

2. Summary of Project Water Demands

2.1. Introduction and Summary of Previous Studies

Lewis & Clark previously prepared a Needs Assessment Study to determine potential water demands within the project's Water Service Area. The Needs Assessment Study was later summarized, updated and included in the 1993 Feasibility Study. The 1993 Feasibility Study documented a total system reserved capacity of 23.469 MGD (million gallons per day) for the 22 Lewis & Clark member systems at the time of that report. The reserved capacity was based on water needs identified by the member systems and forwarded to Lewis & Clark for project planning purposes.

As mentioned above, a Needs Assessment Study was previously completed and as such this Final Engineering Report does not repeat that data. Rather, the purpose of this section is to summarize the results of the surveys, meetings with existing members and visits with potential participants.

2.2. Member/Potential New Member Surveys

Following project authorization in the summer of 2000, Lewis & Clark contacted its current membership to determine if the reserved capacity identified in the 1993 Feasibility Study was still appropriate. Concurrently, Lewis & Clark also contacted other water systems to see if they would be interested in participating in the project. A survey questionnaire was distributed to all existing members and water systems expressing an interest in receiving water from Lewis & Clark. Meetings were held with all existing members and potential member water systems from late October, 2000 through early January, 2001.

The questionnaire (a copy of the form is included in Appendix A-2) requested the water systems to provide input regarding various criteria, including:

- ? Reserved capacity requested (some existing member systems wanted to increase reserved capacity);
- ? Requested point(s) of delivery, description and pressure requirements;
- ? Information regarding current source(s) of supply;
- ? Water treatment processes and disinfection;
- ? Population served and current water delivered;
- ? Water quality information;

- ? Water rate and other financial information;
- ? Policy or guidelines for water conservation and emergency water use restrictions; and
- ? Other miscellaneous information.

Summaries of pertinent data collected during the survey process and follow-up meetings are tabulated in the following pages. Other data collected is summarized and discussed elsewhere in this Final Engineering Report.

2.3. Summary of Project Participants and Reserved Capacity Requirement Revisions

All existing Lewis & Clark members were contacted as well as a number of other water systems interested in participating in the project. Several of Lewis & Clarks' member systems re-evaluated their water needs since the original demands were developed in the early 1990's. Table 2.3-1 provides a listing of existing Lewis & Clark member systems that considered increasing their reserved capacity in the project:

Table 2.3-1
Existing Member Systems Expressing Interest in Increasing
Reserved Capacity in Lewis & Clark

Water System	Original 1993 Capacity (MGD)	Revised Capacity Considered (MGD)	Potential Increase in Capacity (MGD)
Beresford, SD	0.25	0.80	0.55
Harrisburg, SD	0.25	0.40	0.15
Lennox, SD	0.40	0.80	0.40
Madison, SD	1.00	1.50	0.50
Tea, SD	0.329	1.00	0.671
Lincoln County RWS, SD	0.90	1.40	0.50
South Lincoln RWS, SD	0.15	0.25	0.10
Luverne, MN	0.50	0.75	0.25
Lincoln - Pipestone RWS, MN	0.30	1.00	0.70
Boyden, IA	0.10	0.15	0.05
Rural Water No. 1, IA	1.00	3.00	2.00
TOTALS	5.179	11.050	5.871

Non-member water systems in the Water Service Area were contacted to see if these systems were interested in receiving a water supply from Lewis & Clark. The following systems, tabulated in Table 2.3-2, expressed an interest in participating in Lewis & Clark.

Table 2.3-2
Non-Member Systems Expressing Interest in
Participating in the Lewis & Clark Project

Water System	Capacity Considered (MGD)
Canton, SD	1.00
Vermillion, SD - Raw Water only	1.00
Rushmore, MN	0.20
George, IA	0.075
Rock Valley, IA	0.20
Lyon & Sioux RWS, IA	0.15
Hartley, IA	0.30
Sanborn, IA	0.20
Rock Rapids, IA	0.40
Southern Sioux RWS, IA	1.00
TOTALS	4.525

Based upon the preliminary results of the survey, the potential reserved capacity of the Lewis & Clark project would have to increase from 23.469 MGD to 33.865 MGD ($23.469 + 5.871 + 4.525$). In order to accommodate the potential increased water demands, the project would have to be upsized. Also, portions of the pipeline transmission system were realigned to better serve the potential systems.

The costs to upsize the project and serve additional users are outside the funding of the Lewis & Clark Project. Funding has been arranged for the project based on the opinion of probable construction costs developed from the demands and project configuration presented in the 1993 Feasibility Study. Lewis & Clarks' Federal and state funding, as authorized, does not include monies beyond the project as identified in the 1993 Feasibility Report. Each new water user or member requesting additional reserved capacity would be responsible to secure funding for its portion of the incremental project construction cost.

Lewis & Clark prepared an evaluation of the changes to the water system design that would be necessary to deliver the water capacity requested. An opinion of probable construction costs for the new system configuration was also prepared. The difference between the estimate of the new system cost and the estimate of the original system cost is the incremental construction cost for the added capacity. The incremental cost for added capacity was allocated between the prospective new water users and existing members who increased their reserved capacity. Each user's incremental costs were allocated on the basis of additional water system capacity requested. Additionally, Lewis & Clark decided to require the construction cost of long service lines to new users be borne exclusively by the system being served.

Lewis & Clark presented the incremental cost information to the prospective new water users and existing members who increased their reserved capacity. These systems evaluated the cost information and made a decision regarding their participation or increased capacity in Lewis & Clark. Lewis & Clark gained one new member¹ (Rock Rapids, IA – 0.30 MGD) and eight existing members increased their reserved capacity (3.421 MGD). The total increase in reserved capacity is 3.721 MGD. For the purpose of this Final Engineering Report, the project will be sized to deliver 27.19 MGD treated water capacity. Table 2.3-3 (on the following page) provides a summary of the final roster of Lewis & Clark members and their reserved capacity.

2.4. Summary of Lewis & Clark Member System Requirements

One of the purposes of the survey questionnaire was to collect data regarding each member system's connection requirement for the Lewis & Clark project. The following sections provide a summary of the results of the survey and are used for preliminary design of the project.

2.4.1. Member System Planned Use of Lewis & Clark Reserved Capacity

Lewis & Clarks' membership is a mix of various water users, from a major metropolitan area to small communities and rural water systems. Each community and system has its own approach and plan for using its reserved capacity in Lewis & Clark.

¹ At the time of this report, Lewis & Clark and Rock Rapids Municipal Utilities were in the final process of negotiating a Commitment Agreement for Rock Rapids to become a member of Lewis & Clark. Rock Rapids should attain membership status in June 2002. For the remainder of this FER, Rock Rapids is included as one of the member systems of the Lewis and Clark Rural Water System.

Table 2.3-3
Lewis & Clark Member Systems Reserved Capacity

Water System	Original 1993 Capacity (MGD)	Final Design Capacity (MGD)	Percent of Total System Capacity
Beresford, SD	0.25	0.80	2.94%
Centerville, SD	0.22	0.22	0.81%
Harrisburg, SD	0.25	0.40	1.47%
Lennox, SD	0.40	0.40	1.47%
Madison, SD	1.00	1.50	5.52%
Parker, SD	0.49	0.49	1.80%
Sioux Falls, SD	10.00	10.00	36.78%
Tea, SD	0.329	1.00	3.68%
Lincoln County RWS, SD	0.90	1.40	5.15%
Minnehaha Community Water Co, SD	2.00	2.00	7.36%
South Lincoln RWS, SD	0.15	0.25	0.92%
Luverne, MN	0.50	0.75	2.76%
Worthington, MN	1.73	1.73	6.36%
Rock County RWS, MN	0.30	0.30	1.10%
Lincoln - Pipestone RWS, MN	0.30	1.00	3.68%
Boyden, IA	0.10	0.10	0.37%
Hull, IA	0.30	0.30	1.10%
Sheldon, IA	1.00	1.00	3.68%
Sibley, IA	0.65	0.65	2.39%
Sioux Center, IA	0.60	0.60	2.21%
Clay Regional RWS, IA	1.00	1.00	3.68%
Rural Water No. 1, IA	1.00	1.00	3.68%
Rock Rapids, IA	--	0.30	1.10%
TOTALS	23.469	27.19	100.00%

Distribution by State			
State	Number of Systems	Reserved Capacity (MGD)	Percent of Total System Capacity
South Dakota	11	18.46	67.89%
Iowa	8	4.95	18.21%
Minnesota	4	3.78	13.90%
TOTALS	23	27.19	100.00%

The systems that make up Lewis & Clark have a variety of water sources and water system concerns. Each member has evaluated its system and planned a strategy for using its existing supply and its Lewis & Clark reserved capacity. Table 2.4-1 provides a listing of each of the member system's planned usage or its future water supply. The information in Table 2.4-1 is used to project average daily water demands from Lewis & Clark upon project completion (see section 2.4.2). The remainder of each system's water demands would be met using existing water supplies.

2.4.2. Member System Water Usage Statistics

The survey questionnaire also requested input from each water system with regard to its current water usage. Table 2.4-2 provides information and ratios that are used to make projections of member water demands from Lewis & Clark. Information collected from member systems included:

- Water pumped in the maximum month;
- Water pumped on the maximum day; and
- Winter flow information (either as reported by the system or calculated from flow data for the period November through March).

These data indicate the ratio of maximum month daily flow to average annual daily flow ranges from 1.03 (very little variation in monthly flow) to 1.66 (a high-moderate variation). The combined system average ratio for maximum month daily flow to average annual daily flow is 1.43, which is consistent with earlier estimates. The ratio of peak day flow to average annual day flow ranges from 1.36 to 2.37 – the system average is 1.82. Winter flow rates indicate a smaller variation in winter flow to average day flows from 0.61 to 0.93. The combined system average ratio for winter day flow to average day flow is 0.80.

Due to the nature of the various use strategies of Lewis & Clark's member systems, it is difficult to make a projection of average daily vs. peak day. For example, Sioux Falls, Luverne and Worthington have indicated they will, over the period of a typical year, take all of their daily reserved capacity. Other systems have set aside Lewis & Clark reserved capacity for future growth. For the purpose of making projections for Lewis & Clark, the maximum month daily flow to average annual daily flow ratio is likely to be of more use for making projections for operational and financial calculations. It is important to note that Lewis & Clark will, in general,

Table 2.4-1
Lewis & Clark Member Systems' Water Use Strategy

Member System	Current Source of Supply	Existing Water Supply		Lewis & Clark Water Supply		
		Continue or Reduced Usage	Standby or Emergency Supply	Primary or Sole Source	Supplemental Supply (portion of RC)	Supplemental Supply (all of RC)
Beresford, SD	Surficial aquifer		x	x		
Centerville, SD	Surficial aquifer		x	x		
Harrisburg, SD	Lincoln County RWS (95-100%) and surficial aquifer		x	x		
Lennox, SD	Dakota Aquifer		x	x		
Madison, SD	Upper Skunk Creek (shallow) and Howard Aquifer (deep)	x			x	
Parker, SD	Deep wells, Parker-Centerville Aquifer		x	x		
Sioux Falls, SD	Big Sioux River and Big Sioux, Skunk Creek and Split Rock Aquifers	x				x
Tea, SD	Lincoln County RWS		x	x		
Lincoln County RWS, SD	City of Sioux Falls (90%) and Big Sioux Aquifer		x	x		
Minnehaha Community Water Company, SD	Big Sioux Aquifer	x			x	
South Lincoln RWS, SD	Dakota Sandstone	x			x	
Luverne, MN	Surficial Aquifer, Rock River outwash deposits	x				x
Worthington, MN	Surficial Aquifer, Lake Bella outwash deposits	x				x
Rock County RWS, MN	Surficial aquifer, Rock River outwash deposits	x			x	
Lincoln - Pipestone RWS, MN	Surficial aquifers near Verdi and Holland, MN	x			x	
Boyd, IA	Surficial aquifer	x		x		
Hull, IA	Rock Valley RWS (shallow wells and Big Sioux Aquifer)		x	x		
Sheldon, IA	Floyd River surficial aquifers and Dakota Sandstone	x			x	
Sibley, IA	Osceola Co RWS and 3 deep wells		x	x		
Sioux Center, IA	Floyd River surficial aquifer and deep well	x			x	
Clay Regional RWS, IA	Surficial aquifer near Spencer, IA interconnect with other water systems	x			x	
Rural Water No. 1, IA	Deep (Dakota Aquifer) and shallow wells	x			x	
Rock Rapids, IA	Surficial aquifer	x			x	

SS = Supplemental Supply

RC = Reserved Capacity in Lewis & Clark

Table 2.4-2
Lewis & Clark Member Systems' Water Use Statistics (Sheet 1 - Monthly)

Member System	Lewis & Clark Reserved Capacity (MGD)	Annual Volume Pumped (MG)	Max Month Pumped (MG)	Calculated	
				Avg Month (MG)	Ratio Max/Avg Month
Beresford, SD	0.80	96.49	12.48	8.04	1.55
Centerville, SD	0.22	50.62	4.72	4.22	1.12
Harrisburg, SD	0.40	34.16	4.00	2.85	1.41
Lennox, SD	0.40	63.03	7.76	5.25	1.48
Madison, SD	1.50	326.27	32.52	27.19	1.20
Parker, SD	0.49	60.30	7.82	5.03	1.56
Sioux Falls, SD	10.00	7,569.01	1,007.00	630.75	1.60
Tea, SD	1.00	47.03	5.49	3.92	1.40
Lincoln County RWS, SD	1.40	240.00	25.00	20.00	1.25
MCWC, SD ¹	2.00	652.67	73.17	54.39	1.35
South Lincoln RWS, SD	0.25	250.00	27.25	20.83	1.31
Luverne, MN	0.75	300.30	34.91	25.03	1.40
Worthington, MN	1.73	1,010.55	95.84	84.21	1.14
Rock County RWS, MN	0.30	230.00	22.36	19.17	1.17
Lincoln-Pipestone RWS, MN ¹	1.00	436.18	46.55	36.35	1.28
Boyden, IA	0.10	23.07	3.19	1.92	1.66
Hull, IA	0.30	53.84	5.08	4.49	1.13
Sheldon, IA	1.00	296.66	28.79	24.72	1.16
Sibley, IA	0.65	125.00	14.94	10.42	1.43
Sioux Center, IA	0.60	306.55	29.95	25.55	1.17
Clay Regional RWS, IA	1.00	250.00	24.50	20.83	1.18
Rural Water No. 1, IA	1.00	696.00	60.00	58.00	1.03
Rock Rapids, IA	0.30	260.04	25.70	21.67	1.19
TOTALS (or Averages)	27.19	13,377.78	1,599.02	1,114.81	1.43

¹ Historic usage numbers are for the entire water system - the Lewis & Clark supply will be targeted to a portion of the service area.

Table 2.4-2 (Continued)
Lewis & Clark Member Systems' Water Use Statistics (Sheet 2 - Daily)

Member System	Lewis & Clark Reserved Capacity (1000 gpd)	Max Day Pumped (1000 gpd)	Calculated		Ratio Max/Avg Day	Avg Day Winter (1000 gpd)	Ratio Wtr/Avg Day
			Avg Day for Max Month (1000 gpd)	Avg Day (1000 gpd)			
Beresford, SD	800	619.4	410.4	264.4	2.34	211.5	0.80
Centerville, SD	220	250.0	155.1	138.7	1.80	110.9	0.80
Harrisburg, SD	400	165.6	131.6	93.6	1.77	74.9	0.80
Lennox, SD	400	407.0	255.2	172.7	2.36	160.0	0.93
Madison, SD	1,500	1,600.0	1,069.1	893.9	1.79	785.0	0.88
Parker, SD	490	334.3	257.0	165.2	2.02	110.0	0.67
Sioux Falls, SD	10,000	41,300.0	33,106.8	20,737.0	1.99	16,580.0	0.80
Tea, SD	1,000	240.0	180.5	128.8	1.86	112.0	0.87
Lincoln County RWS, SD	1,400	1,300.0	821.9	657.5	1.98	475.6	0.72
MCWC, SD ¹	2,000	3,300.0	2,405.5	1,788.1	1.85	1,573.1	0.88
South Lincoln RWS, SD	250	1,250.0	895.9	684.9	1.83	547.9	0.80
Luverne, MN	750	1,274.4	1,147.8	822.8	1.55	658.2	0.80
Worthington, MN	1,730	3,953.0	3,150.8	2,768.6	1.43	2,478.2	0.90
Rock County RWS, MN	300	992.0	735.2	630.1	1.57	422.9	0.67
Lincoln-Pipestone RWS, MN ¹	1,000	1,625.0	1,530.3	1,195.0	1.36	868.7	0.73
Boyden, IA	100	150.0	105.0	63.2	2.37	57.4	0.91
Hull, IA	300	250.0	167.0	147.5	1.69	120.9	0.82
Sheldon, IA	1,000	1,447.0	946.5	812.8	1.78	669.1	0.82
Sibley, IA	650	605.0	491.2	342.5	1.77	272.6	0.80
Sioux Center, IA	600	1,454.0	984.7	839.9	1.73	777.9	0.93
Clay Regional RWS, IA	1,000	1,138.0	805.5	684.9	1.66	506.8	0.74
Rural Water No. 1, IA	1,000	2,200.0	1,972.6	1,906.8	1.15	1,159.2	0.61
Rock Rapids, IA	300	1,009.0	845.0	712.4	1.42	639.3	0.90
TOTALS (or Averages)	27,190	66,863.7	52,570.7	36,651.5	1.82	29,372.2	0.80

¹ Historic usage numbers are for the entire water system - the Lewis & Clark supply will be targeted to a portion of the service area.

provide a fairly uniform delivery over a 24-hour period to its member systems – peaking capacity will be the responsibility of the individual systems through additional supplies and/or storage.

Table 2.4-3 is a summary table developed to project individual member system water demands and their projected demands on the Lewis & Clark project for the year 2000 and 2030. Full tables with additional information are included in Appendix A-2. Projected total water demands of Lewis & Clark member systems are summarized in Table 2.4-4. The total water demands of member systems will be met in part by Lewis & Clark. Using present water supply systems would satisfy the balance of demands from the individual systems.

The amount of Lewis & Clark water member systems use will vary depending upon each system's needs and condition of existing infrastructure. Also, the initial demand will likely be slightly higher than the currently reported 2000 water demands due to growth and increasing demands between 2000 and project completion.

The annual average day demand from the Lewis & Clark system, for Year 2000 conditions, is projected to be approximately 19.6 MGD (rounded to 20 MGD). The ratio between the projected average day demand from the Lewis & Clark system and the total reserved capacity of 27.19 MGD is 0.74 (20/27.19).

Table 2.4-3
Member Systems' Projected Water Use of Lewis & Clark Water

Member System	Present (2000) Population Served	Projected 2030 Population	RC - Reserved Capacity (1000 gpd)	Average Day	Note Next Page	% of Avg Day Demand	Avg Day Maximum Month	Note Next Page	% Avg Day Maximum Month
Beresford, SD	2,000	3,000	800	264.4	1	100.0%	410.4	1	100.0%
Centerville, SD	887	702	220	138.7	1	100.0%	155.1	1	100.0%
Harrisburg, SD	1,050	2,200	400	93.6	1	100.0%	131.6	1	100.0%
Lennox, SD	2,030	6,000	400	172.7	1	100.0%	255.2	1	100.0%
Madison, SD	6,500	7,000	1,500	446.9	4	50.0%	748.3	4	70.0%
Parker, SD	1,000	1,200	490	165.2	1	100.0%	257.0	1	100.0%
Sioux Falls, SD	124,000	168,000	10,000	10,000.0	2	48.2%	10,000.0	2	30.2%
Tea, SD	1,800	5,400	1,000	128.8	1	100.0%	180.5	1	100.0%
Lincoln County RWS, SD	8,000	17,700	1,400	657.5	1	100.0%	821.9	1	100.0%
MCWC, SD	15,000	21,000	2,000	894.1	4	50.0%	1,683.8	4	70.0%
South Lincoln RWS, SD	5,000	7,500	250	175.0	3	25.6%	250.0	2	27.9%
Luverne, MN	4,600	5,693	750	750.0	2	91.2%	750.0	2	65.3%
Worthington, MN	10,500	12,000	1,730	1,730.0	2	62.5%	1,730.0	2	54.9%
Rock County RWS, MN	3,000	4,000	300	210.0	3	33.3%	300.0	2	40.8%
Lincoln-Pipestone RWS, MN	5,029	9,500	1,000	700.0	3	58.6%	1,000.0	2	65.3%
Boyden, IA	650	700	100	63.2	1	100.0%	100.0	2	95.3%
Hull, IA	1,724	3,000	300	147.5	1	100.0%	167.0	1	100.0%
Sheldon, IA	5,000	6,000	1,000	700.0	3	86.1%	946.5	1	100.0%
Sibley, IA	3,000	3,000	650	342.5	1	100.0%	491.2	1	100.0%
Sioux Center, IA	6,000	8,747	600	420.0	3	50.0%	600.0	2	60.9%
Clay Regional RWS, IA	6,875	20,500	1,000	479.5	3	70.0%	805.5	1	100.0%
Rural Water No. 1, IA	5,500	6,000	1,000	700.0	3	36.7%	1,000.0	2	50.7%
Rock Rapids, IA	4,253	5,252	300	210.0	3	29.5%	300.0	2	35.5%
TOTALS (or Averages)	223,398	324,094	27,190	19,589.6		53.4%	23,084.2		43.9%

Member System	Present (2000) Population Served	Projected 2030 Population	2000/2030		2030 Projected LCRWS				
			Ratio	Average Day	Note Next Page	% of Avg Day Demand	Avg Day Maximum Month	Note Next Page	% Avg Day Maximum Month
Beresford, SD	2,000	3,000	1.50	396.5	1	100.0%	615.6	1	100.0%
Centerville, SD	887	702	0.79	109.8	1	100.0%	122.8	1	100.0%
Harrisburg, SD	1,050	2,200	2.10	196.1	1	100.0%	275.8	1	100.0%
Lennox, SD	2,030	6,000	2.96	400.0	2	78.4%	400.0	2	53.0%
Madison, SD	6,500	7,000	1.08	481.3	4	50.0%	1,151.3	1	100.0%
Parker, SD	1,000	1,200	1.20	198.3	1	100.0%	308.4	1	100.0%
Sioux Falls, SD	124,000	168,000	1.35	10,000.0	2	35.6%	10,000.0	2	22.3%
Tea, SD	1,800	5,400	3.00	386.5	1	100.0%	541.5	1	100.0%
Lincoln County RWS, SD	8,000	17,700	2.21	1,400.0	2	96.2%	1,400.0	2	77.0%
MCWC, SD ¹	15,000	21,000	1.40	1,251.7	4	50.0%	2,000.0	2	59.4%
South Lincoln RWS, SD	5,000	7,500	1.50	175.0	3	17.0%	250.0	2	18.6%
Luverne, MN	4,600	5,693	1.24	750.0	2	73.7%	750.0	2	52.8%
Worthington, MN	10,500	12,000	1.14	1,730.0	2	54.7%	1,730.0	2	48.0%
Rock County RWS, MN	3,000	4,000	1.33	210.0	3	25.0%	300.0	2	30.6%
Lincoln-Pipestone RWS, MN ¹	5,029	9,500	1.89	700.0	3	31.0%	1,000.0	2	34.6%
Boyden, IA	650	700	1.08	68.1	1	100.0%	100.0	2	88.5%
Hull, IA	1,724	3,000	1.74	256.7	1	100.0%	290.6	1	100.0%
Sheldon, IA	5,000	6,000	1.20	700.0	3	71.8%	1,000.0	2	88.0%
Sibley, IA	3,000	3,000	1.00	342.5	1	100.0%	491.2	1	100.0%
Sioux Center, IA	6,000	8,747	1.46	420.0	3	34.3%	600.0	2	41.8%
Clay Regional RWS, IA	6,875	20,500	2.98	1,000.0	2	49.0%	1,000.0	2	41.6%
Rural Water No. 1, IA	5,500	6,000	1.09	700.0	3	33.7%	1,000.0	2	46.5%
Rock Rapids, IA	4,253	5,252	1.23	210.0	3	23.9%	300.0	2	28.7%
TOTALS (or Averages)	223,398	324,094	1.45	22,082.4		43.3%	25,627.1		35.1%

Notes for Table 2.4-3 on previous page:

1. Lewis & Clark usage = system's water demand
2. Lewis & Clark usage = system's reserved capacity
3. Lewis & Clark usage = 70% of system's reserved capacity
4. Lewis & Clark usage = 50% system's water demand for average day demand and 70% to 100% of system's water demand for maximum month average day demand.

Table 2.4-4
Lewis & Clark Member Systems' Water Demand Summary

Condition	Projected LCRWS Demand	Total Water Demand (MGD)	Percent of Total Supply from LCRWS
Currently Reported Water Demands (2000)			
• Annual Average Day	19.6	36.7	53.4%
• Average Day for Maximum Month	23.1	52.6	43.9%
Projected Water Demands (2030)			
• Annual Average Day	22.1	51.0	43.3%
• Average Day for Maximum Month	25.6	73.1	35.1%

2.4.3. Service Connection Requirements

Member systems were requested to provide information regarding their requirements for connection to Lewis & Clark. Information requested in the survey questionnaire included:

- ? Location of point of delivery;
- ? Reserved capacity in Lewis & Clark;
- ? Pressure requirements and ground elevation at point of delivery; and
- ? Nature of the point of delivery (whether into a reservoir, water main or other facility).

These data are summarized in Table 2.4-5. This information is important for the proper sizing, routing, operating pressure and storage requirements of the Lewis & Clark transmission pipeline system. Also, along with information on the members' planned usage strategy, it aids in the evaluation of potential water blending issues (see Section 3.4.2.5). The actual connection requirements and details vary widely among the various users. It should be noted that the requirements for each member system should be re-evaluated during design because members continue to make changes in their water systems and the time of connection to many systems will occur in the next five to ten years.

Table 2.4-5
Lewis & Clark Member Systems' Service Connection Requirements

Member System	Reserved Capacity (MGD) ¹	Requirements at Point of Delivery			Description of Member's Facility at Point of Delivery (GSR = ground storage reservoir, WTP = water treatment plant)	ApproxLocation Point of Delivery ²		
		Pressure (psi)	Approx Ground Elev	HGL Elev		Sec	Twp	Range
Beresford, SD	0.80	53	1,515	1,638	8" water main	5	T95N	R50W
Centerville, SD	0.22	39	1,230	1,320	GSR at WTP	23	T96N	R52W
Harrisburg, SD	0.40	66	1,436	1,589	8" water line to new tower	36	T100N	R50W
Lennox, SD	0.40	63	1,332	1,477	8" well water line to WTP GSR	32	T99N	R51W
Madison, SD	1.50	21	1,655	1,704	WTP clearwell	8	T106N	R52W
Parker, SD	0.49	20	1,339	1,385	GSR at WTP	17	T99N	R53W
Sioux Falls, SD ³	10.00	20	1,420	1,466	New 30" spur line from LCRWS main	35	T102N	R50W
Tea, SD	1.00	56	1,486	1,615	8" water main	26	T100N	R51W
Lincoln County RWS, SD	1.40	68	1,537	1,695	New tower	21	T100N	R50W
MCWC, SD (1)	1.00	101	1,390	1,624	12" water main (east)	19	T101N	R48W
MCWC, SD (2)	1.00	109	1,514	1,765	8" water main (west)	19	T101N	R50W
South Lincoln RWS, SD	0.25	64	1,490	1,638	Tower	26	T100N	R52W
Luverne, MN	0.75	22	1,436	1,486	GSR at WTP	11	T102N	R45W
Worthington, MN	1.73	20	1,574	1,620	GSR at WTP	26	T102N	R40W
Rock County RWS, MN (1)	0.15	61	1,575	1,715	Water tower (Beaver Creek)	34	T102N	R46W
Rock County RWS, MN (2)	0.15	70	1,530	1,692	Water tower (Magnolia)	14	T102N	R44W
Lincoln-Pipestone RWS, MN	1.00	125	1,600	1,889	8" water main	21	T102N	R42W
Boyd, IA	0.10	55	1,420	1,547	New water tower	26	T97N	R44W
Hull, IA	0.30	49	1,427	1,540	Meter house @ RVRWS connection	35	T97N	R45W
Sheldon, IA	1.00	20	1,400	1,446	Clearwell at WTP	30	T97N	R42W
Sibley, IA	0.65	74	1,594	1,765	12" OCRWS line to WTP GSR	16	T99N	R41W
Sioux Center, IA	0.60	20	1,400	1,446	GSR at WTP	9	T95N	R45W
Clay Regional RWS, IA (1)	0.50	20	1,365	1,411	GSR at WTP (south)	13	T97N	R38W
Clay Regional RWS, IA (2) ⁴	0.50	20	1,525	1,571	GSR or 8" water main (north)	2	T99N	R36W
Rural Water No. 1, IA (1)	0.50	20	1,413	1,460	GSR at WTP (west)	21	T95N	R45W
Rural Water No. 1, IA (2)	0.50	36	1,414	1,496	8" Water Main (east)	35	T97N	R43W
Rock Rapids, IA ³	0.30	20	1,363	1,409	New 8" spur line	12	T100N	R47W

¹ Some systems have two points of delivery, the system demand listed below is split equally between the two points. In some locations (not all), the total reserved capacity can be delivered to either point.

² The final location of the point of delivery may vary. Several points of delivery are located on section lines (or even at the corner of four sections) and the final location may vary depending on the side of the road a connection is made.

³ The point of delivery shown above is where Lewis & Clark will connect to the member system's spur line. The member system has agreed to construct a pipeline to connect to Lewis & Clark. The blending point at Sioux Falls is its Water Purification Plant located at NW1/4NW1/4, Sec 9, T100N, R49W. The final blending point in Rock Rapids is a clearwell at its Water Treatment Plant located at SW1/4SW1/4, Sec 33, T100N, R45W.

⁴ The point of delivery shown above is where Lewis & Clark will connect to the member system's spur line. The member system will build a pump station near the reservoir to provide adequate pressure for its needs.