

EDWARDS UNDERGROUND
WATER DISTRICT

Report 93-08

**LEAK DETECTION / LOCATION SURVEY REPORT
FOR
SAN ANTONIO WATER SYSTEM
SERVICE AREA WITHIN THE CITY LIMITS
OF THE CITY OF LEON VALLEY**

June 28, 1993 - August, 1993



EDWARDS UNDERGROUND
WATER DISTRICT

6.25-7.5

October 18, 1993

Mr. Joe Aceves
President and Chief Executive Officer
San Antonio Water System
P. O. Box 2449
San Antonio, Texas 78298-2449

Dear Mr. Aceves:

We are pleased to submit this final report of the leak detection survey performed on the San Antonio Water System's service area within the city limits of the City of Leon Valley.

The Edwards Underground Water District (District) appreciates the cooperation and assistance you have provided during the leak detection survey. Special thanks to Mr. Kent M. Anderson and Mr. Robert Johnson for their attention and patience during the survey. The District hopes that the information provided herein will be beneficial to the San Antonio Water System in identifying and targeting areas of water loss and potential loss.

This survey has demonstrated the water saving potential of the Leak Detection/Location Program. Maintaining the best possible program is vital in order to continue the successes that have been realized. For this reason, the District is soliciting your comments, both positive and negative, and any suggestions you may have on how to improve our program.

Please respond to this request candidly, as the District cannot improve on deficiencies or support positive measures without the knowledge of such conditions.

During this survey, SAWS and EUWD leak detection staff were able to survey together for the first time. This partnership allowed both staffs to share experiences, evaluate different techniques and discuss problems common to leak detection programs. Our staff developed a very positive image of the SAWS program and found these talks to be informing and productive.

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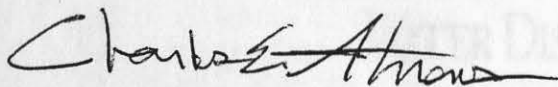
RUSSELL L. MASTERS
GENERAL MANAGER

Mr. Joe Aceves
October 18, 1993 - Page 2

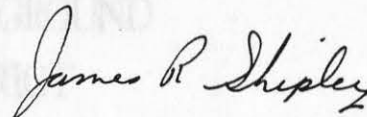
The Edwards Underground Water District commends the San Antonio Water System for the implementation of an in-house leak detection program. The District stands ready to provide assistance and support, if needed by your staff in this worthy endeavor.

The District appreciates your water conservation efforts and recognizes the high level of cooperation provided by San Antonio Water System to assist in this successful completion of this survey. Should you require leak detection assistance, additional information regarding this report, or have any water related questions, please do not hesitate to call.

Sincerely,



Charles E. Ahrens
Water Resources Planner III



James R. Shipley
Leak Detection Technician II

CEA:JRS/bmc
Enclosures

cc: Mr. Kent M. Anderson, P.E., San Antonio Water System

001jrs

EDWARDS UNDERGROUND
WATER DISTRICT
LEAK DETECTION/LOCATION SURVEY REPORT
FOR
SAN ANTONIO WATER SYSTEM
SERVICE AREA WITHIN THE CITY LIMITS
OF THE CITY OF LEON VALLEY
JUNE 15, 1993 - JULY 2, 1993

PREPARED BY:

Division of Planning and Environmental Management
Leak Detection Program

October, 1993

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WATER DISTRICT

LEAK DETECTION/LOCATION SURVEY REPORT
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JUNE 15, 1993 - JULY 2, 1993

PREPARED BY:

Division of Planning and Environmental Management
Leak Detection Program

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SUMMARY
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On December 7, 1992, the Edwards Underground Water District (EUWD) received a completed application form from the City of Leon Valley requesting a leak detection/location survey on its water distribution system. A pre-survey conference was held March 18, 1993 at the City Public Works Center to discuss the work to be performed.

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Approval for this survey was requested and granted by Mr. Joe Acosta, President and Chief Executive Officer of San Antonio Water System. An additional pre-survey conference was held May 18, 1993 at the San Antonio Water System Northwest Service Center. It was agreed that EUWD would

APPENDICES

- A. Service Line Leaks
- B. Customer Side Leaks
- C. Valve Stacks Maintenance Needed
- D. Valves Unable To Locate
- E. Services Unable To Locate
- F. Curb Stops Partially Open

ENCLOSURES TO REPORT

- A. Revised Master Water System Distribution Plats

JRS/bac
 0011rs

SUMMARY

On December 7, 1992, the Edwards Underground Water District (EUWD) received a completed application form from the City of Leon Valley requesting a leak detection/location survey on its water distribution system. A pre-survey conference was held March 18, 1993 at the City Public Works Center to discuss the work to be performed.

At this time, Mr. James J. Malone, Director of Public Works for the City of Leon Valley, requested the District also perform a survey on the San Antonio Water System distribution system within the city limits of the City of Leon Valley. Approval for this survey was requested of and granted by Mr. Joe Aceves, President and Chief Executive Officer of San Antonio Water System. An additional pre-survey conference was held May 18, 1993 at the San Antonio Water System Northwest Service Center. It was agreed that EUWD would perform sonic leak detection on all available access points, and computerized leak location as needed, record any unusual system conditions found, and submit to the San Antonio Water System a revised master water plat with the final report.

Mark L. McGinnis of EUWD began the survey on June 15, 1993, and the survey was concluded on July 2, 1993. Over the course of the survey, EUWD staff surveyed a total of 1,275 access points including 914 customer service connections, 81 fire hydrants, 255 main line valves, and 25 other access points covering 15.29 miles of distribution mains. Computer leak sound correlation was performed on one location.

EUWD technicians detected a total of 26 leaks. This total included 2 meter box leaks, 2 fire hydrant leaks, 6 service line leaks, 1 valve leak, and 15 customer side leaks. EUWD staff estimates 20,684 gallons of water per day have been saved by the repair of 26 detected leaks as of August 9, 1993. The leaks discovered during the survey range from 14,400 gallons per day to small meter box leaks.

EUWD staff was unable to locate 18 valves and 21 customer service connections. An additional 8 valve stacks need cleaning and/or repair. EUWD staff noted 1 water meter that was not registering accurately.

JRS/bmc
001jrs

DISCUSSION

A. Total Access Points Surveyed..... 1,275

The following number of access points were used during the survey:

1. Customer service connections: 914
2. Main Valves: 255
3. Fire Hydrants: 81
4. Others: 25

B. Total Miles of Distribution Main Surveyed..... 15.29

C. Total Estimated Water Saved by Repair of Detected Leaks In Gallons Per Day as of 8/9/93..... 20,684 GPD

Leakage estimates for main line, service line, fire hydrants, and valve leaks are based on hole size and system pressure in P.S.I.. This information was furnished by SAWS personnel when EUWD staff was not on site at the time of repair.

D. Total Leaks Detected..... 26

Main line, service line, fire hydrant, and valve leaks were located by computer correlation of leak sounds or by visual inspection. Meter box leaks and customer side leaks were located through house to house surveying.

I. Meter Box Leaks..... 2

- | | | |
|-----------------|--------------------|------------|
| 1. Plat 124-606 | 6030 Forest Shadow | 180 G.P.D. |
| 2. Plat 130-598 | 4901 Hodges | 4.3 G.P.D. |

II. Fire Hydrant Leaks..... 2

- | | | |
|-----------------|------------------|------------|
| 1. Plat 122-606 | 7103 Forest Moss | 180 G.P.D. |
| 2. Plat 124-604 | 6235 Forest Bend | 180 G.P.D. |

III. Service Line Leaks..... 6

Leakage estimates of repaired services..... 15,820 GPD

A list of service leaks is included in Appendix A.

IV. Main Valve Leaks..... 1

- | | | |
|-----------------|------------------------|--------------|
| 1. Plat 124-600 | Wurzbach Rd. @ Bandera | 4,320 G.P.D. |
|-----------------|------------------------|--------------|

V. Customer Side Leaks..... 15

Customer side leaks were generally small. EUWD staff did not attempt to estimate this leakage. Customers were notified in person when possible or will be notified by SAWS personnel.

A list of customer leaks is included in Appendix B.

E. General Maintenance Needed

I. Slow Water Meters..... 1

During house to house surveying, water use was detected on this service. This meter was observed sticking and not registering the flow.

1. Plat 124-604 6323 Forest Bend

II. Valve Stacks Needing Maintenance..... 8

The majority of these valve stacks need to be raised to grade. The condition of some of these valve stacks makes them unusable at this time.

A list of these valve stacks is included in Appendix C.

III. Valves That Could Not Be Located..... 18

1. Main Valves: 9
2. Blow Off Valves: 5
3. Fire Line Valves: 1
4. Fire Hydrant Valves: 2
5. Service Valves: 1

A list of these valves is included in Appendix D.

IV. Services That Could Not Be Located..... 21

A list of these services is included in Appendix E.

V. Curb Stops Partially Open..... 27

EUWD recommends that these curb stops be checked to determine if they will hold in the closed position.

A list of these curb stops is included in Appendix F.

The EUWD technicians consider the conditions recorded in discussion section E of this report to be normal system wear and tear. Most of these conditions are beyond the control of the utility. Street resurfacing, adjustment of street or right-of-way grades, heavy rains, customer and plumbers operating curb stops, etc.

F. Revised master water plats included with this report.

Codes

Yellow indicates mains and services were surveyed from access points only.

Blue indicates mains and services were surveyed with a ground microphone and from access points.

Abbreviations Used on Revised Master Plats:

- UTL - Unable to Locate
- UTS - Unable to Survey
- NC - Needs Cleaning
- RTG - Raise to Grade
- CCNH - Curb Cock not Holding
- FHWV - Fire Hydrant with Valve
- FH - Fire Hydrant Without Valve
- ARV - Air Relief Valve
- PCV - Pressure Control Valve
- NO - Curb Stop Not Open Completely

All mains were surveyed from all available access points. When the spacing of access points was too great to survey properly, a ground microphone was used in combination.

All valves located were surveyed. When direct contact could not be made on a valve, a probe rod was used.

Fire hydrants labeled on the plat as fire hydrants without lead valves are hydrants where the lead valve could not be located or does not exist.

Any item circled on the plat indicates that it was added, could not be located, or needs repair.

All mains, fire hydrants, water services, blow-offs, and main line valves hand drawn on the plats are for access point accounting. The location and placement of these items on the plat is intended to indicate what was actually found during the field survey. Placement of hand drawn main valves on the plat is the technicians best guess of what they control. Every effort was made to ensure the accuracy of these plats, but EUWD does not guarantee their accuracy.

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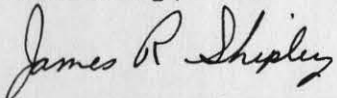
COMMENTS

We wish to express our personal appreciation for the assistance and cooperation we received from the management and staff of the San Antonio Water System's Northwest Service Center. We were grateful for the opportunity to survey your water system. Management's professional and progressive approach to serving the needs of their customers while helping to conserve a valued resource is commendable. All personnel we worked with were highly trained, meticulous in the performance of their duties, and had a very positive attitude about their jobs and the customers they serve.

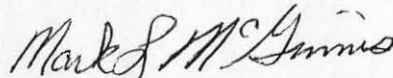
The active participation of the San Antonio Water System staff members that assisted in this survey is greatly appreciated. Their knowledge, experience, enthusiasm, and professional work habits contributed to its success.

Your efforts and timely repair of the leaks discovered in this survey have saved a significant amount of precious water. Our thanks to all the staff for your efforts in helping conserve the Edwards Aquifer.

Sincerely,



James R. Shipley
Leak Detection Technician II



Mark L. McGinnis
Leak Detection Technician I

JRS:MLM/bmc

004jrs

APPENDIX A

Edwards Underground Water District
Service Line Leaks
1993

System: San Antonio Water System/City of Leon Valley

Page 1 of 1

Line #	Date #	Plat	Address	Loss G.P.D.	Date Repaired	Comments
1	6/17	124-606	6011 Forest Shadow	360	7/5/93	Long Service
2	6/18	126-604	6518 Forest Grove	160	7/5/93	Short Service
3	6/19	126-606	6010 Forest Ridge	420	7/6/93	Long Service
4	6/22	124-602	6024 Mike Nesmith	160	7/5/93	Short Service
5	6/24	124-602	6025 Rue Sophie	320	7/5/93	Long Service
6	6/24	124-604	5407 Evers Rd.	14400	6/25/93	Corporation
7	6/21	124-604	6318 Forest Bend			
8	6/21	126-604	6926 Forest Crest		Notified	
9	6/22	126-604	7002 Forest Grove		Notified	
10	6/22	124-606	6300 Forest Edge		Customer Valve	
11	6/23	124-604	6307 Forest Lodge			
12	6/24	124-602	6205 Rue Francoise		Sprinkler System	
13	6/28	130-598	4909 Hodges			
14	6/29	130-598	4921 Althea			
15	6/28	128-598	8030 Northwest Industrial Dr.		Notified	

APPENDIX B

Edwards Underground Water District Customer Side Leaks 1993

System: San Antonio Water System/City of Leon Valley

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Line #	Date #	Plat	Address	Comments	Number of Valves
1	6/17	124-606	7027 Forest Mint	Notified	1 of 2
2	6/17	124-606	7015 Forest Mint		Fire Hydrant Valve
3	6/17	124-604	6814 Forest Haven		1 of 2
4	6/18	124-604	6719 Forest Haven		1 of 2
5	6/18	124-604	6323 Forest Bend		1 of 1
6	6/21	126-604	7011 Forest Crest	Flare Leak	1 of 2
7	6/21	124-604	6318 Forest Bend		1 of 2
8	6/21	126-604	6926 Forest Crest	Notified	
9	6/22	126-604	7002 Forest Grove	Notified	1 of 2
10	6/22	124-606	6200 Forest Rose	Customer Valve	
11	6/23	124-606	5903 Forest Ledge		
12	6/21	124-602	6205 Rue Francois	Sprinkler System	
13	6/23	130-598	4909 Hodges		
14	6/29	130-598	4921 Althea		
15	6/28	128-598	5000 Northwest Industrial Dr.	Notified	

APPENDIX C

Edwards Underground Water District Valve Stacks Maintenance Needed 1993

System: San Antonio Water System/City of Leon Valley

Page 1 of 1

Line #	Plat #	Location	Needed	Type	Number of Valves
1	122-606	Evers Rd. @ Forest Pine	Cleaning	12" Valve	1 of 2
2	124-604	6319 Forest Bend	Raise to Grade		Fire Hydrant Valve
3	124-606	Forest Wood @ Forest Moss	Cleaning		1 of 2
4	124-606	Forest Mint @ Forest Ledge	Raise to Grade		1 of 2
5	126-598	5707 Bandera Rd.	Raise to Grade		1 of 1
6	126-604	Forest Crest @ Ponderosa	Raise to Grade		1 of 2
7	126-606	Forest Ridge @ Ernie Kovach	Cleaning		1 of 2
8	126-606	Forest Gate @ Forest Park	Raise to Grade		1 of 2
9	128-598	5605 Bandera Rd.		Fire Hydrant Valve	
10	128-598	5707 Bandera Rd.		Service Valve	
11	128-598	5605 Bandera Rd.		Fire Hydrant Valve	
12	128-598	5605 Bandera Rd.		12" Valves	1 of 2
13	128-598	Bandera Rd. across from Northwest Industrial Dr.		8" Fire Line	
14	130-598	Between 5308 and 5320 Bandera Rd.		Blow Off	
15	126-598	E.W. Coop 430 @ Alley northeast of Bandera Rd.		24", 8"	2 of 3

APPENDIX D

Edwards Underground Water District Valves Unable to Locate 1993

System: San Antonio Water System/City of Leon Valley

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Line #	Plat #	Location	Type	
1	120-604	6812 Bandera Rd.	12" Valve	1 of 1
2	124-602	6609 Countess Adam Ln.	3" Valve	1 of 1
3	124-602	Prosser Ln. @ Rue Sophie	Blow Off	
4	124-602	Rue Francois @ Bandera Rd.	4" Valve	1 of 1
5	124-604	Forest Hauer @ Forest Mint	8", 4 Valve	2 of 4
6	124-606	7207 Forest Pine	Blow Off	
7	126-602	5912 Trome Trail	Blow Off	
8	126-606	7030 Forest Grove	Blow Off	
9	128-598	5405 Bandera Rd.	12" Valve	1 of 1
10	128-598	5405 Bandera Rd.	Fire Hydrant Valve	
11	128-598	5707 Bandera Rd.	Service Valve	
12	128-598	5404 Bandera Rd.	Fire Hydrant Valve	
13	128-598	5601 Bandera Rd.	12" Valve	1 of 2
14	128-598	Bandera Rd. across from Northwest Industrial Dr.	8" Fire Line	
15	130-598	Between 5300 and 5220 Bandera Rd.	Blow Off	
16	126-598	N.W. Loop 410 @ Alley northwest of Bandera Rd.	24", 8"	2 of 3
17	130-598			
18	130-598			
19	130-598			
20	130-598			
21	130-598			

APPENDIX E

Edwards Underground Water District
Services Unable to Locate
1993

System: San Antonio Water System/City of Leon Valley

Page 1 of 1

Line #	Plat #	Address
1	124-602	6501 Adair Dr.
2	124-602	6008 Rue Francois
3	124-602	6019 Forest Dell
4	126-604	6939 Forest Way
5	126-602	6113 Evers Rd.
6	126-602	6020 Evers Rd.
7	128-598	5003 Industrial Dr.
8	128-598	4734 Timco West
9	128-598	4747 Timco West
10	128-598	4755 Timco West
11	128-598	4647 Timco West
12	128-598	4655 Timco East
13	128-598	4655 Timco East
14	128-598	4643 Timco East
15	130-598	5309 Bandera Rd.
16	130-598	5305 Bandera Rd.
17	130-598	5301 Bandera Rd.
18	130-598	5201 Bandera Rd.
19	130-598	115 Hodges
20	130-598	113 Hodges
21	130-598	116 Alther Dr.

APPENDIX F

Edwards Underground Water District Curb Stops Partially Open 1993

System: San Antonio Water System/City of Leon Valley

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Line #	Plat #	Address
1	122-606	7114 Forest Pine
2	124-602	6109 Rue Sophie
3	124-602	6025 Trome Brook
4	124-602	6515 Adair Dr. Brook
5	126-604	6612 Adair Dr.
6	126-604	6612 Countess Adair
7	126-604	6803 Forest Haven
8	126-604	6811 Forest Haven
9	126-604	6835 Forest Haven
10	126-604	6243 Forest Bend
11	126-604	6318 Forest Bend
12	126-604	6246 Forest Bend
13	126-604	6914 Forest Way
14	124-606	7126 Forest Pine
15	124-606	7119 Forest Moss
16	124-606	6206 Forest Circle
17	124-606	6201 Forest Circle
18	124-606	6215 Forest Rose
19	124-606	6119 Forest Wood
20	124-606	7030 Forest Meadow
21	124-606	7015 Forest Mint

APPENDIX F

Edwards Underground Water District
Curb Stops Partially Open
1993

System: San Antonio Water System/City of Leon Valley

Page 2 of 2

Line #	Plat #	Address
22	124-606	7035 Forest Mint
23	124-606	7206 Forest Mint
24	124-606	7111 Forest Brook
25	124-606	7103 Forest Brook
26	126-602	6012 Connie Way
27	126-602	6013 Connie Way