

PONDING TESTS AND RESULTS

Texas Cooperative Extension has conducted 52 ponding tests in the Lower Rio Grande Basin since 1998 to measure seepage and total losses from irrigation canals. However, only a few of these have been on components of the municipal water supply network (MSN) (Fig. A1).

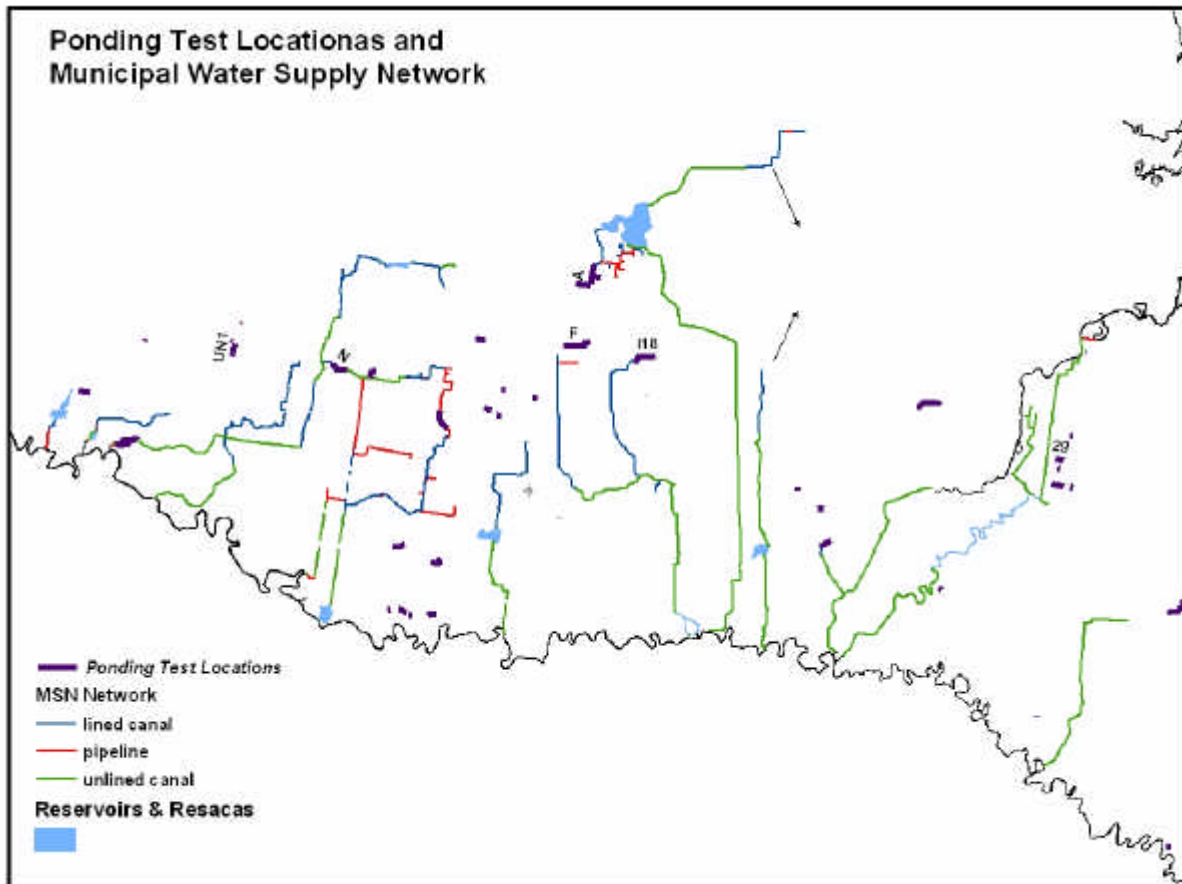


Figure A1. Locations of ponding tests in relation to the municipal water supply network.

Ponding Test Procedures

In the ponding test method, two ends of a canal segment are closed or sealed with earthen dams shown in Figures A2 and A3. Once sealed, water elevations are taken for approximately 48 hours. Two to three staff gauges (Fig. A4) are placed in each test segment, and stage levels are recorded manually. Canal dimensions and water spans are also surveyed during the test.



Figure A2. Typically, the irrigation district provides the equipment and constructs the earthen dams used to block off the ends of the test segment.

Figure A3. Close up of an earthen dam used in ponding tests.



Figure A4. Free standing staff gauge used to record changes in water levels during test.

Test Results

The results of our ponding tests are summarized in Tables A1–A3. Additional information on these ponding tests and complete reports can be found at <http://idea.tamu.edu>.

Table A1. Results of seepage loss tests conducted by Texas Cooperative Extension in the Lower Rio Grande River Basin.						
Test ID	Year	Canal Width (ft)	Canal Depth (ft)	Class	<u>Loss Rate</u>	
					gal/ft ² /day	ac-ft/mi/yr
<u>Lined</u>						
16HC2	03			M		
LF1	03	12	5	M	1.77	152.9
LF2	03	10	6	M	4.61	369.1
MA4	03	12	5	S	8.85	529.7
SJ4	00	15	4	M	1.17	111.2
SJ5	02	14	5	M	1.38	145.5
UN1	01	12	6	M	2.32	217.7
UN2	01	8	3	M	2.09	121.2
<u>Unlined</u>						
BR1	03	60	11	M	3.14	794.6
MA3	03	19	5	S	13.9	1690.1
RV1	03	38	4	M	0.15	23.0
SB4	02	16	4	S	0.64	68.3
SB5	02	18	3	S	1.67	188.3
SB6	02	20	5	S	1.44	189.0
SB7	02	16	4	S	0.42	47.4
SB8	02	20	5	S	0.83	104.0

Classification of canal: M = main, S = secondary

Table A2. Results of total loss tests in lined canals (leaking gates and valves may have contributed to measured loss rates) conducted by Texas Cooperative Extension in the Lower Rio Grande River Basin.						
Test ID	Year	Canal Width (ft)	Canal Depth (ft)	Class	Loss Rate	
					gal/ft ² /day	ac-ft/mi/yr
<u>Lined</u>						
16HC1	03	14	5	M	1.89	192.4
BV1	99	10	5	M	7.97	510.5
BV2	99	9	4	M	8.53	451.5
DL1	00	20	6	M	0.16	18.8
DL2	00	7	4	S	4.12	236.2
DO1	03	5	3	S	1.68	65.2
DO2	03	6	4	S	2.18	121.5
DO3	03	6	3	S	2.71	107.2
ED1	00	6	4	S	34.32	1519.6
ED2	00	6	4	S	21.5	858.2
ED3	00	3	2	T	10.22	308.2
ED4	00	4	3	S	18.72	567.7
ED6	99	9	4	M	8.53	451.5
HA2	00	10	4	M	2.26	135.2
HA3	98	15	2	S	0.64	45.5
ME1	98	38	7	M	1.26	281.9
ME2	98		4	M	1.88	163.5
SJ1	99	12	5	M	2.58	126.8
SJ6	03	12	3	M	1.88	1.63
SJ7	03	19	4	M	1.98	227.1
UN3	02	12	6	M	2.02	154.3

Classification of canal: M = main, S = secondary, T = tertiary

Table A3. Results of total loss tests in unlined canals (leaking gates and valves may have contributed to measured loss rates) conducted by Texas Cooperative Extension in the Lower Rio Grande River Basin.						
Test ID	Year	Canal Width (ft)	Canal Depth (ft)	Class	Loss Rate	
					gal/ft ² /day	ac-ft/mi/yr
BV3	99	55	8	M	0.15	53.4
ED5	02	105	7	M	2.39	1213.2
MA1	99	50	10	M	1.98	227.1
MA2	99	20	5	S	4.32	371.4
SB1	00	29	7	S	1.27	215.5
SJ2	00	23	6	M	2.74	293.2
SJ3	00	30	5	S	0.95	132.6

Classification of canal: M = main, S = secondary