

WATER AVAILABILITY ANALYSIS FOR THE "CAPITAN TRADING POST" SUBDIVISION CAPITAN, NM

FINAL

New Mexico Office of the State Engineer Water Rights by Owner

WR File Nbr	Owner	Address	City	Doc Code	Use	Owner End Date
H 00186 1	VILLAGE OF CAPITAN	(No address on file)	CAPITAN	CLWPP	IRR	
H 00685	VILLAGE OF CAPITAN	(No address on file)	CAPITAN	CLOSE	CLS	
H 00685 1	VILLAGE OF CAPITAN	(No address on file)	CAPITAN	CPLA	MUN	
H 00686	VILLAGE OF CAPITAN	(No address on file)	CAPITAN	CLOSE	CLS	
H 00757	VILLAGE OF CAPITAN	(No address on file)	CAPITAN	EXPL	EXP	
H 01464	VILLAGE OF CAPITAN	P.O. BOX 246	CAPITAN	72121	PRO	
H 01853	VILLAGE OF CAPITAN	P.O. BOX 3156	ROSWELL	EXPL	EXP	
H 01943	VILLAGE OF CAPITAN	PO BOX 246	CAPITAN	EXPL	EXP	
H 02164	VILLAGE OF CAPITAN	P.O. BOX 246	CAPITAN	72121	STK	01/13/2010
SD 01406 2A	VILLAGE OF CAPITAN	P.O. BOX 246	CAPITAN	STGPP	MUN	
SD 01894 5	VILLAGE OF CAPITAN	P.O. BOX 246	CAPITAN	STGPP	IRR	
SD 01898 11A	VILLAGE OF CAPITAN	PO BOX 246	CAPITAN	STGPP	IRR	
SD 01898 2A	VILLAGE OF CAPITAN	PO BOX 246	CAPITAN	STGPP	MUN	
SD 01898 9C	VILLAGE OF CAPITAN	PO BOX 246	CAPITAN	STGPP	MUN	

** 14 Owners matching "VILLAGE OF CAPITAN" in the last name

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

5/26/11 7:40 AM

WATER RIGHTS BY OWNER

PREPARED BY
BENCHMARK ENGINEERING AND SURVEYING, INC
OCTOBER 26, 2011

FINAL



NOTICE

This document is prepared for submittal with the Final Subdivision Plat. It is based on the data, findings, and recommendations contained in the duly adopted 40 Year Water Plan for the Village of Capitan and is not intended to supersede that document to any degree nor can it be construed to bind the Village in any way. Only new data of public record are introduced and the analysis of these data is intended to assist Village staff in deciding if there is sufficient water to serve the proposed subdivision.

FINAL

WATER AVAILABILITY ANALYSIS FOR THE
“CAPITAN TRADING POST” SUBDIVISION
CAPITAN, NM

Introduction

This report is to provide supporting documentation for the requirement of the preliminary plat submittal that includes:

A Water Supply Plan, certified by a registered professional engineer or professional hydro-geologist. Water must be sufficient in quantity to fulfill the maximum annual water requirements of the subdivision for indoor and outdoor use for a 70-year period, as certified by a letter from the Village Water Department or other water utility providing the water.

This is a two-part requirement. The first is a water supply plan certified by an engineer or hydro-geologist, and the second is certification by the Village that there is sufficient water to supply the subdivision for a 70 year period.

There is already the duly adopted “40-Year Water Plan 2000-2040” that was prepared for the Village of Capitan by Livingston Associates in 1998. In order to assist the water department which would have to certify that there is a sufficient quantity of water to supply the subdivision for a 70 year period, this report shall use the 40 Year Water Plan to help quantify the effects of the proposed new subdivision on Capitan’s water supply.

This will amount to applying the data contained in the Water Plan and extrapolating the identified trends to project the impact of the subdivision on Capitan’s water supply. Even though it is now 2011, the 70-year period should be from 2000-2070. This is in order to make meaningful comparisons with the data and findings of the Water Plan and is no different than, say, calculating present, past, or future worth as needed when comparing financial projections. Following are my preliminary findings arranged by topic in the same order as presented in the 40 Year Water Plan.

Existing Water Demands

The Water Plan tabulates water use by class as of 1997, and water meter installations from 1994 through 1997. These are reproduced here for reference

Existing Water Use by Class (1997)

Use Class	Gallons/ Year	Gallons/ Month	Gallons/ Day	Total AC-FT	% of Total
Total	54,773,500	4,564,458	150,064	168	100%
Domestic	49,798,185	4,149,849	136,433	153	91%
School	1,328,364	110,697	3,639	4	2%
Irrigation	1,877,578	156,465	5,144	6	3%
Smokey Bear Restaurant	1,769,373	147,448	4,848	5	3%

Water Meter Installations – 1994 to 1997

Year	New Meters Installed	Total No. of Meters	Percentage Increase
1994	-	620	-
1995	25	645	4.0%
1996	30	675	4.7%
1997	49	724	7.3%
Average	-	-	5.3%

We don’t know from the Water Plan alone how many of these meters are domestic, but it is safely conservative to include the high-use meters and divide the total water use by the total number of meters. Accordingly, the domestic use in 1997 should not be more than 207 gallons per meter per day. Assuming that patterns of use remain more or less constant over the years, this quantity should remain representative of household use for Capitan in future years.

Existing Water Rights

The total ground water rights available for diversion at the time of the Water Plan are 264.5925 acre-feet/annum (AF/AN) and of this the consumptive use is 221.3535 AF/AN. There was an additional 22.5875 AF/AN increase identified if waste water return flow credits are applied for and approved, and it appears that this has since been done.

Additional surface and groundwater rights are held in the interest of the Eagle Creek Water Association (ECWA), and these comprise 800 AF/AN surface water rights and 38.88 AF/AN groundwater rights. At the time of the Water Plan, a draft proposal was under consideration by the Office of the State Engineer (OSE) to transfer 500 AF/AN to Capitan’s well field ([OSE File H-685](#)) and to lease the remaining 300 AF/AN to Ruidoso.

Since that time, the surface water rights were successfully transferred to Capitan’s well field. An abstract of OSE File H-685 dated January 31, 2006 shows that Capitan is permitted a total diversion of 1018.914 AF/AN for consumptive use. This is subject however to a temporary

transfer of 599.92 acre-feet to Ruidoso that is in effect. This temporary transfer is itself subject to reversion by written request of Capitan.

Population Projections

Since the time of the Water Plan, the results of the 2000 Census and the 2010 Census are available. The historical populations of Capitan are shown to the right. During the period from 1970 to 2010 the population increased from 439 to 1489. Although the actual increases are not steady, the average yearly growth rate for this period is 3.1% calculated as follows:

Census	Population
1960	552
1970	439
1980	762
1990	840
2000	1443
2010	1489

$$\left(\frac{1489}{439}\right)^{1/40} - 1 = 0.031$$

This is consistent with the moderate growth rate scenario (3.0% annual growth) identified in the Water Plan and it is appropriate then to use this scenario for the purposes of projecting future water demands. A revised projection that starts with the actual 2000 population and assumes an annual growth rate of 3.1% is shown to the right. It overestimates the actual 2010 projection, but should be reasonably predictive of the growth over a 40 year period.

Year	Projected Population
2000	1489
2005	1735
2010	2021
2015	2354
2020	2742
2025	3194
2030	3721
2035	4335
2040	5049

Future Water Demands

The water plan assumed that meter installations would continue at an annual rate of 5% until 2010 and then would continue following one of the low, moderate or high growth rates. Here we will assume installation continues only at the moderate growth rate after 2010.

The Water Plan assumed that the water demands for the Smoky Bear Restaurant and school irrigation will not change. Otherwise, it assumed that school, commercial and domestic water demands will all follow the domestic growth rate.

Year	MGY	AF/AN
2000	75.10	230.56
2005	90.37	277.43
2010	108.61	333.45
2015	125.33	384.77
2020	144.71	444.27
2025	167.18	513.24
2030	193.23	593.21
2035	223.42	685.90
2040	258.38	793.24

The Water Plan further assumes that the current demand is 135 GPCD and that this would be reduced after 2010 to 123 GPCD through conservation programs.

Accordingly, the future water demands from the Water Plan assuming moderate growth are as shown to the left.

Note that at 123 GPCD along with an assumption that domestic use is 90% of the total, 258.38 MGY translates to a population of 5230 persons.

Available Lands for Growth

According to the Water Plan, there are approximately 1,600 building sites within the municipal boundaries. In 1997 there were 724 meters so approximately 876 of these were not served as of 1997. The Water Plan assumes an average population of 3.2 persons per household so that at total build-out the population should be approximately 5120 persons. This is within 2% of the number of people that the water demand table equates to at the end of 2040. Therefore build-out can be reasonably expected to occur at about the end of the 40 year period.

Capitan’s total permitted diversion for consumptive use is 1018.914 AF/AN. This means that after serving all existing building sites, there are an excess of 225.674 AF/AN for new development.

Water Conservation

The Water Plan shows the historical consumption rate for Capitan is 208 gallons per household per day, which is 0.232 AF/AN. At 3.2 persons per household, this is 65 GPCD. Below is a table showing national averages based on increasing levels of conservation along with estimates prepared by Atkins and Associates for a comparable project in Lincoln County:

Indoor Use (avg. day)							
	AWWARF	Vickers			AWWA		Atkins
<i>Conservation</i>	<i>None</i>	<i>None</i>	<i>Some</i>	<i>Max</i>	<i>None</i>	<i>Some</i>	<i>Max</i>
Toilets	18.50	20.40	8.20	12.20	18.50	8.20	7.70
Showers	11.60	15.90	13.30	2.60	11.60	8.80	7.49
Baths	1.20	-	-	-	1.20	1.20	4.20
Faucets	10.90	12.00	6.00	6.00	10.90	10.80	10.50
Dishwasher	1.00	1.10	0.70	0.40	1.00	0.70	0.85
Washing Machine	15.00	18.90	10.00	8.90	15.00	10.00	3.90
Leakage	9.50	3.42	1.91	1.51	9.50	4.00	1.73
Other	1.50	-	-	-	1.60	1.60	-
Sub Total (gpcd)	69.20	71.72	40.11	31.61	69.30	45.30	36.37
Per Lot (@3.2/lot)	221.44	229.50	128.35	101.15	221.76	144.96	116.38
							Atkins
							Outdoor Use (avg. day)
						Per Lot	9.80
							Total Indoor & Outdoor
						Per Lot	126.18

The current 65 GPCD is in line with national averages where there is no conservation and so the current 208 gallons per lot per day can be dramatically reduced.

FINAL

For a new subdivision, with modern appliances and strict conservation measures in place, a reasonable expectation of water use is 127 gallons per household per day, which is 0.142 AF/AN per household.

So, according to the Water Plan using the moderate growth scenario over a period of 70 years, it appears that Capitan has sufficient water rights to meet complete build-out of lands now within its municipal boundaries with 225.674 AF/AN remaining for new development. With achievable conservation measures applied to new development this remainder should accommodate 1590 new households.

Benchmark Engineering and Surveying,

Paul van Gulick, PE, PS, CFM



NOTICE

This document is prepared for submittal with the Final Subdivision Plat. It is based on the data, findings, and recommendations contained in the duly adopted 40 Year Water Plan for the Village of Capitan and is not intended to supersede that document to any degree nor can it be construed to bind the Village in any way. Only new data of public record are introduced and the analysis of these data is intended to assist Village staff in deciding if there is sufficient water to serve the proposed subdivision.

Final