

10. ABILITY TO PAY

10.1 General

An analysis of "ability to pay" and "willingness to pay" for public water is presented in this chapter. The conclusion is that the members of the Assiniboine and Sioux Tribes have little ability to pay (\$0.66 per month) and that Dry Prairie has the ability to pay, as defined in the chapter, of \$11.26 per month and a theoretical willingness to pay of \$24.12. This assumes that ability to pay is at levels below which 80% of households in a 1993 national survey paid for water. The Dry Prairie willingness to pay compares with the \$37.00 to \$38.00 per month residential billing scenario presented in Chapter 9 for community and rural customers.

Some measure of "ability to pay" is typically used by federal and state decision-makers in the process of authorizing water projects. Similarly, federal and state agencies commonly use some measure of ability to pay for determining the level of grants and loans to be made available to projects.¹ ² In general, those projects with lower levels of household income, adjusted for other basic living expenses, can expect to receive a higher level of grant funds and a corresponding lower level of loan funds than projects with higher levels of adjusted income. The information presented in this chapter was needed, at least in part, by congressional decision-makers as they determined the level of federal funding to be made available for construction within the Fort Peck and Dry Prairie parts of the project. Information presented in this chapter, in combination with other factors, resulted in an authorization that provided appropriations for all construction and operation, maintenance and replacement costs on the Fort Peck Indian Reservation. The authorization also provided for federal financing of 76% of the Dry Prairie construction costs (See Section 9, PL 106-382; Exhibit A of Chapter 1).

The Bureau of Reclamation performs an analysis of *ability to pay*, and the method of that agency was used as a basis to evaluate the ability of residents of the Fort Peck Indian Reservation and Dry Prairie to pay for the costs of a regional water system, including the ability to pay the retirement of debt, operation, maintenance and replacement costs.

The "ability to pay" analysis is a definition based on the amount that households pay for water. Statistics in support of the definition were compiled from data collected by the American Housing Survey (Section 10.1.1) relative to "residual income." Residual income is defined as the amount remaining from household income after payment of housing costs, such as electrical utilities, gas or other heating utility, mortgage or rent, and water and sewer costs. The equations used to estimate *ability to pay* factors were defined by Bureau of Reclamation as follows:³

¹General Authority: South Dakota, SDCL 46 A-1-60.3, Water Development 74:05:11:11.

²Project selection criteria for the Rural Utilities Service of the U.S. Dept. of Agriculture are presented in circular 1081 of the agency. The criteria is also available at the following site: <USDA.GOV/RUS/REGS/RB-01.TXT>.

³Bureau of Reclamation, May 14, 1996, *Rocky Boy/North Central Montana Regional Water System: Analysis of Socio- Economic Conditions and Household Ability and Willingness to Pay*, Draft, p. 8.

ability to pay factor = average water bill paid ÷ residual income in thousands of dollars (1)

residual income = household income - home payment - non-water utilities - insurance and tax (2)

10.2 American Housing Survey

For the purposes of this investigation, the American Housing Survey of 1993 was used to compile national statistics on ability to pay. Records were extracted from Census Bureau electronic files of the American Housing Survey.⁴ Approximately 80,000 records were accessed and 26,842 records were used in the analysis for this project. Records were eliminated from the original data set if not all information related to ability to pay factors was available from the records.

Relevant variables included in the American Housing Survey, that are consistent with the Bureau of Reclamation equations, were the following:

1. average monthly cost of electricity;
2. average annual cost of other fuels;
3. annual cost of water and sewage;
4. income of all household members, including non-relatives; and
5. monthly housing costs, including mortgage, taxes and rent

When comparing these variables with the Bureau of Reclamation equations cited above, residual income can be defined as “income of all household members, including non-relatives” less “monthly housing costs, including mortgage, taxes and rent” less “average monthly cost of electricity” with appropriate conversions to annual values. Note that “average annual cost of other fuels” is not a variable easily defined in the four county area of the project. Only 3,300 records in the American Housing Survey have data for this variable. Therefore, the variable was not included in the calculation of residual income from either the American Housing Survey data or the regional data for this project. Note further that the American Housing Survey does not separate the cost of water and sewer, which can be separated in the four county area.

Table 10-1 presents sample information from the American Housing Survey showing the variables used in the computation of residual income and annual cost of water and sewer per \$1,000 of residual income. The data presented in Table 10-1 were taken from the midrange of the 26,842 records in the file. The annual cost of water and sewer in the mid range of the data is \$6.61 per thousand dollars of residual income. Table 10-2 presents the full range of annual cost of water and sewer per thousand dollars of residual income.

Table 10-2 summarizes the annual cost of water per \$1,000 of residual household income by frequency classes ranging from 10 to 100 percent. For example, the lower 20 percentile of households had water and sewer costs of \$0.50 per \$1,000 of annual residual income. The median household had an annual water and sewer cost of \$6.61 per \$1,000 of annual residual income as shown in Table 10-1.

⁴Bureau of Census, 1993 American Housing Survey <census.gov/ftp/pub/hhes/www/housing/ahs>. No comparable data from the 2000 census were available at the time of this writing. The “release schedule” gives March to May 2002 for the sample data for social, economic and housing characteristics and 2003 for summary characteristics. Only population and housing characteristics, without economic characteristics, were available from the 2000 census for analysis.

TABLE 10-1

SAMPLE DATA FROM AMERICAN HOUSING SURVEY
 COMPUTATION OF ANNUAL RESIDUAL INCOME AND ANNUAL COST OF WATER AND SEWER

Household Number	Monthly Cost of Electricity	Annual Cost of Water & Sewer	Income of All Household Members	Monthly Housing Costs	Annual Residual Income	Annual Cost of Water & Sewer Per \$1,000 Residual Income	Percentile
13,414	46	382	65,200	569	57,820	6.61	49.974
13,415	56	144	25,000	211	21,796	6.61	49.978
13,416	124	180	44,800	1,339	27,244	6.61	49.981
13,417	114	180	32,256	304	27,240	6.61	49.985
13,418	28	325	60,000	875	49,164	6.61	49.989
13,419	48	240	39,400	210	36,304	6.61	49.993
13,420	47	250	45,400	585	37,816	6.61	49.996
13,421	52	276	51,000	719	41,748	6.61	50.000
13,422	121	300	58,700	990	45,368	6.61	50.004
13,423	110	240	50,500	1,074	36,292	6.61	50.007
13,424	120	550	103,000	1,533	83,164	6.61	50.011
13,425	78	392	75,000	1,233	59,268	6.61	50.015
13,426	152	600	102,000	789	90,708	6.61	50.019
13,427	65	225	37,000	184	34,012	6.62	50.022
13,428	106	300	58,500	991	45,336	6.62	50.026
13,429	70	100	18,000	171	15,108	6.62	50.030
...

TABLE 10-2

WATER AND SEWER COST PER \$1,000 RESIDUAL INCOME BY FREQUENCY CLASS
 BASED ON 1993 AMERICAN HOUSING SURVEY

Percent Households Less Than Cost	Fort Peck Water and Sewer Costs per \$1,000 Annual Residual Income	Rocky Boys Water and Sewer Costs per \$1,000 Annual Residual Income
10	.00	--
20	.50	--
30	2.89	--
40	4.70	--
50	6.61	--
60	9.02	--
70	12.34	--
75	14.86	11.45
80	18.27	--
90	32.32	19.32
95	56.50	--
98	118.60	--
Mean	--	9.03

Bureau of Reclamation analysis, in comparable projects in Montana⁵, predicted a slightly lower cost per \$1,000 of residual income at the 75 percentile (\$14.86 in the current analysis and \$11.45 in the Bureau of Reclamation analysis). There was a more marked difference in the cost per \$1,000 of residual income at the 90 percentile (\$32.32 in the current analysis and \$19.32 in the Bureau of Reclamation analysis). The reason for the differences is probably due to the data set used from the American Housing Survey in the two independent analyses. Bureau of Reclamation reported use of 1,678 records, and 26,842 records were used here.

It is clear from inspection of American Housing Survey data that annual costs of water and sewer did not exceed \$1,000 annually in the American Housing Survey, irrespective of annual residual income. It is also evident that where there was no annual residual income (\$0 per year), the annual cost of water was as high as \$800. At the lower end of the annual residual income range, annual water costs are consuming the remainder of funds available to households and result in zero or near zero annual residual incomes.

Therefore, is not surprising that a fit to the data from the American Housing Survey is poorly correlated ($R^2 = .0192$). A straight line regression suggests that families with no residual income had annual water and sewer costs of approximately \$233 annually (\$19.40 per month). Households with \$200,000 in annual residual income paid, on the average, approximately \$314 annually (\$26.15 per month). The data suggest little separation in cost of water and sewer relative to income.

10.3 Regional Household Income

Table 10-3 summarizes ability to pay computations for the project area. The basic computations were performed by block group. Median household income of the project area was \$20,351 in 1990, significantly less than the median household income for Montana of \$22,988. The Fort Peck Indian Reservation had a median annual household income of \$19,388, comparable to Dry Prairie, \$20,816. Within the Fort Peck Indian Reservation, the Indian household had a median income of \$13,822, about half the non-Indian income within the Reservation (\$26,000) and significantly less than Dry Prairie.

10.4 Regional Electrical Costs

The next element of ability to pay was annual cost of electricity, which varies by utility. Two investor owned utilities provide services within the area: Montana Dakota Utilities and Montana Power Company. Montana Dakota Utilities serves the communities east of and including Wolf Point and Scobey, and the Montana Power Company serves Glasgow and Nashua to the west. Sheridan Electric, Northern Electric and Valley Electric are rural electric cooperatives (REC's) that generally

⁵ See note 3, *supra*.

provide service outside the communities. Northern Electric and Valley Electric serve the rural areas west of Wolf Point and Scobey, and Sheridan Electric serves the rural areas in the eastern half of the project. Valley Electric serves part of the area along U.S. Highway 2 west of Wolf Point, but most of its service area is to the west of the project.

Table 10-3 presents estimates of annual cost of electricity for the principal electric suppliers in the area. In 1992, Sheridan Electric had average residential consumption of 957 kwh per month, about 70% of the 1,354 kwh per month average residential consumption of Northern Electric.⁶ Differences in consumption between REC's may be due to the availability of natural gas for space heating or for other reasons. The composite rate of both rural electrical cooperatives was comparable at about \$0.062 per kilowatt hour. The composite rate was derived using the residential rate structure of each electrical cooperative and the monthly estimate of residential consumption. Sheridan Electric served 2,453 residential consumers in 1992, and Northern Electric served 1,085. As shown in Table 2-16, the estimated annual cost per residential consumer in the Sheridan Electric system was \$716, and the estimated annual cost per residential consumer in the Northern Electric system was \$1,017.

The rate structure of Montana Power Company⁷ produced an annual residential cost of \$724 for the Sheridan Electric level of consumption and \$1,004 for the Northern Electric level of consumption. Therefore, there was very little difference in annual electrical costs between the Montana Power Company and the rural electric cooperatives. A higher rate structure for Montana Dakota Utilities⁸ produced an annual electrical cost of \$836 for residential consumers in the Sheridan Electric system and \$1,168 for residential consumers in the Northern Electric system. The annual electrical costs as presented in Table 10-3 were distributed among block groups, and the results were averaged as given in Table 10-3.

The average annual residential electric cost on the Fort Peck Indian Reservation was estimated at \$929, and the average annual residential electric cost in the Dry Prairie area was estimated at \$867. The average for the project area of \$898 was arbitrarily used as the average electrical cost for the state of Montana. (The determination of average annual residential electrical cost throughout the state was considered beyond the scope of the current investigation).

The scope of the current investigation did not determine the cost of "other fuels" due to several factors. First, only 3,300 records in the American Housing Survey (AHS) had data for this variable. Thus, the data set for compilation of statistics would have been reduced from 26,842 records to 3,300 records. The larger data set was considered more representative.

⁶Rural Electrification Administration, July 1993, *1992 Statistical Report, Rural Electric Borrowers*, United States Department of Agriculture, Informational Publication 201-1, Montana, p. 140 for Sheridan Electric Co-op (Montana-25) and Northern Electric Cooperative (Montana-26).

⁷Montana Power Company, June 1, 1999, Fax to Thomas in Watson, 94431754, *Residential Electric Rate from March 1 Through October 1, 1999*.

⁸Montana Dakota Utilities Co. November 10, 1998, *Residential Electric Service Rate 10*, Public Service Commission of Montana, Order Nos. 6109 and 6110.

TABLE 10-3

ABILITY TO PAY
FORT PECK INDIAN RESERVATION, DRY PRAIRIE AND MONTANA

Statistic	Fort Peck Indian	Fort Peck Non-Indian	Fort Peck Total	Dry Prairie	Total Project Area	Montana
Median Annual Household Income	13,822	26,000	19,388	20,816	20,351	22,988
Annual Cost Electricity	929	929	929	867	898	898
Annual Housing Costs	3,267	3,127	3,197	3,361	3,279	4,547
Annual Residual Income	9,626	21,944	15,261	16,588	16,174	17,543
90 Percentile W/S Cost/\$1,000	32.32	32.32	32.32	32.32	32.32	32.32
Annual ATP W/S Costs	311.11	709.21	493.24	536.13	522.74	566.98
Annual Sewer Costs	168.00	168.00	168.00	168.00	168.00	168.00
Ability to Pay Water Cost (Monthly)	11.93	45.10	27.10	30.68	29.56	33.25
80 Percentile W/S Cost/\$1,000	18.27	18.27	18.27	18.27	18.27	18.27
Annual ATP W/S Costs	175.87	400.91	278.82	303.07	295.50	320.51
Annual Sewer Costs	168.00	168.00	168.00	168.00	168.00	168.00
Ability to Pay Water Cost (Monthly)	.66	19.41	9.24	11.26	10.62	12.71

TABLE 10-4

ANNUAL COST OF ELECTRICITY
BY INVESTOR OWNED UTILITIES AND RURAL ELECTRIC COOPERATIVES

Statistic	Sheridan Electric	Northern Electric
Annual Residential Revenues and Pat Capital	1,756,901	1,103,281
Monthly Residential Consumer KWH	957	1,354
Annual Residential Consumer KWH	11,484	16,248
Composite Rate	.062	.063
Residential Consumers Served	2,453	1,085
Annual Costs Per Consumer	716	1,017
MPC Equivalent	724	1,004
MDU Equivalent	836	1,168

Second, the level of effort to determine the cost of “other fuels” used in the region would not have resulted in a commensurate level of improvement in the analysis because, third, the region and the AHS data were made compatible by not including the cost of “other fuels” in either data set. Important is the fact that “ability to pay” as used and defined in this analysis permits a determination of the regional index of ability to pay to rank against the national index, both computed in the same way. It is not the amount that households in the project or parts the project *can pay*, it is simply the amount, below which, 80% to 90% of American households paid for water according to the 1993 survey.

10.5 Regional Housing Costs

Housing costs are the next factor in the ability to pay analysis as presented in Table 10-3. In 1990 there were 12,332 total housing units in the project area (Table 10-5). Of the total housing units, 3,110 were vacant and 9,222 were occupied. There were 5,772 occupied housing units in the Dry Prairie area and 3,450 on the Fort Peck Indian Reservation of which 1,602 were occupied by the Indian population and 1,848 were occupied by the non-Indian population.

Of the occupied houses, 6,428 were owner occupied and 2,794 were renter occupied (43% rented). The Indian population on the Fort Peck Indian Reservation occupied more homes for rent (834 or 52%) than were owned (768).

TABLE 10-5

Statistic	TENURE AND HOUSING COSTS FORT PECK INDIAN RESERVATION, DRY PRAIRIE AND MONTANA					
	Fort Peck Indian	Fort Peck Non-Indian	Fort Peck Total	Dry Prairie	Total Project Area	Montana
Occupied Housing Units	1,602	1,848	3,450	5,772	9,222	306,163
Vacant Housing Units	--	--	541	2,569	3,110	54,992
Total Housing Units	--	--	3,991	8,341	12,332	361,155
Tenure (Occupied Houses)						
Owner Occupied	768	1,363	2,131	4,297	6,428	205,938
Renter Occupied	834	485	1,319	1,475	2,794	100,225
	1,602	1,848	3,450	5,772	9,222	306,163
Monthly Owner Costs						
Mortgaged	--	--	407	485	462	575
Not Mortgaged	--	--	179	172	174	175
	--	--	293	328	318	375
Median Gross Rent	--	--	289	259	268	311
Median Annual Household Income			19,388	20,816	--	22,773
Percent of Median Annual Household Income						
Owner With Mortgage Costs			25.2	27.9	--	24.0
Owner Without Mortgage Costs			11.0	9.9	--	7.3
Median Gross Rent			17.9	14.9	--	13.0
Annual Housing Cost	--	--	3,492	3,728	3,636	4,249

Monthly owner costs and median gross rent are also presented in Table 10-5. More detailed information by block group were used for computation. Throughout the project area, average owner costs were \$318 per month. This consisted of \$462 per month for owner costs of a mortgaged home and \$174 per month for owner costs of a home that was not mortgaged. The latter costs are comprised primarily of taxes, insurance, repairs and similar costs. The median gross rent for the project area was \$268 per month. Comparison of the project area costs with the State of Montana demonstrates that the costs of home ownership with mortgages are about \$113 per month higher across the State of Montana than within the project area and that median cost of rent across the State of Montana was approximately \$43 per month higher than in the project area. Home ownership costs with mortgages are lower on the Fort Peck Indian Reservation (\$407 per month) than in the Dry Prairie area (\$485 per month), and median rent costs on the Fort Peck Indian Reservation (\$289 per month) are higher than in the Dry Prairie area (\$259 per month). Census data for 1990 did not permit comparison of Indian and non-Indian home ownership and rent costs within the Fort Peck Indian Reservation.

Annual housing costs in Table 10-3 of \$3,267 for the Indian population and \$3,127 for the non-Indian population on the Fort Peck Indian Reservation were derived from basic census block group data. The method of determining annual housing cost was not perfect by block group. The method finds the product of average owner costs from mortgaged and not-mortgaged homes and the number of occupied homes by race and adds the result to the product of median gross rent and the number of occupied rentals by race. Similar methods were used to derive annual housing costs for Dry Prairie (\$3,361). Annual housing costs for the State of Montana (\$4,457) were derived independently from 1990 Census summary tape file 3A.

10.6 Regional Residual Income

Residual income in Table 10-3 was determined by deducting annual cost of electricity and annual housing costs from median annual household income. Residual income for the project area was \$16,174, as contrasted with the State of Montana with residual income of \$17,543. The Fort Peck Indian Reservation had residual income of \$15,261, and the Dry Prairie area had residual income of \$16,588. Non-Indians within the Fort Peck Indian Reservation had the highest residual income (\$21,944), and Indians within the Fort Peck Indian Reservation had the lowest residual income (\$9,626).

10.7 Regional Ability to Pay for Water

From the American Housing Survey, as presented in Table 10-2, it was shown that 90% of households in the survey paid water and sewer costs per \$1,000 of annual residual income of \$32.32 or less and that 80% paid water and sewer costs per \$1,000 of annual residual income of \$18.27 or less. Therefore, it was predicted that, if the 80 percentile criteria were applied to the project, annual ability to pay for water and sewer costs would range from \$175.87 for the Indian population on the Fort Peck Indian Reservation to \$400.91 for the non-Indian population (Table 10-3). The Dry Prairie

population had a 1990 ability to pay of \$303.07 for water and sewer. The population in the State of Montana had a 1990 ability to pay of \$320.51 for water and sewer annually.

Finally, an average \$14.00 per month or \$168.00 annually for sewer costs was deducted from the ability to pay both water and sewer costs to arrive at the ability to pay for water costs. When converted to monthly values, the Indian population on the Fort Peck Indian Reservation had an average ability to pay \$0.66 per month in 1990, and the non-Indian population within the Reservation had an ability to pay \$19.41 per month.

If the 90 percentile cost data are applied, the Indian population on the Fort Peck Indian Reservation has an ability to pay \$11.93 for water per month, and the non-Indian population has an ability to pay \$45.10. The Dry Prairie population has the ability to pay \$30.68 per month, and the State of Montana population has an ability to pay \$33.25 per month.

Investigations of ability to pay have been conducted in other areas of Montana where comparison with the Fort Peck Indian Reservation and Dry Prairie can be assessed. The Rocky Boys rural water system in North Central Montana is a proposed project of comparable magnitude. Ability to pay results for the project are presented in Table 10-6. The number of occupied housing units in the Rocky Boys project was 13,687 as contrasted with 9,222 occupied housing units in the project reported here. Weighted average income of \$29,982 in the Rocky Boys project is higher than the \$20,351 in the project discussed here. Residual income of \$24,713 in the Rocky Boys project is more than 50 percent greater than the residual income of \$16,174 in the Fort Peck project.

TABLE 10-6
ABILITY TO PAY
ROCKY BOYS PROJECT - NORTH CENTRAL MONTANA

Census Area	Households	Household Income	Housing Costs	Energy Costs	Residual Income
Hill Co	6,426	\$30,321	\$4,879	\$1,097	\$24,345
Liberty Co	788	29,189	3,225	1,141	24,823
Toole Co	1,922	29,468	3,662	1,055	24,751
Chinook Div	1,140	27,360	3,490	994	22,876
Big Sandy Div	647	33,014	2,970	1,031	29,013
Fort Benton Div	389	27,936	4,032	1,010	22,894
Dutton/Power Div	477	34,367	3,770	1,057	29,540
Conrad Div	1,618	29,665	3,680	1,062	24,923
Cut Bank Div	280	28,850	4,559	1,089	23,202
Total Average	13,687	\$29,982	\$4,196	\$1,074	\$24,713

Census Area	Households	90% ATP/1000	90% ATP/yr	90% ATP/mon	90% Annual Project
Hill Co	6,426	\$19.32	\$470	\$39.20	\$3,022,440
Liberty Co	788	19.32	480	39.97	377,909
Toole Co	1,922	19.32	478	39.85	919,080
Chinook Div	1,140	19.32	442	36.83	503,839
Big Sandy Div	647	19.32	561	46.71	362,664
Fort Benton Div	389	19.32	442	36.86	172,059
Dutton/Power Div	477	19.32	571	47.56	272,230
Conrad Div	1,618	19.32	482	40.13	779,087
Cut Bank Div	280	19.32	448	37.36	125,514
Total Average	13,687	19.32	477	39.79	6,534,822

As shown in Table 10-6, the 90 percentile ability to pay per \$1,000 of residual income in the Rocky Boys project was \$19.32, slightly higher than the 80 percentile ability to pay per \$1,000 of residual income in the Fort Peck project (\$18.27, Table 10-3). Ability to pay in the Rocky Boys project at the 90 percentile level is nearly equivalent to ability to pay in the Fort Peck project at the 80 percentile level. For the Rocky Boys project the 90 percentile ability to pay per month for water and sewer is \$39.79 (Table 10-6) as contrasted with the Fort Peck project 80 percentile ability to pay for water and sewer of \$29.56. The lower ability to pay in the Fort Peck project is due to a lower median household income, which in turn results in a lower residual income.

A willingness to pay analysis was also conducted for the Rocky Boys project. A survey of households in the proposed project was conducted. A second analysis known as Tobit modeling was also conducted. The results are presented in Table 10-7. Assuming a comparable monthly sewer cost with the Fort Peck project, the ability to pay for water in the Rocky Boys project is \$25.79. Existing urban and rural water costs in the Rocky Boys project were determined at \$30.36 and 49.50, respectively. Potential participants in the proposed Rocky Boys project were found to be willing to pay an additional \$7.62 and \$14.99 above the level of existing costs in the urban and rural districts. Therefore, there was a willingness to pay of \$37.98 in the urban districts and \$64.49 in the rural districts. This was \$12.19 and \$38.70 more than the computed ability to pay for water in the urban and rural districts, respectively.

TABLE 10-7

WILLINGNESS TO PAY
ROCKY BOYS PROJECT - NORTH CENTRAL MONTANA

Statistic	Survey	Tobit Model
Ability to Pay Water and Sewer	39.79	39.79
Ability to Pay Water	25.79	25.79
Willingness to Pay		
Existing Urban Costs	30.36	30.36
Existing Rural Costs	49.50	49.50
Extra Urban Willingness	7.62	9.83
Extra Rural Willingness	14.99	18.28
Total Urban Willingness	37.98	40.19
Total Rural Willingness	64.49	67.78
Difference Between Willingness and Ability		
Urban	12.19	14.40
Rural	38.70	41.99

Table 10-8 uses the results of willingness to pay in the Rocky Boys project based on survey results (not the Tobit model) to address potential willingness to pay within the Fort Peck project. It was assumed that the weighted average of urban and rural willingness to pay in the Rocky Boys project of \$27.87 would be applicable additions to ability to pay in the Fort Peck project for a residual income of \$24,713 annually. It was further assumed that the residual income of \$9,626 among the Indian population on the Fort Peck Indian Reservation would not be willing to pay beyond the ability to pay as computed and presented and Table 10-8. Based on the foregoing assumptions, willingness to pay in the Fort Peck project was determined by straight line interpolation between the higher and lower residual incomes. Willingness to pay by the Indian population on the Fort Peck Indian Reservation totals \$0.66 per month. Willingness to pay in the Dry Prairie area is the sum of the ability to pay (\$11.26 per month) and the willingness to pay beyond computed ability to pay (\$12.86 per month) or a total of \$24.12. Similarly, the willingness to pay of non-Indians on the Fort Peck Indian Reservation was computed at \$42.17 per month.

TABLE 10-8
ESTIMATED WILLINGNESS TO PAY
FORT PECK INDIAN RESERVATION AND DRY PRAIRIE

Statistic	Fort Peck Indian	Fort Peck Non-Indian	Dry Prairie	Total Project	Rocky Boys
Occupied Housing Units	1,602	1,848	5,772	9,222	13,687
Residual Income	\$9,626	\$21,944	\$16,588	\$16,174	\$24,713
90% Ability to Pay (Month)	--	--	--		\$25.79
80% Ability to Pay (Month)	\$.66	\$19.41	\$11.26	\$10.62	--
Willingness to Pay Difference	.00	22.76	12.86	12.10	--
Urban	--	--	--	--	\$12.19
Rural	--	--	--	--	\$38.70
Weighted Average	--	--	--	--	\$27.87
Willingness to Pay (Month)	\$.66	\$42.17	\$24.12	\$22.72	\$53.66
Willingness to Pay (Annual)	\$12,688	\$935,065	\$1,670,733	\$2,513,891	\$8,813,487

The annual willingness to pay for water in the Fort Peck project was estimated at \$2,513,891 (\$273 per household), and annual willingness to pay for water in the Rocky Boys project was estimated at \$8,813,487 (\$644 per household). The willingness to pay in the Rocky Boys project per occupied housing unit is 2.36 times the willingness to pay in the Fort Peck project due to differences in annual median household incomes and annual residual household incomes.

10.8 Montana Target Rate

The State of Montana uses a different, but comparable, method to address the ability to pay for water, wastewater or solid waste projects. The method uses 2.2% of median household income as a "target rate" for combined water and sewer costs for projects with populations greater than 5,000 persons. The target rate was developed from an August 1999 survey of community water and sewer rate structures across Montana. Communities included in the survey were selected if the rate structure reflected systems that meet or approach current design and operating standards of the State of Montana. Communities included in the survey from the regional project were Glasgow, Poplar, Bainville, Froid, Medicine Lake and Nashua. Water rates as a percentage of median household income in public water systems with population greater than 5,000 ranged from .89% (Billings) to 1.87% (Missoula) and averaged 1.4%. Sewer rates as a percentage of median household income in communities with population greater than 5,000 ranged from .31% (Anaconda) to 1.51% (Bozeman) and averaged 0.8%. The sum of water (1.4%) and sewer (0.8%) was the 2.2% of median household income established as a "target rate."

The target rate is used by the Montana Department of Commerce to determine the amount of State grant funds a community needs in order to maintain the combined monthly water and sewer user rates at reasonably affordable levels for ratepayers. The Department uses the target rates as an estimate of the level of affordability that grant applicants are expected to reach before grant funds are recommended by the Department for a new project. In conducting the financial analysis, Montana Department of Commerce uses 90% of the target rate for comparison against actual rates. This provides local governments with a margin of safety to meet emergencies or other facility needs that may be unknown at the time of a grant application. If an applicant's actual combined water and sewer rates, after implementation of a new project, would be less than the target rate, then the amount of debt that can reasonably be assumed by borrowing would be subtracted from the grant request to determine the amount of a recommended grant award.⁹

Table 10-9 applies the "target rate" concepts to the public water systems in the project. Average target rates were estimated at \$20.86 per month, which compares reasonably well with the monthly "willingness to pay" estimate for the project of \$22.72 per month from Table 10-8. The target rates for median household income levels comparable to the Fort Peck Indian population (\$13,822) would be approximately \$10 per month as contrasted with the "willingness to pay" estimate of \$0.66 per month.

⁹Peter S. Blouke, January 2001, *Treasure State Endowment Program, 2003 Biennium, Project Evaluations and Funding Recommendations*, Montana Department on Commerce, p. 28.

TABLE 10-9

MONTANA TARGET RATES

Place/Rural Place	Population	PWS Population	Check PWS Pop	Place Total Housing	PWS Total Housing	Median Household Income	Monthly Sewer Rates	Montana	Montana
								Water and Sewer Target %	Water Target Rate
Bainville	135	166	153	96	109	22,917	26.01	2.20%	14.41
Brockton	339	507	467	103	142	13,375		2.20%	
Culbertson	780	784	784	361	363	23,125	14.00	2.20%	25.56
Flaxville	77	0	0	43	0	22,500		2.20%	
Frazer	394	422	415	132	139	10,962		2.20%	
Froid	230	253	253	143	157	14,861	14.00	2.20%	11.92
Glasgow	3,574	3,662	3,652	1,744	1,782	20,766	10.00	2.20%	25.26
Medicine Lake	362	381	381	192	202	14,659	7.00	2.20%	17.89
Nashua	371	379	379	221	226	16,550	11.50	2.20%	16.96
Opheim	141	144	144	97	99	18,542		2.20%	
Outlook	113	143	143	53	67	24,063	15.00	2.20%	26.20
Plentywood	2,119	2,119	2,115	1,102	1,100	20,666	8.50	2.20%	26.45
Poplar	878	2,114	2,113	386	929	15,662	14.00	2.20%	13.24
Scobey	1,160	632	1,149	638	632	21,552		2.20%	
Westby	265	265	259	135	132	26,125	10.00	2.20%	34.11
Wolf Point	2,881	3,518	3,520	1,236	1,510	21,290	7.91	2.20%	28.01
	13,819	15,489	15,927	6,682	7,589				21.82
Not Place									
Whitetail	--	112		--	61				
Peerless	--	17		--	10				
Oswego	--	--		--	--				
Fort Kipp	--	--		--	--				
Raymond	--	--		--	--				
Antelope	--	79		--	39	22,333	0.00	2.20%	36.85
St. Marie	--	--		--	1,223	16,250	37.14	2.20%	-6.61
	--	208		--	1,333				
Total Average	13,819	15,697	15,927	6,682	8,922	19,233	13.47	2.20%	20.86