

FILE COPY

BRAZOS MUTUAL DOMESTIC WATER CONSUMERS ASSOCIATION, INC.  
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Albuquerque, NM 87105-3005  
(505) 247-4669

February 27, 2002

Office of the State Engineer  
Bataan Memorial Building, Room 101  
Post Office Box 25102  
Santa Fe, New Mexico 87504-5102

Attention: Mr. Stermon M. Wells  
Water Rights Division

Dear Mr. Wells,

Subject: File No. RG-24272-et al

Reference: Your Letter Dated November 13, 2001

As directed in your referenced letter, the Brazos MDWCA has prepared additional data to be submitted by this letter to augment our submission of our Water Development Plan. As you requested, we have developed a Water Conservation Plan and are now providing updated drawings of our water distribution and storage system. These drawings are prepared by, and endorsed by, a Professional Engineer licensed in the State of New Mexico. The attached package contains several components consisting of;

1. Current updated drawings of our water storage and distribution system
2. A Water Conservation Plan
3. Three tables that are referenced in the Water Conservation Plan
4. A copy of the current Rules and Regulation of the Brazos MDWCA

Please note that the Water Conservation Plan was prepared using the document that you provided in your referenced letter. The document is entitled: "Water Conservation Guidelines for Public Water Supply Systems", as prepared by Brian C. Wilson, P.E. of the New Mexico Office of the State Engineer, Draft: February 8, 1999. Additionally, we used the document entitled: "A Water Conservation Guide for Public Utilities" published by the New Mexico Office of the State Engineer, as a source of additional information.

It is anticipated that this Water Conservation Plan and supplemental documentation will be accepted and approved by the Office of the State Engineer. It is further anticipated that following that acceptance and approval by the Office of the State Engineer, that the 97 acre feet of water rights that is now held by the Brazos MDWCA on a conditional basis, will be approved for permanent ownership by the Brazos MDWCA.

Therefore, it is requested that the Office of the State Engineer review and approve the attached Water Conservation Plan and System Drawings, as well as the previously submitted Water Development Plan. The Board of Directors of the Brazos MDWCA stands by to answer any questions or respond to any additional comments from your office.

Sincerely,



J.T. McWilliams  
Vice President,  
Board of Directors

Attachments: as stated

**BRAZOS MUTUAL DOMESTIC WATER CONSUMERS  
ASSOCIATION, INC.**

**WATER CONSERVATION PLAN  
FOR THE TIME PERIOD  
YEAR 2001 THROUGH YEAR 2041**

A. Profile of the Brazos MDWCA

The Brazos Mutual Domestic Water Consumers Association, Inc. is located in northern Rio Arriba County, in the State of New Mexico. The Cooperative acquires, stores, and distributes daily household (domestic) water to 157 memberships. All of the members are taxpayers in Rio Arriba County. The community is unincorporated. The business address of the Cooperative is that of our bookkeeper/financial accountant and is shown as:

1521 Cerro Vista  
Albuquerque, NM 87105  
(505) 247-4669

The Brazos Mutual Domestic Water Consumers Association, Inc. is an outgrowth of The Brazos Water Cooperative Association, Inc. which was incorporated in December 1962, with 14 members. The Association has grown to 157 memberships. During the 1960's, the membership's water usage was mainly seasonal, however in the more recent years members have moved to the area as full time residents. The memberships now include both domestic and three commercial accounts (Bed & Breakfast, Tourist Lodge, and a Restaurant) that operate year around. From 1990 to 2000, this upper Brazos canyon area has realized a tremendous growth in both membership and new construction of homes for year around habitation.

A (1). Description of existing water rights.

The Brazos MDWCA owns 97 acre feet of water rights under the designation RG-24272, et. al. The applicable documents are on file with the New Mexico Office of the State Engineer, Water Rights Division. The Association does not export or import water to any other organization.

The type of water rights that are held by the Brazos MDWCA are Declared Rights. Our water sources consist of ground water from two wells and is supplemented on occasion by surface water from

one coffer dam. The well heads are metered and the output of the upper tank (which receives water from the coffer dam) is metered. Since all water produced is consumed (less leakage) by the members, the Association does not presently claim any return flow credits.

A (2). Description of location and type of treatment

The Association provides a disinfectant process by injecting hypochlorate into the water at each well head. The injection pumps are energized when the well pump is energized. The well pumps operate via storage tank level demand sensors and/or electric clock timers. The Association has three water storage tanks, the upper tank has 38,000-gallon capacity, the middle tank has 57,000-gallon capacity, and the lower tank has 12,000-gallon capacity. Daily testing is performed on-site and official water sample testing is performed once a month by a contract testing laboratory. The results of the contract testing laboratory evaluations are sent directly to the State of New Mexico Environment Department.

A (3). Description of location and type of wastewater treatment

The Association does not own or operate a wastewater treatment facility. There is no common wastewater treatment facility in the community. Each property is serviced by its own septic or wastewater holding tank.

A (4). History of water production

The history of water production is reflected in Table 1. This table shows that the community does not import (buy) or export (sell) any water to other water users.

A (5). History of water demand

The history of water demand is reflected in Table 2. This table reflects recent water demand and provides a projection for water demand to the year 2040. Embedded in these estimates are several important variables. In recent years, some existing residences have been sold. The sellers are typically older citizens who are leaving the area. These people are typically good conservationists. The properties are being bought by younger people who are not as inclined to conserve water. Secondly, the new homes being built are large two story homes with multiple bath/shower facilities. These home are equipped with dishwashers, ice makers, etc. These families also have

younger children, the sum of which demands more water and a higher GPCD consumption. Likewise, Table 2 reflects increased commercial/institutional usage. It can be expected that as the population grows, and is a younger median age, there will be a demand for better restaurant services which will cause the commercial/institutional consumption to increase. Another subtle facet of large growth to the water distribution system is the potential for underground leaks. As the distribution system grows to accommodate growth, the actual leaks and potential for leaks on the customers property increases.

A (6). Identification of connections that exceed 50,000 gpd.

There are no connections within our present or future water distribution system that use 50,000 gallons per day or more. The subdivision platting filed with Rio Arriba County does not allow large commercial or institutional activity in the community. Therefore a Table 3 is not included in this plan.

A (7). History of annual yields of wells.

A history of annual yields of each well is reflected in Table 4. The Number 3 Well data reflect that the well was redrilled at a slightly different location in 1999, and we have very little quantitative data prior to that redrilling.

## B. Specification of Conservation Goals

B (1). Percent reduction in per capita water usage.

The percent reduction in per capita water usage is dependent on many factors. For example, the use of low flow toilet fixtures provides a 47% reduction per flush in the GPCD demand per household. By virtue of the county and national building codes, each new residence built in the future will be equipped with the low flow toilet fixtures. As the older residences are updated and remodeled, they too will be equipped with the low flow toilet fixtures, by virtue of the building codes. The Association encourages all members to upgrade their residences with the newer technology equipment. Many of the older residences are not equipped with dish washing machines, so a certain conservation of resources already exists. Likewise, the Association has recommended that its members use a water flow orifice in the showerheads of all residences. These topics are discussed at the annual meeting of all members of the Association. The expected reduction in per capita water usage of all these factors could approach 10% overall within the

entire water system.

The Association does not operate any self-supplied facilities.

#### B (2). Unaccounted-for-water Losses

The Association presently estimates that the unaccounted-for-water losses are 10% to 12%. This reasonable figure is achieved by virtue of a 1990 capital improvement project that replaced 90% of the underground water distribution system galvanized piping with PVC piping. The new PVC piping was installed five feet in the ground to prevent frost shifting which would cause leaks. The success of this improvement was readily apparent in the operation of the water system following the completion of the project. Periodically underground leaks are observed and repaired. The Association has recently purchased a LD-10 acoustic leak detection system to further control unaccounted-for-water losses.

#### B (3). Percent Reduction in Total Annual Withdrawals.

The percent of reduction in total annual withdrawals is hard to calculate but would certainly follow the per capita usage trends. It is expected, and planned, that the number of connections will continue to increase each calendar year. The construction methods and water connection/metering methods will help to assure a minimal unaccounted-for-water loss. The service connection standard design is published in the Rules and Regulations document provided to each member.

The ground water source for the Association is below a sandstone and basalt cap beginning about 280 feet underground. A classic water table or aquifer does not exist in our mountainous terrain. The renewable nature of the water source is very evident. The snowmelt provides substantial underground water flow in the spring, but by September, the underground flow is noticeably reduced. Therefore, it is concluded that the rate of increase in water withdrawal will increase proportional to the increase in new connections, but the increase in unaccounted-for-water losses will rise at a slightly lesser rate. This is because the undetected leakage is presumed to be in the core underground distribution lines and is assumed to not be in the new service hook-ups.

#### B (4). Basis for Development of Goals.

The basis for development of water conservation goals is shown

below. The methodology used is the "Procedure for Quantifying Conservation Goal for Residential Water Use" provided by the New Mexico Office of the State Engineer. Please note that irrigation and vehicle washing is not allowed and evaporative coolers are not installed or used in the Upper Brazos Canyon community.

Step 1: Analysis of the local population data indicate an average occupancy rate of 3.25 capita per dwelling unit.

Step 2: Assume a baseline indoor water requirement of 60 gallons per capita per day (gpcd). Allow 5 gpcd for water softening. Evaporative Coolers are not installed and used in the Upper Brazos Canyon. The total annual indoor water requirement (W1) is:

$$W1 = (3.25 \text{ capita/du}) (65 \text{ gpcd}) (365 \text{ d/y}) = 77,106 \text{ gpy}$$

Step 3: Not Applicable, irrigation is not allowed.

Step 4: The total annual water requirement (W3) for each dwelling unit is:

$$W3 = (77,106 \text{ gpy}) + (0) = 77,106 \text{ gpy}$$

The total water requirement per day (GPD) and the per capita requirement per day (GPCD) are:

$$GPD = (77,106 \text{ gpy}) / (365 \text{ d/y}) = 211$$

$$GPCD = (211 \text{ gpd}) / (3.2 \text{ capita/du}) = 65$$

### C. Description of Existing Water Conservation Measures.

Regulations - The Brazos NOWCA, in an effort to conserve water, allows water for domestic use only. This includes the three so-called commercial accounts. The Rules and Regulations of the Association do not allow use of water for the following activities:

- a. Washing of vehicles or equipment
- b. Irrigation of lawns, trees, and shrubs
- c. Purposeful wasting of water

Violators of these Rules and Regulations are subject to fines and if critical enough and constantly repeated, are subject to being expelled from the Association, which then denies them

access to water at their property.

Metering and Conservation Rate Structuring - Since each service connection is metered, the Association has in place a graduated rate structure for water usage. That is, we allow a basic amount of water usage per month without a surcharge, but beyond the basic allowance, the member must pay for additional water usage by the gallon. These rates are published in the Association Rules and Regulations.

Education - When the Association accepts a new member, that member is supplied with a copy of the Rules and Regulations as well as a laminated notice which is to be placed in the bathroom of the residence. This posted notice urges the member and their guests to conserve water by taking shorter showers and flushing the toilet less times each day.

The Association holds an annual meeting for members, at which all the operational issues and financial issues are discussed. It is at this meeting of all the members that the Association recommends installation of low flow lavatory fixtures, low flow showerheads, and water fixtures.

Leak Detection and Repair - The Association has recently purchased an LD-10 acoustic underground leak detection system to aid in finding and correcting water leaks. We have a local contractor who answers any service calls for leaks in the distribution system or on a member's private property. Any illegal hook-ups or water usage violations are detected by our System Administrator who lives in the community and is a State of New Mexico certified small water system operator.

Pressure Reduction - The Association water distribution system is controlled through several automatic valves and sensors. The main distribution system pressure is controlled by a 2-½ inch Pressure Reducing Valve. This valve is set at 47 psig thus maintaining a usable household water pressure for the majority of the members. For those properties that have a need for additional pressure control (due to elevation changes), a separate pressure reducing valve has been installed by the Association at the service connection.

#### D. Description of New Conservation Measures

The water conservation measures that have been implemented by the Association are presently producing excellent results. Due to the character of the conservation measures and the overall



program that underlies the results, the Association asserts that additional conservation measures are not required at this time. This does not mean that some unconceived measures would not be called for in the future. As a demonstration of our assertion, we have compared our per capita water use with similar water appropriators and data from the New Mexico Office of the State Engineer. This comparison shows that the Association's GPCD of diverted water of 20.19 GPCD, is much lower than that of the NM Office of the State Engineer's guideline of 60 GPCD. However as previously stated, the Association's service area is experiencing a great change with the addition of more full time residences.

The State Engineers guideline of 60 GPCD for northern New Mexico residence is very low when compared to the GPCD for the City of Albuquerque that is in excess of 225 GPCD (includes irrigation).

#### E. Implementation and Enforcement

The implementation and enforcement of the Water Conservation measures discussed in this plan is already a matter of record. The Association Rules and Regulations are long standing, and each member is provided with a copy. Any revisions to the Rules and Regulations are promulgated through a newsletter to each member. The Association Board of Directors holds all authority concerning enforcement and penalties. A copy of the Rules and Regulations is attached.

#### F. Drought Management Plan

The Drought Management Plan consists of several levels of action on the part of the water system Administrator and the managing Board of Directors of the Association.

Phase 1. - A drought condition is recognized when the production of water from the wells and cofferdam is not keep pace with the demand for usage. At this point, the system Administrator begins a contact plan with several key neighbors to urge voluntary conservation. These key neighbors then advise the neighbors in close proximity. The conservation measures urged at the time are to not operate the clothes washer, or dish washer, and take short showers.

Phase 2. - When the system Administrator recognizes that the storage tanks are not recovering overnight, he begins a similar contact program, but now demands conservation. The conservation measures now demanded of the customers are to not operate any

machines that utilize water, limit flushing of toilets to that following several usage's, be very sensitive to any water use, and report any observed violations to the system Administrator.

Phase 3. - If the water storage system is fully depleted, the system Administrator is authorized to contact the Rio Arriba County office of Emergency Preparedness in Espanola. This office can access state funds to help the Association buy water from some of the surrounding communities.

#### G. Fire Fighting Capability

A local Volunteer Fire Department was formed three years ago. The fire department now owns two trucks and has recently completed a fire station building to house the trucks and all their equipment. The VFD has installed fire hydrants on the Association water distribution system at selected locations. The Association has implemented a Memorandum of Agreement to provide water to the fire fighting equipment upon demand by the VFD. Since the Association has a total of 107,000 gallons of water storage, there is ample water to support the VFD emergency needs.

Table 1. Name of water supplier. History of water production (1 year intervals for last 5 years or more) and transfers by source of supply, and wastewater discharges and return flow, in thousands of gallons per year. The gross supply is the sum of production and imports. If water is exported and the population is enumerated, the net supply is the same as the gross supply. If water is exported and the population served is not enumerated (e.g. commercial or industrial deliveries), the net supply is the gross supply less the water exported. Return flow is calculated as WD-WR. The percentage of the net supply depleted is calculated as  $(NS-RF/NS)(100)$ .

Year	Production X 1000		Imported		Exported		X 1000 Gross Supply	X 1000 Net Supply	Wastwtr Dischrg	Wastwtr Reuse	Return Flow	Percent Depl
	Surface	Ground	Surface	Ground	Surface	Ground						
1996	1,308.6	2,412.1	0	0	0	0	3,720.7	3,720.7	0	0	0	100
1997	1,304.7	2,024.9	0	0	0	0	3,329.6	3,329.6	0	0	0	100
1998	1,142.9	2,379.5	0	0	0	0	3,522.4	3,522.4	0	0	0	100
1999	1,292.7	2,495.6	0	0	0	0	3,788.3	3,788.3	0	0	0	100
2000	1,302.8	2,518.3	0	0	0	0	3,821.1	3,821.1	0	0	0	100
2001	1,484.8	2,323.2	0	0	0	0	3,808.0	3,808.0	0	0	0	100

BRAZOS MDCWA, INC.  
 HISTORY OF WATER PRODUCTION

TABLE 1

Table 2. Name of water supplier. History of water demand (1 year intervals for last 5 years or more) and baseline projections without new conservation measures (5 year intervals for next 40 years) in thousands of gallons per year, disaggregated by category. Com/Inst is Commercial/Industrial, Public Landscap Irrigation includes golf courses, athletic fields, parks, and greenbelts. The net supply should reflect the same values entered into Table 1. Residential gpd (gallons per capita per day) is calculated as (RSX1000)/(PopX365); Net gpd is (NSX1000)/(PopX365); Unaccounted for water (UAW) is NS-TD, and the percentage of unaccounted for water is (UAW/NSX100).

Year	Residential					Non-Residential									
	Pop Served	Single Family	Multi Family	Res Subtotal	Res gpd	Com/Inst	Industrial	Public Irrigation	Other	Non-Res Subtotal	Total Deliveries	Net Supply	Net gpd	UAW	Percent UAW
1998	478	145	0	2937.7	16.8	3	0	0	0	16.2	3097.7	3522.4	20.19	422.7	12.0
1999	498	150	0	3175.5	17.4	3	0	0	0	16.2	3337.5	3788.3	20.84	450.8	11.9
2000	511	154	0	3200.6	17.16	3	0	0	0	16.2	3362.6	3821.1	20.48	458.5	11.9
2005	680	191	0	5832.7	23.5	3	0	0	0	16.2	5994.7	6714.1	26.93	719.4	12.0
2010	810	236	0	7834.7	26.5	5	0	0	0	302	8134.7	9110.9	30.82	976.2	12.0
2015	935	278	0	10067.6	29.5	5	0	0	0	302	10367.6	11715.4	34.39	1347.8	13.0
2020	1070	317	0	12692.9	32.5	8	0	0	0	450	13142.9	14851.5	38.03	1708.6	13.0
2025	1200	359	0	15549.0	35.5	8	0	0	0	450	15999.0	18238.9	41.64	2239.9	14.0
2030	1330	398	0	18689.8	38.5	11	0	0	0	650	19339.8	22042.4	45.42	2702.6	14.0
2035	1460	440	0	22115.4	41.5	11	0	0	0	650	22765.4	26180.2	49.13	3414.8	15.0
2040	1590	479	0	25825.6	44.5	14	0	0	0	800	26625.6	30618.4	52.76	3993.8	15.0

Table 2

BASIS MWA, Inc.  
History of Water Demand

Table 4. Name of water supplier. History of water levels (feet) and yields (gallons per minute) of wells.

Well No. 1			Well No. 3			Well No.			Well No.		
Date Meas	Water Level	Yield	Date Meas	Water Level	Yield	Date Meas	Water Level	Yield	Date Meas	Water Level	Yield
1991	200'	12GPM	1991		7.5GPM						
1995	295'	13GPM	1999	105'	10GPM						
1998	277'	10GPM	2000	220'	7.5GPM						
2001	E 300'	11GPM									

BRAZOS MDWCA, INC.  
 HISTORY of ANNUAL yields of wells

TABLE 4