

---

**TECHNICAL MEMORANDUM**

---

**SUBJECT:           Green River Basin Plan**  
***Basin Water Use Profile-Municipal***

**PREPARED BY:** Mike Purcell, Purcell Consulting, P.C.

### **Introduction**

The purpose of this technical memorandum is to provide water use information for the following fourteen (14) cities, towns, and joint power boards that supply water to their citizens or customers:

Entities that obtain their primary water supply from surface water are:

- Town of Baggs-Little Snake River
- Bridger Valley Joint Powers Board-Smith's Fork and Black's Fork
- City of Cheyenne-Tributaries to the Little Snake River
- Dixon-Little Snake River
- Town of Granger-Green River
- Kemmerer-Diamondville Joint Powers Board-Hams Fork River
- Town of LaBarge-Green River
- Pinedale-Fremont Lake Dam
- Rock Springs/Green River/Sweetwater County JPB-Green River

Entities that obtain their primary water supply from groundwater (and the source aquifer) are:

- Town of Big Piney (Battle Springs Formation)
- Town of Marbleton (Green River Formation)
- Town of Opal (Wasatch Formation)
- Town of Superior (Ericson Sandstone/Rock Springs Formation)
- Town of Wamsutter (Green River Formation)

In this technical memorandum, Appendix 1 provides a summary for each of the fourteen (14) municipal water suppliers. Each summary provides an estimate of the service area population, a brief description of the water supply and the water treatment facilities, the water rates, data pertaining to annual, per capita and peak day water use, and a tabulation of water rights.

### **Methodology**

Primarily, information was obtained from the various municipalities through direct communication or from the municipalities' responses to the WWDC's 1999 Water Supply Survey. If neither of these sources were available, data from the WWDC's "1998 Water System Survey Report" were used.

The impacts to surface water are best represented by depletions, as determined through the following simple relationship:  $\text{Depletions} = \text{Diversions} - \text{Return Flow}$ . The estimated surface water depletions were calculated on a monthly basis to accommodate the modeling efforts for the planning study. Therefore, monthly diversion and wastewater discharge information was obtained from the municipalities. Only the wastewater discharge (return flow) that was measured was considered in this analysis. Return flows resulting from irrigation or seepage of the wastewater facilities were not considered as they are highly variable and difficult to realistically estimate. Therefore, the return flows used in this analysis are likely understated, which will result in the depletions being somewhat overstated. However, this methodology is typical for studies relating to municipal water use.

Municipal groundwater use in the Green River Basin has very little, if any, impact on surface water flows due to the depth of the wells. If the municipalities were releasing wastewater discharge to the surrounding streams, those streams would enjoy the benefits or accretions from that discharge. However, representatives from the five (5) communities that use groundwater each represented their wastewater system as having zero or minimal discharge to surrounding streams. Therefore, it was concluded that the groundwater supplies have little or no impacts on the surface water system and groundwater was not considered in the modeling efforts.

Typically, municipalities provide water to customers outside their corporate limits. Therefore, the populations of the service areas are more pertinent than the census information. Further, some of the municipalities or joint powers boards sell water to surrounding water districts. For purposes of this analysis, water sales outside the corporate limits for domestic use is considered municipal water use and is included in the statistics for the various entities. The technical memorandum relating to domestic water use will address this issue further.

In addition, municipalities may sell water to industrial water users. For example, the Kemmerer-Diamondville Joint Powers Board and the Rock Springs/Green River/ Sweetwater County Joint Powers Board sell water to industries outside the corporate limits of their member municipalities. These water sales are not considered municipal water use in this analysis and will be addressed in the technical memorandum addressing industrial water use. Data relating to industrial water sales are readily available, while data relating to domestic water sales is often combined with the total water use for the respective municipalities.

## **Conclusions**

Table 1 on the following page summarizes the water use for the fourteen (14) municipal water suppliers.

Table 2 provides a comparison of reported existing peak day demand with the reported system capacity and the capacity of the direct flow and storage water rights for the thirteen suppliers in the Green River Basin:

**Table 1 – Green River Basin, Municipal Depletions**

**Green River Basin-Municipal Surface Water Depletions**

City/Town	Population	GPCPD	River	January	February	March	April	May	June	July	August	September	October	November	December
<b>Baggs</b>	300	157	Little Snake	5.07	4.76	4.41	0.62	-0.65	2.25	9.51	7.60	5.84	4.22	3.98	5.14
<b>BV JPB</b>	4,500	86	Smith/Black Fk	19.12	16.41	18.83	21.30	28.73	38.82	104.49	65.16	51.71	25.51	25.19	15.89
<b>Cheyenne</b>	N.A.	N.A.	Little Snake trib.	21.67	7.67	6.33	145.00	4,132.33	9,683.00	372.00	12.33	3.67	2.33	1.00	1.00
<b>Dixon</b>	75	274	Little Snake	1.40	1.38	1.38	1.29	1.72	2.69	3.74	2.72	2.30	1.55	1.55	1.31
<b>Granger</b>	170	294	Green	0.62	0.47	0.58	0.94	12.67	28.24	4.68	3.12	1.94	1.01	0.78	0.93
<b>K/D JPB</b>	3,950	80	Hams Fork	14.35	12.89	13.68	10.84	23.55	43.02	87.91	68.13	32.96	14.71	14.73	17.64
<b>LaBarge</b>	490	251	Green	6.73	6.07	6.12	6.09	11.04	17.20	27.75	21.26	12.22	7.37	5.97	9.92
<b>Pinedale</b>	1,480	154	Fremont Lake	30.69	6.14	15.34	42.96	61.38	30.69	153.45	162.65	110.48	95.14	27.62	49.10
<b>RS/GR/SC</b>	36,500	115	Green	133.63	121.24	149.03	122.85	464.89	707.93	984.99	823.48	505.56	225.27	212.48	246.71
<b>Total</b>	<b>47,465</b>	<b>113</b>		<b>233.29</b>	<b>177.01</b>	<b>215.69</b>	<b>351.90</b>	<b>4,735.65</b>	<b>10,553.84</b>	<b>1,748.52</b>	<b>1,166.46</b>	<b>726.68</b>	<b>377.10</b>	<b>293.31</b>	<b>347.63</b>
<b>Mo. Dist.</b>				0.011	0.008	0.010	0.017	0.226	0.504	0.084	0.056	0.035	0.018	0.014	0.017

BV JPB-Lyman, Mountain View, Fort Bridger, Lower Bench  
 Cheyenne serves approximately 65,000 people in the South Platte Basin.  
 Cheyenne data is the 1995-1997 diversions as recorded by the SEO hydrographer reports.  
 K/D JPB-Kemmerer, Diamondville  
 RS/GR/SC-Rock Springs, Green River, White Mountain, Clearview, Ten-Mile, Reliance

**Green River Basin-Municipal Ground Water Users**

City/Town	Wells	Depth	Population	GPCPD	Total (AF)
<b>Big Piney</b>	4	90-900	496	90	50
<b>Marbleton</b>	5	580-830	635	787	560
<b>Opal</b>	3	400-480	100	120	13
<b>Superior</b>	3	1700	300	133	45
<b>Wamsutter</b>	3	1365-1905	310	161	56
<b>Total</b>	<b>18</b>		<b>1841</b>	<b>351</b>	<b>724</b>

Supplier	Peak Day Demand	System Capacity	Water Right Capacity (GW or Direct Flow)	Storage Rights (AF)
Baggs	0.61	0.88	1.24	None
Big Piney	0.41	2.30	3.30	None
BVJPB	6.60	12.10	15.10	800
Dixon	0.08	0.97	0.97	None
Granger	0.31	3.09	13.01	None
K-D JPB	6.14	12.82	17.07	1,770
LaBarge	1.54	1.77	2.64	None
Marbleton	2.15	2.20	3.60	None
Opal	0.07	0.24	0.46	None
Pinedale	7.67	44.20	11.48	17,439
RS/GR JPB	47.20	65.00	79.30	None
Superior	0.28	1.60	5.57	None
Wamsutter	0.61	3.09	1.51	None

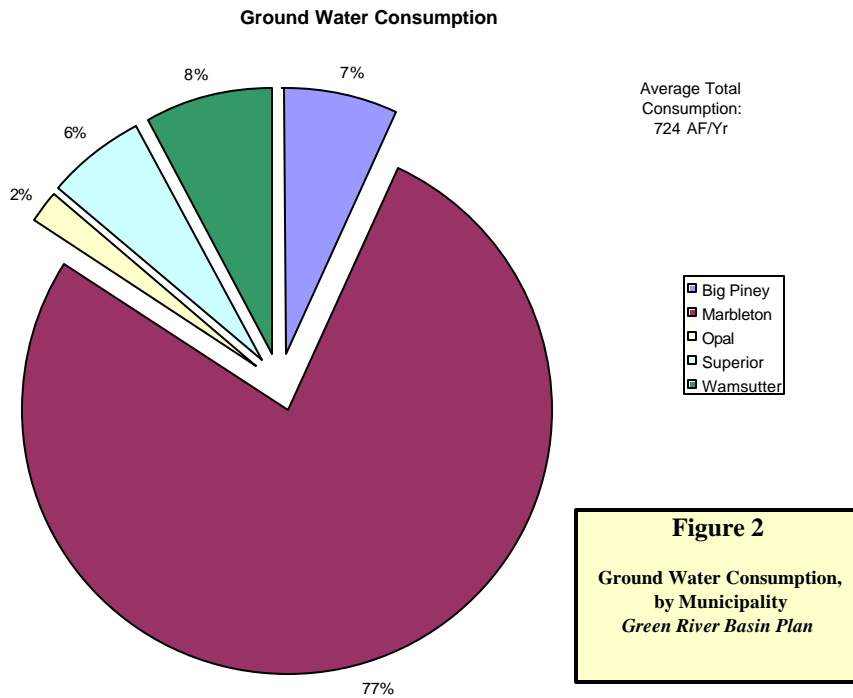
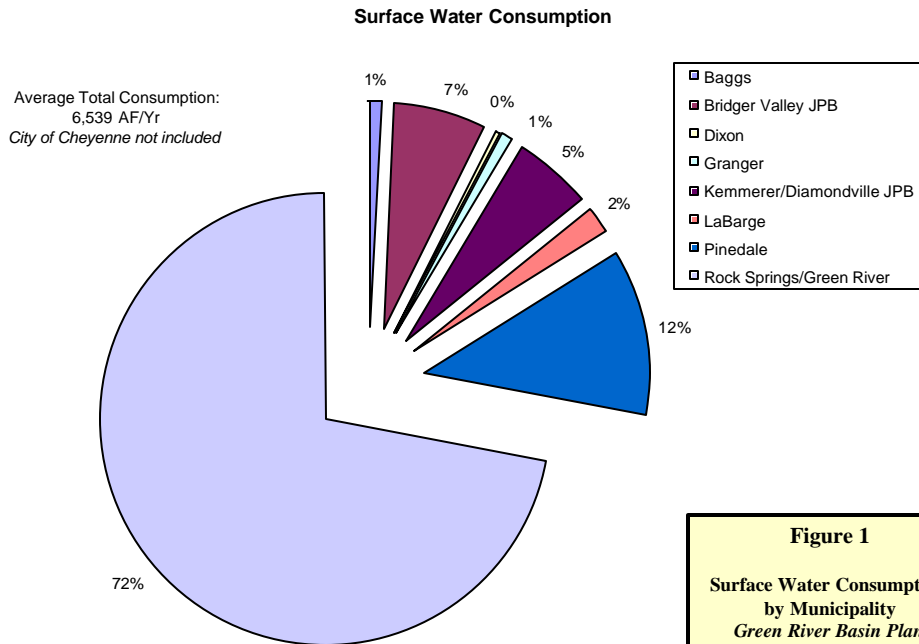
Table 2 is offered as an indication that the water suppliers have sufficient system and water right capacity to meet their existing demands, as well as the opportunity to meet the demands of some future growth. However, the suppliers may have other water supply problems in the form of system rehabilitation needs. Further, simply having water rights does not necessarily mean those water rights can meet the demands in drought years. There must be water available at the points of diversion. In addition, the water rights must have priority dates that can withstand water rights regulation in times of shortage.

This analysis is based on current water use. In most cases, water use is based on 1997-1999 data in order to present the current-day situation. However, water users may have a situation that cannot be described with present information. The Rock Springs/Green River/Sweetwater County Joint Powers Board depletes more water, approximately 4,700 acre feet per year, than the other twelve (12) in-basin water suppliers combined, approximately 2,500 acre feet per year. Recently, the Joint Powers Board completed a comprehensive expansion of its water treatment and supply facilities, which removed "bottlenecks" in the previous water supply system. Area water officials believe that water use, particularly in the Rock Springs area, may increase 15% or more as the water supply system can now meet the true demands of the water users.

It is interesting to note that the largest municipal water user in the basin is not located in the Green River Basin. The city of Cheyenne presently diverts an average of approximately 14,400 acre feet of water per year from the Little Snake River Basin to North Platte River Basin, where the water is ultimately exchanged to meet Cheyenne's needs in the South Platte River Basin. The thirteen (13) water suppliers located in the Green River Basin deplete approximately 7,200 acre feet of water per year on an annual basis. Figures 1 and 2 show graphically the apportionment of use by municipality.

Municipal water suppliers are faced with similar problems. They must provide sufficient water of good quality to promote the quality of life their users expect. They must plan for the future to be able to meet the demands of potential future growth. Some of the municipalities are seeking additional growth through economic development efforts.

The water suppliers must comply with state and federal water quality standards, which are being constantly revised and are becoming more stringent. Compliance is becoming more and more costly. Typically, the budgets for water system improvements, operation and maintenance are based on revenues from the sale of water. They must sell water to meet their financial obligations.



## References

### General

Water Right Services, "Municipal Water Rights, Green River Basin," March, 2000.

### Town of Baggs

Baggs, Town of, "Response to Water Supply Survey," 1999.

Mosier, Brent, "1997-1999 Municipal Diversion and Discharge Information," February 3, 2000.

Purcell, Mike, "Notes from discussions with Brent Mosier," January 2000.

### Town of Big Piney

Big Piney, Town of, "Response to Water Supply Survey," 1999.

Purcell, Mike, "Notes from telecon to Town Hall," March 2000.

### Bridger Valley Joint Powers Board

Bridger Valley Joint Powers Board, "Response to Water Supply Survey," 1999.

Dasher, David, "Town of Mountain View, Sewer-Monthly Average Discharge for 1997-1998," February 10, 2000.

Irick, Rocky, "Bridger Valley Joint Powers Board Diversions for 1997-1999," February 2, 2000.

Lyman, Town of, "Response to Water Supply Survey," 1999.

Mountain View, Town of, "Response to Water Supply Survey," 1999.

Purcell, Mike, "Notes from telecons with Rocky Irick and Andy Spray," January 2000.

Spray, Andy, "Town of Lyman's Water Purchased from Joint Powers Board and Effluent Discharge for 1997-1999," February 17, 2000

### City of Cheyenne

States West Water Resources Corporation, "Raw Water Delivery System and Wastewater Effluent Availability Study," January 1999.

Wyoming State Engineer's Office, "Cheyenne Stage I and Stage II Historic Diversions-Hydrographer's Report," obtained May 2000.

### Town of Dixon

Dixon, Town of, "Response to Water Supply Survey," 1999.

Purcell, Mike, "Notes from Telecons with Larry Sewell," February and March 2000.

Town of Granger

Purcell, Mike, "Notes from Telecon with Tom Jones," March, 2000.

Wyoming Water Development Commission, "Water System Survey Report," 1998.

Kemmerer-Diamondville Joint Powers Board

Kemmerer-Diamondville Joint Powers Board, "Response to Water Supply Survey," 1999.

Mootz, Barry, "Kemmerer-Diamondville Joint Powers Board Diversions and Wastewater Effluent," February 11, 2000.

Purcell, Mike, "Notes from Telecon with Barry Mootz," February 2000.

Town of LaBarge

Purcell, Mike, "Notes from Telecon with Scott Smith," March 2000.

Smith, Scott, "LaBarge Monthly Water Usage and Average Monthly Effluent Discharge for 1997-1999," March 13, 2000.

Wyoming Water Development Commission, "Water System Survey Report," 1998.

Town of Marbleton

Marbleton, Town of, "Response to Water Supply Survey," 1999.

Purcell, Mike, "Notes from telecon to Town Hall," March 2000.

Town of Opal

Opal, Town of, "Response to Water Supply Survey," 1999.

Purcell, Mike, "Notes from telecon to Town Hall," March 2000.

Town of Pinedale

Ron Brown, "Town of Pinedale Water Flows and Monthly Sewer Weir Flows," February 2000.

Pinedale, Town of, "Response to Water Supply Survey," 1999.

Purcell, Mike, "Notes from discussions with Patty Racich and Mark Eatinger," March 2000.

Rock Springs/Green River/Sweetwater County Joint Powers Board

Bracken, Ben, "Tabulations of Water Usage," not dated.

Clearview I & S, "Response to Water Supply Survey," 1999.



Green River, City of, "Response to Water Supply Survey," 1999.

Michaels, George, "Green River Effluent Discharge for 1997-1999," February 2, 2000.

Peterson, Colleen, "Water Usage/Sales Information for Rock Springs," February 18, 2000, amended April 4, 2000.

Purcell, Mike, "Notes from discussions with Ben Bracken, George Michaels, and Colleen Peterson," February/March 2000.

Rock Springs, City of, "Response to Water Supply Survey," 1999.

White Mountain W&S, "Response to Water Supply Survey," 1999.

Town of Superior

Superior, Town of, "Response to Water Supply Survey," 1999.

Purcell, Mike, "Notes from telecon to Town Hall," March 2000.

Town of Wamsutter

Wamsutter, Town of, "Response to Water Supply Survey," 1999.

Purcell, Mike, "Notes from telecon to Town Hall," March 2000.

## **APPENDIX 1**

### **Green River Basin Planning Study Municipality Summary**

**Green River Basin Planning Study  
Municipality Summary**

**Entity:** Town of Bairoil

**Service Area Population:** 250

**Water Supply:** Three (3) groundwater wells varying in depth between 35 and 51 feet. In addition, emergency supplies are provided by Amoco's Battle Springs wells.

**Water Treatment:** Disinfection/chlorination.

**Wastewater Treatment:** A zero discharge lagoon system.

**Monthly Water Rates:** \$17.00 as a flat rate regardless of use.

**Annual Water Use:** (1998)

Diverted: 28.7 MG = 87.9 AF  
Consumed: 28.7 MG = 87.9 AF (100%)  
Returned: 0 MG = 0 AF (0)

**Per Capita Use:** (average annual gallons per capita per day)

Diverted: 314 GPCPD  
Consumed: 314 GPCPD

**Peak Day Demand:** (reported) 250,000 GPD = 0.39 CFS = 0.77 AFD

**Water Supply System Capacity:** (reported) 300,000 GPD = 0.46 CFS = 0.92 AFD

**Municipal Water Rights:**

<u>Permit No.</u>	<u>Source</u>	<u>Priority</u>	<u>Amount</u>	<u>Remarks</u>
UW 1379	Ground	12/3/1964	15 gpm	Depth-45 feet.
UW 5476	Ground	4/16/1970	12 gpm	Depth-35 feet.
UW 52094	Ground	11/26/1979	5 gpm	Depth-51 feet.

**Water Right Capacity:** 32 gpm = 0.07 cfs = 0.14 AFD. In addition, the Town receives water from Amoco's Battle Springs wells, Permit Nos. UW 71036 - UW 71041. Each of these six (6) wells produce approximately 875 gpm. Therefore, Bairoil has access to water rights to match its system capacity as needed.

## Appendix 1

### Municipality Summary

**Entity:** Town of Baggs

**Service Area Population:** 300 (1999 WWDC Survey)

**Water Supply:** Little Snake River through direct diversions and infiltration gallery.

**Water Treatment:** Conventional water treatment plant.

**Wastewater Treatment:** Lagoon system with discharges to the Little Snake River.

**Monthly Water Rates:** \$20.72 for the first 8,000 gallons, plus \$2.09 for each additional 1,000 gallons. Monthly bill for the use of 20,000 gallons = \$45.80.

**Annual Water Use:** (1997-1999 average)

Diverted: 29.51 MG = 90.56 AF  
Consumed: 17.19 MG = 52.75 AF (58.2%)  
Returned: 12.32 MG = 37.81 AF (41.8%)

**Per Capita Use:** (average annual gallons per capita per day)

Diverted: 269 GPCPD  
Consumed: 157 GPCPD

**Peak Day Demand:** (reported) 200,000 GPD = 0.31 CFS = 0.614 AFD

**Water Supply System:** Capacity (reported) 200 GPM = 0.44 CFS = 0.884 AFD

#### Municipal Water Rights:

<u>Permit No.</u>	<u>Source</u>	<u>Priority</u>	<u>Amount</u>	<u>Remarks</u>
620 Enl.	L. Snake	9/2/1901	0.59 cfs	Summer use only.
28995	L. Snake	11/5/1984	0.746 cfs	Winter use only.
UW 15173	Ground	5/11/1972	15.0 gpm	Baggs No. 1 Well
UW 37522	Ground	3/28/1977	60.0 gpm	Jebens Park No. 1 Well

#### Municipal Water Right Capacity:

Surface Water: 0.59 CFS = 1.17 AFD (summer use)  
Groundwater: 15 GPM = 0.07 AFD  
Total: = 1.24 AFD

## Appendix 1

### Green River Basin Planning Study Municipality Summary

**Entity:** Town of Big Piney

**Service Area Population:** 496 (1999 Water Supply Survey)

**Water Supply:** Four (4) groundwater wells varying in depth between 120 to 901 feet.

**Water Treatment:** Disinfection/chlorination.

**Wastewater Treatment:** A zero discharge lagoon system.

**Monthly Water Rates:** \$20.00 for the first 6,000 gallons, plus increasing costs for each additional 1,000 gallons. Monthly bill for the use of 20,000 gallons = \$31.05.

**Annual Water Use:** (1998)

Diverted: 16.3 MG = 50.0 AF  
Consumed: 16.3 MG = 50.0 AF (100%)  
Returned: 0 MG = 0 AF (0)

**Per Capita Use:** (average annual gallons per capita per day)

Diverted: 90 GPCPD  
Consumed: 90 GPCPD

**Peak Day Demand:** (reported) 133,920 GPD = 0.21 CFS = 0.41 AFD

**Water Supply System Capacity:** (reported) 520 GPM = 1.16 CFS = 2.3 AFD

**Municipal Water Rights:**

<u>Permit No.</u>	<u>Source</u>	<u>Priority</u>	<u>Amount</u>	<u>Remarks</u>
UW 104	Ground	1/14/1959	100 gpm	Depth-120 feet.
UW 107	Ground	1/24/1959	100 gpm	Depth-130 feet.
UW 1202	Ground	5/5/1964	150 gpm	Depth-332 feet.
UW 33546	Ground	4/15/1976	100 gpm	Depth-442 feet.
UW 58788	Ground	9/15/1981	100 gpm	Depth-901 feet.
UW 116643	Ground	6/21/1999	200 gpm	Depth-350 feet.

**Water Right Capacity:** 750 gpm = 1.67 cfs = 3.3 AFD

**Green River Basin Planning Study  
Municipality Summary**

**Entity: Bridger Valley Joint Powers Board**

**Service Area Population:** 4,500 (1999 WWDC Survey)

Lyman	2,200
Mountain View	1,200
Fort Bridger, Blacks Fork, Lower Bench Districts, plus retail customers.	<u>1,100</u>
Total	4,500

**Water Supply:**

The Bridger Valley Joint Powers Board (BVJPB) diverts its direct flow rights from the Black's Fork River into the Bridger Valley Robertson Pipeline, which delivers the water to Smith's Fork Creek. The deliveries from the Black's Fork River, storage water from State Line Dam and direct flow rights from Smith's Fork Creek are diverted from the creek and piped to a water treatment plant with an estimated capacity of 2.25 MGD.

The Town of Lyman diverts water from three (3) springs.

**Water Treatment:** The BVJPB has a conventional water treatment plant. Lyman disinfects and filters water from the springs.

**Wastewater Treatment:** Lyman and Mountain View have treatment facilities which discharge to the streams.

**Monthly Water Rates:** Lyman-\$17.50 for the first 10,000 gallons, plus \$2.20 for each additional 1,000 gallons. Monthly bill for the use of 20,000 gallons = \$39.50. Mountain View -\$18.00 for the first 10,000 gallons, plus \$1.80 for each additional 1,000 gallons. Monthly bill for the use of 20,000 gallons = \$36.00.

**Annual Water Use:** (1997-1999 average)

Diverted:	BVJPB:	220.8 MG = 677.6 AF
	Lyman Springs	<u>85.5 MG = 262.4 AF</u>
	Total	306.3 MG = 940.0 AF
Consumed:	Total	140.5 MG = 431.2 AF (45.9%)
Returned:	Lyman:	54.6 MG = 167.6 AF
	Mountain View:	<u>111.2 MG = 341.2 AF</u>
	Total	165.8 MG = 508.8 AF (54.1%)

## Appendix 1

### Per Capita Use: (average annual gallons per capita per day)

Diverted:	Total JPB Service Area	186 GPCPD
Consumed:	Total JPB Service Area	86 GPCPD

### Peak Day Demand:

BVJPB system (reported):	1.5 MGD = 4.6 AFD
Lyman springs (water rights):	<u>0.6 MGD = 2.0 AFD</u>
Total Service Area	2.1 MGD = 6.6 AFD

### Water Supply System Capacity: (reported)

BVJPB system (reported):	3.3 MGD = 10.1 AFD
Lyman springs (water rights):	0.6 MGD = 2.0 AFD

### Municipal Water Rights:

Water rights shared and used through the JPB:

Permit No.	Source	Priority	Amount	Remarks
26356*	State Line Dam	6/29/1978	1,500 AF	BV Pipeline
26355	Smith's Fork Creek	6/29/1978	4.378 cfs	BV Pipeline
Numerous	Black's Fork River	1891-1915	2.21 cfs	Cannot exceed 460.15 AF/YR (105 days beginning May 15)

\* This is a secondary permit for the delivery of storage from State Line Dam. The dam is located in Utah and does not need a Wyoming water right. By contract, the JPB's use of storage is limited to 800 acre feet per year in the following manner: June-200 AF; July-300 AF; August-200 AF; and September-100 AF.

Lyman water rights:

Permit No.	Source	Priority	Amount	Remarks
15027	Spring Creek	3/29/1918	0.04 cfs	Lyman Pipeline
2174 Enl.	Spring Creek	3/2/1910	0.60 cfs	Lyman Pipeline
17993	Bradshaw Spring	10/23/1931	0.127 cfs	Lyman Pipeline
24193	Forman Spring (FS)	1/8/1974	0.22 cfs	F.S. Pipeline
S.C. 600	Ground	10/15/1936	650 gpm	1200 ft. deep.
UW 8064	Ground	2/3/1971	275 gpm	9 ft. deep.

## Appendix 1

### **Municipal Supply System/Water Right Capacity:**

BVJPB-Storage: 800 AFY

BVJPB-Direct flow: 6.606 CFS = 13.1 AFD

Lyman-Springs: 0.987 cfs = 2.0 AFD



**Green River Basin Planning Study  
Municipality Summary**

**Entity: City of Cheyenne**

**Service Area Population:** The City of Cheyenne is located in the South Platte River Basin. The city serves a population of approximately 65,000 people. However, the city does not service anyone in the Green River Basin.

**Water Supply:** A component of the city's water supply system is the Stage I and Stage II Projects. The projects consist of collection and transmission systems in the Little Snake River Drainage. Water is collected on several tributaries of the Little Snake River and delivered to a tunnel which transports the water under the continental divide to Hog Park Reservoir in the North Platte River Basin. Storage in Hog Park Reservoir is released to replace water diverted to Cheyenne through the Rob Roy supply components of the Stage I and II Projects, which transports from the North Platte River Basin to the South Platte River Basin .

**Monthly Water Rates:** \$3.40 base rate plus \$2.02 for each 1,000 gallons of usage. Monthly bill for the use of 20,000 gallons = \$43.80.

**Annual Water Use:** Based on the SEO hydrographer reports, the city diverted an average of 14,400 acre feet per year from 1995 to 1997 from the Little Snake Basin. While the reports indicate there has been some seepage into the system throughout the year, the city typically actively diverts water from late April to early July with 97% of the water diverted in May and June. The diversions are typically shut off in early July due to water rights regulation.

**Water Supply System Capacity:** The estimated potential annual average yield of the Stage I and Stage II Projects is 21,000 acre feet per year. Under drought conditions, this yield drops to 16, 400 acre feet per year.

**Municipal Water Rights:** The attached tabulation depicts the water rights for the Little Snake Diversion Pipeline, which diverts water from various tributaries to the Little Snake River and delivered to the Hog Park Reservoir through the tunnel under the continental divide. It should be noted that the system serves to divert water during the spring runoff and these water rights are not exercised on an annual or irrigation season basis.

**Water Right Capacity:** The total permitted capacity of Hog Park Reservoir is 22,656 acre feet, which is the limiting water right under the one-fill limitation.

Appendix 1

**Green River Basin Planning Study  
Municipality Summary**

**Entity:** Town of Dixon

**Service Area Population:** 75 (1999 WWDC Survey)

**Water Supply:** Little Snake River through infiltration gallery.

**Water Treatment:** Disinfection/chlorination and filtration.

**Wastewater Treatment:** Evaporation pond with intermittent discharge into a slew.  
Minimal, if any, direct discharge to the Little Snake River.

**Monthly Water Rates:** \$27.50 for the first 15,000 gallons, plus \$1.50 for each additional 1,000 gallons. Monthly bill for the use of 20,000 gallons = \$35.00.

**Annual Water Use:** (1999 average)

Diverted: 7.5 MG = 23.02 AF  
Consumed: 7.5 MG = 23.02 AF (100%)  
Returned: 0.0 MG = 00.00 AF (0%)

**Per Capita Use:** (average annual gallons per capita per day)

Diverted: 274 GPCPD  
Consumed: 274 GPCPD

**Peak Day Demand:** (reported) 27,000 GPD = 0.042 CFS = 0.083 AFD

**Water Supply System Capacity:** (reported) 220 GPM = 0.49 CFS = 0.973 AFD

**Municipal Water Rights:**

Permit No.	Source	Priority	Amount	Remarks
23143	L. Snake	11/7/1967	0.49 cfs	Dixon Mun. Water System.

**Municipal Water Right Capacity:**

Surface Water: 0.49 CFS = 0.973 AFD

## Appendix 1

### Green River Basin Planning Study Municipality Summary

**Entity:** Town of Granger

**Service Area Population:** 170 (1998 Water Supply Survey)

**Water Supply:** Direct diversion from the Green River. The water is transported approximately 15- 20 miles in the FMC Pipeline and the Granger Pipeline.

**Water Treatment:** Conventional treatment plant.

**Wastewater Treatment:** A zero discharge lagoon system.

**Monthly Water Rates:** \$30.00, a flat rate regardless of use.

**Annual Water Use:** (1997)

Diverted: 18.25 MG = 56.0 AF  
Consumed: 18.25 MG = 56.0 AF (100%)  
Returned: 0 MG = 0 AF (0)

**Per Capita Use:** (average annual gallons per capita per day)

Diverted: 294 GPCPD  
Consumed: 294 GPCPD

**Peak Day Demand:** (reported) 100,000 GPD = 0.155 CFS = 0.307 AFD

**Water Supply System Capacity:** (reported) 700 GPM = 1.56 CFS = 3.09 AFD

**Municipal Water Rights:**

<u>Permit No.</u>	<u>Source</u>	<u>Priority</u>	<u>Amount</u>	<u>Remarks</u>
Territorial	Ham's Fork	1882	0.57 cfs	Granger Pipeline
4104 Enl.	Green River	3/23/1920	6.0 cfs	Diverted 6/1-8/31, Westvaco
6674 Enl.	Green River	11/8/1978	0.56 cfs	Enl. Westvaco Pipeline

**Water Right Capacity:**

Ham's Fork: All year: 0.57 cfs = 1.13 AFD  
Green River: January 1 - May 31: 0.56 cfs = 1.11 AFD  
June 1 - August 31: 6.56 cfs = 13.01 AFD  
Sept.1 - Dec. 31 0.56 cfs = 1.11 AFD

## Appendix 1

### Green River Basin Planning Study Municipality Summary

**Entity:** Kemmerer-Diamondville Joint Powers Board

**Service Area Population:** 3,950 (1999 WWDC Survey)

**Water Supply:** Direct diversion from the Ham's Fork River.

**Water Treatment:** Disinfection/chlorination and filtration.

**Wastewater Treatment:** The Joint Powers Board operates a conventional wastewater treatment facility which discharges back to the Ham's Fork River.

**Monthly Water Rates:** \$7.81 flat rate plus \$1.93 for each 1,000 gallons. Monthly bill for the use of 20,000 gallons = \$46.41.

**Annual Water Use:** (1997-1999 average)

Diverted: 258.3 MG = 792.7 AF  
Consumed: 115.5 MG = 354.5 AF (44.7%)  
Returned: 142.8 MG = 438.2 AF (55.3%)

**Per Capita Use:** (average annual gallons per capita per day)

Diverted: 179 GPCPD  
Consumed: 80 GPCPD

**Peak Day Demand:** (reported) 2.0 MGD = 3.09 CFS = 6.14 AFD

**Water Supply System Capacity:** (reported) 4.18 MGD = 6.47 CFS = 12.82 AFD

#### Municipal Water Rights:

Kemmerer's Water Rights:

<u>Permit No.</u>	<u>Source</u>	<u>Priority</u>	<u>Amount</u>	<u>Remarks</u>
5302 Res.	Kemmerer No. 1 Res.	5/24/1935	1,058 AF	Kemmerer Pipeline
9776 Res.	Enl. Kemmerer Res.	1/12/1990	711.78 AF	Kemmerer Pipeline
1601	Ham's Fork	10/13/1897	1.39 cfs	Kemmerer Pipeline
3825 Enl.	Ham's Fork	10/01/1917	3.06 cfs	Kemmerer Pipeline
19292	Ham's Fork	5/27/1940	2.00 cfs	Kemmerer Pipeline
18392	Kemmerer Springs	7/30/1934	0.04 cfs	Cities Pipeline

Diamondville's Water Rights:

## Appendix 1

Permit No.	Source	Priority	Amount	Remarks
18392	Kemmerer Springs	7/30/1934	0.04 cfs	Cities Pipeline
1674	Ham's Fork	11/19/1897	0.60 cfs	Diamondville P/L
30760	Ham's Fork	12/27/1989	1.56 cfs	Diamondville P/L
31809	Little Canyon Drnge.	3/22/1996	0.111 cfs	Green Belt P/L
UW 43357	Ground	5/26/1977	25 gpm	Lawns and parks.
UW	Ground	82449	25 gpm	Lawns and parks.

### **Municipal Supply System/Water Right Capacity:**

Kemmerer-Storage: 1,769.78 AFY  
Kemmerer-Ham's Fork direct flow rights: 6.45 cfs = 12.79 AFD  
Diamondville-Ham's Fork direct flow rights: 2.16 cfs = 4.28 AFD

Appendix 1

**Green River Basin Planning Study  
Municipality Summary**

**Entity:** Town of LaBarge

**Service Area Population:** 490 (reported)

**Water Supply:** Infiltration gallery diverting from the Green River.

**Water Treatment:** Disinfection/chlorination.

**Wastewater Treatment:** A lagoon system which discharges back to the Ham's Fork River.

**Monthly Water Rates:** \$17.14, a flat rate regardless of use.

**Annual Water Use:** (1997-1999 average)

Diverted: 78.6 MG = 241.2 AF  
Consumed: 44.9 MG = 137.8 AF (57.1%)  
Returned: 33.7 MG = 103.4 AF (42.9%)

**Per Capita Use:** (average annual gallons per capita per day)

Diverted: 439 GPCPD  
Consumed: 251 GPCPD

**Peak Day Demand:** (reported) 0.5 MGD = 0.77 CFS = 1.54 AFD

**Water Supply System Capacity:** (reported) 400 GPM = 0.89 CFS = 1.77 AFD

**Municipal Water Rights:**

<u>Permit No.</u>	<u>Source</u>	<u>Priority</u>	<u>Amount</u>	<u>Remarks</u>
24979	Green River	12/8/1975	1.33 cfs	LaBarge P/I

**Municipal Supply System/Water Right Capacity:** 1.33 cfs = 2.64 AFD

## Appendix 1

### Green River Basin Planning Study Municipality Summary

**Entity:** Town of Marbleton

**Service Area Population:** 635 (1999 Water Supply Survey)

**Water Supply:** Five (5) groundwater wells varying in depth between 586 to 827 feet.

**Water Treatment:** None.

**Wastewater Treatment:** A zero discharge lagoon system.

**Monthly Water Rates:** \$21.15, a flat rate regardless of use.

**Annual Water Use:** (1998)

Diverted:	182.5 MG = 560.1 AF
Consumed:	182.5 MG = 560.1 AF (100%)
Returned:	0 MG = 0 AF (0)

**Per Capita Use:** (average annual gallons per capita per day)

Diverted:	787 GPCPD
Consumed:	787 GPCPD

**Peak Day Demand:** (reported) 700,000 GPD = 1.08 CFS = 2.15 AFD

**Water Supply System Capacity:** (reported) 500 GPM = 1.11 CFS = 2.2 AFD

**Municipal Water Rights:**

<u>Permit No.</u>	<u>Source</u>	<u>Priority</u>	<u>Amount</u>	<u>Remarks</u>
UW 32773	Ground	4/13/1976	250 gpm	Depth-605 feet.
UW 32774	Ground	4/13/1976	100 gpm	Depth-586 feet.
UW 59001	Ground	11/10/1981	150 gpm	Depth-820 feet.
UW 70447	Ground	6/25/1985	160 gpm	Depth-800 feet.
UW 92099	Ground	5/21/1993	20 gpm	Depth-20 feet, park irrigation.
UW 105267	Ground	3/14/1997	160 gpm	Depth-827 feet.

**Water Right Capacity:** 820 gpm = 1.83 cfs = 3.6 AFD

Appendix 1

**Green River Basin Planning Study  
Municipality Summary**

**Entity:** Town of Opal

**Service Area Population:** 100 (1999 Water Supply Survey)

**Water Supply:** Three (3) groundwater wells varying in depth between 400 to 480 feet.

**Water Treatment:** Disinfection/chlorination.

**Wastewater Treatment:** A zero discharge lagoon system.

**Monthly Water Rates:** \$19.00 for the first 10,000 gallons, plus \$2.00 for each additional 1,000 gallons. Monthly bill for the use of 20,000 gallons = \$39.00.

**Annual Water Use:** (1998)

Diverted: 4.38 MG = 13.44 AF  
Consumed: 4.38 MG = 13.44 AF (100%)  
Returned: 0 MG = 0 AF (0)

**Per Capita Use:** (average annual gallons per capita per day)

Diverted: 120 GPCPD  
Consumed: 120 GPCPD

**Peak Day Demand:** (reported) 23,500 GPD = 0.04 CFS = 0.07 AFD

**Water Supply System Capacity:** (reported) 55 GPM = 0.12 CFS = 0.24 AFD

**Municipal Water Rights:**

<u>Permit No.</u>	<u>Source</u>	<u>Priority</u>	<u>Amount</u>	<u>Remarks</u>
UW 69347	Ground	1/21/1985	35 gpm	Depth-480 feet.
UW 71847	Ground	1/29/1986	35 gpm	Depth-450 feet.
UW 76028	Ground	7/20/1987	35 gpm	Depth-400 feet.

**Water Right Capacity:** 105 gpm = 0.23 cfs = 0.46 AFD



## Appendix 1

### Green River Basin Planning Study Municipality Summary

**Entity:** Town of Pinedale

**Service Area Population:** 1,480 (1999 WWDC Survey)

**Water Supply:** Fremont Lake Reservoir, located on Pine Creek. The water is delivered to town through an intake structure in the reservoir and gravity pipelines, approximately 2 miles in length.

**Water Treatment:** Disinfection/chlorination.

**Wastewater Treatment:** A lagoon system which discharges back to Pine Creek.

**Monthly Water Rates:** \$15.14, a flat rate regardless of use.

**Annual Water Use:** (1998)

Diverted: 532.0 MG = 1,632.6 AF  
Consumed: 256.0 MG = 785.6 AF (48.1%)  
Returned: 276.0 MG = 847.0 AF (51.9%)

**Per Capita Use:** (average annual gallons per capita per day)

Diverted: 985 GPCPD  
Consumed: 474 GPCPD

**Peak Day Demand:** (reported) 2.5 MGD = 3.87 CFS = 7.67 AFD

**Water Supply System Capacity:** (reported) 14.4MGD = 22.3 CFS = 44.2 AFD

#### **Municipal Water Rights:**

<u>Permit No.</u>	<u>Source</u>	<u>Priority</u>	<u>Amount</u>	<u>Remarks</u>
4452 Res.	Fremont Res.	9/10/1931	9,844.12 AF	
8937 Res.	Fremont Res.	2/2/1977	7,594.5 AF	
1817	Pine Creek	5/6/1898	0.37 cfs	Diverted 6/1-8/31, 68.28 AF
1817	Pine Creek	5/6/1898	1.60 cfs	Diverted 5/17-9/28, 131.3 AF
392 Enl.	Pine Creek	12/1/1898	0.11 cfs	Diverted 6/1-8/31, 19.6 AF
626 Enl.	Pine Creek	2/25/1901	0.12 cfs	Diverted 6/1-8/31, 21.49 AF
1631 Enl.	Pine Creek	11/8/1906	0.07 cfs	Diverted 6/1-8/31, 11.89 AF
1631 Enl.	Pine Creek	11/8/1906	1.51 cfs	Diverted 5/17-9/28, 241.55 AF
18601	Pine Creek	1/30/1935	0.17 cfs	
5289 Enl.	Pine Creek	1/2/1941	1.75 cfs	

## Appendix 1

### **Water Right Capacity:**

Storage in Fremont Lake: 17,438.62 AFY

Direct flows rights:	January 1 - May 16:	1.92 cfs =	3.81 AFD
	May 17- June 1:	5.03 cfs =	9.97 AFD
	June 1 - August 31:	5.79 cfs =	11.48 AFD
	Sept.1 - Sept. 28	5.03 cfs =	9.97 AFD
	Sept. 29 - Dec. 31	1.92 cfs =	3.81 AFD

Appendix 1

**Green River Basin Planning Study  
Municipality Summary**

**Entity: Rock Springs/Green River/Sweetwater County Joint Powers Board**

**Service Area Population:** (1999 estimated)

Green River	13,000
Rock Springs, including Reliance	20,500
White Mountain (WM)	1,600
Clearview (CV)	900
Ten-Mile	<u>500</u>
Total	36,500

**Water Supply:** Green River, through direct diversion.

**Water Treatment:** A conventional water treatment plant with a capacity of 32 MGD (98.2 AFD) serves the entire service area.

**Water Supply Pipeline:** A pipeline with a capacity of 15 MGD (23 cfs = 46 AFD) from the water treatment plant serves Rock Springs, Reliance, White Mountain, Clearview and Ten-Mile.

**Wastewater Treatment:** Rock Springs and Green River have conventional wastewater treatment facilities which discharge into the Green River.

**Monthly Water Rates:** Rock Springs-\$9.49 for the first 2,000 gallons, plus \$3.04 for each additional 1,000 gallons. Monthly bill for the use of 20,000 gallons = \$64.21. Green River-\$12.55 for the first 2,000 gallons, plus \$2.21 for each additional 1,000 gallons. Monthly bill for the use of 20,000 gallons = \$52.33.

**Annual Water Use:** (1997-1999 average)

Diverted:	Green River:	937.4 MG = 2,876.8 AF
	Rock Springs, including Reliance:	1,678.4 MG = 5,150.8 AF
	WM, CV, Ten-Mile	<u>89.3 MG = 274.0 AF</u>
	Total	2,705.1 MG = 8,301.6 AF
Consumed:	Green River:	596.8 MG = 1,831.4 AF
	Rock Springs, including Reliance:	844.8 MG = 2,592.7 AF
	WM, CV, Ten-Mile	<u>89.3 MG = 274.0 AF</u>
	Total	1,530.9 MG = 4,698.1 AF (56.6%)
Returned:	Green River:	340.7 MG = 1,045.6 AF
	Rock Springs:	<u>833.5 MG = 2,557.9 AF</u>
	Total	1,174.3 MG = 3,603.8 AF (43.4%)

**Per Capita Use:** (average annual gallons per capita per day)

Appendix 1

Diverted:	Green River:	198 GPCPD
	Rock Springs, including Reliance:	224 GPCPD
	WM, CV, Ten-Mile	82 GPCPD
	Total Service Area	203 GPCPD

Consumed:	Green River:	126 GPCPD
	Rock Springs, including Reliance:	113 GPCPD
	WM, CV, Ten-Mile	82 GPCPD
	Total Service Area	115 GPCPD

**Peak Day Demand:** (reported)

Green River:	5.0 MGD = 15.3 AFD
Rock Springs, including Reliance:	10.0 MGD = 30.7 AFD
WM, CV, Ten-Mile	<u>0.4 MGD = 1.2 AFD</u>
Total Service Area	15.4 MGD = 47.2 AFD

**Water Supply System Capacity:** (reported)

To Green River area:	6.2 MGD = 19.0 AFD
To Rock Springs area:	15.0 MGD = 46.0 AFD

**Municipal Water Rights:**

Water rights shared by towns of Rock Springs and Green River through the JPB:

Permit No.	Source	Priority	Amount	Remarks
Territorial	Green River	1871	4.0 cfs	Green River Pipeline (GRP)
4620 Enl.	Green River	9/4/1928	6.0 cfs	Enl. GRP
6415 Enl.	Green River	10/27/1971	10.0 cfs	Enl. GRP
6672 Enl.	Green River	5/31/1978	10.0 cfs	Enl. GRP
6982 Enl.	Green River	11/30/1989	10.0 cfs	Enl. GRP

Green River water rights:

Permit No.	Source	Priority	Amount	Remarks
22817	Green River	2/16/1962	0.13 cfs	Lawns and parks.
22818	Green River	2/16/1962	0.33 cfs	Lawns and parks.
23623	Green River	9/23/1970	0.05 cfs	Town park.
25660	Green River	6/6/1977	0.44 cfs	Ball parks.

Rock Spring water rights:

## Appendix 1

<u>Permit No.</u>	<u>Source</u>	<u>Priority</u>	<u>Amount</u>	<u>Remarks</u>
UW 10431	Ground	9/15/1971	50 gpm	Recreation complex.
UW 45012	Ground	9/7/1978	400 gpm	Golf course/lawns.
UW 46552	Ground	1/23/1979	400 gpm	Golf course/lawns.

### **Municipal Supply System/Water Right Capacity:**

Surface Water: 40 CFS = 79.3 AFD

### **Comments:**

1. It should be anticipated that the per capita use in the Rock Springs area will increase by 15% in the future. In the past, water use was restricted due to the capacity of the Rock Springs pipeline, which has been recently increased.
2. Historically, Rock Springs has provided water to SF Phosphates. Presently, the Joint Powers Board is providing water to this industrial water user. The amount of water provided to SF Phosphates is **not** included in the above totals.
3. Green River has surface water rights totalling 0.95 CFS (1.88 AFD), which are used for lawn water for parks. Rock Springs has three (3) wells with water rights totalling 850 GPM (3.8 AFD), which are used for lawn watering of parks and golf courses.

## Appendix 1

### Green River Basin Planning Study Municipality Summary

**Entity:** Town of Superior

**Service Area Population:** 300 (1999 Water Supply Survey)

**Water Supply:** Three (3) groundwater wells with approximate depths of 1,700 feet.

**Water Treatment:** Conventional water treatment plant.

**Wastewater Treatment:** A zero discharge lagoon system.

**Monthly Water Rates:** \$35.00, a flat rate regardless of use.

**Annual Water Use:** (1998)

Diverted: 14.6 MG = 44.8 AF  
Consumed: 14.6 MG = 44.8 AF (100%)  
Returned: 0 MG = 0 AF (0)

**Per Capita Use:** (average annual gallons per capita per day)

Diverted: 133 GPCPD  
Consumed: 133 GPCPD

**Peak Day Demand:** (reported) 90,000 GPD = 0.14 CFS = 0.28 AFD

**Water Supply System Capacity:** (reported) 360 GPM = 0.80 CFS = 1.6 AFD

**Municipal Water Rights:**

<u>Permit No.</u>	<u>Source</u>	<u>Priority</u>	<u>Amount</u>	<u>Remarks</u>
UW 66539	Ground	1/27/1984	500 gpm	Depth-1,500 feet.
UW 66540	Ground	1/27/1984	150 gpm	Depth-1,720 feet.
UW 69481	Ground	3/4/1985	300 gpm	Depth-1,700 feet.
UW 83437	Ground	8/20/1990	250 gpm	Depth-1,720 feet.
UW 87220	Ground	2/26/1992	60 gpm	Depth-968 feet.

**Water Right Capacity:** 1,260 gpm = 2.81 cfs = 5.57 AFD

Appendix 1

**Green River Basin Planning Study  
Municipality Summary**

**Entity:** Town of Wamsutter

**Service Area Population:** 310 (1999 Water Supply Survey)

**Water Supply:** Three (3) groundwater wells varying in depth between 1,365 feet and 1,905.

**Water Treatment:** Disinfection/chlorination.

**Wastewater Treatment:** A zero discharge lagoon system.

**Monthly Water Rates:** \$22.00, a flat rate regardless of use.

**Annual Water Use:** (1998)

Diverted: 18.25 MG = 56.0 AF  
Consumed: 18.25 MG = 56.0 AF (100%)  
Returned: 0 MG = 0 AF (0)

**Per Capita Use:** (average annual gallons per capita per day)

Diverted: 161 GPCPD  
Consumed: 161 GPCPD

**Peak Day Demand:** (reported) 200,000 GPD = 0.31 CFS = 0.61 AFD

**Water Supply System Capacity:** (reported) 700 GPM = 1.56 CFS = 3.09 AFD

**Municipal Water Rights:**

<u>Permit No.</u>	<u>Source</u>	<u>Priority</u>	<u>Amount</u>	<u>Remarks</u>
SC 118	Ground	5/4/1902	10 gpm	Depth-1,365 feet.
SC 119	Ground	1/15/1912	15 gpm	Depth-1,905 feet.
SC 120	Ground	8/20/1921	67 gpm	Depth-1,801 feet.
UW 113188	Ground	11/25/1998	250 gpm	Depth-2,010 feet.

**Water Right Capacity:** 342 gpm = 0.76 cfs = 1.51 AFD