of 153 gpcd (The 17 western Reclamation States averaged 125 gpcd residential and 28 gpcd Commercial, totaling 153 gpcd).

Recent water billing data provided by the municipalities in the study area indicates that the weighted average residential and commercial use is presently 105 gpcd, as shown in the table below. This is more than 12 percent lower than the Technical Memorandum projects for North Dakota (120 gpcd), and 31 percent below the 153 gpcd projected for the "West".

Due to the current conservative water usage of residential and commercial customers in the study area it appears inappropriate to assume that additional conservation efforts would have a significantly reduce water demand of these sectors. Therefore for the purpose of this water conservation feature, present per capita residential and commercial water use rates shown on the table above will be projected out to the year 2050 with no reductions for water conservation.

Table 12.1
Average Recent Residential and Commercial Water Use
for Target Municipalities

City	1994 Population	Percent of Study Area Population	Residential and Commercial Use Gallon per Capita Day
Fargo	79,715	39.75%	120
West Fargo	13,771	6.87%	86
Moorhead	33,072	16.49%	85
Valley City	7,068	3.52%	100
Grand Forks	50,168	25.01%	106
E. Grand Forks	9,013	4.49%	95
Grafton	4,853	2.42%	90
Drayton	904	0.45%	120
TOTAL	200,558		105*

* 105 is the weighted average per capita demand for all the municipalities included above.

While additional water conservation is almost always possible, especially during emergencies, it is anticipated that the cities will be sufficiently challenged in the future to maintain their present low level of residential and commercial water use. City administrators have stated that in previous years, water use during high demand periods would have been higher, but was limited by the capacity of the water treatment plants. Since the capacity of these plants have been increased, city administrators state that they are beginning to see water demands also increase. Maintaining future residential and commercial water demand at it's present levels should represent a challenging enough goal for each municipality's's water conservation effects in the future.

Industrial Use: Industrial water is typically used for processing, washing, and cooling in facilities that manufacture products. Industrial usage for this analysis is based upon Reclamation's future projections for industrial water use found in Table 38, Phase I, Part A, of the Water Needs Assessment Report. For this water conservation feature, projected water use for the industrial sector was reduced by 15% from the values shown in Table 38 to represent future water conservation activities including, among other things, water audits of individual industries and rate structures that provide a conservation incentive along with the incorporation of new and more efficient technologies.

Nationally, industrial use of water (other than thermoelectric) peaked around 1970 and has decreased by about 38 percent from 1970 to 1995 according to USGS Circular 1200, Table 31. The circular explains that "*Lower industrial withdrawals are the result of new industries and technologies that*

require less water, improved plant efficiencies, increased water recycling, changes in laws and regulations to reduce discharge of pollutants, and conservation measures".

Recent local trends indicate a similar decrease in water use on a per capita basis as exemplified by the City of Moorhead, Minnesota.

- Moorhead's average industrial usage from 1985 to 1989 was 38 gpcd. Form 1990 to 1996 the average industrial usage dropped by about 24 percent to 29 gpcd according to information included in their Water Emergency and Conservation Plan dated December, 1995. As stated in their plan, Industrial usage has declined by 8.25 percent since 1985 while both industrial customers have increased production at their facilities during this period. Most of the water use reduction occurred after a water audit was performed by each company. American Crystal Sugar reduced their consumption by 40% after the water audit at their factory.

The table below shows Reclamation's projected industrial use for the year 2050 from Table 38 of the Needs Assessment and the projected industrial demand for the year 2050 with a 15 percent reduction for water conservation.

Table 12.2
Industrial Use with Water Conservation

City	Reclamation's Projections		Projections with Conservation	Estimated Water Savings
	(gpcd)	Acre-Feet	Acre-Feet	Acre-Feet
Fargo	9	1,942	1,650	292
West Fargo	18	657	558	99
Moorhead	48	2,300	1,955	345
Valley City	49	357	303	54
Grand Forks	93	9,740	8,280	1,460
E. Grand Forks	21	200	170	30
Grafton	76	432	367	65
Drayton	519	523	445	78
Existing Cargill		6,000	5,100	900
Future Industry		24,000	20,400	3,600
Total		46,151	39,228	6,923

Unbilled Water: Unbilled water is water that is produced (treated) but is not billed to customers. Unbilled water typically includes items such as: water for fire fighting, flushing pipelines, watering public parks and lawns, water lost from water main leaks, water line breaks, and meter slippage (as meters get older they tend to under record the amount of water actually used). Present records show that unbilled water use varies throughout the study area, ranging from less than 10 percent to over 20 percent. For the purpose of this water conservation feature, it is assumed that in the future municipal distribution systems will be maintained at a high level of efficiency, and the level of unbilled water will average 10 percent of total water produced.

Water Need Projections for the year 2050 with water conservation:

The following table represents projected water use for the year 2050 incorporating water conservation for each municipality in the study area.

See Attached Lotus Spreadsheet: Table 38C

The table shows a total estimated average annual demand of 92,917 acre-feet for the represented municipalities and industries in the valley, a reduction of almost 15 percent from Reclamations projected water demands without water conservation.

Conservation Programs and Costs: Water conservation programs are not free. There are definite costs associated with conservation programs. However, municipalities can design and packaged conservation programs to meet their specific needs, budgets and opportunities so that the local benefits of the program will meet or exceed costs. This is generally the case even before the benefits of reduced capital investments for new or expanded raw water and waste water treatment facilities are considered.

An effective water conservation program usually includes measures which address both demand and supply management. Typical conservation plan components are listed below.

Supply management programs typically include:

- Meter all customers, meter testing and replacement programs
- Control and reduce where possible maximum pressure in water delivery system and regulate pressure to new subdivisions;
- Active water audit and leak detection, repair and replacement programs.
- Water reuse

Demand Management programs typically include:

- Active public education, outreach and demonstration programs
- Education/enforcement of existing plumbing codes or development of additional codes;
- Encourage/require low water use landscaping, efficient irrigation and irrigation designs for new development;

- o Retrofit kits/programs to lower interior water use in existing homes, or rebates for the installation of new water conserving fixtures;
- o Conservation oriented rate structures (both supply and waste water) to provide incentives for efficient water use.

Supply management programs are typically the most expensive part of a municipal conservation program. In most cases however the activities of leak detection, repair and replacement of leaking or old water mains, water meter testing and replacement are considered routine maintenance, and the cost of these activities are included as part of the normal annual operating budget of the water utility. A municipality may chose to increase their water conservation budget significantly to accelerate programs like water main and water meter replacement to help meet their water conservation goals, however these costs are balance by the benefits they realize more quickly, such as: reduced raw water and waste water treatment costs, recovering lost revenue, reduced liability for damages from water main breaks, reduce costs for emergency maintenance, etc.

Demand Management programs are usually less expensive, versatile and can be quickly implemented, however success will vary depending on public cooperation. Utilities who's income is based on metered water sales may see income drop do to reduced water use and may need to adjust or reevaluate their pricing structures. The costs and benefits of demand management programs will be shared between the municipalities and their customers, and depends significantly on which measures are chosen and how the programs are implemented. It is left to each municipality to identify the most appropriate and effective mix of demand management measures to implement to meet their specific goals, yet it is expected that the total benefits to the community will exceed the costs of the programs.

Evaluation of the conservation programs of the cities of Grand Forks and Moorhead, as contained in their 1995 *Water Emergency and Conservation Plans*, indicate that costs ranged form $6.00 to 8.00 dollars per capita. These programs included a mix of supply and demand measures including: water metering and meter replacement; water audits, leak detection and water main replacement; pressure reduction; conservation oriented rates; regulation and codes; education and information programs. The majority of the program costs can be attributed to the repair and replacement of older water mains. These costs will vary for each municipality depending on the age and condition of their distribution system. The two cities referenced here have been rather aggressive in recent years in replacing aging water mains and this has been reflected in reducing unbilled water close or below the target of 10 percent. As cities achieve the goals of their water main replacement programs, the cost of these supply management programs may decrease somewhat, or remain steady as more resources are put into demand reductions programs.

It is expected that in the future, each municipality will continue to develop and implement water conservation programs that best match there particular situation based on a more detailed local analysis of costs and benefits.

Details for Determining Municipal Demand

City of Fargo

The total projected raw water demand for year 2050 for the City of Fargo under the Water Conservation Feature is estimated to average 142 gallons per capita day (gpcd). This represents about a 16.5 percent reduction from the 170 gpcd demand included in Reclamations water need projections for year 2050 shown on Table 38 of the Phase I Part A, Needs Assessment Report. The components of this estimate include: 120 gpcd for Residential and Commercial use, 8 gpcd for industrial use, and 14 gpcd for unbilled water (public use and losses).

During this evaluation questions arose concerning a discrepancy in the amount of raw water that the city was reporting to use and the amount of water that was pumped to the city from the water treatment plant. This is illustrated in the table below.

Table 12.3

Fargo Water Records 1994 in gallons		
Category	Water in Gallons	Percent of Raw Water
Raw Water Meter Reading	4,597,660,000	100%
Treated Water Pumped to City	3,873,150,000	84%
Difference (Unaccounted for)	724,510,000	16%
Water Billed to Customers	3,434,596,000	75%
Unbilled (Treated - Billed)	438,554,000	10%
Total Unbilled & Unaccounted	1,163,064,000	25%

Based on the figures above there was a 16% discrepancy between the amount to water withdrawn from the river and the amount of water treated and pumped to the city. In addition, about 10 percent of the water metered at the output side of the treatment plant was not metered and billed to customers. In total about 25 percent of the water reported as withdrawn from the river was not billed to customers. This difference between raw water withdrawn from the river and the water treated and pumped to the city is still not fully understood. Therefore, several methods for determining the present level of water used by residential and commercial customers were examined.

Method #1 is based on Reclamation's projections from the Water Need Assessment, Phase I, Part A, (Water Needs Assessment) which identified a representative year Raw Water demand of 166 gpcd (based on 1991), a city loss rate of 17.5 percent or 29 gpcd, and an industrial use of 9 gpcd. Subtracting the above uses from the total raw water demand leaves 128 gpcd for residential, commercial and public use. Reclamation's Technical Memorandum - *Projection of M&I Water*

Demands, Planning Instructions No 82 - 01, Jan 1982, (Technical Memorandum) estimated that public water use in North Dakota averages 6 gpcd. Subtracting 6 gpcd for public use, leaves 122 gpcd for residential and commercial use.

Method #2 uses billed water records provided by the city which show that between 1991 and 1996, on average 110 gpcd was billed to city customers. Subtracting 9 gpcd for industrial use leaves 101 gpcd for Residential and Commercial use.

Method #3 is based on U.S. Army Corps of Engineers *Fargo-Moorhead Urban Water Supply Study (Corps 1985)* which listed residential and commercial use as 32 and 35 percent of total use respectively. Between 1988 and 1996 Fargo's raw water use averaged 158 gpcd (from Figure 21, page 102, Water Needs Assessment), this calculates to a residential demand of 51 gpcd and a commercial demand of 55 gpcd for a totaling 106 gpcd.

Method #4 is based on Reclamation's Technical Memorandum, Table A6 on page A-14 which, for North Dakota in year 2000, projects residential use at 95 gpcd and commercial use at 25 gpcd for a total of 120 gpcd.

The first three methods above are based on available data provided by the city and do not account for water that may actually be delivered to customers but is not metered. Accounting for un-metered water appears significant in this situation as illustrated by the data previously presented for 1994 which shows that 25 percent of the water taken from the river that year was not billed to customers. According to city records, from 1991 to 1996, on average, 151 gpcd was withdrawn from the Red River, while 110 gpcd was billed to customers, leaving the difference of 41 gpcd (27 percent) as unbilled. If 6 gpcd of this unbilled water goes for public use, as estimated in the Technical Memorandum, than the remaining 35 gpcd is either lost through system leaks or is delivered but not billed. Assuming a more typical system loss rate of between 10 and 15 percent would indicate that about 20 gpcd is lost, leaving 15 gpcd as delivered but unbilled water (35-20 = 15). Incorporating this adjustment to the calculations for the 4 methods described produced the following results.

Table 12.4

City of Fargo, Present Residential and Commercial Demand (gpcd)		
	Based on Available Data	Available Data Adjusted for water delivered & unbilled
Method # 1	122	130
Method # 2	101	116
Method # 3	106	121
Method # 4	120	120

The average of the 4 adjusted methods above is almost 122 gpcd which appears to corroborate the 120 gpcd estimated from the Technical Memorandum for residential and commercial use. Therefore 120 gpcd will be considered the present use rate for development of the water conservation feature.

Industrial use of 8 gpcd was estimated by reducing Reclamation's projection (for year 2050) of 9 gpcd (Table 38, Water Needs Assessment) by 15 percent.

Unbilled water use is projected to be 10 percent of total water treated or about 14 gpcd, which represents a reduction of about 16 gpcd from the projections in Table 38 of the Needs Assessment Report.

City of Moorhead

The total projected raw water demand for year 2050 for the City of Moorhead under the Water Conservation Feature is estimated to average 145 gallons per capita day (gpcd). This represents about a 22 percent reduction from the 187 gpcd demand projected by Reclamation in Table 38 of the Water Needs Assessment Report. The components of this estimate include 85 gpcd for residential and commercial use, 45 gpcd for industrial use, and 15 gpcd for unbilled water (public use and losses).

Residential and commercial use is based on the average per capita use from 1986 through 1997, which was 85 gpcd derived from information contained in the city's *Water Emergency and Conservation Plan, (1995),* Appendix 1, and additional information communicated verbally from Cliff McLain, Water Division Manager for the City of Moorhead.

Industrial users in the city have already demonstrated considerable water conservation savings as previously discussed, therefore only future industrial demand is reduced by 15 percent for conservation improvements. The future industrial demand of 45 gpcd with conservation was determined by subtracting the city's present industrial demand (32 gpcd average 1986-97) from Reclamation's projected demand without conservation (48 gpcd from Table 38, Water Needs Assessment). The remaining 16 gpcd represents additional future demand, which is reduced by 15 percent to 13 gpcd,

and then added back to the present demand (32 + 13 = 45) to arrive at the projected industrial demand with water conservation.

Unbilled water is projected to be 10 percent of the total water produced . Data from Moorhead's *Water Emergency and Conservation Plan* indicate that the city has already achieved or exceeded this goal. The city average for unbilled water from 1985 through 1997 was around 8 percent (10 percent from 1985-1989 and 7 percent from 1990 through 1997). Since the city began a water main replacement program in 1984 the number of water main breaks has been reduced by 50 percent. This efforts also included accurate metering, on call distribution system emergency response staff for repairs of water main breaks, and monitoring of sanitary and storm sewers.

City of Grand Forks

The total projected raw water demand for year 2050 for the city of Grand Forks under the Water Conservation Feature is estimated to average 208 gallons per capita day (gpcd). This represents about a 8 percent reduction from the 227 gpcd demand included in Reclamations water need projections for year 2050 shown on Table 38 of the Water Needs Assessment Report. The components of this estimate include: 106 gpcd for residential and commercial use, 81 gpcd for industrial use, and 21 gpcd for unbilled water (public use and losses).

Information for this analysis was obtained from the City of Grand Forks, Water Emergency and Conservation Plan (1995). Information on total water treated by the city is provided for years 1984 through 1994, however information on water use by individual sectors is available for only 1992 through 1994. Therefore the average sector distribution for these three years was calculated and those percentages were applied to the previous years data. The average water use by sector for 1992 through 1994 was: 33 percent for residential use, 30 percent for commercial use, 14 percent for industrial use, 10 percent for institutional use and 14 percent unbilled.

The average residential and commercial use for the 11 year period of 1984 through 1994 is estimated to be 90 gpcd. The city also provided an average of 14 gpcd for "institutional use" to the to the Grand Forks Air force Base bringing the total average to 104 gpcd. To account for water presently under-metered but will be billed in the future as the city reduces unbilled water from around 14 percent to 10 percent, an additional 2 gpcd is added, bringing the total average residential, commercial and institutional use to 106 gpcd.

Industrial use of 81 gpcd was estimated by reducing Reclamation's projection for year 2050 of 93 gpcd (Table 38 Needs Assessment, Part A) by 15 percent or 79 gpcd, then increasing that to 81 gpcd to account for presently unbilled water.

Unbilled water use is projected to be 10 percent of total water treated or about 21 gpcd, which represents a reduction of about 13 gpcd from the Reclamation's projections for year 2050 on Table 38 of the Water Needs Assessment Report..

City of West Fargo

The total projected raw water demand for year 2050 for the city of West Fargo under the Water Conservation Feature is estimated to average 112 gpcd, including 86 gpcd for residential and commercial use, 15 gpcd for industrial use, and 11 gpcd for unbilled water. This represents a 27 percent reduction form the 153 gpcd demand included in Reclamation's projections for year 2050 shown on Table 38 of the Water Needs Assessment Report.

Residential and Commercial use is estimated to comprise 97 percent of the cities present water demand based on the *Fargo-Moorhead Urban Study, May 1985, U.S. Army Corps of Engineers*, which equals about 86 gpcd. Reclamation's Industrial use projections of 18 gpcd was reduced to 15 gpcd to account for future water conservation. Unbilled water was estimated to amount to 10 percent of the total treated water used by the city or about 11 gpcd..

City of East Grand Forks

The total projected raw water demand for year 2050 for the city of East Grand Forks under the Water Conservation Feature is estimated to average 125 gpcd, including 95 gpcd for residential and commercial use, 17 gpcd for industrial use, and 13 gpcd for unbilled water. This represents a 29 percent reduction form the 176 gpcd demand included on Table 38 of the Water Needs Assessment.

Residential and commercial use in East Grand Forks is estimated to presently be about 95 gpcd based on the Corps of Engineers, *Grand Forks-East Grand Forks Urban Water Resources Study 1981, Water Supply Appendix*, (pages 28 and 29) which identifies a residential and commercial use rate of 100 gpcd including distribution losses which the Corps estimated to be at 5 to 10 percent. Reclamation's Industrial use projections of 21 gpcd were reduced by 15 percent to 17 gpcd to account for future water conservation. Unbilled water was projected to be 10 percent of the total treated water used by the city or about 13 gpcd.

City of Valley City

The total projected raw water demand for year 2050 for the city of Valley City with water conservation is projected to average 157 gpcd, including, 100 gpcd for residential and commercial use, 41 gpcd for industrial use, and 16 gpcd for unbilled water. This represents an 8 percent reduction form the 171 gpcd demand included in Reclamation's projections for year 2050 (Table 38).

Residential and commercial use is based on information contained in the Needs Assessment Report which identified Valley City's residential, Commercial and Public use at 105 gpcd. Public use, estimated at 6 gpcd (Tech Memorandum), was then subtracted, resulting in a residential and commercial use of about 100 gpcd. Industrial use was determined by reducing Reclamations projected industrial demand by 15 percent from 49 to 41 gpcd. Unbilled water was estimated to be 10 percent of total raw water demand.

Grafton

The total projected raw water demand for year 2050 for the City of Grafton with water conservation is estimated to average 171 gpcd, including, 90 gpcd for residential and commercial use, 64 gpcd for industrial use, and 17 gpcd for unbilled water. This represents a 21 percent reduction form the 217 gpcd demand projected be Reclamation for year 2050 (Table 38).

Residential and commercial use is based on information contained in the Needs Assessment Report which identified Grafton's raw water use at 161 gpcd for 1994 with unaccounted water representing 16.4 percent of that figure. Billed water would be about 135 gpcd, of which it is estimated that 35 percent or 47 gpcd was provided for industrial use, leaving the remaining 88 gpcd for residential and commercial use. This was rounded up to 90 gpcd accounting for some unbilled water actually being delivered to users. Industrial use was determined by reducing Reclamation's projected industrial demand by 15 percent, from 76 to 64 gpcd. Unbilled water was estimated to be 10 percent or of total raw water demand or 17 gpcd.

Drayton

The total projected raw water demand for year 2050 for the city of Drayton with water conservation is estimated to average 635 gpcd, including, 120 gpcd for residential and commercial use, 451 gpcd for industrial use, and 64 gpcd for unbilled water. This represents a 16 percent reduction form the 752 gpcd demand included in Reclamation's projections for year 2050 (Table 38).

For lack of specific information, residential and commercial use is estimated from Reclamation's Technical Memorandum at 120 gpcd. Industrial use was determined by reducing Reclamation's projected industrial demand by 15 percent, from 686 to 572 gpcd. Unbilled water was estimated to be 10 percent or of total raw water demand or 64 gpcd.

Table 38C - Red River Valley water needs with water conservation

		Surface water demands						Ground water		Total surface (before losses)			Raw water demands (surface water only)	
Municipality	2050 Population	Residential. Commercial, Use (gpcd)	Residential. Commercial, Use (acre-feet)	Industrial Use (gpcd)	Industrial Use (acre-feet)	Total R,C & I Demand (gpcd)	Total R,C & I Demand (acre-feet)	Total Demand (gpcd)	Total Demand (acre-feet)	Total Demand (gpcd)	Total Demand (acre-feet)	City Loss and Public Use %	Total Demand (acre-feet)	Total Demand (gpcd)
Fargo	192,600	120	25,909	8	1,651	128	27,559	0	0	128	27,559	10%	30,621	142
West Fargo	33,300	86	3,210	15	558	101	3,769	76	2,823	101	3,769	10%	4,188	112
Moorhead MN	42,600	85	4,059	45	2,170	130	6,229	14	662	130	6,229	10%	6,921	145
Valley City	6,570	100	736	41	303	141	1,040	0	0	141	1,040	10%	1,155	157
Grand Forks	93,200	106	11,075	81	8,449	187	19,524	0	0	187	19,524	10%	21,693	208
E. Grand Forks	8,700	95	927	17	170	112	1,097	0	0	112	1,097	10%	1,218	125
Grafton	5,100	90	515	64	367	154	882	0	0	154	882	10%	980	171
Drayton	900	120	121	451	455	571	576	0	0	571	576	10%	640	634
Wahpeton	9,200							137	1,410	0	0			
Breckenridge MN	3,700							140	580	0	0			
Existing ProGold					5,100		5,100		0				5,100	
New Industry					20,400		20,400		0				20,400	
Total	395,870		46,551		39,624		86,175		5,475				92,917	209