

# APPENDIX A-2

## QUESTIONNAIRE - LEWIS AND CLARK RWS FINAL ENGINEERING REPORT

WATER UTILITY NAME	
STREET ADDRESS OR PO BOX	
CITY, STATE, ZIP CODE	
NAME OF CONTACT PERSON	
TELEPHONE NUMBER	
FAX NUMBER	
E-MAIL ADDRESS (if available)	
DATE	

The following information is needed for the preparation of the Final Engineering Report for the Lewis and Clark Rural Water System. Several of the items needed can be attached to this questionnaire. Other items related to quantity of water, point of delivery, and water quality information can either be inserted at the appropriate locations in this form or attached in summary form. If you have any questions, please call David Odens, Dennis Odens, Gregg Jorgenson, Kristin Bisgard AT 605-692-6342

<b>CAPACITY REQUESTED ON LEWIS AND CLARK RURAL WATER SYSTEM AND DESCRIPTION OF POINT OF DELIVERY</b>	
Water Delivery Capacity Requested from the Lewis and Clark Rural Water System (Million gallons per day)	
Description of Location of Point(s) of Delivery of the Water	1
	2
Approximate Ground Elevation at point of delivery - (from USGS Quad Map)	1
	2
Pressure Required at point of Delivery or hydraulic grade line elevation at point of delivery	1
	2
Description of Existing Facility at point of delivery (i.e. ground storage, elevated tank, water main)	1
	2
Please attach map of proposed point of connection	

<b>BACKGROUND INFORMATION ON YOUR WATER SYSTEM</b>	
Present source or sources of water	1
(I.e. Name of aquifer(s) or surface water)	2
	3
Approximate percentage of water from each source	Source 1 - %
	Source 2 - %
	Source 3 - %
Water Treatment Process for each source	1
(I.e. - aerator, iron/manganese removal,	2
softening, other)	3
Disinfection Method used for each source	1
(I.e. - free chlorine, combined chlorine, other)	2
	3
Present Population Served by your utility (Rural water systems should include the population of towns they serve)	
Projected of population to be served in year 2030, (Rural water systems include population of towns they serve)	
Average Number of new services each year in past five years	
Total Annual Volume of Water pumped	
Total Annual Volume of Water sold	
Maximum Month - Water pumped	
Maximum Day - Water pumped	
<b>Please attach copies of the following items:</b>	
_____ Rate Card or Sheet or copy of Water Rate Ordinance currently in effect	
_____ Monthly by month summary of water sales in past 12 months	
_____ Recent Copy of Water Quality Data	
_____ Copy of Policy or Guidelines for Water Conservation and Emergency Water Use Restrictions	
_____ A list of Towns or subsequent systems served by your water utility	
_____ A copy of your annual operating budget	
_____ A summary of the number of customers by classification	
	Rural Residential - (if identified in your rate structure.)
	Rural Agricultural - (if identified in your rate structure.)
	Residential
	Commercial
	Industrial

**LEWIS AND CLARK RURAL WATER SYSTEM**  
**Project Use 2000**

Member System	Present (2000) Population Served	Projected 2030 Population	Lewis & Clark Reserved Capacity (1000 gpd)	Ratios		Peak Day Pumped (1000 gpd)	Calculated				Avg Day - Winter (1000 gpd)	Calculated Ratio Winter/Avg Day
				RC to Avg Day	RC to Peak Day		Avg Day for Max Month (1000 gpd)	Avg Day (1000 gpd)	Ratio Peak/Avg Day	Ratio Max/Avg Month		
Beresford, SD	2,000	3,000	800	3.03	1.29	619.4	410.4	264.4	2.34	1.55	211.5	0.80
Centerville, SD	887	702	220	1.59	0.88	250.0	155.1	138.7	1.80	1.12	110.9	0.80
Harrisburg, SD	1,050	2,200	400	4.27	2.42	165.6	131.6	93.6	1.77	1.41	74.9	0.80
Lennox, SD	2,030	6,000	400	2.32	0.98	407.0	255.2	172.7	2.36	1.48	160.0	0.93
Madison, SD	6,500	7,000	1,500	1.68	0.94	1,600.0	1,069.1	893.9	1.79	1.20	785.0	0.88
Parker, SD	1,000	1,200	490	2.97	1.47	334.3	257.0	165.2	2.02	1.56	110.0	0.67
Sioux Falls, SD	124,000	168,000	10,000	0.48	0.24	41,300.0	33,106.8	20,737.0	1.99	1.60	16,580.0	0.80
Tea, SD	1,800	5,400	1,000	7.76	4.17	240.0	180.5	128.8	1.86	1.40	112.0	0.87
Lincoln County RWS, SD	8,000	17,700	1,400	2.13	1.08	1,300.0	821.9	657.5	1.98	1.25	475.6	0.72
MCWC, SD <sup>1</sup>	15,000	21,000	2,000	1.12	0.61	3,300.0	2,405.5	1,788.1	1.85	1.35	1,573.1	0.88
South Lincoln RWS, SD	5,000	7,500	250	0.37	0.20	1,250.0	895.9	684.9	1.83	1.31	547.9	0.80
Luverne, MN	4,600	5,693	750	0.91	0.59	1,274.4	1,147.8	822.8	1.55	1.40	658.2	0.80
Worthington, MN	10,500	12,000	1,730	0.62	0.44	3,953.0	3,150.8	2,768.6	1.43	1.14	2,478.2	0.90
Rock County RWS, MN	3,000	4,000	300	0.48	0.30	992.0	735.2	630.1	1.57	1.17	422.9	0.67
Lincoln-Pipestone RWS, MN <sup>1</sup>	5,029	9,500	1,000	0.84	0.62	1,625.0	1,530.3	1,195.0	1.36	1.28	868.7	0.73
Boyden, IA	650	700	100	1.58	0.67	150.0	105.0	63.2	2.37	1.66	57.4	0.91
Hull, IA	1,724	3,000	300	2.03	1.20	250.0	167.0	147.5	1.69	1.13	120.9	0.82
Sheldon, IA	5,000	6,000	1,000	1.23	0.69	1,447.0	946.5	812.8	1.78	1.16	669.1	0.82
Sibley, IA	3,000	3,000	650	1.90	1.07	605.0	491.2	342.5	1.77	1.43	272.6	0.80
Sioux Center, IA	6,000	8,747	600	0.71	0.41	1,454.0	984.7	839.9	1.73	1.17	777.9	0.93
Clay Regional RWS, IA	6,875	20,500	1,000	1.46	0.88	1,138.0	805.5	684.9	1.66	1.18	506.8	0.74
Rural Water No. 1, IA	5,500	6,000	1,000	0.52	0.45	2,200.0	1,972.6	1,906.8	1.15	1.03	1,159.2	0.61
Rock Rapids, IA	4,253	5,252	300	0.42	0.30	1,009.0	845.0	712.4	1.42	1.19	639.3	0.90
TOTALS (or Averages)	223,398	324,094	27,190	0.74	0.41	66,863.7	52,570.7	36,651.5	1.82	1.43	29,372.2	0.80

<sup>1</sup> Historic usage numbers are for the entire water system - LCRWS's supply will be targeted to a portion of the service area.

> 1.0  
0.5 to 0.99  
< 0.49

**LEWIS AND CLARK RURAL WATER SYSTEM**  
**Project Use 2000**

Member System	Present (2000) Population Served	Projected 2030 Population	Lewis & Clark Reserved Capacity (1000 gpd)	2000 Projected LCRWS							
				Average Day	Ratio LCRWS Used to RC	% of Avg Day Demand	Avg Day flow for Maximum Month	Ratio LCRWS Used to RC	% of Max Day Demand	Peak Day Demand	RC as % of Peak Day Demand
Beresford, SD	2,000	3,000	800	264.4	0.33	100.0%	410.4	0.51	100.0%	619.4	1.29
Centerville, SD	887	702	220	138.7	0.63	100.0%	155.1	0.71	100.0%	250.0	0.88
Harrisburg, SD	1,050	2,200	400	93.6	0.23	100.0%	131.6	0.33	100.0%	165.6	2.42
Lennox, SD	2,030	6,000	400	172.7	0.43	100.0%	255.2	0.64	100.0%	407.0	0.98
Madison, SD	6,500	7,000	1,500	446.9	0.30	50.0%	748.3	0.50	70.0%	1,600.0	0.94
Parker, SD	1,000	1,200	490	165.2	0.34	100.0%	257.0	0.52	100.0%	334.3	1.47
Sioux Falls, SD	124,000	168,000	10,000	10,000.0	1.00	48.2%	10,000.0	1.00	30.2%	41,300.0	0.24
Tea, SD	1,800	5,400	1,000	128.8	0.13	100.0%	180.5	0.18	100.0%	240.0	4.17
Lincoln County RWS, SD	8,000	17,700	1,400	657.5	0.47	100.0%	821.9	0.59	100.0%	1,300.0	1.08
MCWC, SD <sup>1</sup>	15,000	21,000	2,000	894.1	0.45	50.0%	1,683.8	0.84	70.0%	3,300.0	0.61
South Lincoln RWS, SD	5,000	7,500	250	175.0	0.70	25.6%	250.0	1.00	27.9%	1,250.0	0.20
Luverne, MN	4,600	5,693	750	750.0	1.00	91.2%	750.0	1.00	65.3%	1,274.4	0.59
Worthington, MN	10,500	12,000	1,730	1,730.0	1.00	62.5%	1,730.0	1.00	54.9%	3,953.0	0.44
Rock County RWS, MN	3,000	4,000	300	210.0	0.70	33.3%	300.0	1.00	40.8%	992.0	0.30
Lincoln-Pipestone RWS, MN <sup>1</sup>	5,029	9,500	1,000	700.0	0.70	58.6%	1,000.0	1.00	65.3%	1,625.0	0.62
Boyden, IA	650	700	100	63.2	0.63	100.0%	100.0	1.00	95.3%	150.0	0.67
Hull, IA	1,724	3,000	300	147.5	0.49	100.0%	167.0	0.56	100.0%	250.0	1.20
Sheldon, IA	5,000	6,000	1,000	700.0	0.70	86.1%	946.5	0.95	100.0%	1,447.0	0.69
Sibley, IA	3,000	3,000	650	342.5	0.53	100.0%	491.2	0.76	100.0%	605.0	1.07
Sioux Center, IA	6,000	8,747	600	420.0	0.70	50.0%	600.0	1.00	60.9%	1,454.0	0.41
Clay Regional RWS, IA	6,875	20,500	1,000	479.5	0.48	70.0%	805.5	0.81	100.0%	1,138.0	0.88
Rural Water No. 1, IA	5,500	6,000	1,000	700.0	0.70	36.7%	1,000.0	1.00	50.7%	2,200.0	0.45
Rock Rapids, IA	4,253	5,252	300	210.0	0.70	29.5%	300.0	1.00	35.5%	1,009.0	0.30
TOTALS (or Averages)	223,398	324,094	27,190	19,589.6		53.4%	23,084.2		43.9%	66,863.7	0.41

<sup>1</sup> Historic usage numbers are for the entire water system - LCRWS's :

	LCRWS Use = Demand	
	LCRWS Use = RC	
> 1.0	LCRWS Use = 0.7 RC	LCRWS RC > System's Demand
0.5 to 0.99	LCRWS Use = 0.7 RC	LCRWS RC < System's Demand
< 0.49	LCRWS Use = 0.5 Demand (avg) 0.7 & 1.0 (max)	

**LEWIS AND CLARK RURAL WATER SYSTEM**  
**Project Use 2030**

Member System	Present (2000) Population Served	Projected 2030 Population	Ratio 2000/2030	Lewis & Clark Reserved Capacity (1000 gpd)	Ratios		2030 Peak Day Pumped (1000 gpd)	Calculated			
					RC to Avg Day	RC to Peak Day		Avg Day for Max Month (1000 gpd)	Avg Day (1000 gpd)	Ratio Peak/Avg Day	Ratio Max/Avg Month
Beresford, SD	2,000	3,000	1.50	800	2.02	1.29	929.1	615.6	396.5	2.34	1.55
Centerville, SD	887	702	0.79	220	2.00	0.88	197.9	122.8	109.8	1.80	1.12
Harrisburg, SD	1,050	2,200	2.10	400	2.04	2.42	347.0	275.8	196.1	1.77	1.41
Lennox, SD	2,030	6,000	2.96	400	0.78	0.98	1,203.0	754.4	510.4	2.36	1.48
Madison, SD	6,500	7,000	1.08	1,500	1.56	0.94	1,723.1	1,151.3	962.6	1.79	1.20
Parker, SD	1,000	1,200	1.20	490	2.47	1.47	401.2	308.4	198.3	2.02	1.56
Sioux Falls, SD	124,000	168,000	1.35	10,000	0.36	0.24	55,954.8	44,854.4	28,095.3	1.99	1.60
Tea, SD	1,800	5,400	3.00	1,000	2.59	4.17	720.0	541.5	386.5	1.86	1.40
Lincoln County RWS,	8,000	17,700	2.21	1,400	0.96	1.08	2,876.3	1,818.5	1,454.8	1.98	1.25
MCWC, SD <sup>1</sup>	15,000	21,000	1.40	2,000	0.80	0.61	4,620.0	3,367.6	2,503.4	1.85	1.35
South Lincoln RWS, S	5,000	7,500	1.50	250	0.24	0.20	1,875.0	1,343.8	1,027.4	1.83	1.31
Luverne, MN	4,600	5,693	1.24	750	0.74	0.59	1,577.2	1,420.5	1,018.2	1.55	1.40
Worthington, MN	10,500	12,000	1.14	1,730	0.55	0.44	4,517.7	3,601.0	3,164.1	1.43	1.14
Rock County RWS, M	3,000	4,000	1.33	300	0.36	0.30	1,322.7	980.2	840.2	1.57	1.17
Lincoln-Pipestone RW	5,029	9,500	1.89	1,000	0.44	0.62	3,069.7	2,890.8	2,257.4	1.36	1.28
Boyden, IA	650	700	1.08	100	1.47	0.67	161.5	113.1	68.1	2.37	1.66
Hull, IA	1,724	3,000	1.74	300	1.17	1.20	435.0	290.6	256.7	1.69	1.13
Sheldon, IA	5,000	6,000	1.20	1,000	1.03	0.69	1,736.4	1,135.8	975.3	1.78	1.16
Sibley, IA	3,000	3,000	1.00	650	1.90	1.07	605.0	491.2	342.5	1.77	1.43
Sioux Center, IA	6,000	8,747	1.46	600	0.49	0.41	2,119.7	1,435.6	1,224.4	1.73	1.17
Clay Regional RWS, I	6,875	20,500	2.98	1,000	0.49	0.88	3,393.3	2,401.8	2,042.3	1.66	1.18
Rural Water No. 1, IA	5,500	6,000	1.09	1,000	0.48	0.45	2,400.0	2,151.9	2,080.2	1.15	1.03
Rock Rapids, IA	4,253	5,252	1.23	300	0.34	0.30	1,246.0	1,043.5	879.8	1.42	1.19
TOTALS (or Averages)	223,398	324,094	1.45	27,190	0.53	0.41	93,431.5	73,110.1	50,990.4	1.83	1.43

<sup>1</sup> Historic usage numbers are for the entire water system - LCRWS's supply will be targeted to a portion of the service area.

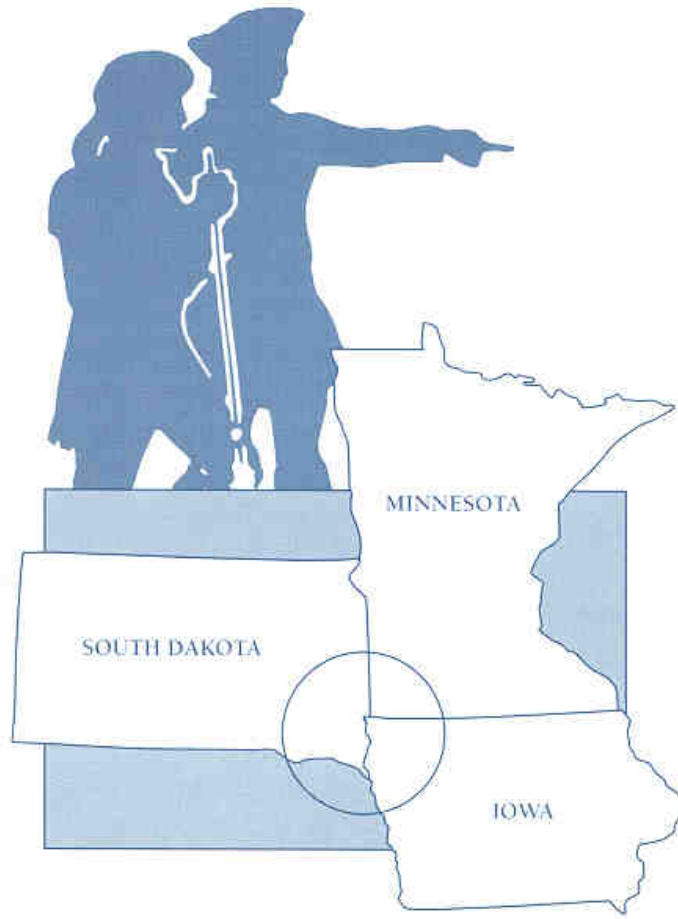
> 1.0  
0.5 to 0.99  
< 0.49

**LEWIS AND CLARK RURAL WATER SYSTEM**  
**Project Use 2030**

Member System	Present (2000) Population Served	Projected 2030 Population	Ratio 2000/2030	Lewis & Clark Reserved Capacity (1000 gpd)	2030 Projected LCRWS							
					Average Day	Ratio LCRWS Used to RC	% of Avg Day Demand	Avg Day flow for Maximum Month	Ratio LCRWS Used to RC	% of Max Day Demand	Peak Day Demand	RC as % of Peak Day Demand
Beresford, SD	2,000	3,000	1.50	800	396.5	0.50	100.0%	615.6	0.77	100.0%	929.1	0.86
Centerville, SD	887	702	0.79	220	109.8	0.50	100.0%	122.8	0.56	100.0%	197.9	1.11
Harrisburg, SD	1,050	2,200	2.10	400	196.1	0.49	100.0%	275.8	0.69	100.0%	347.0	1.15
Lennox, SD	2,030	6,000	2.96	400	400.0	1.00	78.4%	400.0	1.00	53.0%	1,203.0	0.33
Madison, SD	6,500	7,000	1.08	1,500	481.3	0.32	50.0%	1,151.3	0.77	100.0%	1,723.1	0.87
Parker, SD	1,000	1,200	1.20	490	198.3	0.40	100.0%	308.4	0.63	100.0%	401.2	1.22
Sioux Falls, SD	124,000	168,000	1.35	10,000	10,000.0	1.00	35.6%	10,000.0	1.00	22.3%	55,954.8	0.18
Tea, SD	1,800	5,400	3.00	1,000	386.5	0.39	100.0%	541.5	0.54	100.0%	720.0	1.39
Lincoln County RWS,	8,000	17,700	2.21	1,400	1,400.0	1.00	96.2%	1,400.0	1.00	77.0%	2,876.3	0.49
MCWC, SD <sup>1</sup>	15,000	21,000	1.40	2,000	1,251.7	0.63	50.0%	2,000.0	1.00	59.4%	4,620.0	0.43
South Lincoln RWS, S	5,000	7,500	1.50	250	175.0	0.70	17.0%	250.0	1.00	18.6%	1,875.0	0.13
Luverne, MN	4,600	5,693	1.24	750	750.0	1.00	73.7%	750.0	1.00	52.8%	1,577.2	0.48
Worthington, MN	10,500	12,000	1.14	1,730	1,730.0	1.00	54.7%	1,730.0	1.00	48.0%	4,517.7	0.38
Rock County RWS, M	3,000	4,000	1.33	300	210.0	0.70	25.0%	300.0	1.00	30.6%	1,322.7	0.23
Lincoln-Pipestone RW	5,029	9,500	1.89	1,000	700.0	0.70	31.0%	1,000.0	1.00	34.6%	3,069.7	0.33
Boyden, IA	650	700	1.08	100	68.1	0.68	100.0%	100.0	1.00	88.5%	161.5	0.62
Hull, IA	1,724	3,000	1.74	300	256.7	0.86	100.0%	290.6	0.97	100.0%	435.0	0.69
Sheldon, IA	5,000	6,000	1.20	1,000	700.0	0.70	71.8%	1,000.0	1.00	88.0%	1,736.4	0.58
Sibley, IA	3,000	3,000	1.00	650	342.5	0.53	100.0%	491.2	0.76	100.0%	605.0	1.07
Sioux Center, IA	6,000	8,747	1.46	600	420.0	0.70	34.3%	600.0	1.00	41.8%	2,119.7	0.28
Clay Regional RWS, I	6,875	20,500	2.98	1,000	1,000.0	1.00	49.0%	1,000.0	1.00	41.6%	3,393.3	0.29
Rural Water No. 1, IA	5,500	6,000	1.09	1,000	700.0	0.70	33.7%	1,000.0	1.00	46.5%	2,400.0	0.42
Rock Rapids, IA	4,253	5,252	1.23	300	210.0	0.70	23.9%	300.0	1.00	28.7%	1,246.0	0.24
TOTALS (or Averages)	223,398	324,094	1.45	27,190	22,082.4		43.3%	25,627.1		35.1%	93,431.5	0.29

<sup>1</sup> Historic usage numbers are for the entire water system - LCRWS's sup

	LCRWS Use = Demand
	LCRWS Use = RC
> 1.0	LCRWS Use = 0.7 RC      LCRWS RC > System's Demand
0.5 to 0.99	LCRWS Use = 0.7 RC      LCRWS RC < System's Demand
< 0.49	LCRWS Use = 0.5 Demand (avg) 0.7 & 1.0 (max)



# APPENDIX A-3



			h <sub>f</sub> = 4.5 ft/1000 ft			h <sub>f</sub> = 4.0 ft/1000 ft			h <sub>f</sub> = 3.5 ft/1000 ft			h <sub>f</sub> = 3.0 ft/1000 ft			h <sub>f</sub> = 2.5 ft/1000 ft			h <sub>f</sub> = 2.25 ft/1000 ft		
d (in)	ID (in)	A (ft <sup>2</sup> )	Q (cfs)	Q (gpm)	V (fps)	Q (cfs)	Q (gpm)	V (fps)	Q (cfs)	Q (gpm)	V (fps)	Q (cfs)	Q (gpm)	V (fps)	Q (cfs)	Q (gpm)	V (fps)	Q (cfs)	Q (gpm)	V (fps)
6	5.914	0.191	0.51	229	2.67	0.48	215	2.51	0.44	200	2.33	0.41	184	2.14	0.37	166	1.94	0.35	157	1.84
8	7.758	0.328	1.04	467	3.17	0.98	438	2.97	0.91	407	2.77	0.84	375	2.54	0.76	340	2.31	0.72	321	2.18
10	9.514	0.494	1.78	798	3.60	1.67	749	3.38	1.55	697	3.14	1.43	641	2.89	1.29	581	2.62	1.22	549	2.48
12	11.314	0.698	2.80	1,259	4.02	2.63	1,181	3.77	2.45	1,099	3.51	2.25	1,011	3.23	2.04	916	2.92	1.93	866	2.76
14	12.668	0.875	3.78	1,695	4.31	3.54	1,590	4.05	3.30	1,480	3.77	3.03	1,361	3.47	2.75	1,234	3.14	2.60	1,165	2.97
16	14.476	1.143	5.36	2,407	4.69	5.03	2,258	4.40	4.68	2,101	4.10	4.31	1,933	3.77	3.90	1,752	3.42	3.69	1,655	3.23
18	16.286	1.447	7.31	3,281	5.05	6.86	3,079	4.74	6.38	2,864	4.41	5.87	2,636	4.06	5.32	2,389	3.68	5.03	2,256	3.48
20	18.096	1.786	9.64	4,329	5.40	9.05	4,062	5.07	8.42	3,779	4.71	7.75	3,477	4.34	7.02	3,151	3.93	6.63	2,977	3.71
24	22.875	2.854	17.86	8,017	6.26	16.76	7,523	5.87	15.59	6,999	5.46	14.35	6,440	5.03	13.00	5,837	4.56	12.28	5,514	4.30
30	28.875	4.547	32.96	14,792	7.25	30.93	13,881	6.80	28.78	12,915	6.33	26.48	11,884	5.82	23.99	10,769	5.28	22.67	10,174	4.98
36	34.750	6.586	53.64	24,075	8.14	50.33	22,591	7.64	46.83	21,019	7.11	43.09	19,341	6.54	39.05	17,527	5.93	36.89	16,558	5.60
42	40.500	8.946	80.23	36,012	8.97	75.29	33,792	8.42	70.05	31,442	7.83	64.46	28,930	7.20	58.41	26,218	6.53	55.18	24,768	6.17
48	47.000	12.048	118.67	53,265	9.85	111.36	49,982	9.24	103.61	46,505	8.60	95.34	42,791	7.91	86.40	38,779	7.17	81.62	36,634	6.77
54	53.000	15.321	162.77	73,056	10.62	152.74	68,554	9.97	142.11	63,785	9.28	130.76	58,691	8.54	118.50	53,188	7.73	111.95	50,246	7.31

			h <sub>f</sub> = 1.7 ft/1000 ft			h <sub>f</sub> = 1.25 ft/1000 ft			h <sub>f</sub> = 1.0 ft/1000 ft			h <sub>f</sub> = 0.9 ft/1000 ft			h <sub>f</sub> = 0.75 ft/1000 ft			h <sub>f</sub> = 0.65 ft/1000 ft		
d (in)	ID (in)	A (ft <sup>2</sup> )	Q (cfs)	Q (gpm)	V (fps)	Q (cfs)	Q (gpm)	V (fps)	Q (cfs)	Q (gpm)	V (fps)	Q (cfs)	Q (gpm)	V (fps)	Q (cfs)	Q (gpm)	V (fps)	Q (cfs)	Q (gpm)	V (fps)
6	5.914	0.191	0.30	135	1.58	0.26	114	1.34	0.23	101	1.19	0.21	96	1.12	0.19	87	1.01	0.18	80	0.94
8	7.758	0.328	0.61	276	1.87	0.52	234	1.59	0.46	207	1.41	0.44	196	1.33	0.40	177	1.20	0.37	164	1.11
10	9.514	0.494	1.05	472	2.13	0.89	400	1.80	0.79	354	1.60	0.75	335	1.51	0.68	303	1.37	0.63	281	1.27
12	11.314	0.698	1.66	744	2.37	1.40	630	2.01	1.24	559	1.78	1.18	528	1.68	1.07	478	1.53	0.99	443	1.41
14	12.668	0.875	2.23	1,002	2.55	1.89	849	2.16	1.68	752	1.91	1.58	711	1.81	1.43	644	1.64	1.33	596	1.52
16	14.476	1.143	3.17	1,423	2.77	2.69	1,205	2.35	2.38	1,068	2.08	2.25	1,009	1.97	2.04	915	1.78	1.89	847	1.65
18	16.286	1.447	4.32	1,940	2.99	3.66	1,643	2.53	3.24	1,456	2.24	3.07	1,376	2.12	2.78	1,247	1.92	2.57	1,154	1.78
20	18.096	1.786	5.70	2,559	3.19	4.83	2,167	2.70	4.28	1,921	2.40	4.04	1,815	2.26	3.66	1,645	2.05	3.39	1,523	1.90
24	22.875	2.854	10.56	4,739	3.70	8.94	4,014	3.13	7.93	3,559	2.78	7.49	3,362	2.62	6.79	3,047	2.38	6.28	2,820	2.20
30	28.875	4.547	19.48	8,745	4.28	16.50	7,407	3.63	14.63	6,566	3.22	13.82	6,203	3.04	12.52	5,621	2.75	11.59	5,203	2.55
36	34.750	6.586	31.71	14,232	4.81	26.86	12,055	4.08	23.81	10,686	3.61	22.49	10,095	3.42	20.38	9,149	3.09	18.87	8,468	2.86
42	40.500	8.946	47.43	21,289	5.30	40.18	18,032	4.49	35.61	15,985	3.98	33.64	15,101	3.76	30.49	13,685	3.41	28.22	12,667	3.15
48	47.000	12.048	70.16	31,488	5.82	59.42	26,671	4.93	52.68	23,643	4.37	49.76	22,336	4.13	45.10	20,241	3.74	41.74	18,736	3.46
54	53.000	15.321	96.22	43,188	6.28	81.50	36,581	5.32	72.25	32,428	4.72	68.25	30,635	4.46	61.85	27,762	4.04	57.26	25,698	3.74

General Criteria:

- Limit head loss to <4 feet per 1000 feet
- Limit velocity to <4 feet per second
- Limit flow to 80% of range before upsizing pipe

**All Railroads (unless abandoned)**

**Major Road Crossings - all State Highways - All County Roads in MN & IA, major county roads in SD**

**Major Drainages only**

Location	Line Size	River/Stream Crossing (Lot)	Name of River/Stream Crossing	Cased Road/RR Crossing (LF)	RR = 60', County = 60', Hwy & City = 75', Interstate = 240'
Raw Water Line	54	1	Vermillion Ditch	485	Hwy 50, 50 bypass, RR, Hwy 19, 2 CR (Timber, Bluff)
WTP to Beresford Jct	48	2	Vermillion River, Baptist Creek	300	5 CR (University Ave, 312 St, 306 St, 302 St, 300 St)
Beresford Jct to Beresford	24	0		375	468 Av, I-29, SW 13th St
Beresford to Sioux Ctr Jct	20	1	Big Sioux River	1615	SD: S 3rd St, 472 Ave, RR, 475 Av, Hwy 11, 480 Av, Hwy 46; IA: 3 Hwy (Cherry, 390 St, 75), RR (2 track), 4 paved CR (Coolige, Dogwood, Elwood, Garfield), 8 grav CR (Chestnut, Dipper, Eagle, Fig, Fir, Goldfinch, Grant, Harrison), 2 dirt CR (Cleveland, Dove)
Sioux Ctr Jct to Sioux Ctr	12	0		225	3 City (Paved - 390th St (7th St), 9th St, Harrison Av)
Sioux Ctr to RWS#1-1	10	0		120	2 CR (grav - 410 Av, 420 Av)
Sioux Ctr Jct to Hull Jct	18	0		300	5 CR (paved - 370 St, grav - 360, 350, 340 St, dirt-330 St)
Hull Jct to Boydon	18	0		615	Hwy 18, 9 CR (paved - Hickory; grav - Hayes, Ibex, Indian, Ironwood, Jackson, Jefferson, Johnson; dirt - Jay)
Boydon to RWS#1-2	16	0		300	6 CR (paved - Kennedy, Lily; grav - Kingbird, Kiwi, Larch, Log; dirt - none); RR is abandoned
RWS#1-2 to Sheldon	16	0		420	RR, Hwy 60 (Future 4-lane, try to install pipes during Hwy const), 2 CR (paved - McKinley; grav - Marsh)
Sheldon to CRWS-2	12	3	Floyd River, Ocheyedon River, Stoney Creek	1020	17 CR (paved - Monroe, Nest, Oak Hill, Pierce, 130 Av; grav - Nettle, Olive, Oriole, Polk Redwing, Redwood, Willow, Yew, 110, 120, 140, 150 Av)
	14	1	Waterman Creek (?)	675	Hwy 59 (Roosevelt Av), 10 CR (paved - Sorrel, Tyler, Vine, White; grav - Silver, Starling, Taft, Tanager, Van Buren, Warbler); RR is abandoned
CRWS-1 to CRWS-2	12	1	Little Sioux River	1635	Hwy 71 (divided 4-lane), Hwy 9; 22 CR (paved - 300st, 280s, 260s, 220s, 190s, 260av; grav - 160a, 170a, 180a, 190a, 200a, 210a, 230a, 240a, 250s, 240s, 235s, 210s, 185s, 173s, 160s; dirt - 290s)
Beresford Jct to Centerville	48	0		75	Hwy 46; RR is abandoned
Centerville to Lennox	48	0		390	Hwy 18 (285s), Hwy 44 (280s), 3 CR (294s, 288s, 282s); RR
Lennox to Parker Jct	48	0		120	2 CR (278th St, 276 St); RR is abandoned
Parker Jct to Tea	48	0		135	1 CR (469 Ave); 1 Hwy (273rd St is from I-29); RR is abandoned
Tea to Sioux Falls Jct	48	0		75	271st Street
Parker Jct to SLRWS	10	0		75	Hwy 17 (466 Av)
SLRWS to Parker	10	2	EF Vermillion R, WF Vermillion R,	270	Hwy 19, RR, 2 CR (cross 275 St and 461 ave (Turner Co. 41))
Sioux Falls Jct to Tanks	48	0		300	W57th (268 St), W41st, 2 CR (469 Av; 269 St); RR is abandoned
Tanks to MCWC-1	36	0		75	W22nd
MCWC-1 to Sioux Falls (Benson)	36	1	Skunk Creek	295	W12th, W Madison, W Maple; RR and spur
10 MG Turnout to Madison Booster (14")	14	2	Skunk Crk, Willow Crk	675	RR, Hwy 38, I-90, 5 CR (258s, 256s, 254s, 250s, 248s)
Booster to Madison	14	2	Buffalo Crk, Brandt Lake	390	RR, Hwy 34, Hwy 149, 3 CR (246av, 241av, 458 st)
Sioux Falls Jct to LCRWS	30	0		375	I-29, Louise Ave (472 av), 1 CR (471 Av)
LCRWS to Harrisburg	24	0		225	473rd Av (Western), 474 Av (Hwy 115 - Minnesota), 475th Av (Cliff)
Harrisburg to Schindler Jct	24	0		285	RR, 476 Av (SE Ave), 477 Ave (Sycamore), Hwy 11 (Shindler Rd), 2nd RR at Hwy 11 is abandoned
Schindler Jct to Rock Rapids Jct	24	1	Big Sioux River	1080	Hwy 9, 14 CR (SD paved - 480a, 269s (private), Riverside Pl; IA paved - Adams, K-16/100s/268s, Chestnut (K-16), Dogwood (K-30), IA grav - Arthur, Ashely, Birch, Bucannen, Cherry, Coolige, Dipper); RR
Rock Rapids Jct to RCRWS-1	24	0		375	Hwy 270, 5 CR (gravel - 4 unnamed, Rock County 15); RR is abandoned
RCRWS-1 to tank	24	0		300	5 CR (gravel - 5 unnamed)
Tank to Luverne	20	1	Rock River	795	I-90, Hwy 75, RR, 7 CR (paved - Rock County 11, 16; gravel - 5 unnamed)
Luverne to RCRWS-2	20	0		315	Hwy 3, RR, 3 CR (paved - Rock County 9, gravel - 2 unnamed)

All Railroads (unless abandoned)

Major Road Crossings - all State Highways - All County Roads in MN & IA, major county roads in SD  
Major Drainages only

Location	Line Size	River/Stream Crossing (Lot)	Name of River/Stream Crossing	Cased Road/RR Crossing (LF)	RR = 60'; County = 60'; Hwy & City = 75'; Interstate = 240'
RCRWS-2 to LPRWS	20	1	Kanaranzi Crk	1030	Hwy 91 (100' - Maine Ave in Adrian); 2 RR; 5 City (Magnolia (60') - Garfield, Broadway, Washington, Adrian (75') - Indiana, Oklahoma; 11 CR (paved - Birkett, Durfee/250th (Nobles 28), Edwards Av (Nobles 35), grav - 1 unnamed, Cheney, Cory (2), Dillman, dirt - Abbot, Albers, Cory)
LPRWS to Sibley Jct	16	0		450	2 RR; 5 CR (paved (75') - Jones Av (Nobles 13), Thompson Av (Rushmore); grav - Erikson, Fellows (Nobles 60), Ivers (West Av))
Sibley Jct to Worthington	16	0		950	2 RR, 8 CR (paved - McCall (Nobles 9), Crailsheim/Palm Ave; grav - King, Knauf, Lais, Monroe, Nystrom, Oliver); City - Flower Lane, Lake St (75'), Intervet Parking Lot (200')

Individual Entity Service Lines:					
Bersford	10	0		0	
Sioux Center	10	0		0	
RWS#1-1	10	0		0	CR x-ing included in main line
Hull	8	0		120	2 CR (grav - 330 St; paved - Hickory Av)
Boydton	6	0		0	
RWS#1-2	10	0		120	Hwy 18 Intersection; RR is abandoned
Sheldon	12	1	Floyd River	0	
CRWS - 1	12	0		60	1 CR (grav - 300 St)
CRWS - 2	12	0		0	CR x-ing included in main line
Centerville	6	0		195	Hwy 17, 2 CR (464 Ave, 295 Street), no RR
Lennox	8	0		135	Hwy 17, RR
SLRWS	8	0		60	1 CR (272 St)
Parker	10	0		0	Included in main line
Tea	12	0		120	469th Ave (wide intersection)
MCWC-1	12	0		75	W12th (265 St) (depends on which side of road connection to MCWC is on)
Sioux Falls	36	1	Willow Crk	0	
Madison	12	0		0	Included in main line
LCRWS	14	0		0	
Harrisburg	8	0		120	2 CR (271 St paved, 272 st gravel)
MCWA-2	12	0		750	268 - E57th, 267 - E41st; 266 - E26th; 265 - Hwy 42, RR; 264 - Madison; 479 Ave - Sixmile Road (? - not sure which side of street we'll make connection, assume we cross)
Rock Rapids Jct to Rock Rapids	8	0		570	Hwy 75, Harding Ave, 7 CR (paved - Fig; gravel - 110s, 120s, 130s, 140s, Eagle, Fir)
RCRWS-1	6	0		0	
Luverne	10	1	Rock River	100	Main Street (Hwy 14)
RCRWS-2	6	0		120	RR + spur(?)
LPRWS	12	0		0	
Worthington	16	0		0	Included in main line
Sibley Jct to Sibley	10	1	Little Rock River	1410	RR, Hwy 60 (Future 4-lane, try to install pipes during Hwy const), Hwy 9 (150s); Hwy 100s(IA)/340s(MN); 16 CR (MN paved - 310s, MN grav - 270s, 290s, 320s, 330s; IA paved - Olive av (L36), Oriole av, 150s (county 22), IA grav - 110s, 120s, 130s, 140s, 160s, Pierce av, Polk av)

Sums (Test)		23		21095	
Less Rock Rapids Service		23		20525	

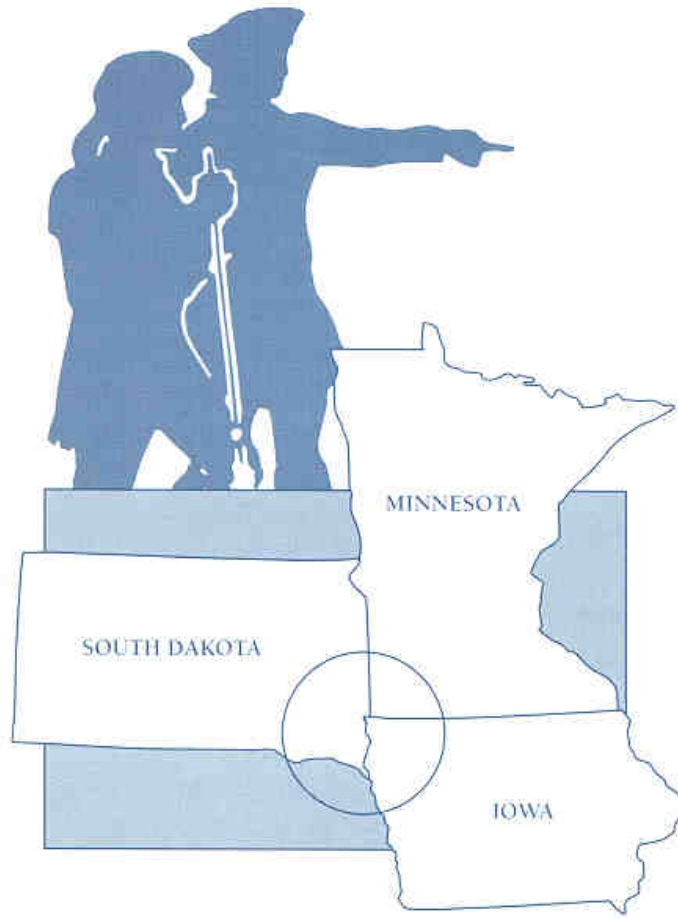
Summary (by size)					
	6	0		315	
	8	0		435	
	10	4		2095	
	12	5		3885	
	14	5		1740	
	16	0		2120	
	18	0		915	
	20	3		3755	
	24	1		2640	
	30	0		375	
	36	2		370	
	42	0		0	
	48	2		1395	
	54	1		485	
Sums (Test)		23		20525	Doesn't include Rock Rapids Service Line

Lewis and Clark RWS - Control and Telemetry - Distribution  
 List of Sites and Equipment summary at each site

Member System	State	Reserved Capacity (MGD)	Pipe Size (in)	Process equipment and Instrumentation									
				Pumps	Surge Control V.	Isolation Valves	Pressure Transm	Flowmeter	pH	Chlorine Residual	Level Transm.	Power Monitor	Intrusion Alarm
<b>Service Connections</b>													
Centerville	SD	0.22	6"	0	1	2	1	1	1	1	1	1	1
Lennox	SD	0.40	8"	2	2	2	1	1	1	1	1	1	1
South Lincoln RWS	SD	0.25	8"	2	2	6	2	1	1	1	1	1	1
Parker	SD	0.49	10"	0	1	2	1	1	1	1	1	1	1
Tea	SD	1.00	12"	0	1	2	1	1	1	1	1	1	1
MCWC #1 (west of Sioux Falls)	SD	1.00	12"	2	2	6	2	1	1	1	1	1	1
Sioux Falls	SD	10.00	30"	0	1	2	1	1	1	1	1	1	1
Madison	SD	1.50	14"	0	1	2	1	1	1	1	1	1	1
Beresford	SD	0.80	10"	0	1	2	1	1	1	1	1	1	1
Sioux Center	IA	0.60	10"	0	1	2	1	1	1	1	1	1	1
Rural Water No. 1 - #1	IA	0.50	10"	0	1	2	1	1	1	1	1	1	1
Hull	IA	0.30	8"	0	1	2	1	1	1	1	1	1	1
Boyden	IA	0.10	6"	0	1	2	1	1	1	1	1	1	1
Rural Water No. 1 - #2	IA	0.50	10"	0	1	2	1	1	1	1	1	1	1
Sheldon	IA	1.00	12"	0	1	2	1	1	1	1	1	1	1
Clay RWS #1	IA	0.50	12"	0	1	2	1	1	1	1	1	1	1
Clay RWS #2	IA	0.50	12"	2	2	6	2	1	1	1	1	1	1
Lincoln County RWS	SD	1.40	14"	0	1	2	1	1	1	1	1	1	1
Harrisburg	SD	0.40	8"	0	1	2	1	1	1	1	1	1	1
MCWC #2 (east of Sioux Falls)	SD	1.00	12"	2	2	6	2	1	1	1	1	1	1
Rock Rapids	IA	0.30	8"	0	1	2	1	1	1	1	1	1	1
Rock County RWS #1	MN	0.15	6"	2	2	6	2	1	1	1	1	1	1
Luverne	MN	0.75	10"	0	1	2	1	1	1	1	1	1	1
Rock County RWS #2	MN	0.15	6"	0	1	2	1	1	1	1	1	1	1
Lincoln-Pipestone RWS	MN	1.00	12"	2	2	6	2	1	1	1	1	1	1
Worthington	MN	1.73	16"	0	1	2	1	1	1	1	1	1	1
Sibley	IA	0.65	10"	2	2	6	2	1	1	1	1	1	1
<b>Total - Service Connections</b>		<b>27.19</b>		<b>16</b>	<b>35</b>	<b>82</b>	<b>34</b>	<b>27</b>	<b>27</b>	<b>27</b>	<b>27</b>	<b>27</b>	<b>27</b>

Lewis and Clark RWS - Control and Telemetry - Distribution  
 List of Sites and Equipment summary at each site

Member System	State	Reserved Capacity (MGD)	Pipe Size (in)	Process equipment and Instrumentation									
				Pumps	Surge Control V.	Isolation Valves	Pressure Transm	Flowmeter	pH	Chlorine Residual	Level Transm.	Power Monitor	Intrusion Alarm
<b>Mainline Pump Stations</b>													
Main Pump Station at WTP	SD	28.60	48"	7	7	18	2	1				1	1
West of Lebanon	IA	4.20	20"	3	3	8	2	1				1	1
North of Hull	IA	2.73	18"	3	3	8	2	1				1	1
North of Spencer	IA	1.05	12"	2	2	6	2	1				1	1
South of Sioux Falls	SD	7.91	30"	4	4	10	2	1				1	1
Luverne	MN	3.71	20"	3	3	8	2	1				1	1
West of Sioux Falls	SD	1.58	14"	3	3	8	2	1				1	1
<b>Service Line Booster Pump Stations</b>													
South Lincoln RWS	SD	0.26	8"	2	2	6	2	1				1	1
Tea	SD	1.05	12"	2	2	6	2	1				1	1
MCWC #1 (west)	SD	1.05	12"	2	2	6	2	1				1	1
Sioux Falls	SD	10.50	30"	5	5	12	2	1				1	1
Hull	IA	0.32	8"	2	2	6	2	1				1	1
Rock County RWS #1 (west)	MN	0.32	6"	2	2	6	2	1				1	1
Lincoln-Pipestone RWS	MN	1.05	12"	2	2	6	2	1				1	1
Sibley	IA	0.68	10"	2	2	6	2	1				1	1
<b>Total - Pump Stations</b>				<b>44</b>	<b>44</b>	<b>120</b>	<b>30</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>15</b>	<b>15</b>
<b>Mainline Reservoirs</b>													
Reservoir - Sioux Falls	SD	15.00	MG			6						1	1
Reservoir - East of Madison	SD	1.50	MG			3						1	1
Reservoir - West of Luverne	MN	4.00	MG			3						1	1
Reservoir - West of Worthington	MN	2.00	MG			3						1	1
Reservoir - South of Hull	IA	4.00	MG			3						1	1
Reservoir - North of Sanborn	IA	2.00	MG			3						1	1
Reservoir - SE of Spirit Lake	IA	1.00	MG			3						1	1
<b>Total Reservoirs</b>		<b>29.50</b>		<b>0</b>	<b>0</b>	<b>24</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>7</b>
<b>Grand Totals</b>				<b>60</b>	<b>79</b>	<b>226</b>	<b>64</b>	<b>42</b>	<b>27</b>	<b>27</b>	<b>34</b>	<b>49</b>	<b>42</b>



# APPENDIX A-4

**SOUTH DAKOTA  
FUTURE USE WATER PERMIT NO. 5832-3**

Date of first receipt of application July 8, 1994.

The Water Management Board approved Water Permit Application No. 5832-3 on July 6, 1995 for Lewis & Clark Rural Water System, 300 N Dakota Ave, Suite 206, Sioux Falls SD 57102 subject to the following limitations, conditions and qualifications:

1. Water Permit No. 5832-3 appropriates 27,000 acre-feet of water annually from 3 radial collection wells, (Missouri:Elk Point) 80 feet deep, to be constructed adjacent to the Missouri River. The areas to be reserved for future water use are the diversion points along the Missouri River between points at the North section line of Section 15 to the approximate southwest corner Section 23; all in T32N-R4E (Nebraska survey). This would include portions of Section 1 and Section 2-T91N-R52W and Section 35 and Section 36-T92N-R52W (South Dakota survey). The area is know locally as Mulberry Point. The water is to be reserved for the purpose of providing future water supplies for the Lewis & Clark Rural Water System to be located in Lincoln, Clay, Union, Turner, McCook, Lake and Minnehaha counties in South Dakota; Rock and Nobeles counties in Minnesota and Lyon, Sioux, Osceola, O'Brien, Clay and Dickinson counties in Iowa. Municipalities to be served by the proposed system include: Beresford, Centerville, Harrisburg, Lennox, Madison, Parker, Sioux Falls and Tea in South Dakota; Boyden, Hull, Sheldon, Sibley, Sioux Center in Iowa and Laverne and Worthington in Minnesota. This permit does not authorize construction of works or application of water to beneficial use.
2. The water appropriated shall be used for the purpose of supplying water for the rural water system and may not exceed the amount of water needed for beneficial use for rural water system use.
3. The water is to be used during the following described annual period: January 1 - December 31.
4. The date from which applicant may claim right is July 8, 1994.
5. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

**QUALIFICATIONS**


1. Approval of Permit No. 5832-3 reserves 27,000 acre-feet of water annually.
2. That Future Use Permit No. 5832-3 is approved with the stipulation that the Permit to appropriate water is subject to review by the Water Management Board as to accomplishment thereunder upon expiration of seven (7) years.
3. At such time as definite plans are made to construct works and put the water reserved by this Permit to beneficial use, specific application for all or any part of the reserved water must be submitted prior to construction of facilities pursuant to SDCL 46-5-38.1.

(continued)

Water Permit No. 5832-3  
Lewis & Clark Rural Water System  
Page 2

- This permit is approved for groundwater from the Missouri Elk Point Aquifer. Radial collection well will be approximately 80 feet deep.

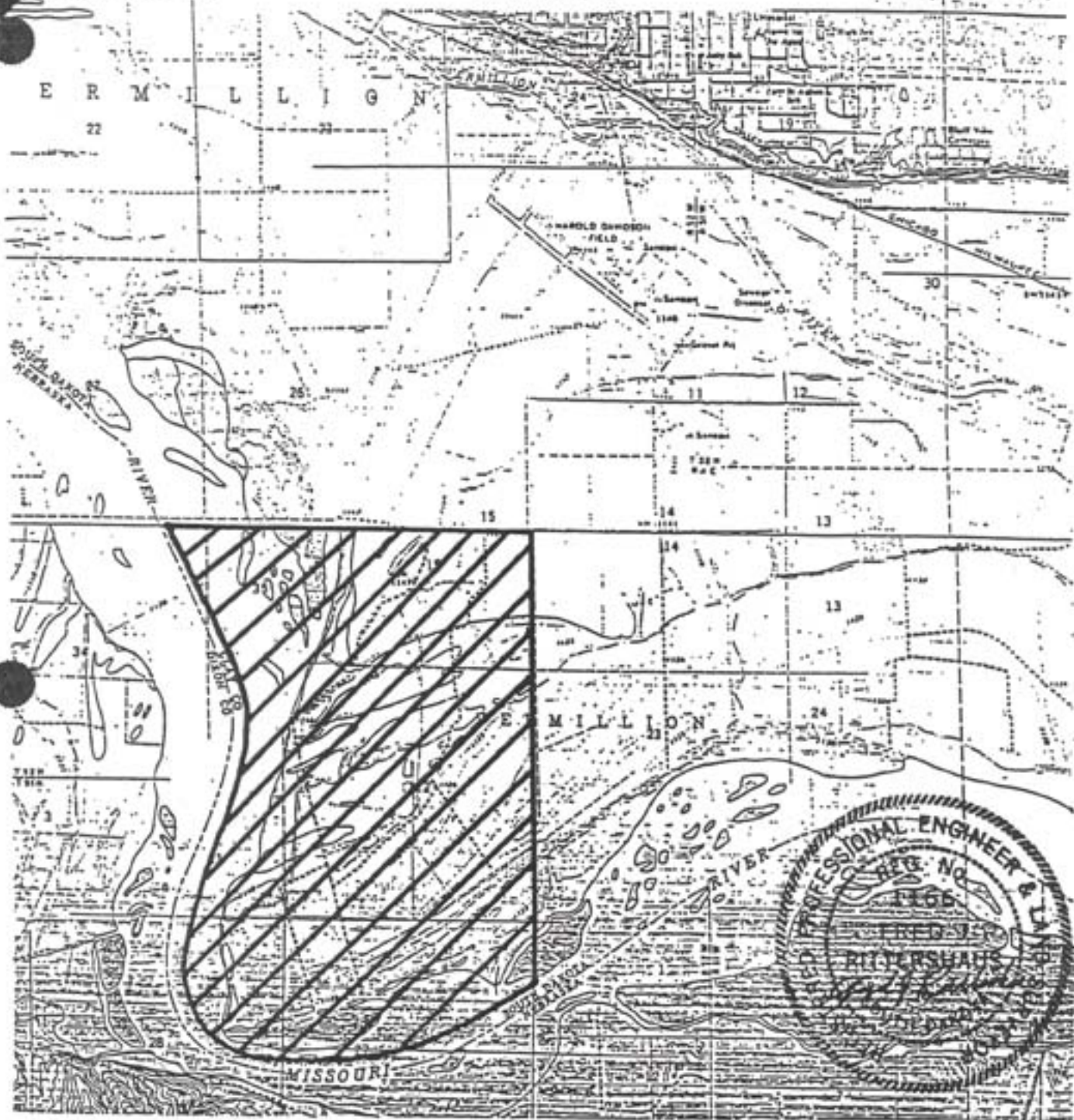
**WATER MANAGEMENT BOARD**

By:   
John Hatch, Chief Engineer  
Water Rights Program  
Department of Environment and Natural Resources

SEP 5 1995  
date



TO COMPANY WATER RIGHT APPLICATION  
PARTS OF T91N-R52W AND T92N-R52W  
CLAY COUNTY

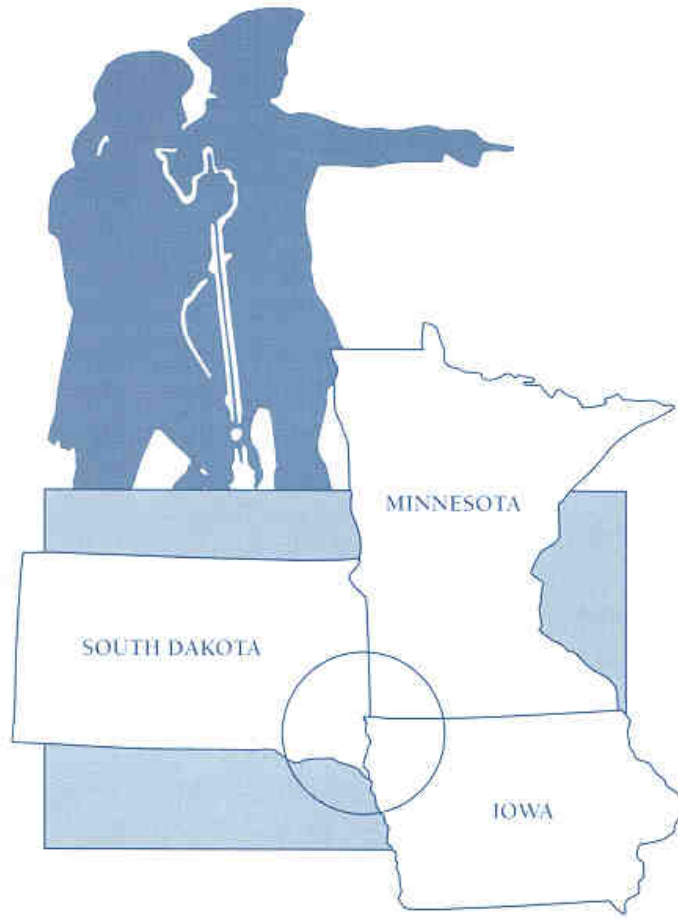


SURVEYOR'S CERTIFICATION

I, Fred Rittershaus, a Registered Land Surveyor, in the State of South Dakota, do hereby certify that at the request of the Lewis and Clark Rural Water System, Sioux Falls, South Dakota, I did prepare the map on this sheet from existing information and that I did survey and locate the sites for which application for and appropriate water rights to withdraw from underground, Missouri River waters for municipal and rural supply purposes is made, and that this map is a true representation thereof.

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 23rd day of June, 1994.

*Fred Rittershaus*



# APPENDIX A-5

## VE-8 and VE-7 Revisions Incorporated into FER

These lengths were measured from Quad maps (rounded up to the nearest 100 feet)

VE-7 Changes  
 VE-8 Changes  
 VE-7 and -8 Changes at same location

Pipeline Segment	54	48	42	36	30	24	20	18	16	14	12	10	8	6
Site D Collector & Main						3,700								
Site C Collector						1,400								
Site B Collector			1,700											
Main Line C to B					2,100									
Main Line B to Site A		3,400												
Site A to Timber Road	15,600													
Site J Collector						7,200								
Site U Collector					2,200									
Site W Collector							4,500							
Sup'tal Line J/U to Timber Rd				13,300										
Main Line Timber Road to WTP	20,600													
Well Laterals:														
Site B								2,000						
Site C									1,000					
Site D									1,000					
Site J									1,000					
Site U										1,700				
Site W										1,400				

Collector line from Site A and laterals are not included in the estimate

Included in estimate for the wells

Totals for Raw Water Lines	36,200	3,400	1,700	13,300	4,300	12,300	4,500	2,000	3,000	3,100	-	-	-	-
75,700														

### TREATED WATER PIPELINES

WTP to Beresford Jct		112,500												
Beresford Jct to Centerville		16,000												
Centerville to Lennox		90,600												
Lennox to Parker Jct		15,900												
Parker Jct to Tea		10,900												
Tea to Sioux Falls Jct		27,500												
Beresford Jct to Bersford						21,100								
Bersford to Sioux Center Jct							181,500							
Sioux Center Jct to Hull								26,600						
Hull to Boydon								52,600						
Boydon to RWS#1-2									31,500					
RWS#1-2 to Sheldon									10,700					
Sheldon to Sanborn Tank											49,500			
Sanborn Tank to Dia Change										55,900				
Dia Change to CRWS-1											53,100			
CRWS-1 to CRWS-2											141,500			
Sioux Center Jct to Sioux Center											10,800			
Sioux Ctr to RWS#1-1												10,800		
Parker Jct to SLRWS													26,200	
SLRWS to Parker													45,400	
Sioux Falls Jct to Reservoirs		12,100												
Reservoirs to MCWC-1				13,700										
MCWC-1 to Sioux Falls (Benson)				16,000										
Sioux Falls (Benson) to Madison										224,000				

## VE-8 and VE-7 Revisions Incorporated into FER

These lengths were measured from Quad maps (rounded up to the nearest 100 feet)

VE-7 Changes  
 VE-8 Changes  
 VE-7 and -8 Changes at same location

Pipeline Segment	54	48	42	36	30	24	20	18	16	14	12	10	8	6
Sioux Falls Jct to LCRWS					18,600									
LCRWS to Harrisburg						13,200								
Harrisburg to Schindler Jct						15,600								
Schindler Jct to Rock Rapids Jct						95,000								
Rock Rapids Jct to RCRWS-1						32,000								
RCRWS-1 to Tank						19,700								
Tank to Rock River (Dia Chg)						27,000								
Rock River (Dia Chg) to Luverne							15,700							
Luverne to RCRWS-2							30,900							
RCRWS-2 to LPRWS							56,400							
LPRWS to Sibley Jct								26,900						
Sibley Jct to Worthington									50,200					
<u>Individual Entity Service Lines:</u>														
Beresford												200		
Sioux Center												1,600		
RWS#1-1												3,900		
Hull													8,000	
Boydton														2,700
RWS#1-2												5,500		
Sheldon											4,600			
CRWS-1												300		
Centerville														26,500
Lennox													8,000	
SLRWS													19,300	
Tea											14,200			
MCWC-1											10,600			
10 MG Tank (Sioux Falls)					6,500									
LCRWS										300				
Harrisburg													13,800	
Schindler Jct to MCWC-2											41,300			

RCRWS-1														2,200
Luverne												3,800		
RCRWS-2														600
LPRWS											100			
Sibley Jct to Sibley												102,000		

Total Treated Water	-	285,500	-	29,700	25,100	223,600	284,500	106,100	92,400	280,200	325,700	199,700	49,100	32,000
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Total Raw Water	36,200	3,400	1,700	13,300	4,300	12,300	4,500	2,000	3,000	3,100	-	-	-	-
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Totals (All Pipelines)	36,200	288,900	1,700	43,000	29,400	235,900	289,000	108,100	95,400	283,300	325,700	199,700	49,100	32,000
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All Pipe (feet)	2,017,400			RWL	83,800			TWL	1,933,600					
(miles)	382.08				15.87				366.21					

## VE-8 and VE-7 Revisions Incorporated into FER

These lengths were measured from Quad maps (rounded up to the nearest 100 feet)

VE-7 Changes  
 VE-8 Changes  
 VE-7 and -8 Changes at same location

Pipeline Segment	54	48	42	36	30	24	20	18	16	14	12	10	8	6
Rock Rapids Jct to Rock Rapids	not included in LCRWS totals as RR will build their own service line from the LCRWS main line													65,600
Sioux Falls Service Line from 10 MG reservoir to WPP via Benson Road to 60th north of airport					36,100									

Pipe Summary	Sum	Segment - measured	
		Feet	Miles
Treated Water Pipelines	54	-	-
	48	285,500	54.07
	42	285,500	-
	36	315,200	5.63
	30	340,300	4.75
	24	563,900	42.35
	20	848,400	53.88
	18	954,500	20.09
	16	1,046,900	17.50
	14	1,327,100	53.07
	12	1,652,800	61.69
	10	1,852,500	37.82
	8	1,901,600	9.30
	6	1,933,600	6.06
	4	1,933,600	-
		1,933,600	366.21

Sum-Round	Segment - Adjusted		
	Add 5%	Rounded	Miles
-	-	-	-
299,800	299,775	299,800	56.78
299,800	-	-	-
331,000	31,185	31,200	5.91
357,400	26,355	26,400	5.00
592,200	234,780	234,800	44.47
890,900	298,725	298,700	56.57
1,002,300	111,405	111,400	21.10
1,099,300	97,020	97,000	18.37
1,393,500	294,210	294,200	55.72
1,735,500	341,985	342,000	64.77
1,945,200	209,685	209,700	39.72
1,996,800	51,555	51,600	9.77
2,030,400	33,600	33,600	6.36
2,030,400	-	-	-
		2,030,400	384.55

Adjustment to add pipe length to account for routing around houses and to avoid certain obstructions  
 Assume 5% additional length

**Treated Pipeline Modeling Results  
Assume Reservoirs Full**

Node Output								Pipe Output										
Node ID	Type	X	Y	Elevation	Demand	Grade	Pressure	Link ID	Type	Node 1	Node 2	Diameter	Length	Roughness	Flow	Velocity	Headloss	Headloss/1000
22	Junction	1048696.9	552388.125	1220	0	1752.354	230.669	21	Pipe	22	447	47	397	136.3	28.601	3.673	0.344	0.867
23	Junction	1068298.44	557936.631	1145	0	1732.444	254.54	22	Pipe	23	24	47	6399.945	136.3	28.601	3.673	4.874	0.762
24	Junction	1074698.3	557886.632	1202	0	1727.571	227.73	24	Pipe	24	26	47	38145.379	136.3	28.601	3.673	29.216	0.766
26	Junction	1074685.06	596032	1229	0	1698.355	203.372	32	Pipe	31	34	47	15884.071	136.3	23.555	3.025	8.528	0.537
31	Junction	1074632.95	637053.393	1300	0	1667.117	159.072	33	Pipe	34	35	5.914	15849.433	136.3	0.231	1.876	39.206	2.474
34	Junction	1074354.29	652934.977	1284	0	1658.589	162.309	34	Pipe	35	36	5.914	9480.377	136.3	0.231	1.876	23.392	2.467
35	Junction	1058505	652858.953	1227	0	1619.383	170.019	35	Pipe	36	37	5.914	1081.525	136.3	0.231	1.876	2.721	2.516
36	Junction	1049032.32	653242.24	1228.5	0	1595.99	159.234	36	Pipe	34	434	47	89862.102	136.3	23.324	2.995	46.943	0.522
37	Junction	1049018.63	654323.66	1230	0.231	1593.27	157.405	40	Pipe	47	377	7.758	1891.75	136.3	0.42	1.979	3.776	1.996
45	Junction	1068137.49	741330.819	1332	0.42	1596.18	114.469	44	Pipe	46	437	7.758	19.5	136.3	0.42	1.979	0.093	4.789
46	Junction	1073816.56	742967.011	1352	0	1611.514	112.447	45	Pipe	46	435	47	20.378	136.3	22.904	2.941	0.051	2.48
47	Junction	1069015.8	742952.307	1337	0	1601.892	114.778	47	Pipe	48	50	47	606.775	136.3	22.904	2.941	0.387	0.637
48	Junction	1073755.86	747262.872	1363	0	1609.265	106.707	48	Pipe	50	51	47	10975.556	136.3	22.904	2.941	5.539	0.505
50	Junction	1073750.41	747869.621	1365	0	1608.879	105.673	49	Pipe	51	52	9.514	26081.998	136.3	0.777	2.437	60.135	2.306
51	Junction	1073653.16	758844.756	1390	0	1603.34	92.44	50	Pipe	52	53	7.758	8287.389	136.3	0.262	1.234	6.895	0.832
52	Junction	1047571.72	758664.578	1372	0	1543.205	74.183	51	Pipe	53	54	7.758	2106.155	136.3	0.262	1.234	1.741	0.827
53	Junction	1047434.38	766950.793	1440	0	1536.31	41.731	52	Pipe	55	56	7.758	8707	136.3	0.262	1.234	7.223	0.83
54	Junction	1047400.05	769056.682	1453	0	1534.569	35.344	53	Pipe	52	57	9.514	2598.163	136.3	0.515	1.615	2.813	1.083
55	Junction	1047388.6	769457.258	1453	0	1646.01	83.631	54	Pipe	57	58	9.514	14455.951	136.3	0.515	1.615	15.518	1.073
56	Junction	1047286.93	777747.727	1490	0.262	1638.787	64.47	55	Pipe	58	59	9.514	11031.488	136.3	0.515	1.615	11.842	1.073
57	Junction	1044973.7	758641.688	1427	0	1540.392	49.133	56	Pipe	59	60	9.514	2680.635	136.3	0.515	1.615	2.878	1.074
58	Junction	1030518.6	758481.457	1350.5	0	1524.873	75.556	57	Pipe	60	61	9.514	4681.224	136.3	0.515	1.615	5.025	1.073
59	Junction	1019487.88	758353.838	1309	0	1513.031	88.407	58	Pipe	61	62	9.514	6661.544	136.3	0.515	1.615	7.151	1.073
60	Junction	1016807.43	758321.226	1331	0	1510.154	77.627	59	Pipe	62	63	9.514	1045.889	136.3	0.515	1.615	1.159	1.108
61	Junction	1012126.41	758275.446	1310	0	1505.129	84.549	60	Pipe	63	64	9.514	2060.134	136.3	0.515	1.615	2.288	1.111
62	Junction	1005465.39	758195.331	1329	0	1497.978	73.218	61	Pipe	51	65	47	10622.606	136.3	22.127	2.841	5.254	0.495
63	Junction	1005477.98	757149.496	1348	0	1496.818	64.483	62	Pipe	65	66	47	10430.922	136.3	21.077	2.707	4.604	0.441
64	Junction	1003446.93	757494.391	1348	0.515	1494.53	63.491	63	Pipe	66	67	47	5985.425	136.3	21.077	2.707	2.59	0.433
65	Junction	1073593.25	769467.191	1445	0	1598.085	66.332	64	Pipe	65	481	11.314	6078.762	136.3	1.05	2.329	10.568	1.739
66	Junction	1073533.33	779897.907	1465	0	1593.481	55.671	65	Pipe	68	70	11.314	1451.375	136.3	1.05	2.329	2.589	1.784
67	Junction	1073509.37	785188.156	1518	0	1590.892	31.584	66	Pipe	67	72	47	10442.922	136.3	21.077	2.707	4.586	0.439
68	Junction	1084026.09	773308.506	1468	0	1618.076	65.028	68	Pipe	72	73	47	3153.178	136.3	13.164	1.69	0.606	0.192
70	Junction	1084026.09	774759.852	1472	1.05	1615.486	62.173	69	Pipe	73	75	47	5962.287	136.3	13.164	1.69	1.079	0.181
71	Junction	1084015.77	785246.537	1520	0	1793.253	118.401	70	Pipe	75	76	47	1122.247	136.3	13.164	1.69	0.221	0.197
72	Junction	1083952.07	785248.068	1514	0	1586.306	31.33	71	Pipe	76	416	47	2112.024	136.3	13.164	1.69	0.4	0.189
73	Junction	1083979.17	788401.102	1518	0	1585.699	29.334	72	Pipe	79	414	11.314	2733.2	136.3	1.05	2.329	4.869	1.782
75	Junction	1083927.43	794363.195	1525	0	1584.621	25.834	73	Pipe	77	417	34.75	3489.065	136.3	13.126	3.083	2.734	0.783
76	Junction	1082889.11	794789.171	1524	0	1584.4	26.171	74	Pipe	79	419	34.75	1400	136.3	12.076	2.837	1.015	0.725
77	Junction	1082716.75	802650.182	1503	0	1579.492	33.144	75	Pipe	412	81	12.668	14507.081	136.3	1.576	2.784	30.542	2.105
78	Junction	1072158.9	810102.93	1514	1.05	1765.837	109.121	76	Pipe	81	82	12.668	13141.23	136.3	1.576	2.784	27.667	2.105
79	Junction	1082670.73	809593.66	1485	0	1574.051	38.586	77	Pipe	82	83	12.668	39539.129	136.3	1.576	2.784	83.244	2.105
80	Junction	1082576.92	826246.399	1483	0	2200.47	310.88	78	Pipe	83	343	12.668	1424.125	136.3	1.576	2.784	3.094	2.173
81	Junction	1082402.55	852518.403	1553	0	2145.085	256.55	79	Pipe	85	342	12.668	1438	136.3	1.576	2.784	3.027	2.105
82	Junction	1082314.7	865659.304	1600	0	2117.418	224.197	80	Pipe	86	87	12.668	5335.877	136.3	1.576	2.784	11.234	2.105
83	Junction	1082060.39	905197.604	1606	0	2034.174	185.528	83	Pipe	89	90	12.668	3941.428	136.3	1.576	2.784	8.298	2.105
85	Junction	1079281.47	905197.604	1569	0	2028.227	198.983	84	Pipe	90	91	12.668	851.47	136.3	1.576	2.784	1.841	2.162

**Treated Pipeline Modeling Results  
Assume Reservoirs Full**

Node Output								Pipe Output										
Node ID	Type	X	Y	Elevation	Demand	Grade	Pressure	Link ID	Type	Node 1	Node 2	Diameter	Length	Roughness	Flow	Velocity	Headloss	Headloss/1000
86	Junction	1077163.76	905192.98	1555	0	2023.768	203.117	85	Pipe	91	92	12.668	5370.438	136.3	1.576	2.784	11.355	2.114
87	Junction	1071827.87	905188.356	1641	0	2012.534	160.986	86	Pipe	92	93	12.668	1053	136.3	1.576	2.784	2.313	2.197
88	Junction	1055806.33	905174.485	1628	0	1978.803	152.003	87	Pipe	93	94	12.668	9477.25	136.3	1.576	2.784	19.953	2.105
89	Junction	1055769.97	916328.299	1671	0	1955.224	123.154	88	Pipe	94	95	12.668	11162.49	136.3	1.576	2.784	23.597	2.114
90	Junction	1055739.88	920269.632	1640	0	1946.926	132.991	89	Pipe	95	96	12.668	5370.521	136.3	1.576	2.784	11.307	2.105
91	Junction	1056191.18	920991.708	1645	0	1945.085	130.027	90	Pipe	96	97	12.668	1519.45	136.3	1.576	2.784	3.199	2.105
92	Junction	1056191.18	926362.15	1614	0	1933.73	138.539	91	Pipe	97	453	12.668	5585.996	136.3	1.576	2.784	11.76	2.105
93	Junction	1055138.15	926362.15	1623.5	0	1931.417	133.421	92	Pipe	98	99	12.668	5237	136.3	1.576	2.784	11.122	2.124
94	Junction	1045660.9	926362.15	1633	0	1911.464	120.659	93	Pipe	99	100	12.668	9601.082	136.3	1.576	2.784	20.214	2.105
95	Junction	1045570.64	937524.246	1616	0	1887.867	117.8	94	Pipe	100	331	12.668	3780.374	136.3	0.001	0.001	0	0
96	Junction	1045540.56	942894.688	1610	0	1876.56	115.5	95	Pipe	100	465	12.668	683.5	136.3	1.575	2.783	1.474	2.157
97	Junction	1045525.51	944414.057	1620	0	1873.361	109.781	96	Pipe	101	374	12.668	952.217	136.3	1.575	2.783	2.111	2.217
98	Junction	1045331.98	973874.208	1709	0	1811.336	44.342	99	Pipe	31	106	22.875	9743.147	136.3	5.047	2.735	10.162	1.043
99	Junction	1040095.03	973874.208	1700	0	1800.214	43.423	100	Pipe	106	107	22.875	6511.643	136.3	5.047	2.735	6.652	1.022
100	Junction	1030493.95	973854.812	1734	0	1780	19.932	101	Pipe	107	108	22.875	4672.126	136.3	5.047	2.735	4.773	1.022
101	Junction	1013852.09	973854.812	1650	0	1744.353	40.883	102	Pipe	108	500	9.514	116.363	136.3	0.84	2.635	0.412	3.536
102	Junction	1009235.81	974940.994	1655	1.575	1728.849	31.999	123	Pipe	129	130	11.314	10598.299	136.3	1.155	2.561	22.009	2.077
106	Junction	1084375.96	637106.92	1377	0	1656.954	121.304	124	Pipe	130	131	9.514	1371.281	136.3	0.63	1.976	2.308	1.683
107	Junction	1090887.52	637150.149	1430	0	1650.302	95.457	126	Pipe	130	133	9.514	3100.615	136.3	0.525	1.647	3.474	1.121
108	Junction	1095559.57	637153.529	1515	0	1645.529	56.558	127	Pipe	133	134	9.514	4795.447	136.3	0.525	1.647	5.334	1.112
109	Junction	1095550.39	637364.706	1515	0.84	1644.763	56.226	128	Pipe	134	135	9.514	2747.782	136.3	0.525	1.647	3.057	1.112
129	Junction	1263722.53	649527.979	1410	0	1600.286	82.451	129	Pipe	137	136	9.514	512.563	136.3	0.525	1.647	0.65	1.268
130	Junction	1263884.43	638930.968	1409	0	1578.277	73.348	130	Pipe	135	137	9.514	3633.419	136.3	0.525	1.647	4.08	1.123
131	Junction	1262514.87	638861.066	1400	0.63	1575.969	76.248	137	Pipe	129	144	16.286	18994.623	136.3	3.052	3.262	40.286	2.121
133	Junction	1263935.91	635830.781	1363	0	1574.803	91.774	148	Pipe	145	158	16.286	4703.476	136.3	2.733	2.922	8.074	1.717
134	Junction	1264017.63	631036	1424	0	1569.468	63.031	151	Pipe	158	491	16.286	1773.174	136.3	2.733	2.922	3.044	1.717
135	Junction	1264057	628288.526	1387	0	1566.412	77.739	152	Pipe	160	476	16.286	5154.82	136.3	2.733	2.922	8.849	1.717
136	Junction	1260424.97	627720.735	1413	0.525	1561.682	64.424	153	Pipe	161	162	5.914	4020	136.3	0.105	0.853	2.335	0.581
137	Junction	1260424	628233.342	1400	0	1562.332	70.338	154	Pipe	161	163	14.476	23425.834	136.3	2.628	3.556	66.499	2.839
144	Junction	1263115.95	668512.956	1493	0	1560	29.031	158	Pipe	163	355	14.476	2840.99	136.3	2.628	3.556	8.168	2.875
145	Junction	1263920.34	686525.264	1430	0	1524.098	40.773	159	Pipe	167	168	9.514	5290.622	136.3	0.525	1.647	6.003	1.135
158	Junction	1268623.29	686600.463	1382	0	1516.024	58.073	160	Pipe	167	175	14.476	10616.271	136.3	2.103	2.846	19.986	1.883
160	Junction	1299400	687100	1451	0	1807.08	154.29	167	Pipe	175	458	11.314	5330.54	136.3	1.053	2.336	9.279	1.741
161	Junction	1304638.32	687193.466	1427	0	1798.086	160.792	168	Pipe	176	177	11.314	20119.416	136.3	1.053	2.336	34.926	1.736
162	Junction	1304700	683600	1420	0.105	1795.752	162.813	169	Pipe	177	178	11.314	8554.084	136.3	1.053	2.336	14.849	1.736
163	Junction	1328061.99	687515.198	1473	0	1731.587	112.046	170	Pipe	178	179	11.314	9717.121	136.3	1.053	2.336	16.868	1.736
167	Junction	1336144.34	687608.071	1430	0	1708.565	120.702	171	Pipe	175	169	11.314	2585.48	136.3	1.05	2.329	4.614	1.785
168	Junction	1336348.36	682321.37	1414	0.525	1702.562	125.034	172	Pipe	169	170	11.314	2153.625	136.3	1.05	2.329	3.877	1.8
169	Junction	1346839.12	685188.071	1393	0	1683.964	126.075	175	Pipe	179	327	12.668	464.643	136.3	0.003	0.005	0	0
170	Junction	1344685.54	685188.071	1403	1.05	1680.087	120.062	176	Pipe	179	184	12.668	135.001	136.3	1.051	1.857	0.166	1.232
175	Junction	1346759.42	687772.342	1388	0	1688.579	130.241	177	Pipe	184	398	12.668	4234.128	136.3	1.051	1.857	4.208	0.994
176	Junction	1357635.41	688033.809	1436	0	1669.643	101.237	178	Pipe	186	187	12.668	26030.645	136.3	1.051	1.857	25.872	0.994
177	Junction	1377752	688368.957	1495	0	1634.717	60.539	182	Pipe	187	191	11.314	10517.069	136.3	1.051	2.33	18.174	1.728
178	Junction	1386304.87	688512.774	1466	0	1619.868	66.671	183	Pipe	191	192	11.314	5236.216	136.3	1.051	2.33	9.124	1.743
179	Junction	1396020.84	688660.394	1568	0	1603	15.165	184	Pipe	192	399	11.314	8554.591	136.3	1.051	2.33	14.859	1.737
184	Junction	1396155.91	688659.943	1555	0	1602.834	20.726	185	Pipe	193	194	11.314	1073.143	136.3	0	0	0	0

**Treated Pipeline Modeling Results  
Assume Reservoirs Full**

Node Output								Pipe Output										
Node ID	Type	X	Y	Elevation	Demand	Grade	Pressure	Link ID	Type	Node 1	Node 2	Diameter	Length	Roughness	Flow	Velocity	Headloss	Headloss/1000
186	Junction	1426103.6	688890.161	1476	0	1573.067	42.059	186	Pipe	193	195	11.314	7975.252	136.3	1.051	2.33	13.832	1.734
187	Junction	1452134	689008.801	1468	0	1547.195	34.315	187	Pipe	195	493	11.314	3094.108	136.3	1.051	2.33	5.347	1.728
191	Junction	1462648.22	689252.305	1419	0	1529.021	47.672	188	Pipe	196	474	11.314	1000.81	136.3	1.051	2.33	1.767	1.766
192	Junction	1462551	694487.628	1430	0	1519.896	38.952	189	Pipe	197	198	11.314	5300.781	136.3	1.051	2.33	9.236	1.742
193	Junction	1498978.94	695132.913	1363	0	1456.861	40.67	190	Pipe	198	409	11.314	1168.26	136.3	1.051	2.33	2.095	1.793
194	Junction	1498918.06	696204.328	1363	0	1456.861	40.67	193	Pipe	200	484	11.314	291.132	136.3	1.051	2.33	0.541	1.858
195	Junction	1506950.71	695365.006	1324	0	1443.028	51.575	194	Pipe	203	405	11.314	249.925	136.3	1.05	2.329	0.507	2.029
196	Junction	1546827.36	696545.232	1358	0	1701.993	149.052	197	Pipe	71	207	28.875	5279.365	136.3	7.913	2.691	4.193	0.794
197	Junction	1545597.67	738318.245	1461	0	1629.7	73.098	198	Pipe	207	206	28.875	946.635	136.3	7.913	2.691	0.715	0.756
198	Junction	1550893.87	738537.398	1490	0	1620.464	56.53	199	Pipe	208	209	28.875	11670.672	136.3	7.913	2.691	8.821	0.756
200	Junction	1550443.38	759478.692	1520	0	1584.19	27.814	202	Pipe	209	213	28.875	806.625	136.3	6.443	2.191	0.461	0.572
203	Junction	1555715.23	759636.97	1529	0	1575	19.932	203	Pipe	213	214	22.875	1825.324	136.3	6.443	3.491	2.932	1.606
206	Junction	1090241.01	785339.398	1520	0	1788.345	116.274	204	Pipe	214	215	22.875	5159	136.3	6.443	3.491	8.286	1.606
207	Junction	1089294.35	785334.935	1520	0	1789.061	116.584	205	Pipe	215	216	22.875	5246.152	136.3	6.443	3.491	8.426	1.606
208	Junction	1090777.47	785339.398	1526	0	1787.94	113.499	206	Pipe	216	480	7.758	736.299	136.3	0.42	1.979	1.514	2.056
209	Junction	1102448.16	785372.32	1537	0	1779.12	104.91	207	Pipe	217	218	7.758	800	136.3	0.42	1.979	1.701	2.126
212	Junction	1102448.86	785172.388	1537	1.47	1778.456	104.623	208	Pipe	216	219	22.875	15610.313	136.3	6.023	3.264	22.228	1.424
213	Junction	1103254.74	785372.32	1555	0	1778.658	96.911	209	Pipe	219	221	11.314	4769.654	136.3	1.05	2.329	8.385	1.758
214	Junction	1105080	785355.859	1489	0	1775.726	124.239	210	Pipe	221	222	11.314	4045.03	136.3	1.05	2.329	6.982	1.726
215	Junction	1110239	785355.859	1499	0	1767.441	116.315	211	Pipe	222	223	11.314	5616.108	136.3	1.05	2.329	9.694	1.726
216	Junction	1115485.09	785339	1466	0	1759.015	126.963	212	Pipe	223	224	11.314	5323.224	136.3	1.05	2.329	9.188	1.726
217	Junction	1115337.99	772539	1437	0	1733.542	128.491	214	Pipe	224	226	11.314	5538.627	136.3	1.05	2.329	9.56	1.726
218	Junction	1116138	772539	1436	0.42	1731.841	128.188	217	Pipe	226	229	11.314	2474.188	136.3	1.05	2.329	4.271	1.726
219	Junction	1131094.93	785471.568	1403	0	1736.787	144.63	218	Pipe	229	230	11.314	119.25	136.3	1.05	2.329	0.366	3.067
221	Junction	1130960.16	790239.322	1412.5	0	1728.403	136.881	232	Pipe	219	244	22.875	9284.635	136.3	4.973	2.695	9.298	1.001
222	Junction	1130842.23	794282.648	1426	0	1721.421	128.006	233	Pipe	244	245	22.875	1334.751	136.3	4.973	2.695	1.327	0.994
223	Junction	1130336.81	799875.914	1515	0	1711.727	85.242	234	Pipe	245	246	22.875	5395.143	136.3	4.973	2.695	5.454	1.011
224	Junction	1130281.46	805198.863	1464	0	1702.538	103.359	235	Pipe	246	247	22.875	1463.035	136.3	4.973	2.695	1.454	0.994
226	Junction	1135820.12	805193.995	1477	0	1692.978	93.583	236	Pipe	247	248	22.875	6097.975	136.3	4.973	2.695	6.164	1.011
229	Junction	1135820.12	807668.198	1497	0	1688.707	83.067	237	Pipe	248	249	22.875	3482.316	136.3	4.973	2.695	3.552	1.02
230	Junction	1135820.12	807787.466	1449	1.05	1688.341	103.707	238	Pipe	249	496	22.875	10404.33	136.3	4.973	2.695	10.389	0.999
244	Junction	1140379.47	785458.127	1399	0	1727.489	142.334	239	Pipe	443	444	22.875	6201.109	136.3	4.973	2.695	6.165	0.994
245	Junction	1141714.3	785456.884	1379	0	1726.162	150.425	240	Pipe	251	440	22.875	15380.406	136.3	4.973	2.695	15.291	0.994
246	Junction	1141812.38	790851.156	1405	0	1720.708	136.796	241	Pipe	252	264	22.875	4436.65	136.3	4.973	2.695	4.411	0.994
247	Junction	1141834.06	792314	1405	0	1719.253	136.166	242	Pipe	253	254	7.758	7075.792	136.3	0.315	1.484	8.229	1.163
248	Junction	1147844.62	791285.549	1262	0	1713.089	195.457	243	Pipe	254	256	7.758	8799.339	136.3	0.315	1.484	10.234	1.163
249	Junction	1147839.82	794767.903	1315	0	1709.537	170.953	245	Pipe	256	257	7.758	7022.209	136.3	0.315	1.484	8.198	1.167
251	Junction	1194158	795203	1512	0	1663.418	65.61	246	Pipe	257	258	7.758	7920.742	136.3	0.315	1.484	9.212	1.163
252	Junction	1210684	795303	1435	0	1646.988	91.854	247	Pipe	258	259	7.758	3960.99	136.3	0.315	1.484	4.607	1.163
253	Junction	1215985.62	792003.545	1468	0	1637.566	73.473	248	Pipe	259	260	7.758	3930.141	136.3	0.315	1.484	4.571	1.163
254	Junction	1216042.62	784928	1393	0	1629.336	102.405	249	Pipe	260	261	7.758	17834.17	136.3	0.315	1.484	20.742	1.163
256	Junction	1216020.94	776128.697	1423	0	1619.102	84.971	250	Pipe	261	262	7.758	5080	136.3	0.315	1.484	5.942	1.17
257	Junction	1223043	776182.904	1400	0	1610.904	91.385	251	Pipe	253	263	7.758	3398	136.3	-0.315	-1.484	3.983	1.172
258	Junction	1230963	776291.316	1490	0	1601.692	48.396	252	Pipe	263	264	7.758	866.721	136.3	-0.315	-1.484	1.029	1.187
259	Junction	1234923.68	776345.137	1440	0	1597.085	68.065	253	Pipe	264	265	22.875	5197.361	136.3	4.658	2.524	4.755	0.915
260	Junction	1238853.48	776390.853	1463	0	1592.514	56.119	254	Pipe	265	266	22.875	4760.526	136.3	4.658	2.524	4.193	0.881



**Treated Pipeline Modeling Results  
Assume Reservoirs Full**

Node Output								Pipe Output										
Node ID	Type	X	Y	Elevation	Demand	Grade	Pressure	Link ID	Type	Node 1	Node 2	Diameter	Length	Roughness	Flow	Velocity	Headloss	Headloss/1000
261	Junction	1256686.58	776584.031	1358	0	1571.772	92.628	255	Pipe	266	267	22.875	8447.678	136.3	4.658	2.524	7.44	0.881
262	Junction	1256380.99	772380.57	1363	0.315	1565.83	87.886	256	Pipe	267	268	22.875	13277.844	136.3	4.658	2.524	11.694	0.881
263	Junction	1215985.62	795371.903	1420	0	1641.549	95.997	257	Pipe	268	269	5.914	1411.5	136.3	0.157	1.275	1.749	1.239
264	Junction	1215119.47	795403.983	1420	0	1642.577	96.443	258	Pipe	270	271	5.914	500	136.3	0.157	1.275	0.629	1.257
265	Junction	1215069.98	800601.119	1431	0	1637.822	89.616	259	Pipe	268	272	22.875	5167.786	136.3	4.501	2.439	4.327	0.837
266	Junction	1215018.73	805361.355	1464	0	1633.629	73.5	260	Pipe	389	334	22.875	4078.295	136.3	0.003	0.002	0	0
267	Junction	1214927.78	813808.594	1479	0	1626.189	63.777	261	Pipe	272	273	22.875	436.537	136.3	4.501	2.439	0.527	1.207
268	Junction	1214734.52	827085	1495	0	1614.495	51.777	262	Pipe	273	389	22.875	14084.306	136.3	4.501	2.439	11.641	0.827
269	Junction	1213323.01	827085	1520	0	1612.746	40.187	263	Pipe	274	275	22.875	2693.25	136.3	4.498	2.437	2.306	0.856
270	Junction	1212873.9	827085	1520	0	1716.062	84.954	264	Pipe	275	276	22.875	2693.25	136.3	4.498	2.437	2.306	0.856
271	Junction	1212500	827850	1543	0.157	1715.434	74.716	265	Pipe	276	376	22.875	2578.786	136.3	4.498	2.437	2.212	0.858
272	Junction	1214686.55	832252.589	1558	0	1610.168	22.604	266	Pipe	277	278	18.096	10875.092	136.3	4.498	3.895	28.323	2.604
273	Junction	1215123.04	832258.238	1558	0	1609.641	22.376	269	Pipe	280	281	18.096	884.625	136.3	3.71	3.212	1.665	1.882
274	Junction	1241118.51	832609.528	1484	0	1588.166	45.135	270	Pipe	281	282	18.096	1158.478	136.3	3.71	3.212	2.16	1.865
275	Junction	1241118.51	835302.752	1452	0	1585.86	58.002	271	Pipe	282	284	18.096	2342.26	136.3	3.71	3.212	4.302	1.837
276	Junction	1243811.73	835302.752	1434	0	1583.554	64.802	272	Pipe	284	285	18.096	2346.976	136.3	3.71	3.212	4.246	1.809
277	Junction	1251657.21	837878.879	1452	0	1572.146	52.059	273	Pipe	285	286	18.096	7605.919	136.3	3.71	3.212	13.826	1.818
278	Junction	1251482.47	848752.569	1435	0	1543.823	47.153	274	Pipe	286	287	18.096	5678.248	136.3	3.71	3.212	10.338	1.821
279	Junction	1250928.39	850463.001	1436	0	1969.964	231.366	275	Pipe	287	288	18.096	8455.324	136.3	3.71	3.212	15.363	1.817
280	Junction	1252836.84	849527.337	1444	0	1966.054	226.206	276	Pipe	288	289	5.914	448.291	136.3	0.157	1.275	0.612	1.365
281	Junction	1253721.45	849527.337	1444	0	1964.389	225.485	277	Pipe	288	290	18.096	4150	136.3	3.553	3.076	7.019	1.691
282	Junction	1254830.16	849863.489	1444	0	1962.229	224.549	278	Pipe	290	291	18.096	20600.971	136.3	3.553	3.076	34.406	1.67
284	Junction	1257153.73	850158.358	1500	0	1957.927	198.42	279	Pipe	291	292	18.096	4344.249	136.3	3.553	3.076	7.314	1.684
285	Junction	1259500	850100	1513	0	1953.68	190.947	280	Pipe	292	293	18.096	4252.646	136.3	3.553	3.076	7.161	1.684
286	Junction	1267100	849800	1534	0	1939.854	175.857	281	Pipe	293	294	18.096	4750	136.3	3.553	3.076	7.992	1.682
287	Junction	1272650	848600	1470	0	1929.516	199.108	282	Pipe	294	295	18.096	3436.568	136.3	3.553	3.076	5.798	1.687
288	Junction	1281100	848300	1526	0	1914.154	168.187	283	Pipe	295	457	18.096	2850.292	136.3	3.553	3.076	4.76	1.67
289	Junction	1281126.63	847852.477	1530	0.157	1913.542	166.189	284	Pipe	296	297	11.314	206.155	136.3	1.05	2.329	0.507	2.461
290	Junction	1285250	848300	1537	0	1907.135	160.379	285	Pipe	298	299	11.314	206.155	136.3	1.05	2.329	0.44	2.135
291	Junction	1305850	848500	1551	0	1872.729	139.405	286	Pipe	296	464	16.286	72.549	136.3	2.503	2.676	0.139	1.918
292	Junction	1310100	849400	1544	0	1865.415	139.269	289	Pipe	300	304	16.286	6797.978	136.3	2.503	2.676	9.914	1.458
293	Junction	1314350	849550	1516	0	1858.253	148.298	290	Pipe	304	305	9.514	20403.002	136.3	0.683	2.142	37.074	1.817
294	Junction	1318150	846700	1525	0	1850.262	140.936	291	Pipe	306	305	9.514	4653.118	136.3	-0.683	-2.142	8.426	1.811
295	Junction	1321550	846200	1541	0	1844.464	131.491	292	Pipe	306	307	9.514	16515.262	136.3	0.683	2.142	29.906	1.811
296	Junction	1334900	843700	1600	0	1821.78	96.097	293	Pipe	307	308	9.514	3361.257	136.3	0.683	2.142	6.151	1.83
297	Junction	1334850	843500	1600	0	1821.273	95.877	294	Pipe	308	309	9.514	29655.135	136.3	0.683	2.142	53.764	1.813
298	Junction	1334800	843350	1600	0	1891.273	126.208	295	Pipe	309	357	9.514	8168.609	136.3	0.683	2.142	14.856	1.819
299	Junction	1334750	843150	1600	1.05	1890.833	126.018	296	Pipe	311	312	9.514	10730.579	136.3	0.683	2.142	19.431	1.811
300	Junction	1355800	839900	1661	0	1790.734	56.214	297	Pipe	312	313	9.514	5912.728	136.3	0.683	2.142	10.842	1.834
304	Junction	1362500	838750	1679	0	1780.821	44.119	298	Pipe	304	314	14.476	5481.585	136.3	1.82	2.462	7.92	1.445
305	Junction	1362850	818350	1580	0	1743.747	70.951	299	Pipe	314	315	14.476	1786.92	136.3	1.82	2.462	2.601	1.456
306	Junction	1362917.72	813697.372	1633	0	1735.321	44.336	300	Pipe	315	316	14.476	4940.368	136.3	1.82	2.462	7.087	1.434
307	Junction	1363209.42	797184.669	1579	0	1705.415	54.776	301	Pipe	316	317	14.476	688.567	136.3	1.82	2.462	0.988	1.435
308	Junction	1366570.3	797235.399	1604	0	1699.264	41.278	302	Pipe	317	318	14.476	596.298	136.3	1.82	2.462	0.855	1.434
309	Junction	1367014.19	767583.557	1545	0	1645.5	43.547	303	Pipe	318	319	14.476	8944.184	136.3	1.82	2.462	12.868	1.439
311	Junction	1377160.24	767735.747	1567	0	1795.777	99.129	304	Pipe	319	320	14.476	350.048	136.3	1.82	2.462	0.502	1.435





**Treated Pipeline Modeling Results  
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Node Output								Pipe Output										
Node ID	Type	X	Y	Elevation	Demand	Grade	Pressure	Link ID	Type	Node 1	Node 2	Diameter	Length	Roughness	Flow	Velocity	Headloss	Headloss/1000
448	Junction	1058824.16	557825.586	1198	0	1739.681	234.71	449	Pipe	449	26	47	27825.02	136.3	-28.601	-3.673	21.189	0.762
449	Junction	1074652.38	623857	1326	0	1677.166	152.16	450	Pipe	450	370	18.096	936.317	136.3	4.207	3.642	2.231	2.382
450	Junction	1183431.82	638943.955	1168	0	1441.934	118.696	451	Pipe	451	277	18.096	1407.409	136.3	4.498	3.895	3.744	2.66
451	Junction	1250250	837900	1410	0	1575.89	71.88	452	Pipe	452	413	11.314	749.059	136.3	1.05	2.329	1.293	1.726
452	Junction	1077300	809491.39	1440	0	1775.629	145.428	453	Pipe	453	98	12.668	23874.779	136.3	1.576	2.784	50.265	2.105
453	Junction	1045500	950000	1591	0	1861.601	117.251	454	Pipe	455	420	28.875	403.266	136.3	10.5	3.571	0.693	1.718
455	Junction	1088500.39	826062.557	1499.5	0	1615.563	50.29	457	Pipe	457	462	18.096	3822.14	136.3	3.553	3.076	6.383	1.67
457	Junction	1324351.86	845676.844	1585	0	1839.703	110.363	459	Pipe	458	176	11.314	5548.603	136.3	1.053	2.336	9.657	1.74
458	Junction	1352088.33	687900.453	1399	0	1679.3	121.454	462	Pipe	462	296	18.096	6909.634	136.3	3.553	3.076	11.54	1.67
462	Junction	1328108.31	844971.542	1630	0	1833.32	88.098	463	Pipe	464	300	16.286	21170.096	136.3	2.503	2.676	30.906	1.46
464	Junction	1334971.4	843687.018	1600	0	1821.641	96.037	464	Pipe	465	101	12.668	15958.375	136.3	1.575	2.783	34.173	2.141
465	Junction	1029810.46	973854.812	1730	0	1778.526	21.026	468	Pipe	416	421	47	675.346	136.3	0.038	0.005	0	0
466	Junction	1100872.17	826061.712	1430	0	1599.596	73.486	469	Pipe	420	466	28.875	11968.501	136.3	10.5	3.571	15.274	1.276
467	Junction	1100872.17	831384.153	1520	0	1592.803	31.546	470	Pipe	466	467	28.875	5322.438	136.3	10.5	3.571	6.792	1.276
468	Junction	1106740.8	831384.153	1434	0	1585.314	65.564	471	Pipe	467	468	28.875	5868.625	136.3	10.5	3.571	7.489	1.276
469	Junction	1110134.14	829501.543	1425	0	1580.361	67.318	472	Pipe	468	469	28.875	3880.597	136.3	10.5	3.571	4.952	1.276
470	Junction	1110134.14	821147.17	1430	0	1569.7	60.532	473	Pipe	469	470	28.875	8354.375	136.3	10.5	3.571	10.662	1.276
471	Junction	1109599.57	820542.875	1420	10.5	1568.67	64.419	474	Pipe	470	471	28.875	806.774	136.3	10.5	3.571	1.03	1.276
472	Reservoir	1555995.77	759293.33	1575	0.001	1575	0	475	Pipe	472	203	11.314	443.623	136.3	-0.001	-0.001	0	0
474	Junction	1546797.86	697545.631	1411.5	0	1700.226	125.105	476	Pipe	474	403	11.314	12837.64	136.3	1.051	2.33	22.222	1.731
476	Junction	1304553.97	687191.961	1439	0	1798.231	155.655	477	Pump	493	494	11.314	0		1.051	0	99.934	N/A
477	Junction	1082621.26	826010.666	1481.75	0	1563.154	35.272	478	Pipe	476	161	16.286	84.388	136.3	2.733	2.922	0.145	1.717
478	Junction	1082622.26	826010.675	1481.75	0	1623.154	61.27	479	Pump	491	492	16.286	0		2.733	0	104.769	N/A
480	Junction	1115476.63	784602.724	1451.5	0	1757.501	132.59	480	Pipe	478	455	28.875	5878.354	136.3	10.5	3.571	7.591	1.291
481	Junction	1079672.05	769479.052	1470	0	1587.517	50.92	481	Pump	477	478	28.875	0		10.5	0	18.288	N/A
482	Junction	1081717.92	773308.506	1483	0	1622.136	60.288	482	Pipe	480	217	7.758	12064.547	136.3	0.42	1.979	23.96	1.986
484	Junction	1550734.32	759487.427	1524.5	0	1583.649	25.629	484	Pipe	482	68	11.314	2308.25	136.3	1.05	2.329	4.06	1.759
488	Junction	1081687.45	773250.305	1483	0	1580.136	42.089	485	Pump	488	482	11.314	0		1.05	0	12.802	N/A
489	Junction	1195341.66	638615.803	1330	0	1411.764	35.428	486	Pipe	484	203	11.314	4983.12	136.3	1.051	2.33	8.649	1.736
490	Junction	1195332.59	638715.64	1330	0	1779.383	194.718	488	Pipe	481	488	11.314	4276.046	136.3	1.05	2.329	7.381	1.726
491	Junction	1270395.87	686644.576	1420	0	1512.98	40.288	490	Pipe	490	368	18.096	9924.255	136.3	4.207	3.642	22.707	2.288
492	Junction	1270493.22	686644.576	1420	0	1856.711	189.227	492	Pipe	492	160	16.286	28910.338	136.3	2.733	2.922	49.63	1.717
493	Junction	1510044.05	695437.868	1354	0	1437.682	36.259	494	Pipe	494	402	11.314	12678.693	136.3	1.051	2.33	21.91	1.728
494	Junction	1510065.63	695437.868	1354	0	1765.549	178.324	496	Pipe	496	427	22.875	5596.186	136.3	4.973	2.695	5.586	0.998
496	Junction	1158243.4	794899.309	1440	0	1699.148	112.289	497	Pipe	498	385	7.758	4996	136.3	0.315	1.484	5.841	1.169
497	Junction	1263231.98	675741	1466.5	0	1544.287	33.705	498	Pump	497	498	7.758	0		0.315	0	1.508	N/A
498	Junction	1263232.98	675741	1466.5	0	1549.235	35.849	499	Pipe	500	109	9.514	95.027	136.3	0.84	2.635	0.355	3.734
500	Junction	1095554.52	637269.757	1515	0	1645.118	56.38											

ID	X	Y	ELEVATION	DEMAND	DESCRIPTION
37	1049019	654323.7	1230	0.23	Centerville (HGL = 1320)
45	1068137	741330.8	1332	0.42	Lennox GSR (HGL = 1477)
56	1047287	777747.7	1490	0.26	S Lincoln RWS(HGL = 1638)
70	1084026	774759.9	1472	1.05	Tea (HGL = 1615)
102	1009236	974941	1530	1.58	Madison (HGL = 1704)
109	1095550	637364.7	1515	0.84	Beresford (HGL=1638)
397	1268229	678541	1427	0.31	Hull (HGL = 1540)
131	1262515	638861.1	1400	0.63	Sioux Center (HGL = 1446)
136	1260425	627720.7	1413	0.52	RWS #1 west (HGL = 1460)
422	1248818	852600.3	1436	0.79	Luverne (HGL = 1486)
405	1555727	759886.6	1451	1.05	Clay RWS (HGL = 1571')
406	1048514	552253	1220	-28.03	Clearwell WTP Source node
162	1304700	683600	1420	0.11	Boyden (HGL = 1547)
78	1072159	810102.9	1514	1.05	MCWC #1 (HGL = 1765)
168	1336348	682321.4	1414	0.52	RWS #1 east (HGL = 1496)
64	1003447	757494.4	1348	0.51	Parker (HGL = 1385)
212	1102449	785172.4	1537	1.47	Lincoln Co (HGL = 1695)
218	1116138	772539	1436	0.42	Harrisburg (HGL = 1589)
230	1135628	821069.7	1449	1.05	MCWC(2) (HGL = 1624')
262	1256381	772380.6	1363	0.31	Rock Rapids (HGL = 1409)
271	1212500	827850	1543	0.16	Rock Co RWS (HGL = 1715)
289	1281127	847852.5	1530	0.16	Rock Co RWS (HGL = 1692)
299	1334750	843150	1610	1.05	Linc-PipstnRWS(HGL =1899)
313	1388067	761977.9	1594	0.68	Sibley (HGL = 1765)
326	1409727	840174	1574	1.82	Worthington (HGL = 1620)
170	1344686	685188.1	1403	1.05	Sheldon (HGL = 1446)
471	1109600	820542.9	1420	10.50	SF (GSR = 1420)

Pump ID	Node 1	Node 2	Design Head	Design Flow	Description
323	329	22	543	28.55	WTP High Service
325	54	55	112	0.26	South Lincoln
327	269	270	102	0.16	Rock Co RWS #1
328	297	298	70	1.05	Lincoln-Pipestone RWS
330	357	358	169	0.68	Sibley
409	489	490	368	4.2	Lbanon
412	390	80	636	1.58	North of SF
415	414	415	211	1.05	MCWC (West)
427	426	425	434	3.71	Luverne
444	72	71	207	7.91	South of Hills
477	493	494	328	1.05	South Oof Milford
479	491	492	344	2.63	North of Boyden
481	477	478	60	10.5	SF - Service
485	488	482	42	1.05	Tea - Service
498	497	498	5	0.31	Hull - Service

RESERVOIR	Ground Elev	High Tank Height	1/2 Full	Low* Tank Height		
Sanborn	1573	1603	1588	1583		30
Madison	1734	1780	1757	1744		46
Hull	1493	1560	1530	1503		67
Rock Co.	1545	1598	1571.5	1555		53
Worthington	1728	1748	1738	1738		20
Sioux Falls	1534	1584	1559	1544		50
Clay Reg RWS	1532	1575	1553.5	1542		43

\* Low tank signifies a 10-ft above ground water level in the reservoir

Lewis and Clark Rural Water System  
Pumping Station Power costs  
With Average Day Demand at 82.18% of Peak

Peak Day  
Avg. Day  
95 Rpt



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\*\*Load Factor  
Avg. Day  
0.8128

Description	Eleccctric Service	Type	Head (ft)	Flow (MGD)	Hp	Motor Hp*	KW	Heat & Lights	Total KW	Load Factor**	Energy Use	KwHr/Mo	Cost Per KW/Hr	Demand Charge	Energy Cost	Demand	Monthly Charges (per year)	Total Cost	Cost per Day
Sioux Falls	Xcel Energy	Pump	60	10.5	111	158	118	50	168	0.8128	1,195,224	99,602	\$ 0.0356	\$ 9.35	\$ 42,500	\$ 18,800	\$ -	\$ 61,300	\$ 168
Tea	Sioux Valley - Southwestern Elec. Coop.Inc	Pump	42	1.05	8	11	8	20	28	0.8128	201,148	16,762	\$ 0.0365	\$ 6.10	\$ 7,300	\$ 2,100	\$ 250	\$ 9,650	\$ 26
Hull	Mid American Electric Coop	Pump	5	0.315	0	0	0	10	10	0.8128	73,299	6,108	\$ 0.0523	\$ -	\$ 3,800	\$ -	\$ 120	\$ 3,920	\$ 11
South Lincoln	Southeastern Elec Coop Inc	Pump	112	0.26	5	7	5	15	20	0.8128	145,592	12,133	\$ 0.0320	\$ 8.50	\$ 4,700	\$ 2,100	\$ 600	\$ 7,400	\$ 20
Rock Co RWS #1	Sioux Valley - Southwestern Elec. Coop.Inc	Pump	102	0.16	3	4	3	10	13	0.8128	92,941	7,745	\$ 0.0365	\$ 6.10	\$ 3,400	\$ 1,000	\$ -	\$ 4,400	\$ 12
Lincoln-Pipestone RWS	Nobles REC - MN	Pump	70	1.05	13	18	14	20	34	0.8128	240,311	20,026	\$ 0.0480	\$ 4.50	\$ 11,500	\$ 1,800	\$ 540	\$ 13,840	\$ 38
Sibley	Osceola REC - Iowa	Pump	169	0.68	20	29	22	20	42	0.8128	295,486	24,624	\$ 0.0440	\$ 9.35	\$ 13,000	\$ 4,700	\$ -	\$ 17,700	\$ 48
West of Lebanon	NW REC - Iowa	Pump	368	4.2	271	388	289	50	339	0.8128	2,414,889	201,241	\$ 0.0320	\$ 11.00	\$ 77,300	\$ 44,800	\$ 250	\$ 122,350	\$ 335
North of Sioux Falls	Xcel Energy	Pump	636	1.58	176	252	188	50	238	0.8128	1,694,599	141,217	\$ 0.0356	\$ 9.35	\$ 60,300	\$ 26,700	\$ -	\$ 87,000	\$ 238
MCWC (west)	Xcel Energy	Pump	211	1.05	39	56	41	30	71	0.8128	508,729	42,394	\$ 0.0356	\$ 9.35	\$ 18,100	\$ 8,000	\$ 219	\$ 26,319	\$ 72
Luverne	Luverne , City of	Pump	434	3.71	283	404	301	50	351	0.8128	2,500,862	208,405	\$ 0.0220	\$ 10.50	\$ 55,000	\$ 44,300	\$ -	\$ 99,300	\$ 272
South of SF for MN line	Xcel Energy	Pump	207	7.91	287	410	306	50	356	0.8128	2,536,170	211,347	\$ 0.0356	\$ 9.35	\$ 90,300	\$ 40,000	\$ 219	\$ 130,519	\$ 358
South of Milford	Iowa Lakes REC	Pump	328	1.05	60	86	64	30	94	0.8128	672,376	56,031	\$ 0.0365	\$ 7.00	\$ 24,500	\$ 7,900	\$ 108	\$ 32,508	\$ 89
North of Hull	Mid American Electric Coop	Pump	344	2.73	165	236	176	50	226	0.8128	1,607,001	133,917	\$ 0.0523	\$ -	\$ 84,000	\$ -	\$ 120	\$ 84,120	\$ 230

\*Motor Horsepower account for an estimated 70% combined pump and motor efficiency

**Totals = \$ 495,700 \$ 202,200 \$ 2,426 \$ 700,326 \$ 1,919**



Lewis and Clark Rural Water System  
 Pumping Station Power costs  
 With Average Day Demand at 82.18% of Peak

Peak Day  
 Avg. Day  
 95 Rpt



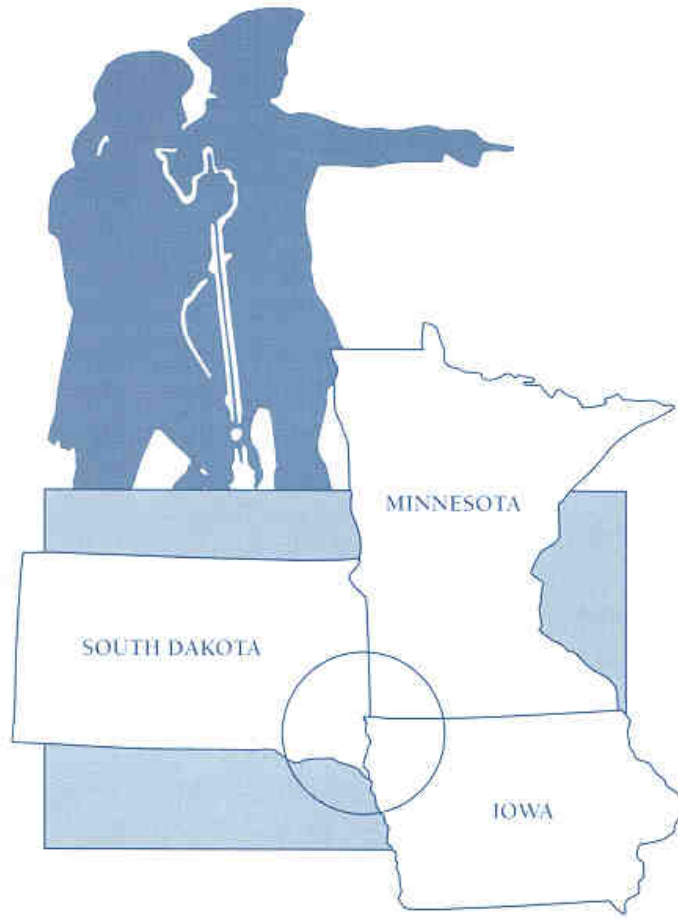
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\*\*Load Factor  
 Avg. Day  
 0.8128

Description	Eleccctric Service	Type	Head (ft)	Flow (MGD)	Hp	Motor Hp*	KW	Heat & Lights	Total KW	Load Factor**	Energy Use	KwHr/Mo	Cost Per KW/Hr	Demand Charge	Energy Cost	Demand	Monthly Charges (per year)	Total Cost	Cost per Day
Wells	Clay-Union REC	Pump	240	28.8	1213	1733	1293	125	1418	0.8128	10,097,441	841,453	\$ 0.0489	\$ 8.03	\$ 493,800	\$ 136,700	\$ -	\$ 630,500	\$ 1,727

\*Motor Horsepower account for an estimated 70% combined pump and motor efficiency

**Totals = \$ 493,800 \$ 136,700 \$ - \$ 630,500 \$ 1,727**



# APPENDIX A-7

**LEWIS AND CLARK RURAL WATER SYSTEM  
OPINION OF PROBABLE COST  
TOTAL PROJECT**

**This has new numbers with the 1993 unit prices**

Banner Associates, Inc.  
Brookings, SD 57006  
BAI # 20000.00.01  
12-Jul-02

**Revised Raw Water Delivery System Delivering Water to Plant North of Vermillion  
WTP Capacity = 23.5 MGD      Raw Water Capacity = 25.7 MGD      Vermillion Demand = 0 MGD**

ITEM	DESCRIPTION	MAT'L UNIT COST	TOTAL QUANTITY	UNIT	UNIT COST	PROJECT TOTALS SD, IA, MN	INDEX CATEGORY
1	48" WATERMAIN	\$108	241,750	L.F.	\$192	\$46,416,000	Steel Pipelines (>=24")
2	42" WATERMAIN	\$86	64,000	L.F.	\$155	\$9,920,000	Steel Pipelines (>=24")
3	36" WATERMAIN	\$67	0	L.F.	\$122	\$0	Steel Pipelines (>=24")
4	30" WATERMAIN	\$51	26,000	L.F.	\$94	\$2,444,000	Steel Pipelines (>=24")
5	24" WATERMAIN	\$39	290,000	L.F.	\$72	\$20,880,000	Steel Pipelines (>=24")
6	20" WATERMAIN	\$32	83,000	L.F.	\$58	\$4,814,000	Laterals and Drains (<24")
7	18" WATERMAIN	\$28	219,000	L.F.	\$51	\$11,169,000	Laterals and Drains (<24")
8	16" WATERMAIN	\$20	382,000	L.F.	\$44	\$16,808,000	Laterals and Drains (<24")
9	14" WATERMAIN	\$16	59,000	L.F.	\$36	\$2,124,000	Laterals and Drains (<24")
10	12" WATERMAIN	\$12	411,000	L.F.	\$28	\$11,508,000	Laterals and Drains (<24")
11	10" WATERMAIN	\$9	171,000	L.F.	\$22	\$3,762,000	Laterals and Drains (<24")
12	8" WATERMAIN	\$7	72,000	L.F.	\$18	\$1,296,000	Laterals and Drains (<24")
13	6" WATERMAIN	\$4	58,000	L.F.	\$14	\$812,000	Laterals and Drains (<24")
14	4" WATERMAIN	\$3	1,300	L.F.	\$10	\$13,000	Laterals and Drains (<24")
15	TRAFFIC CONTROL		1	L.S.	\$509,000	\$509,000	To Be Prorated
16	ROCK EXCAVATION		1	L.S.	\$543,000	\$543,000	To Be Prorated
17	CASING FOR PIPE-48"		1,200	L.F.	\$600	\$720,000	Steel Pipelines (>=24")
18	CASING FOR PIPE-42"		100	L.F.	\$525	\$52,500	Steel Pipelines (>=24")
19	CASING FOR PIPE-36"		0	L.F.	\$300	\$0	Steel Pipelines (>=24")
20	CASING FOR PIPE-30"		200	L.F.	\$275	\$55,000	Steel Pipelines (>=24")
21	CASING FOR PIPE-24"		1,200	L.F.	\$200	\$240,000	Laterals and Drains (<24")
22	CASING FOR PIPE-20"		700	L.F.	\$200	\$140,000	Laterals and Drains (<24")
23	CASING FOR PIPE-18"		2,100	L.F.	\$175	\$367,500	Laterals and Drains (<24")
24	CASING FOR PIPE-16"		2,100	L.F.	\$175	\$367,500	Laterals and Drains (<24")
25	CASING FOR PIPE-14"		0	L.F.	\$125	\$0	Laterals and Drains (<24")
26	CASING FOR PIPE-12"		400	L.F.	\$125	\$50,000	Laterals and Drains (<24")
27	CASING FOR PIPE-10"		400	L.F.	\$100	\$40,000	Laterals and Drains (<24")
28	CASING FOR PIPE-8"		200	L.F.	\$100	\$20,000	Laterals and Drains (<24")
29	CASING FOR PIPE-6"		100	L.F.	\$75	\$7,500	Laterals and Drains (<24")
30	CASING FOR PIPE-4"		0	L.F.	\$75	\$0	Laterals and Drains (<24")
31	48" RIVER CROSSING		5	Each	\$90,000	\$450,000	Steel Pipelines (>=24")
32	42" RIVER CROSSING		0	Each	\$80,000	\$0	Steel Pipelines (>=24")
33	36" RIVER CROSSING		0	Each	\$35,000	\$0	Steel Pipelines (>=24")
34	30" RIVER CROSSING		0	Each	\$30,000	\$0	Steel Pipelines (>=24")
35	24" RIVER CROSSING		0	Each	\$20,000	\$0	Steel Pipelines (>=24")
36	20" RIVER CROSSING		1	Each	\$15,000	\$15,000	Laterals and Drains (<24")
37	18" RIVER CROSSING		2	Each	\$12,000	\$24,000	Laterals and Drains (<24")
38	16" RIVER CROSSING		2	Each	\$10,000	\$20,000	Laterals and Drains (<24")
39	14" RIVER CROSSING		0	Each	\$8,000	\$0	Laterals and Drains (<24")
40	12" RIVER CROSSING		2	Each	\$6,000	\$12,000	Laterals and Drains (<24")
41	10" RIVER CROSSING		2	Each	\$5,000	\$10,000	Laterals and Drains (<24")
42	8" RIVER CROSSING		0	Each	\$3,000	\$0	Laterals and Drains (<24")
43	36" SERVICE CONNECT. & BLDG		0	Each	\$350,000	\$0	Pumping Plant Accessories
44	24" SERVICE CONNECT. & BLDG		2	Each	\$250,000	\$500,000	Pumping Plant Accessories
45	18" SERVICE CONNECT. & BLDG		0	Each	\$185,000	\$0	Pumping Plant Accessories
46	16" SERVICE CONNECT. & BLDG		0	Each	\$175,000	\$0	Pumping Plant Accessories
47	14" SERVICE CONNECT. & BLDG		2	Each	\$160,000	\$320,000	Pumping Plant Accessories
48	12" SERVICE CONNECT. & BLDG		5	Each	\$150,000	\$750,000	Pumping Plant Accessories
49	10" SERVICE CONNECT. & BLDG		3	Each	\$125,000	\$375,000	Pumping Plant Accessories
50	8" SERVICE CONNECT. & BLDG		7	Each	\$100,000	\$700,000	Pumping Plant Accessories
51	6" SERVICE CONNECT. & BLDG		5	Each	\$75,000	\$375,000	Pumping Plant Accessories
52	4" SERVICE CONNECT. & BLDG		1	Each	\$60,000	\$60,000	Pumping Plant Accessories
53	22.8 MGD BOOSTER PUMP STATION		1	Each	\$2,445,000	\$2,445,000	Pumping Plants
54	7 MGD BOOSTER PUMP STATION		0	Each	\$1,377,000	\$0	Pumping Plants
55	4.69 MGD BOOSTER PUMP STATION		1	Each	\$564,000	\$564,000	Pumping Plants
56	4.26 MGD BOOSTER PUMP STATION		1	Each	\$520,000	\$520,000	Pumping Plants
57	2.76 MGD BOOSTER PUMP STATION		1	Each	\$352,000	\$352,000	Pumping Plants
58	2.36 MGD BOOSTER PUMP STATION		1	Each	\$305,000	\$305,000	Pumping Plants

**LEWIS AND CLARK RURAL WATER SYSTEM  
 OPINION OF PROBABLE COST  
 TOTAL PROJECT**

**This has new numbers with the 1993 unit prices**

Banner Associates, Inc.  
 Brookings, SD 57006  
 BAI # 20000.00.01  
 12-Jul-02

**Revised Raw Water Delivery System Delivering Water to Plant North of Vermillion  
 WTP Capacity = 23.5 MGD      Raw Water Capacity = 25.7 MGD      Vermillion Demand = 0 MGD**

ITEM	DESCRIPTION	MAT'L UNIT COST	TOTAL QUANTITY	UNIT	UNIT COST	PROJECT TOTALS SD, IA, MN	INDEX CATEGORY
59	2.16 MGD BOOSTER PUMP STATION		1	Each	\$275,000	\$275,000	Pumping Plants
60	1.65 MGD BOOSTER PUMP STATION		1	Each	\$220,000	\$220,000	Pumping Plants
61	1.0 MGD BOOSTER PUMP STATION		1	Each	\$140,000	\$140,000	Pumping Plants
62	0.33 MGD BOOSTER PUMP STATION		1	Each	\$50,000	\$50,000	Pumping Plants
63	0.25 MGD BOOSTER PUMP STATION		1	Each	\$38,000	\$38,000	Pumping Plants
64	10 MG RESERVOIR		1	Each	\$2,644,000	\$2,644,000	Pumping Plants
65	5 MG RESERVOIR		3	Each	\$1,618,000	\$4,854,000	Pumping Plants
66	3 MG RESERVOIR		1	Each	\$1,126,000	\$1,126,000	Pumping Plants
67	2 MG RESERVOIR		0	Each	\$1,000,000	\$0	Pumping Plants
68	UNLISTED ITEMS		1	L.S.	\$4,567,000	\$4,567,000	To Be Prorated
SUBTOTAL						\$156,789,000	
WATER TREATMENT SYSTEM (from HDR)						\$26,181,000	See tabulation below
RAW WATER COLLECTION/DELIVERY SYSTEM (from HDR)						\$23,186,000	See tabulation below
CONSTRUCTION CONTINGENCIES						\$24,449,000	To Be Prorated
ENGINEERING						\$26,013,000	To Be Prorated
LEGAL/ADMINISTRATION						\$7,169,000	To Be Prorated
EASEMENTS AND LAND						\$6,613,000	Land and ROWs
ENVIRONMENTAL MITIGATION						\$2,400,000	To Be Prorated
PROJECT TOTAL						\$272,800,000	

**Index Categories for Raw Water Collection/Delivery System**

Steel Pipelines (>=24")	\$13,793,000
Laterals and Drains (<24")	\$0
Pumping Plants	\$8,580,000
Pumping Plant Accessories	\$0
Land and ROWs	\$287,000
To Be Prorated between all items	\$526,000
<b>TOTALS</b>	<b>\$23,186,000</b>

Refer to the attached detailed summary for the Raw Water Collection/Delivery System

**Index Categories for Water Treatment System**

Steel Pipelines (>=24")	\$0
Laterals and Drains (<24")	\$0
Pumping Plants	\$25,681,000
Pumping Plant Accessories	\$0
Land and ROWs	\$500,000
To Be Prorated between all items	\$0
<b>TOTALS</b>	<b>\$26,181,000</b>

**Total Project Index Category Summary**

Steel Pipelines (>=24")	\$95,963,000
Laterals and Drains (<24")	\$52,387,000
Pumping Plants	\$47,794,000
Pumping Plant Accessories	\$3,080,000
Land and ROWs	\$7,400,000
To Be Prorated between all items	\$66,176,000
<b>TOTALS</b>	<b>\$272,800,000</b>

Opinions of Probable Construction Cost from HDR (does not include contingencies, engineering, legal/admin)					
	MGD	2000 Cost	BOR Index	1993 Cost	Rounded
Water Treatment Plant (from HDR)	23.5	\$ 31,498,559	0.8311688	\$ 26,180,620	\$ 26,181,000
Collection Well System (from HDR)	23.5	\$ 10,323,000	0.8311688	\$ 8,580,156	\$ 8,580,000

# CONSTRUCTION COST TRENDS COMPUTATIONS

## Bureau of Reclamation - Technical Services Center

The Bureau of Reclamation's *Construction Cost Trends [CCT]* were developed to track construction relevant to the primary types of projects being constructed by the organization. All the various cost indexes consist of two elements, contractor labor and equipment costs, and contractor supplied materials and equipment.

When the indexes were originally developed, the substantial amount of construction work being performed by the Bureau provided a large data reference for the 35 construction categories. Actual field cost data were used to develop the costs baselines and their respective incremental increases over time.

Since the early to mid 1980's, the number and magnitude of construction projects being performed by the Bureau has declined. There are fewer construction projects in general and no new large dam or hydroelectric projects. The number of data references from our own construction has therefore declined as well.

Despite this reduction in the construction program, the *Construction Cost Trends* is still considered a valuable asset used by many within Reclamation as well as numerous clients in other government entities and the private sector. In order to perpetuate the *CCT* in as a meaningful and professional manner as possible, cost models consisting of appropriate labor, equipment, and materials types are now used as the principal costs reference in lieu of actual field data. Data for the models are primarily extracted from

- C     Producer Price Indexes [PPI], US Department of Labor, Bureau of Labor Statistics
- C     Price Trends for Federal-Aid Highway Construction, US Department of Transportation
- C     *Engineering News-Record*, weekly publication of McGraw-Hill

Actual field data, when available, is used to confirm the reasonableness of the models. Engineering judgment may also be used to adjust the results.

# Bureau of Reclamation Construction Cost Trends

(Base: 1977 = 100 For Indexing Field Costs Only)

	1992				1993				1994				1995			
	Jan	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr	Jul	Oct
<b>Construction Indexes</b>																
Earth dams	162	160	161	162	164	165	165	166	168	163	167	168	173	175	178	178
Dam structure	147	145	146	148	150	151	152	152	154	145	155	156	162	163	165	163
Spillway	175	171	171	172	174	175	175	176	178	176	173	175	180	182	187	188
Outlet works	189	185	186	188	189	190	191	192	194	194	191	193	196	198	202	204
Concrete dams	186	184	184	186	188	189	189	190	193	192	188	190	193	196	199	201
Diversion dams	183	182	183	185	186	187	188	189	191	191	191	193	195	198	201	202
Pumping plants	185	185	187	188	189	190	191	192	193	195	195	197	200	202	204	206
Structures and improvements	172	171	173	174	175	176	177	178	181	183	182	184	188	191	194	197
Equipment	201	201	203	204	205	206	207	208	208	209	211	213	213	215	217	218
Pumps and prime movers	204	205	206	208	209	210	211	211	210	213	214	215	217	219	220	221
Accessory elect + misc. equip.	195	196	197	199	199	200	201	203	204	204	206	208	209	210	211	213
Powerplants	197	198	199	201	202	203	204	205	207	207	208	209	212	213	215	216
Structures and improvements	173	172	173	175	176	176	178	179	182	183	183	185	189	191	194	197
Equipment	212	213	215	217	218	219	220	221	222	222	223	224	226	227	228	228
Turbines and generators	216	217	218	220	221	222	223	224	226	225	225	227	228	229	230	231
Accessory elect + misc. equip.	191	191	192	194	195	195	197	198	199	200	202	204	205	206	207	208
Steel pipelines	195	195	196	198	199	200	201	202	203	204	204	206	209	211	212	213
Concrete pipelines	178	178	179	181	181	182	183	184	184	185	185	186	188	189	191	191
Canals	167	166	167	169	170	171	172	172	174	176	176	178	182	184	187	189
Canal earthwork	167	166	168	170	172	172	173	173	174	175	176	177	181	182	185	181
Canal structures	172	171	172	174	174	175	176	178	180	183	182	183	188	191	194	198
Tunnels	196	195	196	198	200	200	202	203	205	205	206	208	210	212	216	220
Laterals and drains	167	165	166	169	170	171	175	176	178	180	180	182	188	190	192	190
Lateral earthwork	167	166	167	170	171	172	173	173	174	175	176	177	181	181	185	182
Lateral structures	168	166	168	170	171	172	178	179	181	184	184	186	192	196	197	196
Distribution pipelines	178	178	179	181	181	182	183	184	184	185	185	187	188	190	192	193
Switchyards and substations	189	188	188	190	190	191	192	194	194	196	195	197	198	202	203	204
Wood pole transmission lines	172	171	173	175	177	180	185	198	195	201	208	210	209	217	214	214
Poles and fixtures	157	158	163	166	171	176	186	208	208	220	229	230	221	218	209	208
Overhead conductors and devices	191	188	187	186	185	185	184	186	180	179	182	185	195	218	222	222
Steel tower transmission lines	197	196	195	196	196	196	197	198	196	196	198	201	205	215	218	219
Primary roads	188	185	185	186	188	188	191	196	196	200	197	199	201	204	206	208
Secondary roads	216	211	209	210	212	209	214	215	217	211	216	217	224	229	230	231
Bridges	189	188	188	190	191	191	194	194	196	196	198	199	204	207	208	212
General property	185	185	187	189	190	191	194	198	201	203	205	208	208	209	209	210
<b>Land Indexes</b>																
Arizona	182	185	188	191	194	197	200	203	206	209	212	215	221	227	233	239
California	271	275	279	283	287	289	291	291	291	291	291	291	291	291	292	295
Colorado	162	164	166	168	168	168	171	174	178	182	186	190	194	198	202	206
Idaho	145	146	147	148	149	150	151	155	159	163	167	171	175	179	183	187
Kansas	113	114	115	116	118	120	122	124	126	128	130	132	134	136	137	138
Montana	139	139	139	142	145	148	151	154	157	160	163	166	169	172	175	178
Nebraska	123	123	123	123	123	123	124	126	128	130	134	136	138	140	142	144
Nevada	210	214	218	222	226	230	234	238	242	247	252	257	262	267	272	277
New Mexico	205	205	204	203	200	199	198	202	206	210	214	218	222	226	232	238
North Dakota	118	118	119	120	121	122	123	124	125	126	127	129	131	133	135	137
Oklahoma	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138
Oregon	151	155	159	163	168	173	178	183	188	193	200	207	214	221	228	235
South Dakota	148	146	144	144	143	143	144	145	146	148	150	152	153	154	155	156
Texas	165	164	163	163	163	163	164	167	169	171	173	176	178	181	183	185
Utah	160	163	165	169	173	176	180	185	190	195	200	207	212	219	225	233
Washington	166	166	166	166	167	168	169	176	183	190	197	198	199	200	201	202
Wyoming	140	142	143	145	147	149	151	153	155	160	164	168	171	173	175	178
<b>Other Indicators</b>																
Composite trend	186	185	186	188	189	190	190	194	195	196	197	199	201	204	206	207
Machinery and equipment (BLS)	204	206	207	209	211	214	213	213	214	215	215	216	216	218	219	220
Federal salary	187	187	187	187	194	194	194	194	200	200	200	200	202	202	202	202

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NOTE: The land indexes have been reinstated as part of the Construction Cost Trends. Because of a newly located source of land values from the U.S. Department of Agriculture, it was apparent that our previously published land index values lagged actual values significantly. Because of this it was necessary to recompute our values from 1985 forward.



# Bureau of Reclamation Construction Cost Trends

(Base: 1977 = 100 for Indexing Field Costs Only)

Item	2000				2001				2002				2003			
	Jan	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr	Jul	Oct
<b>Construction Indexes</b>																
Earth dams	191	197	198	201	203	200	200	201	198							
Dam structure	174	179	180	183	185	183	184	184	180							
Spillway	202	211	211	214	215	212	211	212	209							
Outlet works	223	229	230	232	233	232	232	233	232							
Concrete dams	222	227	228	230	231	229	229	229	228							
Diversion dams	223	225	226	228	229	229	229	231	231							
Pumping plants	227	229	230	231	232	233	234	235	236							
Structures and improvements	220	222	223	224	225	225	226	228	228							
Equipment	237	238	240	242	243	244	245	247	249							
Pumps and prime movers	242	243	245	247	248	249	250	252	254							
Accessory elect. & misc. equip.	230	231	233	235	236	236	238	240	242							
Powerplants	232	234	234	236	237	237	239	240	241							
Structures and improvements	220	222	223	224	225	225	226	228	228							
Equipment	240	243	242	244	245	245	247	249	250							
Turbines and accessories	242	245	245	247	248	248	250	252	253							
Accessory elect. & misc. equip.	227	229	230	232	233	233	235	236	238							
Steel pipelines	245	246	248	250	252	253	255	257	258							
Concrete pipelines	217	220	221	223	226	227	230	231	232							
Canals	212	216	217	220	222	221	222	224	222							
Canal earthwork	197	204	205	208	211	209	209	209	205							
Canal structures	226	227	228	230	231	232	233	235	236							
Tunnels	246	249	250	251	252	253	254	256	256							
Laterals and drains	229	234	236	238	241	240	241	243	242							
Lateral earthwork	194	200	201	204	207	205	205	206	203							
Lateral structures	249	253	256	258	260	260	261	263	264							
Distribution pipelines	217	220	221	224	226	227	230	232	232							
Switchyards and substations	228	230	229	232	232	231	233	235	235							
Wood pole transmission lines	214	213	204	203	200	200	203	203	201							
Poles and fixtures	218	211	197	194	189	190	196	197	194							
Overhead conductors and devices	211	216	214	217	216	214	214	213	212							
Steel tower transmission lines	230	233	233	234	233	233	233	233	233							
Primary roads	231	231	228	230	229	228	232	233	231							
Secondary roads	262	263	254	258	258	260	273	273	264							
Bridges	244	247	246	248	250	251	255	257	257							
General property	227	228	227	228	228	228	230	231	233							
Composite trend	228	231	231	233	234	234	235	236	236							
<b>Land Indexes</b>																
Arizona	342	346	350	354	358	362	366	372	378							
California	360	366	370	374	378	384	388	390	392							
Colorado	254	255	256	257	258	261	262	265	268							
Idaho	239	245	251	257	261	264	270	271	272							
Kansas	148	149	150	151	152	153	154	155	155							
Montana	190	191	192	193	194	195	196	201	206							
Nebraska	162	163	166	168	170	171	172	173	174							
Nevada	358	362	366	370	374	376	378	380	382							
New Mexico	292	290	288	286	285	285	283	286	289							
North Dakota	146	148	150	152	154	156	157	158	158							
Oklahoma	155	157	159	161	163	164	165	166	166							
Oregon	294	300	306	312	316	318	320	322	322							
South Dakota	186	190	196	201	202	202	204	206	208							
Texas	201	205	209	213	216	217	218	218	218							
Utah	296	299	302	305	308	310	312	316	320							
Washington	234	231	222	216	216	216	215	217	219							
Wyoming	201	205	209	213	215	217	219	222	225							
<b>Other Indicators</b>																
Machinery and equipment (BLS)	239	240	240	240	240	240	240	240	240							
Federal salary	236	236	236	236	245	245	245	245	257							



## Lewis and Clark Rural Water Project Projected Expenses and Revenue

Water Treatment Plant scheduled to be operational 10/1/09

Water Cost: Use \$1.15 per 1000 gallons (service connection cost is not included in this estimate)

Connections Done by 10/1/09		
Member Entity	Peak MGD	Avg MGD
Centerville	0.22	0.14
Lennox	0.40	0.17
Parker	0.49	0.17
South Lincoln RWS	0.25	0.18
Tea	1.00	0.13
MCWC (1)	1.00	0.45
Sioux Falls	10.00	10.00
Beresford	0.80	0.26
Totals this Year	14.16	11.49
Previous Totals	0.00	0.00
Total to Date	14.16	11.49

Monthly/Quarterly Income - 10/1/09 to 12/31/10	
Average Demand =	11.49 MGD
Water Delivered/Month =	349,521 1000 gal
Monthly Gross Income =	\$ 401,949 /month
Monthly Expense =	\$ 373,065 /month
Monthly Admin Cost =	\$ 13,333 /month
Monthly Net Income =	\$ 15,551 /month
Quarterly Net Income =	\$ 46,652 /quarter

Connections Done by 12/31/10		
Member Entity	Peak MGD	Avg MGD
Lincoln County RWS	1.40	0.66
Harrisburg	0.40	0.09
MCWC (2)	1.00	0.45
Totals this Year	2.80	1.20
Previous Totals	14.16	11.49
Total to Date	16.96	12.69

Monthly/Quarterly Income - 1/1/11 to 12/31/11	
Average Demand =	12.69 MGD
Water Delivered/Month =	385,966 1000 gal
Monthly Income =	\$ 443,861 /month
Monthly Expense =	\$ 389,499 /month
Monthly Admin Cost =	\$ 13,333 /month
Monthly Net Income =	\$ 41,029 /month
Quarterly Net Income =	\$ 123,086 /quarter

Connections Done by 12/31/11		
Member Entity	Peak MGD	Avg MGD
Rock Rapids	0.30	0.21
Rock County RWS (1)	0.15	0.11
Sioux Center	0.60	0.42
Rural Water No. 1 (1)	1.00	0.70
Hull	0.30	0.15
Totals this Year	2.35	1.58
Previous Totals	16.96	12.69
Total to Date	19.31	14.27

Monthly/Quarterly Income - 1/1/12 to 12/31/12	
Average Demand =	14.27 MGD
Water Delivered/Month =	434,101 1000 gal
Monthly Income =	\$ 499,216 /month
Monthly Expense =	\$ 423,249 /month
Monthly Admin Cost =	\$ 13,333 /month
Monthly Net Income =	\$ 62,633 /month
Quarterly Net Income =	\$ 187,899 /quarter

## Lewis and Clark Rural Water Project Projected Expenses and Revenue

Water Treatment Plant scheduled to be operational 10/1/09

Water Cost: Use \$1.15 per 1000 gallons (service connection cost is not included in this estimate)

Connections Done by 12/31/12		
Member Entity	Peak MGD	Avg MGD
Luverne	0.75	0.75
Boyden	0.10	0.06
Rural Water No. 1 (2)	0.00	0.00
Sheldon	1.00	0.70
Rock County RWS (2)	0.15	0.11
Lincoln - Pipestone RWS	1.00	0.70
Totals this Year	3.00	2.32
Previous Totals	19.31	14.27
Total to Date	22.31	16.59

Monthly/Quarterly Income - 1/1/13 to 12/31/13	
Average Demand =	16.59 MGD
Water Delivered/Month =	504,613 1000 gal
Monthly Income =	\$ 580,304 /month
Monthly Expense =	\$ 472,997 /month
Monthly Admin Cost =	\$ 13,333 /month
Monthly Net Income =	\$ 93,974 /month
Quarterly Net Income =	\$ 281,921 /quarter

Connections Done by 12/31/13		
Member Entity	Peak MGD	Avg MGD
Worthington	1.73	1.73
Sibley	0.65	0.34
Clay Regional RWS (1)	1.00	0.48
Totals this Year	3.38	2.55
Previous Totals	22.31	16.59
Total to Date	25.69	19.14

Monthly/Quarterly Income - 1/1/14 to 12/31/14	
Average Demand =	19.14 MGD
Water Delivered/Month =	582,236 1000 gal
Monthly Income =	\$ 669,571 /month
Monthly Expense =	\$ 517,676 /month
Monthly Admin Cost =	\$ 13,333 /month
Monthly Net Income =	\$ 138,562 /month
Quarterly Net Income =	\$ 415,685 /quarter

Connections Done by 12/31/14		
Member Entity	Peak MGD	Avg MGD
Madison	1.50	0.45
Clay Regional RWS (2)	0.00	0.00
Totals this Year	1.50	0.45
Previous Totals	25.69	19.14
Total to Date	27.19	19.59

Monthly/Quarterly Income - 1/1/15 forward	
Average Demand =	19.59 MGD
Water Delivered/Month =	595,829 1000 gal
Monthly Income =	\$ 685,203 /month
Monthly Expense =	\$ 532,100 /month
Monthly Admin Cost =	\$ 13,333 /month
Monthly Net Income =	\$ 139,770 /month
Quarterly Net Income =	\$ 419,309 /quarter

### Estimated Annual Cost

Description	Raw Water System	Water Treatment Plant	Treated Water Pipeline System	Total Project
<b>10/1/09 to 12/31/10 - Average Flow (MGD) =</b>			<b>11.49</b>	
<b>Estimated Cost per 1000 gallons =</b>			<b>\$ 1.11</b>	
Energy	\$328,615	\$749,034	\$96,569	\$1,174,218
Chemicals	\$0	\$518,482	\$26,081	\$544,562
Labor	\$29,000	\$1,456,000	\$116,000	\$1,601,000
Personnel	0.5	25	2	27.5
R&R Account	\$90,000	\$251,000	\$350,000	\$691,000
Miscellaneous	\$20,000	\$346,000	\$100,000	\$466,000
Estimated Annual Cost - Operations	\$467,615	\$3,320,516	\$688,650	\$4,476,781
Estimated Annual Cost - Admin				\$160,000
Total Estimated Annual Cost				\$4,636,781

<b>1/1/11 to 12/31/11 - Average Flow (MGD) =</b>			<b>12.69</b>	
<b>Estimated Cost per 1000 gallons =</b>			<b>\$ 1.04</b>	
Energy	\$362,881	\$827,137	\$124,628	\$1,314,646
Chemicals	\$0	\$572,545	\$28,800	\$601,345
Labor	\$29,000	\$1,456,000	\$116,000	\$1,601,000
Personnel	0.5	25	2	27.5
R&R Account	\$90,000	\$251,000	\$350,000	\$691,000
Miscellaneous	\$20,000	\$346,000	\$100,000	\$466,000
Estimated Annual Cost - Operations	\$501,881	\$3,452,682	\$719,428	\$4,673,991
Estimated Annual Cost - Admin				\$160,000
Total Estimated Annual Cost				\$4,833,991

<b>1/1/12 to 12/31/12 - Average Flow (MGD) =</b>			<b>14.27</b>	
<b>Estimated Cost per 1000 gallons =</b>			<b>\$ 1.01</b>	
Energy	\$408,136	\$930,291	\$197,224	\$1,535,651
Chemicals	\$0	\$643,948	\$32,392	\$676,340
Labor	\$29,000	\$1,456,000	\$175,000	\$1,660,000
Personnel	0.5	25	3	28.5
R&R Account	\$90,000	\$251,000	\$350,000	\$691,000
Miscellaneous	\$20,000	\$346,000	\$150,000	\$516,000
Estimated Annual Cost - Operations	\$547,136	\$3,627,238	\$904,616	\$5,078,990
Estimated Annual Cost - Admin				\$160,000
Total Estimated Annual Cost				\$5,238,990

### Estimated Annual Cost

Description	Raw Water System	Water Treatment Plant	Treated Water Pipeline System	Total Project
<b>1/1/13 to 12/31/13 - Average Flow (MGD) =</b>			<b>16.59</b>	
<b>Estimated Cost per 1000 gallons =</b>			<b>\$ 0.96</b>	
Energy	\$474,430	\$1,081,400	\$358,939	\$1,914,769
Chemicals	\$0	\$748,546	\$37,653	\$786,199
Labor	\$29,000	\$1,456,000	\$233,000	\$1,718,000
Personnel	0.5	25	4	29.5
R&R Account	\$90,000	\$251,000	\$350,000	\$691,000
Miscellaneous	\$20,000	\$346,000	\$200,000	\$566,000
Estimated Annual Cost - Operations	\$613,430	\$3,882,946	\$1,179,592	\$5,675,968
Estimated Annual Cost - Admin				\$160,000
<b>Total Estimated Annual Cost</b>				<b>\$5,835,968</b>

<b>1/1/14 to 12/31/14 - Average Flow (MGD) =</b>			<b>19.14</b>	
<b>Estimated Cost per 1000 gallons =</b>			<b>\$ 0.91</b>	
Energy	\$547,411	\$1,247,749	\$534,818	\$2,329,978
Chemicals	\$0	\$863,693	\$43,445	\$907,138
Labor	\$29,000	\$1,456,000	\$233,000	\$1,718,000
Personnel	0.5	25	4	29.5
R&R Account	\$90,000	\$251,000	\$350,000	\$691,000
Miscellaneous	\$20,000	\$346,000	\$200,000	\$566,000
Estimated Annual Cost - Operations	\$686,411	\$4,164,442	\$1,361,263	\$6,212,116
Estimated Annual Cost - Admin				\$160,000
<b>Total Estimated Annual Cost</b>				<b>\$6,372,116</b>

<b>After 1/1/15 (All Systems) - Average Flow (MGD) =</b>			<b>19.59</b>	
<b>Estimated Cost per 1000 gallons =</b>			<b>\$ 0.92</b>	
Energy	\$560,191	\$1,276,880	\$644,818	\$2,481,889
Chemicals	\$0	\$883,857	\$44,460	\$928,316
Labor	\$29,000	\$1,456,000	\$233,000	\$1,718,000
Personnel	0.5	25	4	29.5
R&R Account	\$90,000	\$251,000	\$350,000	\$691,000
Miscellaneous	\$20,000	\$346,000	\$200,000	\$566,000
Estimated Annual Cost - Operations	\$699,191	\$4,213,737	\$1,472,278	\$6,385,205
Estimated Annual Cost - Admin				\$160,000
<b>Total Estimated Annual Cost</b>				<b>\$6,545,205</b>

Lewis & Clark Rural Water System  
Pumping Station Power Costs

Description	Pump Capacity (Avg Flow 2000)	Total Cost (Avg Flow 2000)	10/01/09 to 12/31/10	1/1/11 to 12/31/11	1/1/12 to 12/31/12	1/1/13 to 12/31/13	1/1/14 to 12/31/14	After 1/1/15
<b>Main Line Stations</b>								
West of Lebanon	2.51	\$ 113,650	\$ -	\$ -	\$ 57,594	\$ 91,916	\$ 113,650	\$ 113,650
North of Hull	1.59	\$ 74,720	\$ -	\$ -	\$ -	\$ 52,163	\$ 74,720	\$ 74,720
North of Spencer	0.24	\$ 29,808	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 29,808
South of Sioux Falls	5.15	\$ 120,419	\$ -	\$ 28,059	\$ 35,541	\$ 72,018	\$ 120,419	\$ 120,419
Luverne	2.88	\$ 93,200	\$ -	\$ -	\$ -	\$ 26,213	\$ 93,200	\$ 93,200
West of Sioux Falls	0.43	\$ 80,300	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 80,300
<b>Service Line Boosters</b>								
South Lincoln	0.18	\$ 6,800	\$ 6,800	\$ 6,800	\$ 6,800	\$ 6,800	\$ 6,800	\$ 6,800
Tea	0.13	\$ 8,850	\$ 8,850	\$ 8,850	\$ 8,850	\$ 8,850	\$ 8,850	\$ 8,850
MCWC (west)	0.45	\$ 24,319	\$ 24,319	\$ 24,319	\$ 24,319	\$ 24,319	\$ 24,319	\$ 24,319
Sioux Falls	10.00	\$ 56,600	\$ 56,600	\$ 56,600	\$ 56,600	\$ 56,600	\$ 56,600	\$ 56,600
Hull	0.15	\$ 3,520	\$ -	\$ -	\$ 3,520	\$ 3,520	\$ 3,520	\$ 3,520
Rock County #1	0.11	\$ 4,000	\$ -	\$ -	\$ 4,000	\$ 4,000	\$ 4,000	\$ 4,000
Lincoln-Pipestone RWS	0.70	\$ 12,540	\$ -	\$ -	\$ -	\$ 12,540	\$ 12,540	\$ 12,540
Sibley	0.34	\$ 16,200	\$ -	\$ -	\$ -	\$ -	\$ 16,200	\$ 16,200
<b>Total</b>		<b>\$ 644,926</b>	<b>\$ 96,569</b>	<b>\$ 124,628</b>	<b>\$ 197,224</b>	<b>\$ 358,939</b>	<b>\$ 534,818</b>	<b>\$ 644,926</b>

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**Preliminary Estimate of Required Local Funding  
Option 1 - Based on Matching State Funding (Pay As You Go)**

Shaded Areas represent when each system will be receiving water

Member System	Notes	1993 Original Reserved Capacity (MGD)	2001 Revised Reserved Capacity (MGD)	Added Capacity (MGD)	Local Cost with Added Capacity - Year 2001\$			
					Cost for Added Capacity	Local Cost Share for Original System	Revised Total Local Cost Share	Percent of Local Cost Share
Beresford, SD	1	0.250	0.800	0.550	\$1,304,711	\$375,618	\$1,680,329	3.28%
Centerville, SD		0.220	0.220	0.000	\$0	\$330,533	\$330,533	0.65%
Harrisburg, SD	1	0.250	0.400	0.150	\$355,830	\$375,618	\$731,448	1.43%
Lennox, SD		0.400	0.400	0.000	\$0	\$600,975	\$600,975	1.17%
Madison, SD	1	1.000	1.500	0.500	\$1,186,101	\$1,502,444	\$2,688,546	5.25%
Parker, SD		0.490	0.490	0.000	\$0	\$736,203	\$736,203	1.44%
Sioux Falls, SD	2	10.000	10.000	0.000	\$1,457,000	\$20,650,129	\$22,107,129	43.20%
Tea, SD	1	0.329	1.000	0.671	\$1,591,748	\$494,300	\$2,086,048	4.08%
Lincoln County RWS, SD	1	0.900	1.400	0.500	\$1,186,101	\$1,352,210	\$2,538,312	4.96%
Minnehaha CWC, SD		2.000	2.000	0.000	\$0	\$3,004,902	\$3,004,902	5.87%
South Lincoln RWS, SD	1	0.150	0.250	0.100	\$237,220	\$225,371	\$462,591	0.90%
Luverne, MN	1	0.500	0.750	0.250	\$593,051	\$751,222	\$1,344,273	2.63%
Worthington, MN		1.730	1.730	0.000	\$0	\$2,599,245	\$2,599,245	5.08%
Rock County RWS, MN		0.300	0.300	0.000	\$0	\$450,741	\$450,741	0.88%
Lincoln-Pipestone RWS, MN	1	0.300	1.000	0.700	\$1,660,542	\$450,741	\$2,111,283	4.13%
Boyden, IA		0.100	0.100	0.000	\$0	\$150,247	\$150,247	0.29%
Hull, IA		0.300	0.300	0.000	\$0	\$450,741	\$450,741	0.88%
Sheldon, IA		1.000	1.000	0.000	\$0	\$1,502,444	\$1,502,444	2.94%
Sibley, IA		0.650	0.650	0.000	\$0	\$976,593	\$976,593	1.91%
Sioux Center, IA		0.600	0.600	0.000	\$0	\$901,469	\$901,469	1.76%
Clay Regional RWS, IA		1.000	1.000	0.000	\$0	\$1,502,444	\$1,502,444	2.94%
RWS #1, IA		1.000	1.000	0.000	\$0	\$1,502,444	\$1,502,444	2.94%
Rock Rapids, IA	3	0.000	0.300	0.300	\$711,661	\$0	\$711,661	1.39%
<b>TOTALS</b>		<b>23.469</b>	<b>27.190</b>	<b>3.721</b>	<b>\$10,283,965</b>	<b>\$40,886,636</b>	<b>\$51,170,601</b>	<b>100.00%</b>

<sup>1</sup> Increased reserved capacity

<sup>2</sup> Changed connection, added cost

<sup>3</sup> New member system

Estimate of added cost for Sioux Falls	\$1,457,000
Estimate of added cost for increased capacity	\$8,826,965
Estimate of Total added cost	\$10,283,965
Cost/MGD of added capacity	\$2,372,202

**Preliminary Estimate of Required Local Funding  
Option 1 - Based on Matching State Funding (Pay As You Go)**

Shaded Areas represent when each system will be receiving water

Member System	Notes	Preliminary Estimate of Annual Construction Funding Requirements (does not include other membership fees, water sales or other costs)						
		FFY 2002	FFY 2003	FFY 2004	FFY 2005	FFY 2006	FFY 2007	FFY 2008
		<b>\$ 345,749</b>	<b>\$ 2,221,088</b>	<b>\$ 5,552,719</b>	<b>\$ 5,552,719</b>	<b>\$ 5,552,719</b>	<b>\$ 5,552,719</b>	<b>\$ 5,552,719</b>
Beresford, SD	1	\$11,354	\$72,936	\$182,339	\$182,339	\$182,339	\$182,339	\$182,339
Centerville, SD		\$2,233	\$14,347	\$35,867	\$35,867	\$35,867	\$35,867	\$35,867
Harrisburg, SD	1	\$4,942	\$31,749	\$79,372	\$79,372	\$79,372	\$79,372	\$79,372
Lennox, SD		\$4,061	\$26,086	\$65,214	\$65,214	\$65,214	\$65,214	\$65,214
Madison, SD	1	\$18,166	\$116,698	\$291,744	\$291,744	\$291,744	\$291,744	\$291,744
Parker, SD		\$4,974	\$31,955	\$79,888	\$79,888	\$79,888	\$79,888	\$79,888
Sioux Falls, SD	2	\$149,373	\$959,572	\$2,398,930	\$2,398,930	\$2,398,930	\$2,398,930	\$2,398,930
Tea, SD	1	\$14,095	\$90,546	\$226,365	\$226,365	\$226,365	\$226,365	\$226,365
Lincoln County RWS, SD	1	\$17,151	\$110,177	\$275,442	\$275,442	\$275,442	\$275,442	\$275,442
Minnehaha CWC, SD		\$20,304	\$130,429	\$326,073	\$326,073	\$326,073	\$326,073	\$326,073
South Lincoln RWS, SD	1	\$3,126	\$20,079	\$50,198	\$50,198	\$50,198	\$50,198	\$50,198
Luverne, MN	1	\$9,083	\$58,349	\$145,872	\$145,872	\$145,872	\$145,872	\$145,872
Worthington, MN		\$17,563	\$112,822	\$282,054	\$282,054	\$282,054	\$282,054	\$282,054
Rock County RWS, MN		\$3,046	\$19,565	\$48,912	\$48,912	\$48,912	\$48,912	\$48,912
Lincoln-Pipestone RWS, MN	1	\$14,266	\$91,641	\$229,103	\$229,103	\$229,103	\$229,103	\$229,103
Boyden, IA		\$1,015	\$6,522	\$16,304	\$16,304	\$16,304	\$16,304	\$16,304
Hull, IA		\$3,046	\$19,565	\$48,912	\$48,912	\$48,912	\$48,912	\$48,912
Sheldon, IA		\$10,152	\$65,214	\$163,036	\$163,036	\$163,036	\$163,036	\$163,036
Sibley, IA		\$6,599	\$42,390	\$105,974	\$105,974	\$105,974	\$105,974	\$105,974
Sioux Center, IA		\$6,091	\$39,129	\$97,822	\$97,822	\$97,822	\$97,822	\$97,822
Clay Regional RWS, IA		\$10,152	\$65,214	\$163,036	\$163,036	\$163,036	\$163,036	\$163,036
RWS #1, IA		\$10,152	\$65,214	\$163,036	\$163,036	\$163,036	\$163,036	\$163,036
Rock Rapids, IA	3	\$4,809	\$30,890	\$77,225	\$77,225	\$77,225	\$77,225	\$77,225
<b>TOTALS</b>		<b>\$345,749</b>	<b>\$2,221,088</b>	<b>\$5,552,719</b>	<b>\$5,552,719</b>	<b>\$5,552,719</b>	<b>\$5,552,719</b>	<b>\$5,552,719</b>

<sup>1</sup> Increased reserved capacity

<sup>2</sup> Changed connection, added cost

<sup>3</sup> New member system

**Preliminary Estimate of Required Local Funding  
Option 1 - Based on Matching State Funding (Pay As You Go)**

Shaded Areas represent when each system will be receiving water

Member System	Notes	Preliminary Estimate of Annual Construction Funding Requirements (does not include other membership fees, water sales or other costs)						
		FFY 2009	FFY 2010	FFY 2011	FFY 2012	FFY 2013	FFY 2014	Total
		<b>\$ 5,552,719</b>	<b>\$ 5,552,719</b>	<b>\$ 5,552,719</b>	<b>\$ 5,552,719</b>	<b>\$ 5,552,719</b>	<b>\$ 3,607,541</b>	<b>\$ 61,701,570</b>
Beresford, SD	1	\$182,339	\$182,339	\$182,339	\$182,339	\$182,339	\$118,464	\$2,026,142
Centerville, SD		\$35,867	\$35,867	\$35,867	\$35,867	\$35,867	\$23,303	\$398,557
Harrisburg, SD	1	\$79,372	\$79,372	\$79,372	\$79,372	\$79,372	\$51,567	\$881,981
Lennox, SD		\$65,214	\$65,214	\$65,214	\$65,214	\$65,214	\$42,369	\$724,657
Madison, SD	1	\$291,744	\$291,744	\$291,744	\$291,744	\$291,744	\$189,543	\$3,241,851
Parker, SD		\$79,888	\$79,888	\$79,888	\$79,888	\$79,888	\$51,902	\$887,714
Sioux Falls, SD	2	\$2,398,930	\$2,398,930	\$2,398,930	\$2,398,930	\$2,398,930	\$1,558,558	\$26,656,802
Tea, SD	1	\$226,365	\$226,365	\$226,365	\$226,365	\$226,365	\$147,067	\$2,515,359
Lincoln County RWS, SD	1	\$275,442	\$275,442	\$275,442	\$275,442	\$275,442	\$178,952	\$3,060,699
Minnehaha CWC, SD		\$326,073	\$326,073	\$326,073	\$326,073	\$326,073	\$211,846	\$3,623,314
South Lincoln RWS, SD	1	\$50,198	\$50,198	\$50,198	\$50,198	\$50,198	\$32,613	\$557,792
Luverne, MN	1	\$145,872	\$145,872	\$145,872	\$145,872	\$145,872	\$94,772	\$1,620,926
Worthington, MN		\$282,054	\$282,054	\$282,054	\$282,054	\$282,054	\$183,247	\$3,134,173
Rock County RWS, MN		\$48,912	\$48,912	\$48,912	\$48,912	\$48,912	\$31,777	\$543,504
Lincoln-Pipestone RWS, MN	1	\$229,103	\$229,103	\$229,103	\$229,103	\$229,103	\$148,846	\$2,545,787
Boyden, IA		\$16,304	\$16,304	\$16,304	\$16,304	\$16,304	\$10,592	\$181,168
Hull, IA		\$48,912	\$48,912	\$48,912	\$48,912	\$48,912	\$31,777	\$543,504
Sheldon, IA		\$163,036	\$163,036	\$163,036	\$163,036	\$163,036	\$105,923	\$1,811,649
Sibley, IA		\$105,974	\$105,974	\$105,974	\$105,974	\$105,974	\$68,850	\$1,177,577
Sioux Center, IA		\$97,822	\$97,822	\$97,822	\$97,822	\$97,822	\$63,554	\$1,086,993
Clay Regional RWS, IA		\$163,036	\$163,036	\$163,036	\$163,036	\$163,036	\$105,923	\$1,811,649
RWS #1, IA		\$163,036	\$163,036	\$163,036	\$163,036	\$163,036	\$105,923	\$1,811,649
Rock Rapids, IA	3	\$77,225	\$77,225	\$77,225	\$77,225	\$77,225	\$50,172	\$858,121
<b>TOTALS</b>		<b>\$5,552,719</b>	<b>\$5,552,719</b>	<b>\$5,552,719</b>	<b>\$5,552,719</b>	<b>\$5,552,719</b>	<b>\$3,607,541</b>	<b>\$61,701,570</b>

<sup>1</sup> Increased reserved capacity

<sup>2</sup> Changed connection, added cost

<sup>3</sup> New member system



**Preliminary Estimate of Required Local Funding  
Option 2 - Based on Financing the Local Match in 3 Loans (Staged Financing)**

Shaded Areas represent when each system will be receiving water

Member System	Notes	1993 Original Reserved Capacity (MGD)	2001 Revised Reserved Capacity (MGD)	Added Capacity (MGD)	Local Cost with Added Capacity - Year 2001\$			
					Cost for Added Capacity	Local Cost Share for Original System	Revised Total Local Cost Share	Percent of Local Cost Share
Beresford, SD	1	0.250	0.800	0.550	\$1,304,711	\$375,618	\$1,680,329	3.28%
Centerville, SD		0.220	0.220	0.000	\$0	\$330,533	\$330,533	0.65%
Harrisburg, SD	1	0.250	0.400	0.150	\$355,830	\$375,618	\$731,448	1.43%
Lennox, SD		0.400	0.400	0.000	\$0	\$600,975	\$600,975	1.17%
Madison, SD	1	1.000	1.500	0.500	\$1,186,101	\$1,502,444	\$2,688,546	5.25%
Parker, SD		0.490	0.490	0.000	\$0	\$736,203	\$736,203	1.44%
Sioux Falls, SD	2	10.000	10.000	0.000	\$1,457,000	\$20,650,129	\$22,107,129	43.20%
Tea, SD	1	0.329	1.000	0.671	\$1,591,748	\$494,300	\$2,086,048	4.08%
Lincoln County RWS, SD	1	0.900	1.400	0.500	\$1,186,101	\$1,352,210	\$2,538,312	4.96%
Minnehaha CWC, SD		2.000	2.000	0.000	\$0	\$3,004,902	\$3,004,902	5.87%
South Lincoln RWS, SD	1	0.150	0.250	0.100	\$237,220	\$225,371	\$462,591	0.90%
Luverne, MN	1	0.500	0.750	0.250	\$593,051	\$751,222	\$1,344,273	2.63%
Worthington, MN		1.730	1.730	0.000	\$0	\$2,599,245	\$2,599,245	5.08%
Rock County RWS, MN		0.300	0.300	0.000	\$0	\$450,741	\$450,741	0.88%
Lincoln-Pipestone RWS, MN	1	0.300	1.000	0.700	\$1,660,542	\$450,741	\$2,111,283	4.13%
Boyden, IA		0.100	0.100	0.000	\$0	\$150,247	\$150,247	0.29%
Hull, IA		0.300	0.300	0.000	\$0	\$450,741	\$450,741	0.88%
Sheldon, IA		1.000	1.000	0.000	\$0	\$1,502,444	\$1,502,444	2.94%
Sibley, IA		0.650	0.650	0.000	\$0	\$976,593	\$976,593	1.91%
Sioux Center, IA		0.600	0.600	0.000	\$0	\$901,469	\$901,469	1.76%
Clay Regional RWS, IA		1.000	1.000	0.000	\$0	\$1,502,444	\$1,502,444	2.94%
RWS #1, IA		1.000	1.000	0.000	\$0	\$1,502,444	\$1,502,444	2.94%
Rock Rapids, IA	3	0.000	0.300	0.300	\$711,661	\$0	\$711,661	1.39%
<b>TOTALS</b>		<b>23.469</b>	<b>27.190</b>	<b>3.721</b>	<b>\$10,283,965</b>	<b>\$40,886,636</b>	<b>\$51,170,601</b>	<b>100.00%</b>

<sup>1</sup> Increased reserved capacity

<sup>2</sup> Changed connection, added cost

<sup>3</sup> New member system

<<<NOTE THE FUNDING STREAM SHOWN IN THIS TABLE IS BASED ON STRAIGHT AMORTIZATION OF THE LOANS OVER A 30-YEAR PERIOD WITH CONSTANT INTEREST AND CONSTANT PAYMENTS.

Estimate of added cost for Sioux Falls	\$1,457,000
Estimate of added cost for increased capacity	\$8,826,965
Estimate of Total added cost	\$10,283,965
Cost/MGD of added capacity	\$2,372,202

**Preliminary Estimate of Required Local Funding  
Option 2 - Based on Financing the Local Match in 3 Loans (Staged Financing)**

Shaded Areas represent when each system will be receiving water

Member System	Notes	Preliminary Estimate of Annual Construction Funding Requirements (does not include other membership fees, water sales or other costs)						
		FFY 2002	FFY 2003	FFY 2004	FFY 2005	FFY 2006	FFY 2007	FFY 2008
		<b>\$ 347,759</b>	<b>\$ -</b>	<b>\$ 1,051,535</b>	<b>\$ 1,051,535</b>	<b>\$ 1,051,535</b>	<b>\$ 2,453,583</b>	<b>\$ 2,453,583</b>
Beresford, SD	1	\$11,420	\$0	\$34,530	\$34,530	\$34,530	\$80,570	\$80,570
Centerville, SD		\$2,246	\$0	\$6,792	\$6,792	\$6,792	\$15,849	\$15,849
Harrisburg, SD	1	\$4,971	\$0	\$15,031	\$15,031	\$15,031	\$35,072	\$35,072
Lennox, SD		\$4,084	\$0	\$12,350	\$12,350	\$12,350	\$28,816	\$28,816
Madison, SD	1	\$18,272	\$0	\$55,249	\$55,249	\$55,249	\$128,913	\$128,913
Parker, SD		\$5,003	\$0	\$15,129	\$15,129	\$15,129	\$35,300	\$35,300
Sioux Falls, SD	2	\$150,242	\$0	\$454,293	\$454,293	\$454,293	\$1,060,016	\$1,060,016
Tea, SD	1	\$14,177	\$0	\$42,867	\$42,867	\$42,867	\$100,024	\$100,024
Lincoln County RWS, SD	1	\$17,251	\$0	\$52,161	\$52,161	\$52,161	\$121,710	\$121,710
Minnehaha CWC, SD		\$20,422	\$0	\$61,750	\$61,750	\$61,750	\$144,082	\$144,082
South Lincoln RWS, SD	1	\$3,144	\$0	\$9,506	\$9,506	\$9,506	\$22,181	\$22,181
Luverne, MN	1	\$9,136	\$0	\$27,624	\$27,624	\$27,624	\$64,457	\$64,457
Worthington, MN		\$17,665	\$0	\$53,413	\$53,413	\$53,413	\$124,631	\$124,631
Rock County RWS, MN		\$3,063	\$0	\$9,263	\$9,263	\$9,263	\$21,613	\$21,613
Lincoln-Pipestone RWS, MN	1	\$14,348	\$0	\$43,386	\$43,386	\$43,386	\$101,234	\$101,234
Boyden, IA		\$1,021	\$0	\$3,088	\$3,088	\$3,088	\$7,204	\$7,204
Hull, IA		\$3,063	\$0	\$9,263	\$9,263	\$9,263	\$21,613	\$21,613
Sheldon, IA		\$10,211	\$0	\$30,875	\$30,875	\$30,875	\$72,041	\$72,041
Sibley, IA		\$6,637	\$0	\$20,069	\$20,069	\$20,069	\$46,827	\$46,827
Sioux Center, IA		\$6,126	\$0	\$18,525	\$18,525	\$18,525	\$43,225	\$43,225
Clay Regional RWS, IA		\$10,211	\$0	\$30,875	\$30,875	\$30,875	\$72,041	\$72,041
RWS #1, IA		\$10,211	\$0	\$30,875	\$30,875	\$30,875	\$72,041	\$72,041
Rock Rapids, IA	3	\$4,836	\$0	\$14,624	\$14,624	\$14,624	\$34,123	\$34,123
<b>TOTALS</b>		<b>\$347,759</b>	<b>\$0</b>	<b>\$1,051,535</b>	<b>\$1,051,535</b>	<b>\$1,051,535</b>	<b>\$2,453,583</b>	<b>\$2,453,583</b>

<sup>1</sup> Increased reserved capacity

<sup>2</sup> Changed connection, added cost

<sup>3</sup> New member system

<<<NOTE THE FUNDING STREAM SHOWN IN THIS TABLE IS BASED ON STRAIGHT AMORTIZATION OF THE LOANS OVER A 30-YEAR PERIOD WITH CONSTANT INTEREST AND CONSTANT PAYMENTS.

**Preliminary Estimate of Required Local Funding  
Option 2 - Based on Financing the Local Match in 3 Loans (Staged Financing)**

Shaded Areas represent when each system will be receiving water

Member System	Notes	Preliminary Estimate of Annual Construction Funding Requirements (does not include other membership fees, water sales or other costs)						
		FFY 2009	FFY 2010	FFY 2011	FFY 2012	FFY 2013	FFY 2014	FFY 2015
		<b>\$ 2,453,583</b>	<b>\$ 4,009,769</b>	<b>\$ 4,009,769</b>	<b>\$ 4,009,769</b>	<b>\$ 4,009,769</b>	<b>\$ 4,009,769</b>	<b>\$ 4,009,769</b>
Beresford, SD	1	\$80,570	\$131,672	\$131,672	\$131,672	\$131,672	\$131,672	\$131,672
Centerville, SD		\$15,849	\$25,901	\$25,901	\$25,901	\$25,901	\$25,901	\$25,901
Harrisburg, SD	1	\$35,072	\$57,317	\$57,317	\$57,317	\$57,317	\$57,317	\$57,317
Lennox, SD		\$28,816	\$47,093	\$47,093	\$47,093	\$47,093	\$47,093	\$47,093
Madison, SD	1	\$128,913	\$210,677	\$210,677	\$210,677	\$210,677	\$210,677	\$210,677
Parker, SD		\$35,300	\$57,689	\$57,689	\$57,689	\$57,689	\$57,689	\$57,689
Sioux Falls, SD	2	\$1,060,016	\$1,732,332	\$1,732,332	\$1,732,332	\$1,732,332	\$1,732,332	\$1,732,332
Tea, SD	1	\$100,024	\$163,464	\$163,464	\$163,464	\$163,464	\$163,464	\$163,464
Lincoln County RWS, SD	1	\$121,710	\$198,904	\$198,904	\$198,904	\$198,904	\$198,904	\$198,904
Minnehaha CWC, SD		\$144,082	\$235,466	\$235,466	\$235,466	\$235,466	\$235,466	\$235,466
South Lincoln RWS, SD	1	\$22,181	\$36,249	\$36,249	\$36,249	\$36,249	\$36,249	\$36,249
Luverne, MN	1	\$64,457	\$105,338	\$105,338	\$105,338	\$105,338	\$105,338	\$105,338
Worthington, MN		\$124,631	\$203,679	\$203,679	\$203,679	\$203,679	\$203,679	\$203,679
Rock County RWS, MN		\$21,613	\$35,320	\$35,320	\$35,320	\$35,320	\$35,320	\$35,320
Lincoln-Pipestone RWS, MN	1	\$101,234	\$165,442	\$165,442	\$165,442	\$165,442	\$165,442	\$165,442
Boyden, IA		\$7,204	\$11,773	\$11,773	\$11,773	\$11,773	\$11,773	\$11,773
Hull, IA		\$21,613	\$35,320	\$35,320	\$35,320	\$35,320	\$35,320	\$35,320
Sheldon, IA		\$72,041	\$117,733	\$117,733	\$117,733	\$117,733	\$117,733	\$117,733
Sibley, IA		\$46,827	\$76,527	\$76,527	\$76,527	\$76,527	\$76,527	\$76,527
Sioux Center, IA		\$43,225	\$70,640	\$70,640	\$70,640	\$70,640	\$70,640	\$70,640
Clay Regional RWS, IA		\$72,041	\$117,733	\$117,733	\$117,733	\$117,733	\$117,733	\$117,733
RWS #1, IA		\$72,041	\$117,733	\$117,733	\$117,733	\$117,733	\$117,733	\$117,733
Rock Rapids, IA	3	\$34,123	\$55,766	\$55,766	\$55,766	\$55,766	\$55,766	\$55,766
<b>TOTALS</b>		<b>\$2,453,583</b>	<b>\$4,009,769</b>	<b>\$4,009,769</b>	<b>\$4,009,769</b>	<b>\$4,009,769</b>	<b>\$4,009,769</b>	<b>\$4,009,769</b>

<sup>1</sup> Increased reserved capacity

<sup>2</sup> Changed connection, added cost

<sup>3</sup> New member system

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**Preliminary Estimate of Required Local Funding  
Option 2 - Based on Financing the Local Match in 3 Loans (Staged Financing)**

Shaded Areas represent when each system will be receiving water

Member System	Notes	Preliminary Estimate of Annual Construction Funding Requirements (does not include other membership fees, water sales or other costs)						
		FFY 2016	FFY 2017	FFY 2018	FFY 2019	FFY 2020	FFY 2021	FFY 2022
		<b>\$ 4,009,769</b>	<b>\$ 4,009,769</b>	<b>\$ 4,009,769</b>	<b>\$ 4,009,769</b>	<b>\$ 4,009,769</b>	<b>\$ 4,009,769</b>	<b>\$ 4,009,769</b>
Beresford, SD	1	\$131,672	\$131,672	\$131,672	\$131,672	\$131,672	\$131,672	\$131,672
Centerville, SD		\$25,901	\$25,901	\$25,901	\$25,901	\$25,901	\$25,901	\$25,901
Harrisburg, SD	1	\$57,317	\$57,317	\$57,317	\$57,317	\$57,317	\$57,317	\$57,317
Lennox, SD		\$47,093	\$47,093	\$47,093	\$47,093	\$47,093	\$47,093	\$47,093
Madison, SD	1	\$210,677	\$210,677	\$210,677	\$210,677	\$210,677	\$210,677	\$210,677
Parker, SD		\$57,689	\$57,689	\$57,689	\$57,689	\$57,689	\$57,689	\$57,689
Sioux Falls, SD	2	\$1,732,332	\$1,732,332	\$1,732,332	\$1,732,332	\$1,732,332	\$1,732,332	\$1,732,332
Tea, SD	1	\$163,464	\$163,464	\$163,464	\$163,464	\$163,464	\$163,464	\$163,464
Lincoln County RWS, SD	1	\$198,904	\$198,904	\$198,904	\$198,904	\$198,904	\$198,904	\$198,904
Minnehaha CWC, SD		\$235,466	\$235,466	\$235,466	\$235,466	\$235,466	\$235,466	\$235,466
South Lincoln RWS, SD	1	\$36,249	\$36,249	\$36,249	\$36,249	\$36,249	\$36,249	\$36,249
Luverne, MN	1	\$105,338	\$105,338	\$105,338	\$105,338	\$105,338	\$105,338	\$105,338
Worthington, MN		\$203,679	\$203,679	\$203,679	\$203,679	\$203,679	\$203,679	\$203,679
Rock County RWS, MN		\$35,320	\$35,320	\$35,320	\$35,320	\$35,320	\$35,320	\$35,320
Lincoln-Pipestone RWS, MN	1	\$165,442	\$165,442	\$165,442	\$165,442	\$165,442	\$165,442	\$165,442
Boyden, IA		\$11,773	\$11,773	\$11,773	\$11,773	\$11,773	\$11,773	\$11,773
Hull, IA		\$35,320	\$35,320	\$35,320	\$35,320	\$35,320	\$35,320	\$35,320
Sheldon, IA		\$117,733	\$117,733	\$117,733	\$117,733	\$117,733	\$117,733	\$117,733
Sibley, IA		\$76,527	\$76,527	\$76,527	\$76,527	\$76,527	\$76,527	\$76,527
Sioux Center, IA		\$70,640	\$70,640	\$70,640	\$70,640	\$70,640	\$70,640	\$70,640
Clay Regional RWS, IA		\$117,733	\$117,733	\$117,733	\$117,733	\$117,733	\$117,733	\$117,733
RWS #1, IA		\$117,733	\$117,733	\$117,733	\$117,733	\$117,733	\$117,733	\$117,733
Rock Rapids, IA	3	\$55,766	\$55,766	\$55,766	\$55,766	\$55,766	\$55,766	\$55,766
<b>TOTALS</b>		<b>\$4,009,769</b>	<b>\$4,009,769</b>	<b>\$4,009,769</b>	<b>\$4,009,769</b>	<b>\$4,009,769</b>	<b>\$4,009,769</b>	<b>\$4,009,769</b>

<sup>1</sup> Increased reserved capacity

<sup>2</sup> Changed connection, added cost

<sup>3</sup> New member system

<<<NOTE THE FUNDING STREAM SHOWN IN THIS TABLE IS BASED ON STRAIGHT AMORTIZATION OF THE LOANS OVER A 30-YEAR PERIOD WITH CONSTANT INTEREST AND CONSTANT PAYMENTS.

**Preliminary Estimate of Required Local Funding  
Option 2 - Based on Financing the Local Match in 3 Loans (Staged Financing)**

Shaded Areas represent when each system will be receiving water

Member System	Notes	Preliminary Estimate of Annual Construction Funding Requirements (does not include other membership fees, water sales or other costs)						
		FFY 2023	FFY 2024	FFY 2025	FFY 2026	FFY 2027	FFY 2028	FFY 2029
		<b>\$ 4,009,769</b>	<b>\$ 4,009,769</b>	<b>\$ 4,009,769</b>	<b>\$ 4,009,769</b>	<b>\$ 4,009,769</b>	<b>\$ 4,009,769</b>	<b>\$ 4,009,769</b>
Beresford, SD	1	\$131,672	\$131,672	\$131,672	\$131,672	\$131,672	\$131,672	\$131,672
Centerville, SD		\$25,901	\$25,901	\$25,901	\$25,901	\$25,901	\$25,901	\$25,901
Harrisburg, SD	1	\$57,317	\$57,317	\$57,317	\$57,317	\$57,317	\$57,317	\$57,317
Lennox, SD		\$47,093	\$47,093	\$47,093	\$47,093	\$47,093	\$47,093	\$47,093
Madison, SD	1	\$210,677	\$210,677	\$210,677	\$210,677	\$210,677	\$210,677	\$210,677
Parker, SD		\$57,689	\$57,689	\$57,689	\$57,689	\$57,689	\$57,689	\$57,689
Sioux Falls, SD	2	\$1,732,332	\$1,732,332	\$1,732,332	\$1,732,332	\$1,732,332	\$1,732,332	\$1,732,332
Tea, SD	1	\$163,464	\$163,464	\$163,464	\$163,464	\$163,464	\$163,464	\$163,464
Lincoln County RWS, SD	1	\$198,904	\$198,904	\$198,904	\$198,904	\$198,904	\$198,904	\$198,904
Minnehaha CWC, SD		\$235,466	\$235,466	\$235,466	\$235,466	\$235,466	\$235,466	\$235,466
South Lincoln RWS, SD	1	\$36,249	\$36,249	\$36,249	\$36,249	\$36,249	\$36,249	\$36,249
Luverne, MN	1	\$105,338	\$105,338	\$105,338	\$105,338	\$105,338	\$105,338	\$105,338
Worthington, MN		\$203,679	\$203,679	\$203,679	\$203,679	\$203,679	\$203,679	\$203,679
Rock County RWS, MN		\$35,320	\$35,320	\$35,320	\$35,320	\$35,320	\$35,320	\$35,320
Lincoln-Pipestone RWS, MN	1	\$165,442	\$165,442	\$165,442	\$165,442	\$165,442	\$165,442	\$165,442
Boyden, IA		\$11,773	\$11,773	\$11,773	\$11,773	\$11,773	\$11,773	\$11,773
Hull, IA		\$35,320	\$35,320	\$35,320	\$35,320	\$35,320	\$35,320	\$35,320
Sheldon, IA		\$117,733	\$117,733	\$117,733	\$117,733	\$117,733	\$117,733	\$117,733
Sibley, IA		\$76,527	\$76,527	\$76,527	\$76,527	\$76,527	\$76,527	\$76,527
Sioux Center, IA		\$70,640	\$70,640	\$70,640	\$70,640	\$70,640	\$70,640	\$70,640
Clay Regional RWS, IA		\$117,733	\$117,733	\$117,733	\$117,733	\$117,733	\$117,733	\$117,733
RWS #1, IA		\$117,733	\$117,733	\$117,733	\$117,733	\$117,733	\$117,733	\$117,733
Rock Rapids, IA	3	\$55,766	\$55,766	\$55,766	\$55,766	\$55,766	\$55,766	\$55,766
<b>TOTALS</b>		<b>\$4,009,769</b>	<b>\$4,009,769</b>	<b>\$4,009,769</b>	<b>\$4,009,769</b>	<b>\$4,009,769</b>	<b>\$4,009,769</b>	<b>\$4,009,769</b>

<sup>1</sup> Increased reserved capacity

<sup>2</sup> Changed connection, added cost

<sup>3</sup> New member system

<<<NOTE THE FUNDING STREAM SHOWN IN THIS TABLE IS BASED ON STRAIGHT AMORTIZATION OF THE LOANS OVER A 30-YEAR PERIOD WITH CONSTANT INTEREST AND CONSTANT PAYMENTS.

**Preliminary Estimate of Required Local Funding**  
**Option 2 - Based on Financing the Local Match in 3 Loans (Staged Financing)**

Shaded Areas represent when each system will be receiving water

Member System	Notes	Preliminary Estimate of Annual Construction Funding Requirements (does not include other membership fees, water sales or other costs)						
		FFY 2030	FFY 2031	FFY 2032	FFY 2033	FFY 2034	FFY 2035	FFY 2036
		<b>\$ 4,009,769</b>	<b>\$ 4,009,769</b>	<b>\$ 4,009,769</b>	<b>\$ 4,009,769</b>	<b>\$ 2,958,233</b>	<b>\$ 2,958,233</b>	<b>\$ 2,958,233</b>
Beresford, SD	1	\$131,672	\$131,672	\$131,672	\$131,672	\$97,142	\$97,142	\$97,142
Centerville, SD		\$25,901	\$25,901	\$25,901	\$25,901	\$19,109	\$19,109	\$19,109
Harrisburg, SD	1	\$57,317	\$57,317	\$57,317	\$57,317	\$42,286	\$42,286	\$42,286
Lennox, SD		\$47,093	\$47,093	\$47,093	\$47,093	\$34,743	\$34,743	\$34,743
Madison, SD	1	\$210,677	\$210,677	\$210,677	\$210,677	\$155,428	\$155,428	\$155,428
Parker, SD		\$57,689	\$57,689	\$57,689	\$57,689	\$42,561	\$42,561	\$42,561
Sioux Falls, SD	2	\$1,732,332	\$1,732,332	\$1,732,332	\$1,732,332	\$1,278,039	\$1,278,039	\$1,278,039
Tea, SD	1	\$163,464	\$163,464	\$163,464	\$163,464	\$120,597	\$120,597	\$120,597
Lincoln County RWS, SD	1	\$198,904	\$198,904	\$198,904	\$198,904	\$146,743	\$146,743	\$146,743
Minnehaha CWC, SD		\$235,466	\$235,466	\$235,466	\$235,466	\$173,717	\$173,717	\$173,717
South Lincoln RWS, SD	1	\$36,249	\$36,249	\$36,249	\$36,249	\$26,743	\$26,743	\$26,743
Luverne, MN	1	\$105,338	\$105,338	\$105,338	\$105,338	\$77,714	\$77,714	\$77,714
Worthington, MN		\$203,679	\$203,679	\$203,679	\$203,679	\$150,265	\$150,265	\$150,265
Rock County RWS, MN		\$35,320	\$35,320	\$35,320	\$35,320	\$26,058	\$26,058	\$26,058
Lincoln-Pipestone RWS, MN	1	\$165,442	\$165,442	\$165,442	\$165,442	\$122,056	\$122,056	\$122,056
Boyden, IA		\$11,773	\$11,773	\$11,773	\$11,773	\$8,686	\$8,686	\$8,686
Hull, IA		\$35,320	\$35,320	\$35,320	\$35,320	\$26,058	\$26,058	\$26,058
Sheldon, IA		\$117,733	\$117,733	\$117,733	\$117,733	\$86,858	\$86,858	\$86,858
Sibley, IA		\$76,527	\$76,527	\$76,527	\$76,527	\$56,458	\$56,458	\$56,458
Sioux Center, IA		\$70,640	\$70,640	\$70,640	\$70,640	\$52,115	\$52,115	\$52,115
Clay Regional RWS, IA		\$117,733	\$117,733	\$117,733	\$117,733	\$86,858	\$86,858	\$86,858
RWS #1, IA		\$117,733	\$117,733	\$117,733	\$117,733	\$86,858	\$86,858	\$86,858
Rock Rapids, IA	3	\$55,766	\$55,766	\$55,766	\$55,766	\$41,142	\$41,142	\$41,142
<b>TOTALS</b>		<b>\$4,009,769</b>	<b>\$4,009,769</b>	<b>\$4,009,769</b>	<b>\$4,009,769</b>	<b>\$2,958,233</b>	<b>\$2,958,233</b>	<b>\$2,958,233</b>

<sup>1</sup> Increased reserved capacity

<sup>2</sup> Changed connection, added cost

<sup>3</sup> New member system

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**Preliminary Estimate of Required Local Funding  
Option 2 - Based on Financing the Local Match in 3 Loans (Staged Financing)**

Shaded Areas represent when each system will be receiving water

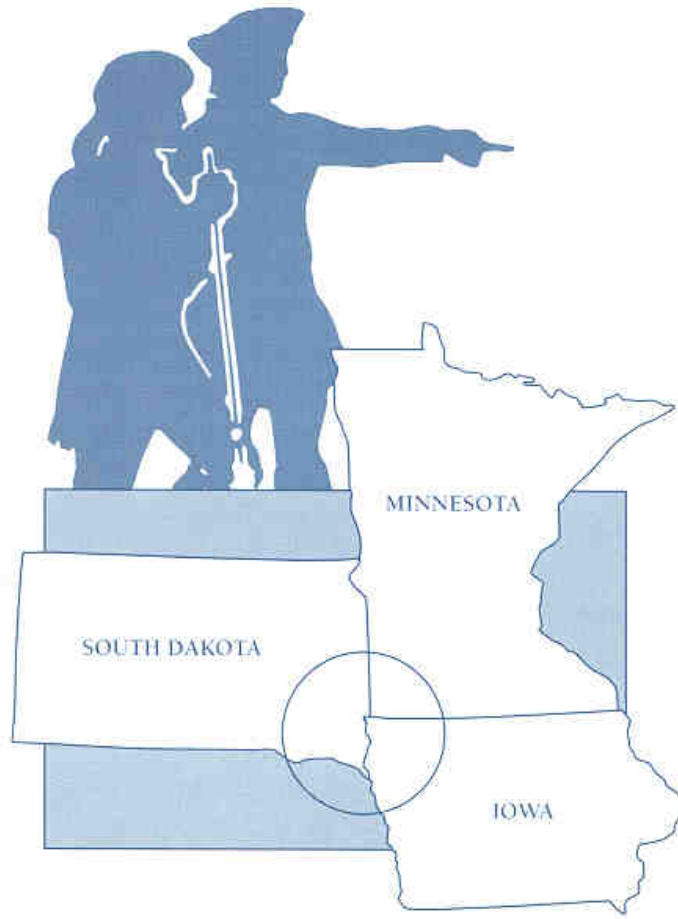
Member System	Notes	Preliminary Estimate of Annual Construction Funding Requirements (does not include other membership fees, water sales or other costs)			
		FFY 2037	FFY 2038	FFY 2039	Total
		<b>\$ 1,556,186</b>	<b>\$ 1,556,186</b>	<b>\$ 1,556,186</b>	<b>\$ 120,640,818</b>
Beresford, SD	1	\$51,102	\$51,102	\$51,102	\$3,961,576
Centerville, SD		\$10,052	\$10,052	\$10,052	\$779,271
Harrisburg, SD	1	\$22,245	\$22,245	\$22,245	\$1,724,476
Lennox, SD		\$18,277	\$18,277	\$18,277	\$1,416,871
Madison, SD	1	\$81,763	\$81,763	\$81,763	\$6,338,568
Parker, SD		\$22,389	\$22,389	\$22,389	\$1,735,686
Sioux Falls, SD	2	\$672,316	\$672,316	\$672,316	\$52,120,204
Tea, SD	1	\$63,440	\$63,440	\$63,440	\$4,918,108
Lincoln County RWS, SD	1	\$77,194	\$77,194	\$77,194	\$5,984,373
Minnehaha CWC, SD		\$91,384	\$91,384	\$91,384	\$7,084,416
South Lincoln RWS, SD	1	\$14,068	\$14,068	\$14,068	\$1,090,613
Luverne, MN	1	\$40,882	\$40,882	\$40,882	\$3,169,284
Worthington, MN		\$79,048	\$79,048	\$79,048	\$6,128,032
Rock County RWS, MN		\$13,708	\$13,708	\$13,708	\$1,062,676
Lincoln-Pipestone RWS, MN	1	\$64,208	\$64,208	\$64,208	\$4,977,602
Boyden, IA		\$4,569	\$4,569	\$4,569	\$354,225
Hull, IA		\$13,708	\$13,708	\$13,708	\$1,062,676
Sheldon, IA		\$45,692	\$45,692	\$45,692	\$3,542,193
Sibley, IA		\$29,700	\$29,700	\$29,700	\$2,302,434
Sioux Center, IA		\$27,415	\$27,415	\$27,415	\$2,125,322
Clay Regional RWS, IA		\$45,692	\$45,692	\$45,692	\$3,542,193
RWS #1, IA		\$45,692	\$45,692	\$45,692	\$3,542,193
Rock Rapids, IA	3	\$21,643	\$21,643	\$21,643	\$1,677,825
<b>TOTALS</b>		<b>\$1,556,186</b>	<b>\$1,556,186</b>	<b>\$1,556,186</b>	<b>\$120,640,818</b>

<sup>1</sup> Increased reserved capacity

<sup>2</sup> Changed connection, added cost

<sup>3</sup> New member system

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# APPENDIX A-8



Major Federal, State, and Local Permits, Approvals, and Authorizing Actions  
Lewis and Clark Water Supply Project, 2001.<sup>1, 2</sup>

Agency	Permit, Approval, or Action	Authority
<b>Federal</b>		
U.S. Army Corps of Engineers (COE)	Nationwide permit/authorization for crossings and impacts to wetlands	Section 404 of the <i>Clean Water Act</i> [CWA] of 1972, as amended (33 <i>United States Code</i> [U.S.C.] 1344), (33 <i>Code of Federal Regulations</i> [C.F.R.] 320-330); EPA-administered permit programs: Sections 318, 402, and 405 of the CWA, National Pollutant Discharge Elimination System (NPDES), as amended (33 U.S.C. 1251 et seq.), (40 C.F.R. 122); State Program Requirements (40 C.F.R. 123); Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Filled Material, as amended (40 C.F.R. 230); Protection of Wetlands, Executive Order (EO) 11990, as amended; Floodplain Management, EO 11988; <i>National Flood Insurance Act of 1968</i> , as amended (42 U.S.C. 4001 et seq.)
	Section 10 river crossing permits	<i>Rivers and Harbors Act of 1899</i> (33 U.S.C 403), (23 C.F.R. 650)
	Consult with state regarding certification of federal water projects	Section 401 of the CWA (33 U.S.C. 1341)
U.S. Bureau of Reclamation (Reclamation)	Compliance with environmental laws	<i>National Environmental Policy Act</i> (NEPA) (42 U.S.C. 4321 et seq.), 40 C.F.R. 1500-1508; 10 C.F.R. 1021; EO 11514, as amended by EO 11991; <i>Federal Land Policy and Management Act of 1976</i> (FLPMA), as amended (43 U.S.C. 1761-1771); Invasive Species, EO 13112; <i>Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990</i> , as amended (16 U.S.C. 4701 et seq.), <i>Lacey Act</i> , as amended (18 U.S.C. 42), <i>Federal Plant Pest Act</i> (7 U.S.C. 150aa et seq.), <i>Federal Noxious Weed Act of 1974</i> , as amended (7 U.S.C. 2801 et seq.), <i>Endangered Species Act of 1973</i> , as amended (16 U.S.C. 1531 et seq.)
	Compliance with cultural resource laws	Section 106 of the <i>National Historic Preservation Act</i> [NHPA], as amended (16 U.S.C. 470 et seq.); Advisory Council Regulations on Protection of Historic and Cultural Properties, as amended (36 C.F.R. 800); <i>Antiquities Act of 1906</i> , as amended (16 U.S.C. 431-433), 43 C.F.R. 3; <i>Archaeological Resources Protection Act of 1979</i> , as amended (16 U.S.C. 470aa-470ll); Protection and Enhancement of the Cultural Environment, EO 11593; <i>Archaeological and Historical Preservation Act of 1974</i> , as amended (16 U.S.C. 469 et seq.);
	Native American consultation	EOs 12866, 12988, 13007, 13175, and 13132; OMB Circular A-19; Executive Memorandum of April 29, 1994; <i>American Indians Religious Freedom Act of 1978</i> (42U.S.C. 1996); <i>Native American Graves Protection and Repatriation Act</i> , as amended (25 U.S.C. 3001, et seq.)
	Environmental Justice	EO 12898, as amended

Major Federal, State, and Local Permits, Approvals, and  
 Authorizing Actions  
 Lewis and Clark Water Supply Project, 2001.<sup>1, 2</sup> (Continued)

Agency	Permit, Approval, or Action	Authority
<b>Federal (cont.)</b>		
U.S. Fish and Wildlife Service (USFWS)	Coordination, consultation, and impact review on federally listed threatened and endangered (T&E) species	<i>Fish and Wildlife Coordination Act</i> (16 U.S.C. 661-666c); Section 7 of the <i>Endangered Species Act [ESA] of 1973</i> , as amended (16 U.S.C. 1536) (50 C.F.R. 17); <i>Bald Eagle Protection Act</i> (16 U.S.C. 668-668dd)
	Migratory bird impact coordination	<i>Migratory Bird Treaty Act</i> (16 U.S.C. 704)
National Park Service, Missouri National Recreational River	Regulatory review of actions that could effect protected areas	Section 7 of the <i>Wild and Scenic Rivers Act</i> (16 U.S.C. 1278) (36 C.F.R.297)
U.S. Environmental Protection Agency	Consult with states regarding certification of new drinking water projects	<i>1996 Safe Drinking Water Act</i> (SDWA), as amended (42 U.S.C. 300f et seq.), (40 C.F.R. 141-142)
U.S. Natural Resource Conservation Service	Farmland Protection	<i>Farmland Protection Policy Act</i> , as amended (7 U.S.C. 4201 et seq.)
<b>Iowa</b>		
State Historical Society of Iowa	Cultural resource protection, programmatic agreements, consultation; permit archaeological investigations	Section 106 of the NHPA, as amended (16 U.S.C. 470f); Advisory Council Regulations on Protection of Historic and Cultural Properties, as amended (36 C.F.R. 800)
Iowa Department of Natural Resources		
Water Quality Bureau, Waste Water Permits Section	NPDES storm water permit for runoff generated during construction activities; construction permit; NPDES permit for water discharges during hydrostatic testing	Iowa Code 455B.103A and 455B.171-192 ; 567 Iowa Administrative Code [IAC] 64; Sections 318, 402, and 405 of the CWA, NPDES, as amended (33 U.S.C. 1251 et seq.), (40 C.F.R. 122)
Water Permit Branch	"One Year Usage Permit" Registration for temporary use of water during construction of the project	Iowa Code 455B.261-281; 567 IAC 50-53
Water Supply Section, Environmental Protection Division	Water Supply Construction Permit for the construction of public water supply's water facility, treatment, and distribution system	Iowa Code 455B.211-455B.224, 455B.171-455B.192 and 461A.4; 567 IAC 40-44, 50-53
Water Supply Section	Water Supply Operation Permit to operate the water supply system after construction is complete	Iowa Code 455B.211 et seq. 567 IAC 40-44, 80, 81
Parks, Recreation, and Preserves Division	Regulatory review Section 401 CWA, state review and certification of federal water projects (Water Quality Certification)	Iowa Code 455B.211-455B.224 and implementing regulations; Section 404 of the CWA, as amended (33 U.S.C. 1344), (33 C.F.R. 320-330); SDWA as amended (42 U.S.C. 300f et seq.), (40 C.F.R. 141-142)
	Floodplains/floodways permits for construction within designated floodplains and floodways	Iowa Code 455B.261-455B.281, 461A.4-461A.8, 567 IAC 70-76
	Sovereign lands construction permit	Iowa Code 461A.4-461A.8; 571 IAC 13

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Agency	Permit, Approval, or Action	Authority
<b>Iowa (cont.)</b>		
Iowa Department of Natural Resources (cont.)		
Parks, Recreation, and Preserves Division (cont.)	Wetland Permit for State Lands for construction activities on state land or fee title land that could impact wetlands (or when crossing state lands)	Iowa Code 455B, 455C, and 464B and implementing regulations
Natural Resource Commission and the Director of the Department of Natural Resources	Takings permits for threatened and endangered species	Iowa Code 481B; 571 IAC 77 and 111; ESA as amended (16 U.S.C. 1536) (50 C.F.R. 17)
Iowa Department of Transportation	Utility Accommodation permit for encroachment or crossings of state and county highways	Iowa Code 320.4-320.8; 761 IAC 115 (Note: Permit holder must obtain easement or permission from each drainage district for construction that will impact highway drainage per Iowa Code 468)
Sioux County	Construction, building, and/or zoning permits for project facilities	County code and zoning regulations
Lyon County	Construction, building, and/or zoning permits for project facilities	County code and zoning regulations
O'Brien County	Construction, building, and/or zoning permits for project facilities	County code and zoning regulations
Osceloa County	Construction, building, and/or zoning permits for project facilities	County code and zoning regulations
Clay County	Construction, building, and/or zoning permits for project facilities	County code and zoning regulations
Dickinson County	Construction, building, and/or zoning permits for project facilities	County code and zoning regulations
<b>Minnesota</b>		
Board of Water and Soil Resources	Administer <i>Minnesota Wetland Conservation Act</i> statewide	Minnesota Statutes 103G.222-.2373; Minnesota Rules 8420
Department of Administration	Permit to cross state-owned lands not under the jurisdiction of the Commissioner of Natural Resources or obtained for trunk highway purposes	Minnesota Statute 16B.26; Minnesota Rules 1245.0300
Department of Health	Regulatory review Section 401 CWA, state review and certification of federal water projects (Water Quality Certification)	<i>Safe Drinking Water Act</i> (Minnesota Statutes 144.381 to 144.388, Minnesota Rules 4720.0200 to 4720.3970); Section 404 of the CWA, as amended (33 U.S.C. 1344), (33 C.F.R. 320-330); SDWA as amended (42 U.S.C. 300f et seq.), (40 C.F.R. 141-142)

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Agency	Permit, Approval, or Action	Authority
<b>Minnesota (cont.)</b>		
Department of Health (cont.)	Issue Water Certificate stating that the water supply system operator has met the requirements for the specified operator classification of the certification program	Minnesota Statute 115.71 to 115.77; Minnesota Rules 9400 (Note: the commissioner of health , upon application, may issue certificates without examination, in a comparable classification to any person who holds a certificate in any state, territory, or possession of the United States or any country, providing the requirements for certification of operators under which the person's certificate was issued do not conflict with the provisions of Minnesota Statutes 115.71 to 115.77 and are of a standard not lower than that specified by rules adopted under sections 115.71 to 115.77.)
Minnesota Historical Society (SHPO)	Cultural resource protection, programmatic agreements, consultation; permit archaeological investigations	Section 106 of the NHPA, as amended (16 U.S.C. 470f ); Advisory Council Regulations on Protection of Historic and Cultural Properties, as amended (36 C.F.R. 800)
Department of Natural Resources (MDNR)	Takings permits for endangered species	Minnesota Statutes 84.0895; as Minnesota Rules 6134.0100-6130.0400 and 6212.1800-6212.2300; ESA , as amended (16 U.S.C. 1536) (50 C.F.R. 17)
Division of Lands and Minerals	Utility Crossing Permit for utility line to cross state-owned lands or waters	Minnesota Statute 84.415; Minnesota Rules 6135
Water Appropriation Permit Program	Temporary Water Appropriations Permit for limited use of water for construction	Minnesota Statutes 103G.215-.315; Minnesota Rules 6115
Wetlands Program	Enforce <i>Minnesota Wetland Conservation Act</i>	Minnesota Statutes 103G.222-.2373; Minnesota Rules 8420
Pollution Control Agency	NPDES point source permits to pump water out from open ditches and permits to discharge water during hydrostatic testing ; NPDES Storm Water Permit for runoff generated during construction activities	<i>State Water Pollution Control Act</i> (Minnesota Statutes 115.01-115.09); Minnesota Rules 7001.01 et seq.; Sections 318, 402, and 405 of the CWA, as amended, (33 U.S.C. 1344 et seq.) (33 C.F.R. 320-330); NPDES, as amended (33 U.S.C. 1251 et seq.), (40 C.F.R. 122)
Department of Transportation, District 7	Encroachment Permits for encroachment or crossing of state lands (highways)	Minnesota Statutes 161.45; Minnesota Rules 8810.31- 8810.36
Nobles County, Public Works Department, Environmental Services	Land Use Permit Construction or building permit	County Ordinances and Building Codes
	Conditional Use Permit zoning permit	County Ordinances and Building Codes
	Utility Permit for crossing of county highway ROW (H-003)	Rules and Regulations of Board of County Commissioners for Utilities on County Highways
Nobles County Local Government Unit	Approve wetland replacement plans	Minnesota Statutes 103G.222-.2373; Minnesota Rules 8420
Rock County Environmental Services, Land Management Office	Land Use Permit, Building and/or zoning permit	County Ordinances and Building Codes

Major Federal, State, and Local Permits, Approvals, and  
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Agency	Permit, Approval, or Action	Authority
<b>Minnesota (cont.)</b>		
Rock County Local Government Unit	Approve wetland replacement plans	Minnesota Statutes 103G.222-2373; Minnesota Rules 8420
<b>South Dakota</b>		
South Dakota State Historic Preservation Office	Cultural resource protection, programmatic agreements, consultation; permit for cultural resource work done on state lands	Section 106 of the NHPA as amended (16 U.S.C. 470f ); Advisory Council Regulations on Protection of Historic and Cultural Properties, as amended (36 C.F.R. 800); <i>South Dakota Codified Law</i> (SDCL) 1-19A-11.1
South Dakota Department of Environment & Natural Resources		
Surface Water Discharge Program	General permit for temporary dewatering and a temporary water use permit for test well water discharge, dewatering of the pipe trench, and for discharge of hydrostatic test water	SDCL 34A-2; Administrative Rules of South Dakota (ARSD) 74:02; NPDES, as amended (33 U.S.C. 1251 et seq.), (40 C.F.R. 122);
	Surface water discharge permit; general storm water permit for runoff generated during construction activities	SDCL 34A-2 ; ARSD 74:52:01-12; NPDES, as amended (33 U.S.C. 1251 et seq.), (40 C.F.R. 122)
Water Rights Program	Temporary Dewatering Permit for water used during construction	SDCL 34A-2; SDCL 46-5; ARSD 74:52:02:09
	Permit to Appropriate Water for water used during construction	SDCL 46-2A; 46-5; ARSD 74:02
	Water Appropriation permit for project intake water wells/for groundwater future use, appropriation, and beneficial use	SDCL 46-2; 46-5; 46-6; ARSD 74:02
Surface Water Quality Program	Regulatory review of Section 401 of the CWA, state review and certification of federal water projects (Water Quality Certification)	SDCL 34A-2-33 and 34A-2-34; ARSD 74:51:02:63-74:51:02:65
Waste Management Program	Solid waste disposal permit for water treatment plant	SDCL 34A-6; ARSD 74:27
Drinking Water Program	Construction and operating permit for the water treatment plant	SDWA, as amended (42 U.S.C. 300f et seq.); (40 C.F.R. 141-142); SDCL 34A-3A ; ARSD 74:04 et seq.
South Dakota Department of Transportation		
Yankton Area Office	Utility Form 200, permits for the encroachment or crossing of state highways	SDCL 31-26-22; ARSD 70
Sioux Falls Area Office	Utility Form 200, permits for the encroachment or crossing of state highways	SDCL 31-26-22; ARSD 70

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Agency	Permit, Approval, or Action	Authority
<b>South Dakota (cont.)</b>		
The Secretary of Agriculture and the Secretary of Game, Fish, and Parks	Enforcement of endangered species statutes within the state	SDCL 34A-8-1 et seq.; ARSD 41:10; ESA, as amended (16 U.S.C. 1536) (50 C.F.R. 17)
Minnehaha County		
Building and Zoning	Construction or building permit(s) for above-ground facilities	<i>1990 Revised Zoning Ordinance for Minnehaha County</i> (Ordinance MC16-90 [as amended])
Highway Department,	Utility Form 200, Permits for the encroachment or crossing of county highways	<i>1990 Revised Zoning Ordinance for Minnehaha County</i> (Ordinance MC16-90 [as amended])
Lake County		
Building and Zoning	Construction or building permit(s) for above-ground facilities	County code and zoning ordinances
Highway Department	Encroachment permit(s) for the encroachment or crossing of county highways	County code and zoning ordinances
Lincoln County		
Building and Zoning	Construction permit(s), building permit(s), or conditional use permit(s) for above-ground facilities	County code and zoning ordinances
Highway Department	Encroachment Permit(s) for the encroachment or crossing of county highways	County code and zoning ordinances
Turner County Building and Zoning	Conditional Use Permit(s) for above-ground facilities	County code and zoning ordinances
Clay County Building and Zoning	Building and/or zoning permits or special exception permit for project facilities	County code and zoning ordinances
Union County Building and Zoning	Construction, building permit(s), and/or zoning permits for project facilities	County code and zoning ordinances

- 1 This list is intended to provide an overview of the key regulatory requirements that would govern project implementation. Additional approvals, permits, and authorizing actions may be necessary.
- 2 This table was taken from *Draft Environmental Assessment for the Lewis and Clark Rural Water System, South Dakota, Minnesota and Iowa* (2002) prepared for this project by TRC Mariah Associates Inc. for the US Bureau of Reclamation