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FROM THE AMERICAN PEOPLE

GENERAL MANAGEMENT ASSISTANCE CONTRACT (GMAC)

Contract No: 674-C-00-01-00051-00

“Saving Water, Improving Access, and Enhancing Sustainable Management of Scarce Natural Resources in South Africa”

Contract or Grantee number: 0157-0805-G-GA50



This report was produced for review by the USAID. It was prepared as a performance milestone under Mega-Tech, Inc.'s prime contract. The contents of this report address activities performed under USAID/South Africa's Strategic Objective No. 6: Increased Access to Shelter and Environmentally Sound Municipal Services

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Activity Summary and achievements:

Educate consumers and create awareness about the efficient use of water; and improve the financial position of the municipality. The primary measurable objectives of this Alliance project will be to:

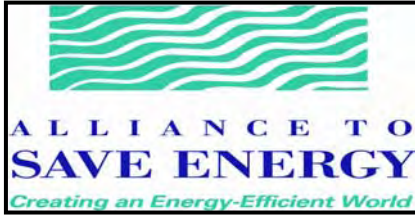
- Reduce water waste and lower non-revenue water loss (both leaks and non-payment);
- Enhance sustainable water management in a local South African community;
- Provide skilled and semi-skilled employment opportunities;
- Provide training within the community in basic plumbing skills;
- Improve sanitation and hygiene to low-income portions of the community through plumbing retrofits and upgrades;

Contents of this report:

- 1) Final Report; (September 2006)



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**MUNSIEVILLE
PRIVATE PROPERTY LEAK REPAIR PROJECT**

CLOSE-OUT REPORT

**“REA THIBA MAROTHODI”
(WE FIX THE LEAKS)**



1. INTRODUCTION

The Project took place in Munsieville, a suburb of the Mogale City Local Municipality (formerly Krugersdorp). Munsieville is made up of 4 parts, namely Munsieville Proper, Munsieville Ext 1, Ext 2, Ext 3 and Ext 4. The Project was only able to focus on private properties located in the Munsieville Proper and Ext 1 areas. Due to the weakening Rand/Dollar exchange rate, additional budget became available which enabled the Project to also address leakages at local schools and access for handicapped persons at the local clinic and centre for disabled persons.



2. OBJECTIVES OF THE PROJECT

The aim of the Project was to develop a water supply efficiency intervention that retrofits and replaces plumbing fixtures (cisterns, taps, pipes, etc) on private properties in a previously disadvantaged community in order to reduce identified high levels of wastage, whilst simultaneously addressing municipal cost recovery for the provision of the basic services. In addition to this, the Project had set objectives which included the following:

- ✚ Job creation
- ✚ Skills training
- ✚ Empowerment of local community members for a sustainable future
- ✚ Community awareness
- ✚ Community upliftment
- ✚ Water savings through repair of leaks
- ✚ Energy savings
- ✚ Saving of the environment

3. ESTABLISHMENT OF A PROJECT STEERING COMMITTEE

One of the first tasks of the Project was to set up a Project Steering Committee (PSC) that would oversee the work carried out in all facets of the implementation of the Project. The PSC that was established was made up of local Councillors, the South African National Civic Organisation (SANCO), the Mogale City Local Municipality, the Plumbing Auditor, the Plumbing Contractor, the Project Community Liaison Officer (CLO) and the Project Manager on behalf of the implementing agent, the Alliance to Save Energy.

Meetings were held in Munsieville every 2nd week to monitor progress of the Project and evaluate whether the Project was meeting its objectives. Minutes of these meetings were distributed to all stakeholders, including all Funders of the Project.

During the PSC meetings, progress was strictly monitored as can be seen by the table shown below (an extract from one of the PSC meeting minutes).

BLOCK	TOTAL No. OF PROPERTIES	PLUMBING REPAIRS COMPLETED		PROPERTIES WAITING FOR MATERIAL		PROPERTIES SIGNED OFF BY THE OWNER		PROPERTIES STILL TO BE COMPLETED (not including material delays)	
		No. of properties	% Comp.	No. of properties	%	No. of properties	% Comp.	No. of properties	%
B	159	154	97%	0	0%	154	97%	5	3%
H	129	126	98%	0	0%	126	98%	3	2%
D Complete	22	22	100%	0	0%	22	100%	0	0%
A	117	113	97%	0	0%	113	97%	4	3%
C	123	121	98%	0	0%	121	98%	2	2%
E ext 1	30	27	90%	0	0%	27	90%	3	10%
E ext 2	8	7	88%	0	0%	7	88%	1	13%
F	79	78	99%	0	0%	78	99%	1	1%
G	116	113	97%	0	0%	113	97%	3	3%
I	125	122	98%	0	0%	122	98%	3	2%
J	150	150	100%	0	0%	150	100%	0	0%
TOTAL	1,075	1033	98%	0	0%	1033	98%	25	2%

4. APPOINTMENT OF PROJECT STAFF



Over 20 interviews were held in November and December 2005 for the appointment of six Learner Plumbers and one Community Liaison Officer who would be employed for the duration of the Project. The interviews were conducted at the local SANCO offices in Munsieville. Present were a panel made up of Project Managers for the Project, as well as a Community Representative. The aspirant candidate was always a member nominated from the Community.

The successful candidates are seen here signing their Training Form Application Documents on 9 December 2005. The six Learner-Plumbers commenced with their training in early February 2006.



5. TRAINING

The empowerment of local, previously disadvantaged persons was one of the important deliverables of this Project. To this end, from the outset, the Plumbing Institute of South Africa (IOPSA) and the Construction, Education and Training Authority (CETA) were closely involved in all decisions relating to training of the Learner-Plumbers.

The Learner Plumbers received 3 weeks of intensive CETA accredited training at the George Tabor Campus in Soweto. This was followed by 6 months of practical work in the field, under the supervision of a qualified, registered plumber. Towards the end of the Project, the Learner Plumbers were each individually assessed by a CETA accredited trainer as to their practical knowledge and the quality of their work. After their successful assessments, each Learner Plumber received a Certificate, issued by CETA, indicating that they had achieved 26 credits towards becoming a fully qualified plumber (total of 126 credits required).



Since completion of the project, these same Learner Plumbers, who were originally unemployed, have been able to be successful in gaining temporary employment on other construction projects in the area. They have also assisted, on a volunteer basis, by repairing all the broken plumbing fixtures at an AIDS orphanage in the area.

6. NAMING OF THE PROJECT

In order for the local Munsieville Community to “buy into” the Project and its objectives, a “Project Naming Competition” was held. This competition was open to all the residents of Munsieville. Hundreds of nominations were received and the winner was chosen at a Community Meeting. The winning name was “REATHIBA MOROTHODI” or “WE FIX THE LEAKS”.



7. PROJECT PHASE 1: Pre-Audit of properties

In order to assess the extent of the plumbing repairs required, a pre-audit inspection of every property in the Project area took place. This work was carried out by a qualified plumber, who inspected and evaluated each house according to a very detailed checklist. A total of 1,371 properties were audited. A job card for each property was produced and from this, a “Materials List” for each property was compiled.



Every household owner was required to sign off the pre-audit checklist, showing agreement with the findings and the repairs that would be carried out.



The vast majority of leakages were found to be through the toilet cisterns. This cistern had a continual flow of water through its flow valve, which when measured, had a measured flow of 1 litre every 23 seconds, or an equivalent of 112 kl per month. This is more than 18 times the allocated minimum supply of free basic water (6 kl per month) supplied by the Municipality.



8. PROJECT PHASE 2: Communication Awareness

In order to communicate the general water savings and awareness message and objectives of the Project, every household received a visit from the CLO and was handed an Information Brochure. Amongst other information, this brochure showed water saving tips, handy pointers for fixing leaks, general awareness of water and the environment and relevant telephone contact details in the Municipality.

To also assist in spreading the news about the Project, a Project Awareness Day was held at the Munsieville Soccer Stadium. A trailer with water barrels showing the 6,000 litres of free basic water allocation was shown to the Community. This was very well received and was probably the first opportunity for most of the residents to actually be able to visually quantify how much free basic water they received on a monthly basis.



During the day, the CLO was able to address the 1,500 strong crowd about water savings and the Project in general.





To thank the Munsieville community for attending the Project awareness day, a soccer festival was held on the day, which proved to be extremely popular with the crowds.

9. PROJECT PHASE 3: Plumbing Repairs

Once the pre-audit of the properties had been completed, the actual plumbing repairs were able to commence. For this to occur, a competitive tendering process was used to select a local plumbing contractor. The requirements of the tender were that the contractor be local and that they employ qualified, registered plumbers. The successful contractor lived in Munsieville, which immediately made his interest and success of the Project more real as he would be answerable to the community should the work not be carried out successfully.

The Project repaired and/or replaced the following:

- ✚ Complete new toilet cisterns
- ✚ Cistern components
- ✚ Complete new taps
- ✚ Tap components
- ✚ Water pipes

Where the cisterns were in such a state of disrepair, complete new cisterns were installed.



The photographs shown below are of 2 toilets that were repaired as part of the Project. These 2 toilets served approximately 50 families who lived in informal “shack” dwellings and had to share these ablution facilities. After completion of repairs, the households concerned appointed a person to clean the toilets and lock them after useage to ensure they stayed in clean, working condition.

BEFORE



AFTER



BEFORE



AFTER



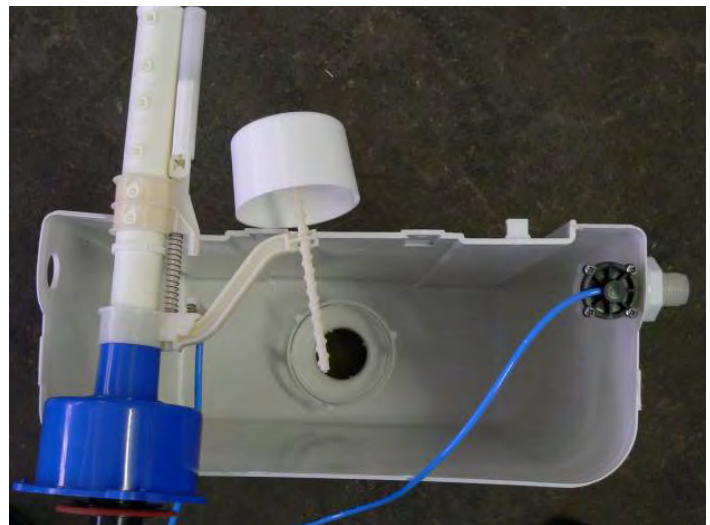
BEFORE



AFTER



As part of the Project, a cistern using a new technology, the “Leak-free” cistern was also installed. This cistern stands empty for the majority of the time, and only fills when the flush button is activated. This means that, should the cistern fail, it fails in the empty position which drastically reduces this common type of leakage.



It was originally intended for this cistern to be installed throughout the Project, but due to low pressure being experienced in the area, the cistern took a long time to fill up. This proved to be a point of concern to the residents and so it was decided by the PSC that normal cisterns be utilised for the remainder of the Project implementation.

To assist in cost saving as much as possible, where the shell of the existing cistern could be re-used, new cistern components only were installed.



Many of the taps were leaking and where possible, washers only were replaced. If the tap was beyond repair, new taps were installed.



The township of Munsieville is a very old part of Mogale City. The existing infrastructure is comprised mostly of old galvanized pipe which was found to be in a very corroded state. For this reason, many houses required that new sections water pipes be installed to replace leaking pipes.



of

The Project was able to make real changes in life quality for the Munsieville residents in improving not only their quality of service, but providing water infrastructure to some residents who had not had any water pipe from their meter to their homes due to affordability reasons. The photograph to the right shows a pensioner, who for the first time in over 10 years, was able to flush his toilet without carrying a bucket from the tap on the street boundary.



10. PROJECT PHASE 4: Plumbing Material Supply

After a competitive tendering process, a local Mogale City plumbing material supplier was appointed to provide the Plumbing Contractor with materials for the Project. Over R150,000 of plumbing materials were installed on the properties during the course of the Project.



11. PROJECT PHASE 5: Plumbing Post-Audit of Properties

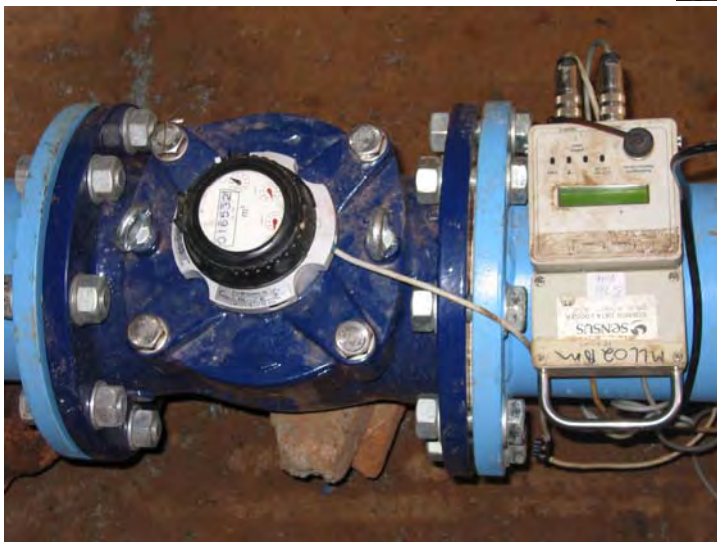
The Plumbing Auditor was also employed to carry out a post-audit of the work done on the properties. All properties had to be signed off by the home-owner once repairs had been completed. Each property was checked by the Plumbing Auditor for quality of repairs completed. A total of 1,075 properties had plumbing repairs carried out on their premises.



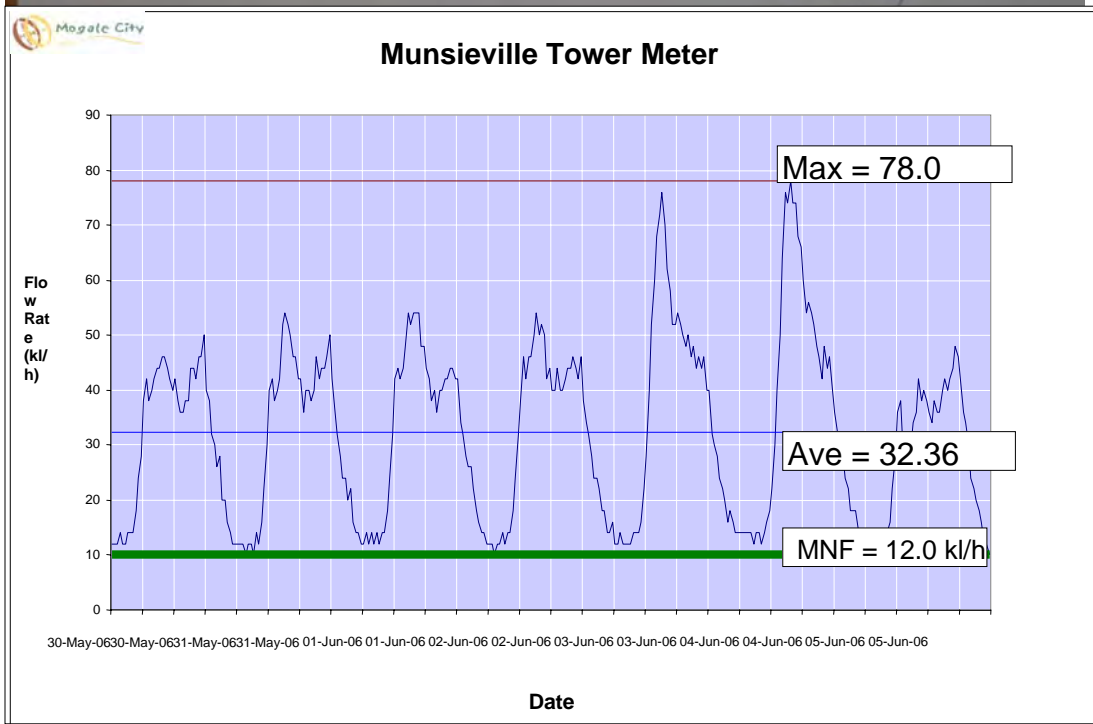
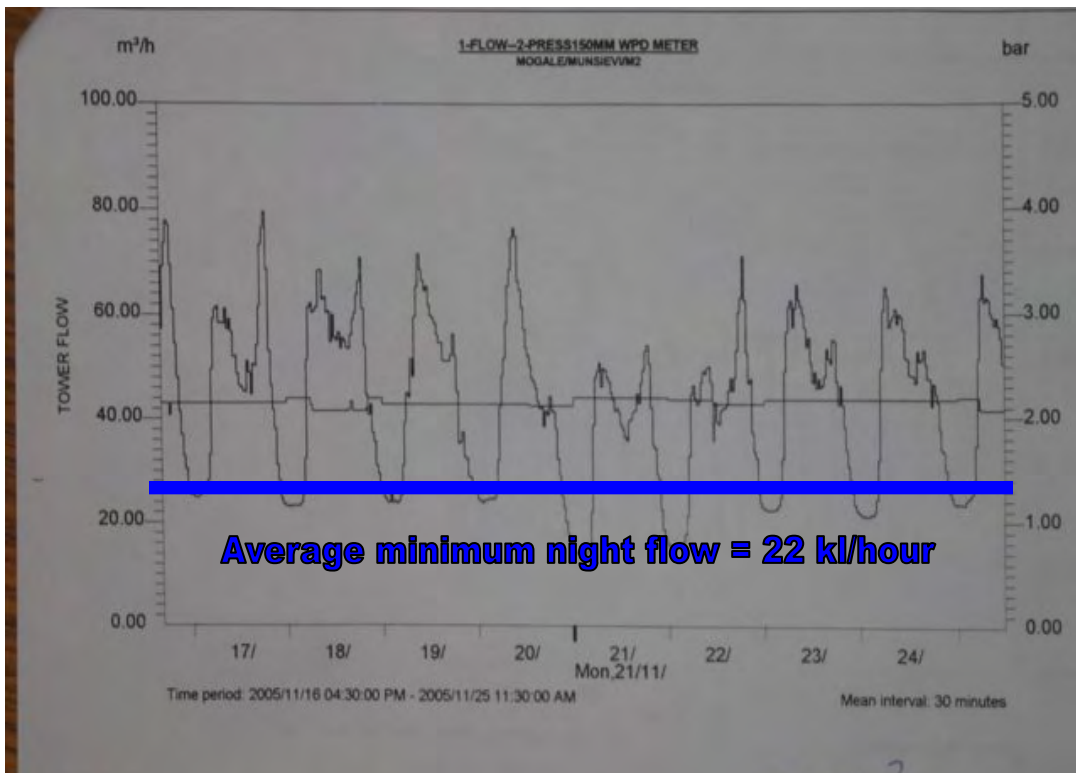


12. PROJECT RESULTS

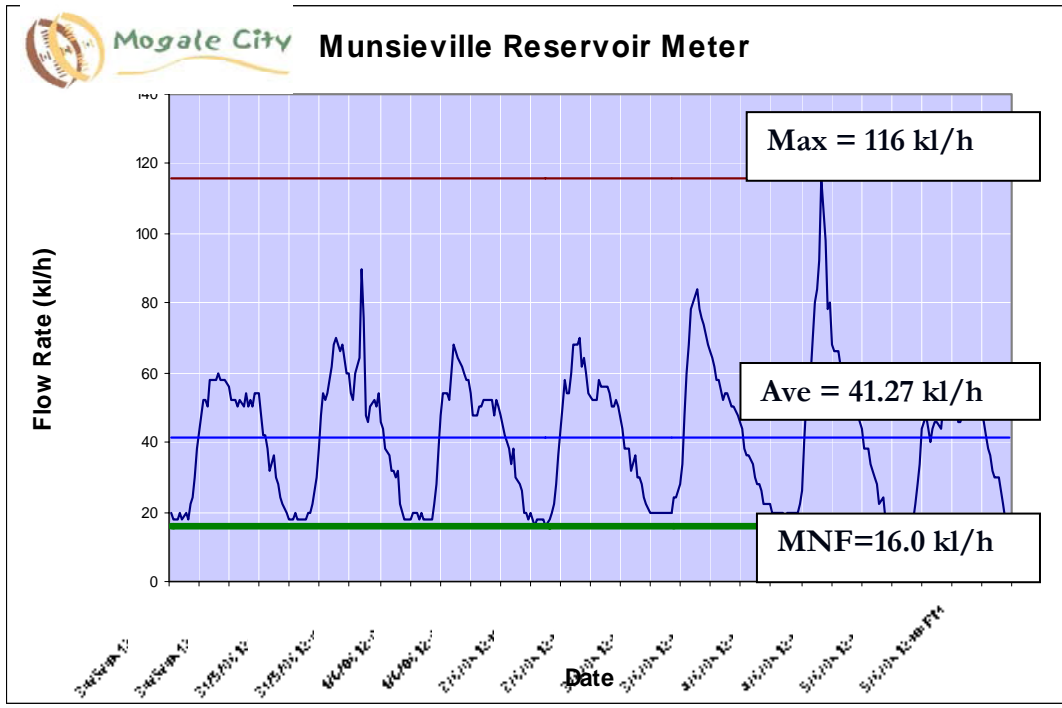
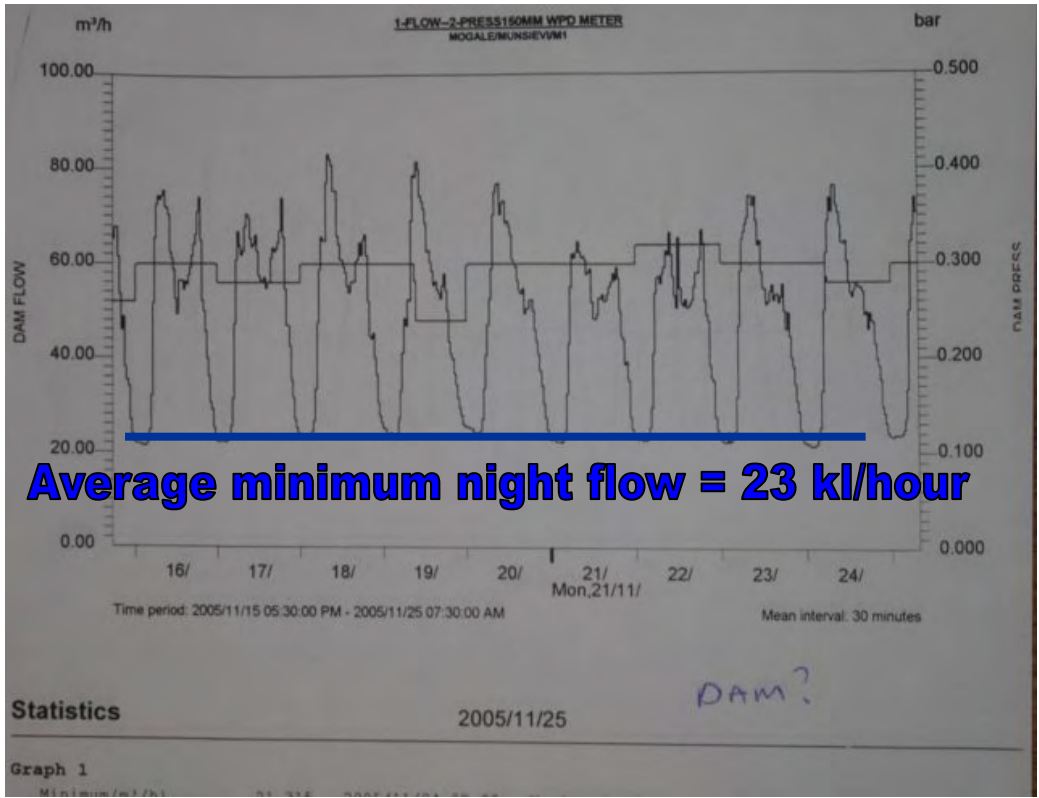
To measure the technical success of the Project, the water savings had to be determined. In order to measure the water used in the Project area, the area had to be ring-fenced from the total water supply infrastructure. This was done by installing 2 new bulk meters which allowed the water leaving the Project area to be measured. Every week, each of the 5 bulk meters were read to measure the water flowing into and out of the Project area.



As an additional measure, each of the 2 bulk supply meters were logged before and after the Project to determine the Minimum Night Flows (MNF) into the area.



This bulk supply meter showed an 83% reduction in MNF after completion of the Project.



This bulk supply meter showed an 44% reduction in MNF after completion of the Project.

Before Project commencement:

**Each house used an average of
over 1,024 litres per day
(or just over 5 drums)**

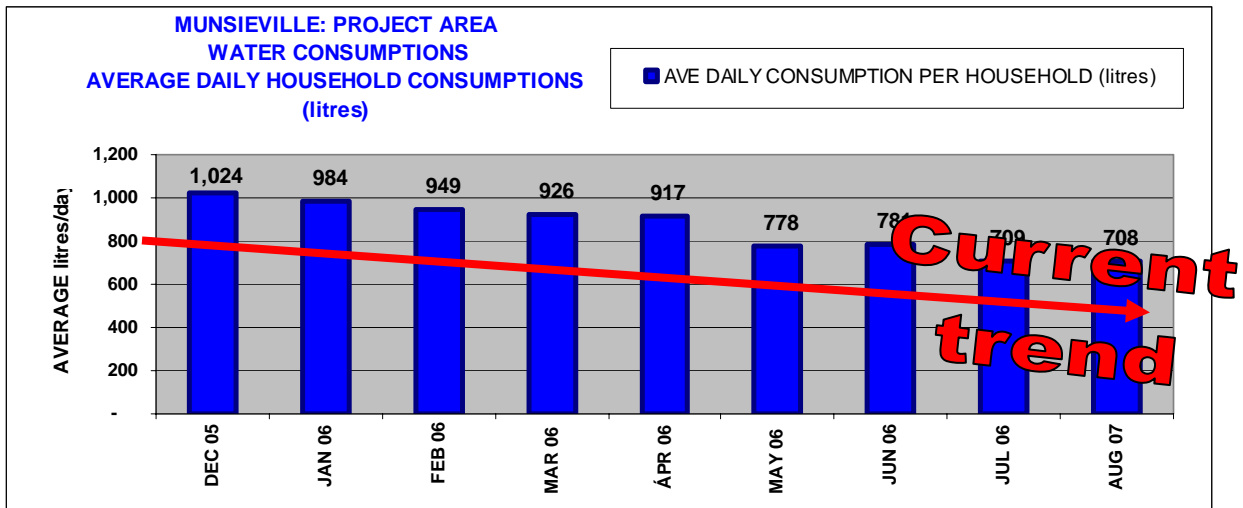


After Project completion:

**Each house now uses an average of
708 litres per day
(or just more than 3 1/2 drums)**



The Project was completed at the end of July 2006. Water savings since the Project started up until the end of August 2006, are 45% to date.



13. INSTALLATION OF ACCESS RAMPS FOR HANDICAPPED PERSONS



The project was also able to assist the disabled by building access ramps, breaking out walls and installing hand-rails to allow persons in wheelchairs access to their toilets where no access had been possible before.



14. EXTENSION OF THE PROJECT

Due to the funding of this Project having been in US Dollars and because of the Rand/Dollar exchange rate having changed over the course of the implementation of the Project, additional funding in the amount of R85,000 was made available for an extension of the Project.

This funding was used to address the following:

- ✚ Installing access ramps and hand-railing in houses where disabled persons live (total of an additional 8 houses);
- ✚ Installing hand-rails at the Community Hall where disabled persons use the facility on a daily basis;
- ✚ Installing hand-rails at the Disabled and Physiotherapy Clinic where disabled persons also use the facility on a daily basis;
- ✚ Phatudi Primary School
 - Boy's steel urinal flush master leaking
 - Burst water pipe on the ground floor
 - 2 x gate-valves leaking
- ✚ Diphlane Primary School
 - 3 out of the 9 boy's toilets not working
 - Boy's steel urinal flush master leaking
 - 3 out of the 12 girl's toilets not working
 - Leaking pan connector on the office toilet
 - 4 x gate-valves leaking
 - No meter cover
- ✚ Thuto Lefa Senior Secondary School
 - Boy's steel urinal flush master leaking

15. COST SAVINGS

The savings in the cost of water supplied due to this Project implementation are as follows:

- ✚ An average of 316 litres per house per day
- ✚ 432,733 litres per day in the Project area of 1,371 h/holds
- ✚ 432,7 kilolitres per day in the Project area
- ✚ 12,982 kilolitres saving per month
- ✚ 155,784 kilolitres per year
- ✚ At a Rand Water tariff of R2.94 per kl
- ✚ Annual saving in water purchases of R351,962 for Mogale City Local Municipality
- ✚ Project cost of R1,062,000
- ✚ Pay-back period of 2,32 years

16. NUMBER OF PERSONS EMPLOYED DURING THE PROJECT'S IMPLEMENTATION

The Project was able to employ a number of previously unemployed persons for the duration of the Project. They were as follows:

- ✚ Plumbing Auditor – 18 persons
- ✚ Plumbing Contractor – 10 persons
- ✚ Learner Plumbers – 6 trained and employed

17. WOMEN EMPLOYED ON THE PROJECT

The Project was also able to employ a significant number of women on the Project. Gender of persons employed:

- ✚ Plumbing Auditor – 6 females
 - ✚ Plumbing Contractor – 3 females
 - ✚ Learner Plumbers – 2 females trained and employed
- Total of 11 females employed or 32 % of staff

18. NUMBER OF HOUSEHOLDS AND PERSONS BENEFITING FROM THE PROJECT



A total of 1,371 households benefited from the Project. The average number of persons per household from Statistics SA = 3.8 persons / household = 5,210 persons.



In some cases, up to 11 families shared one toilet. This means that, if the realistic average number of persons for Munsieville is taken into account, a figure of 10 persons / household is arrived at (or 13,710 persons benefited).

19. FUNDS LEVERAGED BY THE PROJECT

Funding leveraged by the Project was as follows:

✚ USAID	\$ 100,000
✚ Coca Cola SA (Pty) Ltd	\$ 120,000
✚ REEEP	\$ 10,000
✚ Mogale City	\$ 100,000
✚ <u>Watergy (USAID - Washington)</u>	<u>\$ 20,000</u>
TOTAL	\$350,000

*Dugald Ross
Project Manager
Alliance to Save Energy*