CITY OF SHAVANO PARK
WATER ADVISORY COMMITTEE MEETING
900 SADDLETREE COURT, SHAVANO PARK, TX 78231
JUNE 10, 2019
6:30 PM
AGENDA

1. CALL TO ORDER

2. ROLL CALL

3. CITIZENS TO BE HEARD

The Water Advisory Committee welcomes Citizens to be heard, we request that if you wish to speak that you follow these guidelines – Resolution No. 04-11 residents are given three (3) minutes to speak during Citizens to be heard. Citizens are only allowed to speak once and cannot pass their time allotment to someone else. In compliance with the Texas Open Meetings Act, the Water Advisory Committee may no deliberate on comments (Attorney General Opinion – JC0169)

4. CONSENT AGENDA

a. Approval – Water Advisory Committee Meeting Minutes, May 6, 2019

5. REPORTS - Public Works Director Update

a. Water system
    a. Water System Infrastructure Updates
b. Financial Report
    a. April Report

6. REGULAR BUSINESS

a. Discussion / review – FY 2019-20 Budget Revenues - Finance Director
b. Review – Goals & Objectives for FY 2019-20 - PW Director
c. Discussion - Irrigation System Backflow Prevention Requirements - City Manager / PW Director

7. FUTURE ITEMS

a. Franchise Agreement with SAWS (expires 2019)
b. Delinquent Account Procedures
c. Addressing inactive wells
d. Policy #12 Water Adjustment Procedure Clarification - Director Peterson

8. ADJOURNMENT

I, the undersigned authority, do hereby certify that the above Notice of Meeting of the governing body of the above named City of Shavano Park Water Advisory Committee is a true and correct copy of said Notice and that I posted a true and correct copy of said Notice on the bulletin boards, of the City Hall of said City Shavano Park, Texas, a place convenient and readily accessible to the general public at all times, and said Notice was posted on this the 5th day of June 2019 at 3:45 p.m. and remained so posted continuously for at least 72 hours preceding the scheduled time of said meeting.

Zina Tedford
City Secretary

Accessibility Statement

The City of Shavano Park City Hall is wheelchair accessible. The entry ramp is located in the front of the building. Accessible parking spaces are also available in the front and sides of the building. Sign interpretative services for meetings must be made 48 hours in advance of the meeting. Call the A.D.A. Coordinator at 817-447-5400 or TDD 1-800-735-2989.

CITY OF SHAVANO PARK
WATER ADVISORY COMMITTEE MEETING
900 SADDLETREE CT., SHAVANO PARK, TX 78231
MONDAY, MAY 6, 2019

6:30 P.M.
MINUTES

1. CALL TO ORDER
   The meeting was called to order at 6:30 p.m. by Chairman Walea

2. ROLL CALL:

PRESENT:	ABSENT:
Al Walea	None
Sam Bakke	
Tommy Peyton	
Tomas Palmer	
Steve Fleming	
Matt Trippy	

3. CITIZENS TO BE HEARD
   No one addressed the committee at this time

4. CONSENT AGENDA
   a. Approval – WAC Minutes of April 8, 2019
   Member Palmer moved to accept the minutes as submitted, Member Peyton seconded. Motion passed.

5. REPORTS - Public Works Director Update
   a. Water System
      a. Water System Infrastructure Update
      Director Peterson reviewed the activities on the system, Well # 6 they determined can't pump past the 24 foot level or the SCADA parameters will show it tripped. Levels were reduced and no further issues. Well # 5 injector had failed, we had extra in stock so it was switched out and is back online. Wells # 7, # 8 and Huebner are working fine. Well # 8 new A/C to be installed on Tuesday, May 7th. Miox has gone out of making chlorine, Trinity and Well # 9 are currently offline and the ground storage tank had to be drained (110,000 gallons) due to no chlorine. We are looking at other options to provide chlorine. Currently we are waiting on some parts and Trinity should be back online in 2-3 weeks.

b. Financial Report

a. March Report

Finance Director Morey reviewed both the revenues and expenditures for the month and indicated that consumption was still low, on the expenditures was the KFW archiving of the PW maps, etc. but feels comfortable that everything is on track within budget guidelines. Member Palmer moved to approve the Financial Report, Member Peyton seconded. Motion passed.

6. REGULAR BUSINESS

a. Discussion - City of Shavano Park Water Rate Study – Chairman Walea

Chairman Walea briefed members of the presentation he did to City Council for their first read of the recommended rate increases. Council seemed to understand the structure and concurred. However, Councilman Colemere suggested that the water system does need the money, he recommended that the Debt Service fee needs to be paid in full which would be at least one constant expenditure not covered by the O & M expenditures of the water system. Alderman Powers would like to review this information further. Council approved Councilman Colemere's approach. Second reading will be at the May 13th Council meeting. If approved it would be in affect July 1st.

b. Discussion – Irrigation System Backflow Prevention Requirements – Director Peterson

Director Peterson reviewed the changes to the ordinance that were made, the new wording added and that it should be under Section 34 – Water, instead of where it is currently located. Member Palmer moved to table this item for further investigation, Member Peyton seconded. Motion passed.

7. FUTURE ITEMS:

a. NW Military expansion progress
b. Delinquent Account Procedures
c. Water Adjustment Procedure clarification - Policy # 12
d. TCEQ – Decision on what to do about inactive wells
e. Emergency Interconnect Agreement with SAWS
f. Franchise Fees with SAWS expires June 2019

8. ADJOURNMENT
   Member Palmer made a motion to adjourn, member Peyton seconded. Motion passed. Meeting adjourned at 7:07 p.m.

Peggy Stone
PW/Water Utility
Office Manager

Al Walea, Chairman

Date: _____

WATER ADVISORY COMMITTEE STAFF SUMMARY

Meeting Date: June 10, 2019 Agenda item: 5.b.

Prepared by: Brenda Morey Reviewed by: Bill Hill

AGENDA ITEM DESCRIPTION: Presentation of April 2019 Monthly Reports

[X] **Attachments for Reference**: a) April 2019 Revenue and Expense Report

BACKGROUND / HISTORY:

The information provided in the attachment is for the FY 2018-19 budget period, month ending April 30, 2019. The "Current Budget" column contains the amended budget, with one amendment approved to date. This summary highlights a number of points related to the current month's activity.

DISCUSSION:

As of April 30, 2019, the Water Fund total revenues are $317,989 or 35.18% of the total annual budgeted amount. Water Fund (Water Department & Debt Service) expenses total $517,502 or 57.26% of budget.

Revenues:

-Water consumption (5015) billed in April for the month of March is $42,266. Total consumption for the month is approximately 364,000 gallons more than the previous year or $2,038 of revenue.
-The Debt Service (5018) and Water Service Fee (5019) remain on target with annual budgeted amounts as these are flat fees and are not related to volume charges recognized, at 58.51% and 59.40% respectively.
-The EAA Pass Thru (5036) fees are charged to customers based on usage, $5,790 was recorded for the month and 30.95% of the annual budgeted amount has been recognized to date.

Expenses:

Water department (606) expenses for the day-to-day operations are on budget with a total of $51,658 for the month or 51.50% of the budget utilized. Vehicle maintenance (5020) includes $1,000 for safety lights for the Chevy truck (total cost $2,000 split 50/50 with Public Works). Huebner Storage Tank expenses (6060) reflect the ROV inspection for 2019 TCEQ requirements. Elevated Storage Tank/Well #1 expenses (6061) includes $1,425 for the intruder protection door and $1,425 for the video survey inspection. Well Site #6 – Muni Tract expenses (6066) reflect the ribbon curb along the access road. Water System Improvements expenses (8080) includes payment of the final Well #5 disputed costs.

The next debt service payments are scheduled for August, interest only.

Payroll:

The City is on a bi-weekly payroll; there have been 15 pay periods out of 26 so 57.69% of the budget should be expensed in the line items directly related to personnel. The Utility is below budget in the Salaries (1010) due to the vacancy in the superintendent position since January, which is charged 50/50 between Public Works and the Water Utility. Overtime has almost met its budget for the year – April includes OT incurred for Arbor Day along with well issues (Mioxx, Well #5, Well #9) and water crew assisting PW when needed due to PW serviceman vacancy. TMRS (1040) expense is at approximately 61.34%, on track with the related compensation accounts. Expense for Workers' Comp Insurance (1037) is recognized quarterly. It is currently at 40% of budget due to a more favorable experience factor than what was anticipated and used for budget development and the superintendent vacancy. Special allowances also below budget due to superintendent vacancy – this account records certificate pay and cell phone allowances.

COURSES OF ACTION: None related to the Report.

FINANCIAL IMPACT: N/A

STAFF RECOMMENDATION: N/A

REVENUE & EXPENSE REPORT (UNAUDITED)
AS OF: APRIL 30TH, 2019

20 -WATER FUND
FINANCIAL SUMMARY % OF YEAR COMPLETED: 58.33

	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	BUDGET BALANCE	% OF BUDGET
REVENUE SUMMARY					
NON-DEPARTMENTAL	903,799.00	59,933.37	317,989.07	585,809.93	35.18
TOTAL REVENUES	903,799.00	59,933.37	317,989.07	585,809.93	35.18
EXPENDITURE SUMMARY					
WATER DEPARTMENT	716,584.00	51,658.30	369,068.74	347,515.26	51.50
DEBT SERVICE	187,215.00	0.00	148,433.12	38,781.88	79.28
TOTAL EXPENDITURES	903,799.00	51,658.30	517,501.86	386,297.14	57.26
REVENUES OVER/(UNDER) EXPENDITURES	0.00	8,275.07	(199,512.79)	199,512.79	0.00

REVENUE & EXPENSE REPORT (UNAUDITED)
AS OF: APRIL 30TH, 2019

20 -WATER FUND
FINANCIAL SUMMARY % OF YEAR COMPLETED: 58.33

REVENUES	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	BUDGET BALANCE	% OF BUDGET
NON-DEPARTMENTAL					
WATER SALES					
20-599-5015 WATER CONSUMPTION	621,347.00	42,266.00	177,113.69	444,233.31	28.50
20-599-5016 LATE CHARGES	6,000.00	0.00	3,245.08	2,754.92	54.08
20-599-5017 CAPITAL RESERVE FUND	0.00	0.00	0.00	0.00	0.00
20-599-5018 DEBT SERVICE	53,453.00	4,448.00	31,276.80	22,176.20	58.51
20-599-5019 WATER SERVICE FEE	58,092.00	4,880.40	34,508.52	23,583.48	59.40
20-599-5036 EAA PASS THRU CHARGE	83,319.00	5,789.50	25,784.25	57,534.75	30.95
20-599-5037 CONNECTION/DISCONNECT FEE	0.00	0.00	0.00	0.00	0.00
20-599-5040 TAPPING FEES	0.00	0.00	1,800.00	(1,800.00)	0.00
TOTAL WATER SALES	822,211.00	57,383.90	273,728.34	548,482.66	33.29
MISC./GRANTS/INTEREST					
20-599-7000 INTEREST INCOME	9,500.00	925.97	8,845.99	654.01	93.12
20-599-7011 OTHER INCOME	0.00	6.00	815.46	(815.46)	0.00
20-599-7012 LEASE OF WATER RIGHTS	17,108.00	0.00	5,000.00	12,108.00	29.23
20-599-7040 ASR LEASE PROGRAM	0.00	0.00	0.00	0.00	0.00
20-599-7060 CC SERVICE FEES	1,200.00	63.13	609.59	590.41	50.80
20-599-7075 SITE/TOWER LEASE REVENUE	15,500.00	1,304.77	9,123.59	6,376.41	58.86
20-599-7090 SALE OF FIXED ASSETS	0.00	249.60	480.10	(480.10)	0.00
20-599-7097 INSURANCE PROCEEDS	0.00	0.00	0.00	0.00	0.00
TOTAL MISC./GRANTS/INTEREST	43,308.00	2,549.47	24,874.73	18,433.27	57.44
TRANSFERS IN					
20-599-8072 TRF IN - CAPITAL REPLACEMEN	38,280.00	0.00	19,386.00	18,894.00	50.64
20-599-8090 PRIOR PERIOD ADJUSTMENT	0.00	0.00	0.00	0.00	0.00
20-599-8099 TRF IN - RESERVES	0.00	0.00	0.00	0.00	0.00
TOTAL TRANSFERS IN	38,280.00	0.00	19,386.00	18,894.00	50.64
TOTAL NON-DEPARTMENTAL	903,799.00	59,933.37	317,989.07	585,809.93	35.18
TOTAL REVENUES	903,799.00	59,933.37	317,989.07	585,809.93	35.18

REVENUE & EXPENSE REPORT (UNAUDITED)
AS OF: APRIL 30TH, 2019

20 -WATER FUND
WATER DEPARTMENT % OF YEAR COMPLETED: 58.33

EXPENDITURES	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	BUDGET BALANCE	% OF BUDGET
PERSONNEL					
20-606-1010 SALARIES	185,260.00	12,170.27	99,876.51	85,383.49	53.91
20-606-1015 OVERTIME	7,000.00	1,516.22	6,749.30	250.70	96.42
20-606-1020 MEDICARE	2,615.00	200.87	1,575.30	1,039.70	60.24
20-606-1025 TWC (SUI)	828.00	0.00	26.53	801.47	3.20
20-606-1030 HEALTH INSURANCE	25,991.00	1,923.88	14,645.66	11,345.34	56.35
20-606-1031 HSA	178.00	11.14	85.70	92.30	48.15
20-606-1033 DENTAL INSURANCE	1,480.00	105.76	800.91	679.09	54.12
20-606-1035 VISION CARE INSURANCE	325.00	25.14	190.41	134.59	58.59
20-606-1036 LIFE INSURANCE	318.00	23.14	175.93	142.07	55.32
20-606-1037 WORKERS' COMP INSURANCE	6,551.00	0.00	2,620.23	3,930.77	40.00
20-606-1040 TMRS RETIREMENT	25,157.00	1,985.07	15,430.66	9,726.34	61.34
20-606-1070 SPECIAL ALLOWANCES	11,400.00	542.34	4,852.19	6,547.81	42.56
TOTAL PERSONNEL	267,103.00	18,503.83	147,029.33	120,073.67	55.05
SUPPLIES					
20-606-2020 OFFICE SUPPLIES	1,400.00	14.99	971.16	428.84	69.37
20-606-2030 POSTAGE	2,500.00	246.58	1,732.75	767.25	69.31
20-606-2050 PRINTING & COPYING	600.00	0.00	444.92	155.08	74.15
20-606-2060 MED EXAMS/SCREENING/TESTING	0.00	0.00	0.00	0.00	0.00
20-606-2070 JANITORIAL SUPPLIES	100.00	0.00	0.00	100.00	0.00
20-606-2075 BANK/CREDITCARD FEES	5,100.00	294.73	2,895.02	2,204.98	56.77
20-606-2080 UNIFORMS	1,200.00	0.00	494.22	705.78	41.19
20-606-2090 SMALL TOOLS	2,000.00	0.00	392.92	1,607.08	19.65
20-606-2091 SAFETY SUPPLIES/EQUIPMENT	1,200.00	0.00	29.91	1,170.09	2.49
TOTAL SUPPLIES	14,100.00	556.30	6,960.90	7,139.10	49.37
SERVICES					
20-606-3012 ENGINEERING SERVICES	0.00	0.00	4,125.00	(4,125.00)	0.00
20-606-3013 PROFESSIONAL SERVICES	0.00	0.00	0.00	0.00	0.00
20-606-3020 ASSOCIATION DUES & PUBS	2,215.00	540.00	871.00	1,344.00	39.32
20-606-3030 TRAINING/EDUCATION	3,000.00	0.00	1,790.00	1,210.00	59.67
20-606-3040 TRAVEL/MILEAGE/LODGING/PERD	1,438.00	46.64	866.03	571.97	60.22
20-606-3050 INSURANCE - LIABILITY	3,795.00	0.00	3,870.13	(75.13)	101.98
20-606-3060 UNIFORM SERVICES	3,000.00	103.00	1,053.87	1,946.13	35.13
20-606-3070 INSURANCE - PROPERTY	1,850.00	0.00	1,886.62	(36.62)	101.98
20-606-3075 WATER CONSERVATION EDUCATIO	100.00	0.00	0.00	100.00	0.00
20-606-3080 SPECIAL SERVICES	300.00	32.00	142.50	157.50	47.50
20-606-3082 WATER ANALYSIS FEES	6,500.00	58.00	2,993.91	3,506.09	46.06
TOTAL SERVICES	22,198.00	779.64	17,599.06	4,598.94	79.28
CONTRACTUAL					
20-606-4075 COMPUTER SOFTWARE/INCODE	10,292.00	890.54	5,625.26	4,666.74	54.66
20-606-4085 EAA -WATER MANAGEMENT FEES	84,084.00	7,006.52	44,845.64	39,238.36	53.33
20-606-4086 CONTRACT LABOR	0.00	0.00	0.00	0.00	0.00
20-606-4099 WATER RIGHTS/LEASE PAYMENTS	10,851.00	0.00	12,281.50	(1,430.50)	113.18
TOTAL CONTRACTUAL	105,227.00	7,897.06	62,752.40	42,474.60	59.64

REVENUE & EXPENSE REPORT (UNAUDITED)
AS OF: APRIL 30TH, 2019

20 -WATER FUND
WATER DEPARTMENT % OF YEAR COMPLETED: 58.33

EXPENDITURES	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	BUDGET BALANCE	% OF BUDGET
MAINTENANCE					
20-606-5005 EQUIPMENT LEASES	1,500.00	0.00	0.00	1,500.00	0.00
20-606-5010 EQUIPMENT MAINT & REPAIR	6,500.00	0.00	7.00	6,493.00	0.11
20-606-5015 ELECTRONIC EQPT MAINTENANCE	500.00	0.00	0.00	500.00	0.00
20-606-5020 VEHICLE MAINTENANCE	2,000.00	1,588.41	2,553.31	(553.31)	127.67
20-606-5030 BUILDING MAINTENANCE	2,000.00	0.00	1,265.42	734.58	63.27
20-606-5060 VEHICLE & EQPT FUELS	3,000.00	132.85	2,663.31	336.69	88.78
TOTAL MAINTENANCE	15,500.00	1,721.26	6,489.04	9,010.96	41.86
DEPT MATERIALS-SERVICES					
20-606-6011 CHEMICALS	17,000.00	701.89	11,867.61	5,132.39	69.81
20-606-6050 WATER METERS & BOXES	4,500.00	0.00	4,692.94	(192.94)	104.29
20-606-6055 FIRE HYDRANTS	3,000.00	0.00	11,538.14	(8,538.14)	384.60
20-606-6060 HUEBNER STORAGE TANK	6,000.00	1,200.00	1,247.32	4,752.68	20.79
20-606-6061 ELEVATED STORAGE TANK- #1 W	3,000.00	2,850.00	3,846.00	(846.00)	128.20
20-606-6062 WELL SITE #2-EAA MONITORED	100.00	0.00	0.00	100.00	0.00
20-606-6063 WELL SITE #3-NOT OPERATION	0.00	0.00	0.00	0.00	0.00
20-606-6064 WELL SITE #4-NOT OPERATION	0.00	0.00	0.00	0.00	0.00
20-606-6065 WELL SITE #5-EDWARDS BLENDI	3,000.00	0.00	82.06	2,917.94	2.74
20-606-6066 WELL SITE #6-MUNI TRACT	1,000.00	2,300.00	3,172.26	(2,172.26)	317.23
20-606-6067 WELL SITE #7	5,000.00	0.00	82.07	4,917.93	1.64
20-606-6068 WELL SITE #8	3,500.00	0.00	1,231.06	2,268.94	35.17
20-606-6069 WELL SITE #9-TRINITY	2,000.00	0.00	0.00	2,000.00	0.00
20-606-6070 SCADA SYSTEM MAINTENANCE	2,000.00	0.00	2,339.25	(339.25)	116.96
20-606-6071 SHAVANO DRIVE PUMP STATION	7,000.00	355.00	9,257.36	(2,257.36)	132.25
20-606-6072 WATER SYSTEM MAINTENANCE	13,305.00	1,130.01	17,445.28	(4,140.28)	131.12
20-606-6080 STREET MAINT SUPPLIES	1,500.00	0.00	57.50	1,442.50	3.83
TOTAL DEPT MATERIALS-SERVICES	71,905.00	8,536.90	66,858.85	5,046.15	92.98
UTILITIES					
20-606-7040 UTILITIES - ELECTRIC	70,000.00	6,183.44	24,465.78	45,534.22	34.95
20-606-7042 UTILITIES - PHONE/CELL	800.00	0.00	179.70	620.30	22.46
20-606-7044 UTILITIES - WATER	300.00	12.09	82.85	217.15	27.62
TOTAL UTILITIES	71,100.00	6,195.53	24,728.33	46,371.67	34.78
CAPITAL OUTLAY					
20-606-8010 NON-CAP ELECTRONIC EQUIPMEN	0.00	0.00	0.00	0.00	0.00
20-606-8015 NON-CAPITAL - COMPUTERS	0.00	0.00	0.00	0.00	0.00
20-606-8020 NON-CAPITAL MAINTENANCE EQU	1,000.00	0.00	0.00	1,000.00	0.00
20-606-8045 CAPITAL-COMPUTER EQUIPMENT	0.00	0.00	0.00	0.00	0.00
20-606-8050 CAPITAL - VEHICLES	0.00	0.00	0.00	0.00	0.00
20-606-8060 CAPITAL- EQUIPMENT	31,175.00	0.00	19,386.00	11,789.00	62.18
20-606-8080 WATER SYSTEM IMPROVEMENTS	19,500.00	7,467.78	17,264.83	2,235.17	88.54
20-606-8081 CAPITAL - BUILDING	0.00	0.00	0.00	0.00	0.00
20-606-8085 CAPITAL-WATER TOWER/STORAGE	0.00	0.00	0.00	0.00	0.00
20-606-8087 WATER METER REPLACEMENT	3,780.00	0.00	0.00	3,780.00	0.00
TOTAL CAPITAL OUTLAY	55,455.00	7,467.78	36,650.83	18,804.17	66.09

REVENUE & EXPENSE REPORT (UNAUDITED)
AS OF: APRIL 30TH, 2019

20 -WATER FUND
WATER DEPARTMENT % OF YEAR COMPLETED: 58.33

EXPENDITURES	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	BUDGET BALANCE	% OF BUDGET
INTERFUND TRANSFERS					
20-606-9000 EOY ASSET RECLASS	0.00	0.00	0.00	0.00	0.00
20-606-9010 TRF TO GENERAL FUND	22,050.00	0.00	0.00	22,050.00	0.00
20-606-9020 TRF TO CAPITAL REP. FUND 72	71,946.00	0.00	0.00	71,946.00	0.00
20-606-9050 BAD DEBT EXPENSE	0.00	0.00	0.00	0.00	0.00
20-606-9090 DEPRECIATION EXPENSE	0.00	0.00	0.00	0.00	0.00
20-606-9095 PENSION EXPENSE	0.00	0.00	0.00	0.00	0.00
TOTAL INTERFUND TRANSFERS	93,996.00	0.00	0.00	93,996.00	0.00
TOTAL WATER DEPARTMENT	716,584.00	51,658.30	369,068.74	347,515.26	51.50

REVENUE & EXPENSE REPORT (UNAUDITED)
AS OF: APRIL 30TH, 2019

20 -WATER FUND
DEBT SERVICE % OF YEAR COMPLETED: 58.33

EXPENDITURES	CURRENT BUDGET	CURRENT PERIOD	YEAR TO DATE ACTUAL	BUDGET BALANCE	% OF BUDGET
CAPITAL OUTLAY					
20-607-8000 BOND PRINCIPAL EOY	0.00	0.00	0.00	0.00	0.00
20-607-8011 ACCRUED BOND INTEREST	0.00	0.00	0.00	0.00	0.00
20-607-8012 2009 CO - PRINCIPAL	0.00	0.00	0.00	0.00	0.00
20-607-8013 2009 CO - INTEREST	0.00	0.00	0.00	0.00	0.00
20-607-8014 2009 GO REFUND - PRINCIPAL	40,072.50	0.00	40,072.50	0.00	100.00
20-607-8015 2009 GO REFUND - INTEREST	13,830.00	0.00	1,602.90	12,227.10	11.59
20-607-8016 2017 GO REFUNDING (2009) PR	65,000.00	0.00	65,000.00	0.00	100.00
20-607-8017 2017 GO REFUNDING (2009) IN	68,162.50	0.00	34,612.50	33,550.00	50.78
20-607-8020 BOND UNAMORTIZED LOSS	0.00	0.00	0.00	0.00	0.00
20-607-8030 BOND AGENT FEES	150.00	0.00	200.00	(50.00)	133.33
20-607-8035 BOND ISSUANCE COSTS	0.00	0.00	0.00	0.00	0.00
20-607-8056 2018 GO REFUNDING (2009) PR	0.00	0.00	5,137.50	(5,137.50)	0.00
20-607-8057 2018 GO REFUNDING (2009) IN	0.00	0.00	1,807.72	(1,807.72)	0.00
TOTAL CAPITAL OUTLAY	187,215.00	0.00	148,433.12	38,781.88	79.28
TOTAL DEBT SERVICE	187,215.00	0.00	148,433.12	38,781.88	79.28
TOTAL EXPENDITURES	903,799.00	51,658.30	517,501.86	386,297.14	57.26
REVENUES OVER/(UNDER) EXPENDITURES	0.00	8,275.07	(199,512.79)	199,512.79	0.00

WATER ADVISORY COMMITTEE STAFF SUMMARY

Meeting Date: June 10, 2019 | Agenda item: 6.a.

Prepared by: Brenda Morey | Reviewed by: Bill Hill

AGENDA ITEM DESCRIPTION: Discussion/Review – FY 2019-20 Budget Revenues

[X] **Attachments for Reference**:

1) Water Rate History
2) Water Consumption/Revenues History
3) Debt Service Fee
4) Edwards Aquifer Authority Fees
5) Budget Comparison Report – Revenues only
6) Water Consumption – 5 Year History by Month

BACKGROUND / HISTORY: The attached spreadsheets have been presented for information and background when discussing rates and revenues.

1.) Attachment 1 - Water Rate History. This spreadsheet shows the current/past adopted rates. Ordinance 300-08-04 approved on 9-21-2004 began the current tier rate structure for water in the FY 2004-05 after the 2004 Rate Study was completed. The rate structure was updated in FY 2009-10. Ordinance 500-02-09 approved on 9-15-2009 increased the water consumption tier portion only. The Debt Service Fee was increased to cover the Utility's full debt service beginning July 1, 2019, going from $6.40 to $22.58 per account (not meter). The Edwards Aquifer Authority (EAA) Fee was increased to $0.60 per thousand gallons for FY 2011-12 and reduced to $0.50 per thousand gallons for FY 2012-13.

2.) Attachment 2 – Water Consumption/Revenues History with Averages. This spreadsheet includes revenues by budget years from FY 2006-07 to current with gallons sold for the corresponding year. See further discussion below related to these assumptions.

3.) Attachment 3 - Debt Service Fee. City Council approved an increase in the Debt Service Fee to fully fund the Utility's average annual debt payments. The fee, a flat amount of $6.40 a month/account, will increase to $22.58 a month/account as of July 1, 2019. The spreadsheet reflects the fees collected and paid out for debt service from FY2009-10 to FY2018-19 and scheduled payments thru FY2024-25.

4.) Attachment 4 – Edwards Aquifer Authority (EAA) Pass Thru Water Management Fee. The spreadsheet shows the fees charged, revenues collected, amounts paid by the City to the Authority, rebate received, ASR Lease Program revenues, and the difference between the revenues vs cost less rebated and ASR. In July 2012, the EAA began charging a new fee referred to as Habitat Fee and the City did increase the fee to cover the costs that year. The current fee charged to customers is $0.50 per 1,000 gallons. Up until FY 2013-14, the

EAA had a rebate program that returned a portion of fees charged for unused acre feet. With the discontinuance of this program, the fees collected were no longer covering the related expenses and a true pass thru did not exist. In FY2015, the EAA began offering other lease programs in which the City recouped some expenses and received funds for leasing unused acre feet. FY 2017-18 was the final year of the ASR program.

5.) Attachment 6 – Water Consumption – 5 Year History by Month. Analysis prepared to assist in estimating projected revenues for the rest of FY19.

DISCUSSION: Attachment 5 – FY 2019-20 Proposed Budget Worksheet. This report is for revenues only. The first column is the line item account number and description. The next three columns are the actual balances for the indicated fiscal years. The next three columns reflect FY 2018-19 amounts for the amended budget, the Y-T-D Actual for revenues posted as of May 31, 2019 (preliminary – subject to change) and projected year-end amounts based on discussions with the PW director, review of account history, etc. The FY 2019-20 "Requested Budget" column is the draft proposed budgeted revenues developed thru analysis based on the attached documents and staff discussions. This is a rough draft, for discussion purposes and is not to be considered final. Staff will continue working on the FY 2019-20 proposed budget in accordance with WAC guidance.

Water Consumption (20-599-5015) – Staff currently has requested budgeted revenues of $627,000 which is based on the four year average beginning with FY 2014-15 (see attachment #2). Based on the trending water usage and weather factors staff believes utilizing the last 4 year average of actual usage is appropriate.

Debt Service (20-599-5018) – Based on 695 accounts and the current flat fee of $22.58 per month, staff is proposing budgeted revenue of $188,317 as found on attachment #3. This fee is charged to fully fund the Utility's annual debt service payments.

Water Service Fee (20-599-5019) – Staff is proposing the same revenue of $58,092 based on the average monthly fees collected the last five fiscal years. This revenue is a flat/monthly fee based on the size of the meter as shown on attachment #1.

EAA Pass Thru Charge (20-599-5036) – Using the same assumption as above of four years average for gallons sold located on attachment #4, the proposed budgeted revenue amount is $83,681 which can be seen on attachment #3.

COURSES OF ACTION:

1. Provide input to staff to accept the current assumptions for budgeted water revenues development as presented.

2. Provide input to staff to modify the current assumptions for budgeted water revenues development as presented.
3. Provide input to staff to update the projected revenues.

FINANCIAL IMPACT: Varies

STAFF RECOMMENDATION: Committee discuss and provide input and recommendations.

City of Shavano Park
Water Rate History

		Debt Service Flat Fee	Edwards Aquifer Fee	Water Service Fee						Water Consumption Charge -Tiers					
			Per Thousand Gallons	5/8"	3/4"	1"	1 1/2"	2"	6"	0-5000	5,001 - 30,000	30,001 50,000	50,001 - 70,000	70,001 - 100,000	Excess of 100,000
		Per Month		Per Month	Per Month	Per Month	Per Month	Per Month	Per Month	Rate/1000	Rate/1000	Rate/1000	Rate/1000	Rate/1000	Rate/1000
2004/2005	*	$ 6.72	$ 0.25	$ 5.10	$ 7.34	$ 13.06	$ 29.38	$ 52.22	$ 470.02	$ 2.82	$ 3.10	$ 3.53	$ 4.23	$ 5.64	$ 11.29
2009/2010	**	$ 6.72	$ 0.25	$ 5.10	$ 7.34	$ 13.06	$ 29.38	$ 52.22	$ 470.02	$ 3.07	$ 3.40	$ 3.83	$ 4.58	$ 6.29	$ 11.94
2010/2011	***	$ 6.72	$ 0.25	$ 5.10	$ 7.34	$ 13.06	$ 29.38	$ 52.22	$ 470.02	$ 3.07	$ 3.40	$ 3.83	$ 4.58	$ 6.29	$ 11.94
2011/2012	***	$ 6.72	$ 0.60	$ 5.10	$ 7.34	$ 13.06	$ 29.38	$ 52.22	$ 470.02	$ 3.07	$ 3.40	$ 3.83	$ 4.58	$ 6.29	$ 11.94
2012/2013	***	$ 6.40	$ 0.50	$ 5.10	$ 7.34	$ 13.06	$ 29.38	$ 52.22	$ 470.02	$ 3.07	$ 3.40	$ 3.83	$ 4.58	$ 6.29	$ 11.94
2018/2019	A	$ 22.58	$ 0.50	$ 5.10	$ 7.34	$ 13.06	$ 29.38	$ 52.22	$ 470.02	$ 3.07	$ 3.40	$ 3.83	$ 4.58	$ 6.29	$ 11.94

***** Ordinance 300-08-04 Approved on 9-21-2004 included the new tier rate structure for the 2004/2005 Fiscal Year. The tier rates not modified again until 2009/2010 Fiscal Year.

****** Ordinance 500-02-09 Approved on 9-15-2009 increased the tier rates only for the 2009/2010 Fiscal Year. No change to tier or water service fee have occurred since this date.

******* Ordinances were approved with changes to Debt Service Fee and EAA Fee only.

A Ordinance O-2019-004 approved on 5/13/2019 increased debt service fee to fully fund the Utility's average debt service, effective 7/1/2019

City of Shavano Park

Water Consumption/Revenues History with Averages
Water Consumption Charge on Tiers
2018-2019 Projected

Budget Year	Budget	Actual Revenues	Average	
2019/2020	**$ 627,000**	**Proposed**		
2018/2019	$ 621,347	$ 540,000	**Estimated**	
2017/2018	$ 609,034	$ 661,864	$ 661,864	1 yr Average
2016/2017	$ 670,185	$ 658,287	$ 660,076	2 yr Average
2015/2016	$ 675,000	$ 585,411	$ 635,187	3 yr Average
2014/2015	$ 735,000	$ 602,875	$ 627,109	4 yr Average
2013/2014	$ 735,000	$ 638,815	$ 629,450	5 yr Average
2012/2013	$ 700,000	$ 764,052	$ 651,884	6 yr Average
2011/2012	$ 700,000	$ 736,913	$ 664,031	7 yr Average
2010/2011	$ 700,000	$ 951,468	$ 699,961	8 yr Average
2009/2010	$ 752,725	$ 588,365	$ 687,561	9 yr Average
2008/2009	$ 672,500	$ 851,205	$ 703,925	10 yr Average
2007/2008	$ 650,000	$ 843,157	$ 716,583	11 yr Average
2006/2007	$ 675,000	$ 493,203	$ 697,968	12 yr Average

Budget Year	Gallons Sold	Average	
2019/2020	**167,362,000**	**Proposed**	
2018/2019	143,616,000	**Estimated**	
2017/2018	177,674,665	177,674,665	1 yr Average
2016/2017	170,797,036	174,235,851	2 yr Average
2015/2016	159,541,015	169,337,572	3 yr Average
2014/2015	161,436,005	167,362,180	4 yr Average
2013/2014	174,778,180	168,845,380	5 yr Average
2012/2013	200,482,000	174,118,150	6 yr Average
2011/2012	196,846,000	177,364,986	7 yr Average
2010/2011	247,034,000	186,073,613	8 yr Average
2009/2010	139,915,000	180,944,878	9 yr Average
2008/2009	236,652,000	186,515,590	10 yr Average
2007/2008	232,099,000	190,659,536	11 yr Average
2006/2007	132,992,000	185,853,908	12 yr Average

City of Shavano Park
Debt Service Fee

	Payments for 2000 Debt Service Refinanced in 2009/Total DS beg FY2020	# of Customers in System	Calculated Debt Service Fee Per Meter/Per Month	Approved Debt Service Fee Per Meter/Per Month	Actual Revenue or Budget	
2009-10	$ 53,130	706	$ 6.27	$ 6.72	$ 60,386	**
2010-11	$ 53,710	706	$ 6.34	$ 6.72	$ 55,843	
2011-12	$ 52,349	706	$ 6.18	$ 6.72	$ 56,024	
2012-13	$ 52,629	706	$ 6.21	$ 6.40	$ 48,940	**
2013-14	$ 53,697	706	$ 6.34	$ 6.40	$ 53,161	
2014-15	$ 52,680	695	$ 6.32	$ 6.40	$ 53,498	
2015-16	$ 53,687	695	$ 6.44	$ 6.40	$ 53,382	
2016-17	$ 52,518	695	$ 6.30	$ 6.40	$ 53,555	
2017-18	$ 52,269	695	$ 6.27	$ 6.40	$ 53,376	
2018-19	$ 53,181	695	$ 6.38	$ 6.40	$ 44,480	Oct-July
***				$ 22.58	31,386	Aug- Sept
					$ 75,866	Est total
2019/2020	$ 187,833	695	$ 22.52	$ 22.58	$ 188,317	

Future scheduled debt service:

2020-21	**$ 186,023**
2021-22	**$ 185,462**
2022-23	**$ 183,832**
2023-24	**$ 187,763**
2024-25	**$ 185,200**

* This fee was only for the original 2000 Certificate of Obligation. Does not include Trinity Well Project Debt (Covered by Water Service Fees/Tiers) Changed in FY2018-19 to include all debt service.

** End of Year Accrual Entries skewed the numbers, entries are no longer calculated this way.

*** Current FY2018-19 Budget is $53,376. Fee increase effective beginning 7/1/2019

There are 706 total meters in the system, 10 accounts with multiple meters only have one debt service fee charged

City of Shavano Park

Edwards Aquifer Authority (EAA) Pass Thru Water Management Fee

	EAA Fee Per Thousand Gallons	EAA Revenue Collected		EAA Fee Paid by City To Authority		Rebate Received from EAA	*	ASR Lease Program with EAA	Difference	Gallons Sold		Estimated Fee collected based on Gallons Sold
2008/2009	$ 0.25	$ 60,723		$ 59,558		$ 29,016		N/A	$ 30,181	236,652,000		$ 59,163
2009/2010	$ 0.25	$ 40,507		$ 63,049		$ 43,721		N/A	$ 21,179	139,915,000		$ 34,979
2010/2011	$ 0.25	$ 61,896		$ 63,898		$ 35,086		N/A	$ 33,084	247,034,000		$ 61,759
2011/2012	$ 0.60	$ 91,014		$ 86,123	**	$ 30,863		N/A	$ 35,754	196,846,000		$ 118,108
2012/2013	$ 0.50	$ 90,439		$ 121,143		$ 32,443		N/A	$ 1,739	200,482,000		$ 100,241
2013/2014	$ 0.50	$ 88,470		$ 108,516		$ -		N/A	$ (20,046)	174,778,180		$ 87,389
2014/2015	$ 0.50	$ 80,569		$ 109,748		$ -		$ 24,000	$ (5,179)	161,436,005		$ 80,718
2015/2016	$ 0.50	$ 79,313		$ 75,735		$ -		$ 36,000	$ 39,578	159,541,015		$ 79,771
2016/2017	$ 0.50	$ 87,732		$ 75,726		$ -		$ 24,000	$ 36,006	170,797,036		$ 85,399
2017/2018	$ 0.50	$ 89,139		$ 69,765		$ -		$ 24,000	$ 43,374	177,674,665		$ 88,837
2018/2019	$ 0.50	$ 71,808	Estimated	$ 79,878		$ -		$ -	$ (8,070)	143,616,000	***	$ 71,808
2019/2020	$ 0.50	$ 83,681	**Proposed**	$ 84,078		$ -		$ -	$ (397)	167,362,000	**Proposed**	$ 83,681

* The rebate listed is actually received in the following fiscal year for accounting purposes.

** The Habitat Fee was implemented by the Authority in July 2012.

**** **Fiscal year end estimate from consumption schedule.**

Attachment 5

20 -WATER FUND

REVENUES	2015-2016 ACTUAL	2016-2017 ACTUAL	2017-2018 ACTUAL	2018-2019 CURRENT BUDGET	2018-2019 Y-T-D ACTUAL	2018-2019 PROJECTED YEAR END	2019-2020 REQUESTED BUDGET	2019-2020 PROPOSED BUDGET
NON-DEPARTMENTAL								
WATER SALES								
20-599-5015 WATER CONSUMPTION	585,411	658,287	661,864	621,347	216,613	540,000	627,000	
20-599-5016 LATE CHARGES	8,357	4,412	6,010	6,000	3,942	5,900	6,000	
20-599-5018 DEBT SERVICE	53,382	53,555	53,530	53,453	35,731	76,000	188,317	
20-599-5019 WATER SERVICE FEE	57,980	58,605	58,646	58,092	39,448	58,092	58,092	
20-599-5036 EAA PASS THRU CHARGE	79,313	87,732	89,139	83,319	31,293	72,000	83,681	
20-599-5037 CONNECTION/DISCONNECT FEE	0	2,800	0	0	0	0	0	
20-599-5040 TAPPING FEES	0	750	0	0	1,800	1,800	0	
TOTAL WATER SALES	784,443	866,141	869,190	822,211	328,828	753,792	963,090	
MISC./GRANTS/INTEREST								
20-599-7000 INTEREST INCOME	3,139	6,852	11,822	9,500	10,004	15,000	12,000	
20-599-7011 OTHER INCOME	3,406	40	49	0	841	900	0	
20-599-7012 LEASE OF WATER RIGHTS	7,043	7,000	10,000	17,108	5,000	10,000	10,000	
20-599-7040 ASR LEASE PROGRAM	36,000	24,000	24,000	0	0	0	0	
20-599-7060 CC SERVICE FEES	0	337	788	1,200	686	1,000	1,200	
20-599-7075 SITE/TOWER LEASE REVENUE	14,320	14,749	15,491	15,500	10,428	15,650	63,350	
20-599-7090 SALE OF FIXED ASSETS	0	(18,787)	4,705	0	480	500	0	
20-599-7097 INSURANCE PROCEEDS	2,390	45,707	9,838	0	0	0	0	
TOTAL MISC./GRANTS/INTEREST	66,297	79,897	76,693	43,308	27,439	43,050	86,550	
TRANSFERS IN								
20-599-8072 TRF IN-CAPITAL REPLACEMENT	0	0	37,048	38,280	34,460	38,280	0	
20-599-8090 PRIOR PERIOD ADJUSTMENT	0	0	(4,839)	0	0	0	0	
20-599-8099 TRF IN - RESERVES	0	0	0	0	0	0	0	
TOTAL TRANSFERS IN	0	0	32,209	38,280	34,460	38,280	0	
TOTAL NON-DEPARTMENTAL	850,740	946,038	978,092	903,799	390,726	835,122	1,049,640	
TOTAL REVENUES	850,740	946,038	978,092	903,799	390,726	835,122	1,049,640	

City of Shavano Park
Water Consumption - 5 Year History by Month

	FY19	FY18	FY17	FY16	FY15	FY14	FY14-FY18 5 yr ave	Cumulative
October	$ 72,568	$ 79,053	$ 50,030	$ 112,703	$ 50,269	$ 70,783	$ 72,568	11.53%
November	22,603	51,877	58,870	85,137	71,365	43,558	62,161	21.40%
December	19,978	46,362	38,078	26,651	29,336	41,651	36,416	27.19%
January	20,167	30,902	22,942	25,035	26,404	24,869	26,031	31.32%
February	17,965	24,457	27,025	21,424	20,109	35,485	25,700	35.41%
March	18,957	21,153	24,240	38,054	22,263	33,821	27,906	39.84%
April	42,266	40,228	30,363	38,058	24,982	41,554	35,037	45.41%
May	39,499	53,029	41,208	34,100	32,019	59,677	44,007	52.40%
June	34,319	65,752	53,817	28,683	23,168	65,906	47,465	59.94%
July	65,751	108,369	84,484	49,853	32,757	53,293	65,751	70.39%
August	105,625	83,900	125,202	149,369	85,966	83,690	105,625	87.17%
September	80,784	56,781	102,028	(23,655)	184,237	84,526	80,784	100.00%
	$ 540,482	$ 661,864	$ 658,287	$ 585,411	$ 602,875	$ 638,815	$ 629,450	
BUDGET	$ 621,347	$ 609,034	$ 670,185	$ 675,000	$ 735,000	$ 735,000		

amounts per general ledger/Incode, 20-599-5015
estimated based on 5 year average calculations

WATER ADVISORY COMMITTEE STAFF SUMMARY

Meeting Date: June 10, 2019 Agenda item: 6.b

Prepared by: Brandon Peterson Reviewed by: Bill Hill

AGENDA ITEM DESCRIPTION:

Water Department Budget Goals and Objectives for FY 2019-20 Proposed Budget

[X] **Attachments for Reference**: 1) Water Department Proposed Goals and Objectives

BACKGROUND / HISTORY: Water Utility Department is bringing the goals and objectives for FY 2019-20 to the Water Advisory Committee (WAC) for their review and comments.

DISCUSSION: This is the first review of the goals and objectives for FY 2019-20 presented to the Water Advisory Committee. This will be the first round for discussion, next month will be the final round before presenting it to City Council as the final from the WAC.

COURSES OF ACTION: Discuss the goals and objectives for FY 2019-20 and provide any recommendations as to what the Water Advisory Committee would like to see accomplished over the next year.

FINANCIAL IMPACT: Varies depending on the proposed studies and projects accepted.

STAFF RECOMMENDATION: Provide input for goals and objectives for FY 2019-20 Budget

Water Utility Department - 606

Mission Statement

The City of Shavano Park Water Utility Department continuously provides safe and reliable drinking water and maintains essential public water infrastructure for the service connections within Shavano Park in order to provide long-term first-class water utility support to our citizens.

Goals:

- Continually provide safe and reliable drinking water through efficient treatment and delivery of water, meet or exceed environmental and public health standards
- Resource and maintain appropriate equipment and assets
- Improve employee proficiency to include educational training and development opportunities
- Improve water system functions to achieve an efficient operation level while meeting State requirements
- Provide and maintain essential public water infrastructure services while anticipating future requirements

Objectives:

Continually provide safe and reliable drinking water through efficient treatment and delivery of water, exceeding environmental and public health standards

- Maintain 100% compliance of all State and Federal regulations and laws associated with a water system
- Maintain a Superior Water System rating ~~and initiate steps to achieve Outstanding rating~~
- Ensure State requirements are met by having all employees of the Water Department certified and licensed in groundwater operations
- Educate the public while implementing the backflow prevention program approved by Council in accordance with an appropriate strategy

Resource and maintain appropriate equipment and assets

- Maintain enough money in reserve to handle emergencies, and cushion for low water consumption years (approx. $500K)
- Annually re-evaluate adequacy of Edwards water rights and Trinity resources
- Continue to replace meters that have registered approximately 2 million gallons
- Actively apply for grants/funding for other equipment that would make crews more efficient
- Continue working with KFW (City Engineer) to initiate a geographic information system (GIS) program to include utilities, streets, and drainage information
- ~~Purchase a GIS License~~ Renew GIS License
- Continue preparing a schedule based on needs to replace all undersized water mains within the system
- ~~Determine surplus availability~~ Based on power supply needs, initiate applying for grants to pay a portion of or all costs for installation. ~~and cost of emergency power supply (generators) for City buildings and water system;~~
- ~~Actively support a water rate study to be implemented before end of Fiscal Year 2019~~

- ~~Purchase a mini excavator in order to work in tight areas where a backhoe cannot reach.~~
- ~~Purchase a skid steer to replace with the old skid steer (50/50 split)~~
- ~~Install an intruder protection to prevent roof access, per TCEQ requirements (Huebner)~~

Improve employee quality to include educational training and development opportunities.

- Provide additional quality educational opportunities ~~when available~~ and send crews to classes to earn credits to upgrade and improve knowledge of water systems
- Continue to have a safe working environment and maintain the safety and training program on all equipment and water system functions
- Maintain a safe working environment and a zero (0) lost time accident rate, initiate lost accident tally board.
- Improve the preventative maintenance program by establishing a tracking schedule for each piece of equipment/vehicle and when they should be replaced

Improve water system functions to achieve an efficient operation level and meet State requirements

- Investigate alternatives to increase productivity and life expectancy of the Trinity Well pump, motor, and ground storage tank
- Continue to take corrective action on dead end main issues to lessen flushing and reduce loss ratio rate
- Work with TxDOT on preliminary reports for relocating portions of the water mains on NW Military prior to job bid for MPO project
- Identify cul-de-sac dead end mains, including gross cost estimate for each and prioritization for addressing. Complete at remediation of at least one such dead end main each year until all resolved
- Stay current on new and proposed TCEQ water system requirements.
- Propose updates for Shavano Park Ordinances to meet all TCEQ and pertinent Edwards Aquifer Authority requirements
- Achieve annual water loss of less than 5%
- Respond to all water system complaints within one service day. Provide summary of complaints and resolutions to Water Advisory Committee
- Raise/Install 5 fire hydrants with valves to proper height for Fire Department access per year
- Prepare drainage culvert to install ~~pipe~~ boxes for crossing the creek to Well site # 8
- Consider outsourcing printing water utility bills
- Televise and investigate options of some or all wells not in production, evaluate possibilities to place back in production or plug. (wells #1, #2, #3, and #4)
- ~~Research Flowatch Software for more efficient water reporting~~

Provide and Maintain essential public water infrastructure and services while anticipating future requirements.

- Develop and execute a fiscally responsible budget that meets mission requirements
- Update the capital equipment replacement schedule. (Water system, pumps, motors, VFD's, water mains, and hydrants)
- Maintain quality of new SCADA system and entire water system as changes and repairs are accomplished
- ~~Conduct water system customer satisfaction survey~~

WATER ADVISORY COMMITTEE STAFF SUMMARY

Meeting Date: June10, 2019 Agenda item: 6.b.

Prepared by: Bill Hill Reviewed by: Bill Hill

AGENDA ITEM DESCRIPTION:

Discussion – Irrigation System Backflow Prevention Requirements - Director Peterson

[X] **Attachments for Reference**:

1) Draft Backflow Amendments v1
2) Draft Backflow Amendments v2
3) Attorney Memo * Attorney Client
4) TCEQ Backflow Inquiry Response
5) Texas Admin Code (extracts)
6) Cross Connection Control RG-478

BACKGROUND / HISTORY:

On March 7, 2019 the City received a memo from City Attorney answering question from the City Manager regarding Backflow Prevention Assembly where an on-site sewage facility exists (Attachment 3 – Note: Memo is Attorney-Client Privilege).

On March 9, 2019 the City received a memo from Texas Commission on Environmental Quality Office of Compliance and Enforcement in response to the City's inquiries regarding backflow prevention requirements where an on-site sewage facility exists (attachment 4).

Staff briefed the WAC on Backflow Prevention Assembly requirements in March and April and have concluded that Shavano Park's backflow ordinance is outdated and needs revision to be in compliance with TCEQ and the Texas Administrative Code (TAC).

In April, staff drafted amendments v1 (attachment 1) to comply with State regulations regarding backflow prevention requirement using definitions from the 2015 International Plumbing Code combined with language from TCEQ regulations and the ordinances of Fair Oaks Ranch and Universal City. Since April's WAC meeting staff reviewed the draft amendments and have made minor changes to the v1 amendments.

At the May WAC meeting, the Committee considered the v1 draft ordinance and took no action.

DISCUSSION:

After the May meeting, staff was provided comments and analysis that challenged the assumption that an OSSF is a health hazard and therefore does not require annual inspections of backflow devices.

Therefore, staff will present two versions of draft amendments to the ordinance. Version 1 (v1) is the same version presented to the WAC at the May meeting (attachment 1). In this version, OSSF is explicitly listed as a health hazard and annual inspections of reduced pressure backflow devices are required.

Version 2 (v2) (attachment 2) preserves most all the new draft language but removes some of the requirements.

- v2 still requires properties with OSSF to have a reduced pressure backflow device
- v2 does not classify an OSSF as a health hazard
- v2 does not require annual inspections of backflow devices

Staff in consultation with attorney has reviewed the additional comments and analysis provided. According to the City Attorney there is nothing explicitly stated in the administrative code denoting an on-site sewage disposal system (OSSF) is a health hazards. It is also clear that the specific conditions provided for in 30 TAC 344.51(d) is controlling on properties that have an irrigation system with an on-site OSSF (and these conditions do not classify as an OSSF).

Additionally, the City Attorney noted that TCEQ staff are not the rule making authority for TCEQ. However, TCEQ is the administering agency and it is the "staff" that is authorized to make reasonable interpretations of the regulations. In its publication of RG-478, TCEQ has signaled how it intends to interpret the rules, which is to designate irrigation systems with on-site OSSF as a health hazard.

After reviewing the additional comments, the City Attorney's opinion which was based on analysis of the 30 TAC 344.51(d), RG-478 and other relevant provisions our opinion remains the same as originally provided. Ultimately, the City is a point where it must make a policy decision on implementation of the program. If cited by TCEQ for a violation, the City would be in a position to challenge TCEQ, which can be a time consuming and expensive course of action, or amend its ordinance for compliance as directed by TCEQ.

COURSES OF ACTION: Approve v1 or v2 amendments as presented or provide recommendations or guidance

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FINANCIAL IMPACT: These requirements from TCEQ will impact those residents that have an irrigation system on property that is serviced by an OSSF. There will be an annual inspection requirement and eventually residents will need to replace their backflow device with an RPBA device.

MOTION REQUESTED: To approve a recommendation to City Council that the proposed amendments be adopted by ordinance.

Chapter 6 - BUILDINGS AND BUILDING REGULATIONS

. . .

ARTICLE VI. - UTILITY SERVICES

Sec. 6-165. - Water service.

For City of Shavano Park Water Utility system regulations see Chapter 34 – UTILITIES of the City of Shavano Park Code of Ordinances.

~~(a) Upon application and payment of the established connection fee and water meter deposit, the City will provide water to any platted lot within the City's area as defined by the certificate of convenience and necessity (CCN).~~

~~(b) The connection fee will cover installation of a three-fourths-inch connection to the water main, a three-fourths-inch service pipe and a five-eighths-inch meter and meter box. Where a pavement cut is required, the cost of such cut will be borne by the owner, contractor or other person responsible for the construction.~~

~~(c) The service line from the meter to the house shall be installed by the owner or contractor and shall be a minimum one-inch inside diameter of schedule 40 PVC or one-inch copper tubing meeting ASTMA specifications type L soft. The one-inch tubing shall be connected to the water meter through a substantial three-fourths-inch or one-inch brass cutoff ball valve.~~

~~(d) Attachment of a temporary water faucet will not be permitted without an installed meter and hose bib vacuum breaker device installed on temporary water faucet with a customer-installed control ball valve. Violation of this provision will constitute a $200.00 fine.~~

~~(e) All lawn sprinklers must have a control valve and an approved double check backflow prevention device to protect the City's water system from bacterial contamination. The valve must be separate from the house water system. Both house service and sprinkler service must have an individual control valve.~~

~~(f) The backflow prevention device test and maintenance report must be submitted to the Building Official as a component of the final inspection. The report must be signed by a State certified tester.~~

Sec. 6-166. - Electrical and gas connections.

(a) *Electrical connection.* It shall be unlawful for City Public Service to make final power connection to any residence or building within the City until such time as a final inspection has been completed and such connection has been authorized by the Building Official.

(b) *Gas supply.* It shall be unlawful for any person, firm or business to connect a flammable gas supply to any residence or building within the City until pressure and leak tests have been completed, final inspections made, and connection authorized by the Building Official.

Chapter 34 - UTILITIES

ARTICLE I. - IN GENERAL

Secs. 34-1—34-18. - Reserved.

ARTICLE II. - WATER

DIVISION 1. - ~~GENERALLY~~ IN GENERAL.

Sec. 34-19. - ~~Reserved.~~ Definitions.

The following words, terms and phrases, when used in this division, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

Backflow means the backflow of potentially contaminated or polluted water into the potable water system as a result of the pressure in the potable water system falling below atmospheric pressure of the plumbing fixtures, pools, tanks or vats connected to the potable water distribution piping.

Backflow prevention assembly means any assembly used to prevent backflow into a potable water system. The type of assembly used is based on the existing or potential degree of health hazard and backflow condition.

(1) *Double check valve assembly:* The approved double check valve assembly consists of two internally loaded check valves, either spring loaded or internally weighted, installed as a unit between two tightly closing resilient-seated shut-off valves and fittings with properly located resilient-seated tests cocks. This assembly shall only be used to protect against a nonhealth hazard (that is, a pollutant).

(2) *Reduced-pressure backflow prevention assembly:* The approved reduced-pressure principle backflow-prevention assembly consists of two (2) independently acting approved check valves together with a hydraulically operating, mechanically independent pressure differential relief valve located between the check valves and below the first check valve. These units are located between two tightly closing resilient-seated shutoff valves as an assembly and equipped with properly located resilient-seated test cocks. This assembly must be used to protect against health hazards (that is, a contamination).

Contamination means an impairment of the quality of the potable water that creates an actual hazard to the public health through poisoning or the spread of disease by sewage, industrial fluids or waste. Contaminates are considered a health hazard.

Cross connection means any physical connection or arrangement between two otherwise separate piping systems, one of which contains potable water and the other either water of unknown or questionable safety.

Health Hazards means cross-connection, potential contamination hazard, or other situation involving any substance that can cause death, illness, spread of disease, or has a high probability of causing such effects if introduced into the potable drinking water supply. Reference Texas Administrative Code Title 30, Section 290.38(35). This definition includes on-site sewage facilities (OSSF) located on the same property as an irrigation system with a cross-connection to the City of Shavano Park Water Utility system.

On-Site Sewage Facility (OSSF) means an on-site sewage disposal system. This includes systems typically referred to as septic systems. An OSSF is considered a health hazard in reference to backflow prevention for irrigation systems by the Texas Commission on Environmental Quality.

Sec. 34-20. - Rebate program established.

For users of the City water system, the City hereby establishes a rebate program for persons purchasing and installing certain low water use household appliances and fixtures for retrofitting existing single-family structures. The City authorizes the Public Works Director or his designee to prepare a list on an annual basis of appliances and fixtures for which rebates shall be given, and shall be further authorized to establish administrative procedures for implementing the rebate program. Rebates shall be:

(1) Upon installation of low flush toilet, $50.00 credit on water bill.

a. Limit two credits per residential unit.

b. Requires proof of purchase and inspection by City official.

c. Residents will be responsible for disposal of toilet.

d. Qualifying low flush toilet shall be in accordance with the San Antonio Water Systems standard.

(2) Upon installation of high-efficiency washing machine, $100.00 credit on water bill.

a. Limit one per residential unit.

b. Qualifying high-efficiency washing machine shall be in accordance with the San Antonio Water Systems standard.

c. Requires proof of purchase and inspection by City official.

The Water Conservation Rebate Program will be available for fixtures and machines installed after the effective date of the ordinance from which this section is derived. Residents that installed fixtures and machines prior to the approval of the ordinance from which this section is derived do not qualify for the rebate program.

Sec. 34-21. – Water Service.

(a) Upon application and payment of the established connection fee and water meter deposit, the City will provide water to any platted lot within the City's area as defined by the certificate of convenience and necessity (CCN).

(b) The connection fee will cover installation of a three-fourths-inch connection to the water main, a three-fourths-inch service pipe and a five-eighths-inch meter and meter box. Where a pavement cut is required, the cost of such cut will be borne by the owner, contractor or other person responsible for the construction.

(c) The service line from the meter to the house shall be installed by the owner or contractor and shall be a minimum one-inch inside diameter of schedule 40 PVC or one-inch copper tubing meeting ASTMA specifications type L soft. The one-inch tubing shall be connected to the water meter through a substantial three-fourths-inch or one-inch brass cutoff ball valve.

(d) Attachment of a temporary water faucet will not be permitted without an installed meter and hose bib vacuum breaker device installed on temporary water faucet with a customer-installed control ball valve. Violation of this provision will constitute a $200.00 fine.

Sec. 34-22. – Backflow Prevention.

(a) *General*.

(1) No water service connection shall be made to any property where an actual or potential health hazard exists unless the City of Shavano Park Water Utility system is protected in accordance with the Texas Administrative Code Title 30, Chapter 290 and the International Plumbing Code, as adopted.

(2) The Texas Administrative Code referred to herein shall mean those in effect at the effective date of this ordinance and any other subsequent approved amendments, or those made effective by any successor regulatory agency of the state.

(b) *Backflow prevention assembly installation, testing, and maintenance*.

(1) All cross-connections to the City of Shavano Park Water Utility system must have, at a minimum, an approved double check valve assembly installed by a licensed plumber or licensed irrigator.

(2) If an irrigation system is installed on a property that is served by an on-site sewage facility it constitutes a potential health hazard. All cross-connections to the property's water system must install an approved reduced-pressure backflow prevention assembly by a licensed plumber or licensed irrigator.

(3) Reduced pressure principle backflow prevention assemblies shall be tested by a recognized backflow prevention assembly tester at the time of installation, immediately after repairs or relocation, and annually by a recognized backflow prevention assembly tester in accordance with Texas Administrative Code Chapter 344. A copy of all test records must be submitted to the City of Shavano Park upon completion.

(4) All presently installed backflow prevention assemblies that do not meet the standards of this section but were approved assemblies for the purpose described herein at the time of installation and that have been properly maintained, shall, except for the inspection and maintenance requirements, be excluded from the requirements of these rules so long as the Water Utility Director is assured that they will satisfactorily protect the utility system. Whenever the existing assembly is moved from the present location, requires more than minimum maintenance, or when the Water Utility Director finds that the existing device constitutes a hazard to health, the unit shall be replaced by an approved backflow prevention assembly meeting the requirements of this section.

i. If an existing double check valve assembly fails inspection the property owner shall upgrade to a reduced pressure principle backflow prevention assembly within 30 calendar days of the failed inspection.

(5) Testing and maintenance reports of backflow prevention assemblies shall be submitted to the City of Shavano Park Water Utility within 30 calendar days of completion.

(c) *Designation of program coordinator*. The program coordinator shall be the Water Utility Director of the City of Shavano Park Water Utility system.

(d) *Enforcement*.

(1) Any person, firm or corporation violating any provisions of this article shall be deemed guilty of a misdemeanor and upon conviction, shall be fined in a sum not to exceed one thousand dollars ($1,000.00) for each violation and each day being a separate violation.

(2) The Water Utility Director may discontinue water service to a property where such violations occur to protect the public health and safety. Services discontinued under such circumstances shall be restored only upon compliance.

Secs. 34-~~21~~23—34-42. - Reserved.

DIVISION 2. - PUBLIC WATER SUPPLY WELL

Sec. 34-43. - Purpose.

(a) This division sets forth uniform requirements for the users and the construction of facilities in or on land within 150 feet of the wells in order to promote sanitary conditions in and around such wells, to secure all such land from pollution hazards, and to enable the City to comply with all applicable State and local regulations.

(b) The objective of this division is to prevent certain uses and the construction of facilities in or on land surrounding the wells that might create a danger of pollution to the water produced from such wells.

Sec. 34-44. - Definitions.

The following words, terms and phrases, when used in this division, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

Person means any individual, partnership, co-partnership, firm, company, corporation, association, joint stock company, trust estate, governmental entity, or any other legal entity, or its legal representatives, agents, successors, or assigns.

Public Works Director means the head of the City Department of Public Works.

Wells means the water wells owned and operated by the City.

Sec. 34-45. - State regulation.

For the purposes of this division, improperly constructed water wells are those wells that do not meet the surface and subsurface construction standards adopted by the State Commission on Environmental Quality for a public water supply well.

Sec. 34-46. - Prohibited activities.

The following activities are prohibited within the designated areas of land surrounding the wells:

(1) Construction and/or operation of any underground petroleum and/or chemical storage tank, liquid transmission pipeline, stock, pen, feedlot, dump grounds, privy, cesspool, septic tank, sewage treatment plant, sewage wet well, sewage pumping station, drainage ditch that contains industrial waste discharges or the wastes from sewage treatment systems, solid waste disposal site, land on which sewage plant or septic tank sludge is applied, land irrigated by sewage plant effluent, septic tank perforated drain field, absorption bed, evapotranspiration bed, area irrigated by low dosage, low angle spray on-site sewage facility, military petrochemical production, storage and/or transmission facility, Class 1, 2, 3, and/or 4 injection well, pesticide storage and/or mixing facility, abandoned well, inoperative well, improperly constructed water well of any depth, and all other construction or operation that could create an unsanitary

condition is prohibited within, upon, or across all areas of land within a 150-foot radius of the wells.

(2) Construction and/or operation of tile or concrete sanitary sewers, sewer appurtenances, septic tanks, storm sewers, and cemeteries is specifically prohibited within, upon, or across any area of land within a 50-foot radius of the wells.

(3) Construction of homes or buildings upon any area of land within a 150-foot radius of the wells is permitted, provided the restrictions described in subsections (1) and (2) of this section are met.

(4) Except for non-commercial farming, farming and ranching operations are prohibited in all cases, and livestock shall not be allowed within a 150-foot radius of the wells.

Sec. 34-47. - Right of entry.

In order to protect the health, safety, and welfare of our citizens and water supply, City employees, or authorized representatives of the City, bearing proper credentials and identification shall be permitted to immediately enter upon any premises located within a 150-foot radius of any well to conduct any inspection or observation necessary to enforce this division.

Sec. 34-48. - Required removal.

Any person who shall violate any provision of this division shall be required to remove the prohibited construction or potential source of contamination within seven days after notification that they are in violation of this division.

Sec. 34-49. - Superceding regulation or statute.

Whenever any applicable statute, regulation, or permit of any state, federal, or other agency having jurisdiction over the subject matter of this division is in conflict herewith, the stricter requirement shall apply, unless mandated otherwise.

Secs. 34-50—34-73. - Reserved.

DIVISION 3. - WATER SERVICE CHARGES

Sec. 34-74. - Billing; calculation of charges.

(a) Charges for water service shall be calculated on monthly consumption, in amounts as established from time to time by the City Council.

(b) There shall be a minimum bill in an amount as established from time to time by the City Council.

(c) The net charge for water service to each customer shall be the total amount calculated as stated in subsections (a) and (b) of this section and is due upon receipt. The gross charge will be due the last day of the month of billing.

(d) The gross amount (net plus ten percent) will be due on all bills not paid by the listed due date. Unpaid balances carried to the next billing period will become part of the new net due and therefore subject to the ten percent late penalty.

(e) All new customers to the water system or any customers disconnected for nonpayment shall be charged a fee as a connection deposit. In addition, a fee shall be charged to reconnect service disconnected for any reason. Such fees shall be established by the City Council from time to time. The meter installation fee shall be per lot and shall be established by the City Council from time to time.

(f) The City Health Officer will be notified when water service is discontinued and will take appropriate action necessary as a result of termination of service.

(g) The owner of a property whether resident, lessor or developer, shall be liable for water service charges incurred by the occupants. If such bills remain unpaid, the City Council shall have the option after due process to assess such charges and costs incident to the collection as a lien against the property and to file such lien in the County records.

(h) The Public Works Director or his designee will review all outstanding accounts at the end of the second month of each quarter and take appropriate action for collection of delinquent, problem or uncollectable accounts.

(i) To avoid unnecessary charge and penalties, residents who plan to be away over a billing period are encouraged to place an advance deposit, which will be carried on the account as a credit balance, with the Public Works Director or his designee in an amount sufficient to cover an anticipated quarterly billing.

Secs. 34-75—34-91. - Reserved.

DIVISION 4. - WATER UTILITY FUND

Sec. 34-92. - Rate structure.

The water utility fund rate structure shall be as established from time to time by ordinance.

Sec. 34-93. - Water utility fund.

(a) There shall be transferred from the water utility fund of the City to the general fund of the City such rate of gross receipts as set by City Council, at least annually.

(b) Payments hereunder shall be calculated on the basis of gross receipts from the sale of water within the corporate limits of the City during the calendar quarters ending March 31, June 30, September 30 or December 31 next preceding that during which payment is made and shall be payable on or before April 15, July 15, October 15 and January 15 for the preceding quarter.

Secs. 34-94—34-114. - Reserved.

Chapter 6 - BUILDINGS AND BUILDING REGULATIONS

. . .

ARTICLE VI. - UTILITY SERVICES

Sec. 6-165. - Water service.

For City of Shavano Park Water Utility system regulations see Chapter 34 – UTILITIES of the City of Shavano Park Code of Ordinances.

~~(a) Upon application and payment of the established connection fee and water meter deposit, the City will provide water to any platted lot within the City's area as defined by the certificate of convenience and necessity (CCN).~~

~~(b) The connection fee will cover installation of a three-fourths-inch connection to the water main, a three-fourths-inch service pipe and a five-eighths-inch meter and meter box. Where a pavement cut is required, the cost of such cut will be borne by the owner, contractor or other person responsible for the construction.~~

~~(c) The service line from the meter to the house shall be installed by the owner or contractor and shall be a minimum one-inch inside diameter of schedule 40 PVC or one-inch copper tubing meeting ASTMA specifications type L soft. The one-inch tubing shall be connected to the water meter through a substantial three-fourths-inch or one-inch brass cutoff ball valve.~~

~~(d) Attachment of a temporary water faucet will not be permitted without an installed meter and hose bib vacuum breaker device installed on temporary water faucet with a customer-installed control ball valve. Violation of this provision will constitute a $200.00 fine.~~

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~~(f) The backflow prevention device test and maintenance report must be submitted to the Building Official as a component of the final inspection. The report must be signed by a State certified tester.~~

Sec. 6-166. - Electrical and gas connections.

(a) *Electrical connection.* It shall be unlawful for City Public Service to make final power connection to any residence or building within the City until such time as a final inspection has been completed and such connection has been authorized by the Building Official.

(b) *Gas supply.* It shall be unlawful for any person, firm or business to connect a flammable gas supply to any residence or building within the City until pressure and leak tests have been completed, final inspections made, and connection authorized by the Building Official.

Chapter 34 - UTILITIES

ARTICLE I. - IN GENERAL

Secs. 34-1—34-18. - Reserved.

ARTICLE II. - WATER

DIVISION 1. - ~~GENERALLY~~ IN GENERAL.
Sec. 34-19. - ~~Reserved.~~ Definitions.
The following words, terms and phrases, when used in this division, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

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Backflow prevention assembly means any assembly used to prevent backflow into a potable water system. The type of assembly used is based on the existing or potential degree of health hazard and backflow condition.

(1) *Double check valve assembly:* The approved double check valve assembly consists of two internally loaded check valves, either spring loaded or internally weighted, installed as a unit between two tightly closing resilient-seated shut-off valves and fittings with properly located resilient-seated tests cocks. This assembly shall only be used to protect against a nonhealth hazard (that is, a pollutant).
(2) *Reduced-pressure backflow prevention assembly:* The approved reduced-pressure principle backflow-prevention assembly consists of two (2) independently acting approved check valves together with a hydraulically operating, mechanically independent pressure differential relief valve located between the check valves and below the first check valve. These units are located between two tightly closing resilient-seated shutoff valves as an assembly and equipped with properly located resilient-seated test cocks. This assembly must be used to protect against health hazards (that is, a contamination).

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Sec. 34-20. - Rebate program established.

For users of the City water system, the City hereby establishes a rebate program for persons purchasing and installing certain low water use household appliances and fixtures for retrofitting existing single-family structures. The City authorizes the Public Works Director or his designee to prepare a list on an annual basis of appliances and fixtures for which rebates shall be given, and shall be further authorized to establish administrative procedures for implementing the rebate program. Rebates shall be:

(1) Upon installation of low flush toilet, $50.00 credit on water bill.

a. Limit two credits per residential unit.

b. Requires proof of purchase and inspection by City official.

c. Residents will be responsible for disposal of toilet.

d. Qualifying low flush toilet shall be in accordance with the San Antonio Water Systems standard.

(2) Upon installation of high-efficiency washing machine, $100.00 credit on water bill.

a. Limit one per residential unit.

b. Qualifying high-efficiency washing machine shall be in accordance with the San Antonio Water Systems standard.

c. Requires proof of purchase and inspection by City official.

The Water Conservation Rebate Program will be available for fixtures and machines installed after the effective date of the ordinance from which this section is derived. Residents that installed fixtures and machines prior to the approval of the ordinance from which this section is derived do not qualify for the rebate program.

Sec. 34-21. – Water Service.

(a) Upon application and payment of the established connection fee and water meter deposit, the City will provide water to any platted lot within the City's area as defined by the certificate of convenience and necessity (CCN).

(b) The connection fee will cover installation of a three-fourths-inch connection to the water main, a three-fourths-inch service pipe and a five-eighths-inch meter and meter box. Where a pavement cut is required, the cost of such cut will be borne by the owner, contractor or other person responsible for the construction.

(c) The service line from the meter to the house shall be installed by the owner or contractor and shall be a minimum one-inch inside diameter of schedule 40 PVC or one-inch copper tubing meeting ASTMA specifications type L soft. The one-inch tubing shall be connected to the water meter through a substantial three-fourths-inch or one-inch brass cutoff ball valve.

(d) Attachment of a temporary water faucet will not be permitted without an installed meter and hose bib vacuum breaker device installed on temporary water faucet with a customer-installed control ball valve. Violation of this provision will constitute a $200.00 fine.

Sec. 34-22. – Backflow Prevention.

(a) *General*.

(1) No water service connection shall be made to any property where an actual or potential health hazard exists unless the City of Shavano Park Water Utility system is protected in accordance with the Texas Administrative Code Title 30, Chapter 290 and the International Plumbing Code, as adopted.

(2) The Texas Administrative Code referred to herein shall mean those in effect at the effective date of this ordinance and any other subsequent approved amendments, or those made effective by any successor regulatory agency of the state.

(b) *Backflow prevention assembly installation, testing, and maintenance*.

(1) All cross-connections to the City of Shavano Park Water Utility system must have, at a minimum, an approved double check valve assembly installed by a licensed plumber or licensed irrigator.

(2) ~~If an~~ An irrigation system that is installed on a property that is served by an on-site sewage facility shall ensure ~~it constitutes a potential health hazard.~~ all cross-connections to the property's water system ~~must~~ have ~~install~~ an approved reduced-pressure backflow prevention assembly installed by a licensed plumber or licensed irrigator.

(3) Reduced pressure principle backflow prevention assemblies shall be tested by a recognized backflow prevention assembly tester at the time of installation, immediately after repairs or relocation, ~~and annually~~ by a recognized backflow prevention assembly tester in accordance with Texas Administrative Code Chapter 344. A copy of all test records must be submitted to the City of Shavano Park upon completion.

(4) All presently installed backflow prevention assemblies that do not meet the standards of this section but were approved assemblies for the purpose described herein at the time of installation and that have been properly maintained, shall, except for the inspection and maintenance requirements, be excluded from the requirements of these rules so long as the Water Utility Director is assured that they will satisfactorily protect the utility system. Whenever the existing assembly is moved from the present location, requires more than minimum maintenance, or when the Water Utility Director finds that the existing device constitutes a hazard to health, the unit shall be replaced by an approved backflow prevention assembly meeting the requirements of this section.

i. If an existing double check valve assembly fails inspection the property owner shall upgrade to a reduced pressure principle backflow prevention assembly within 30 calendar days of the failed inspection.

(5) Testing and maintenance reports of backflow prevention assemblies shall be submitted to the City of Shavano Park Water Utility within 30 calendar days of completion.

(c) *Designation of program coordinator*. The program coordinator shall be the Water Utility Director of the City of Shavano Park Water Utility system.

(d) *Enforcement*.

(1) Any person, firm or corporation violating any provisions of this article shall be deemed guilty of a misdemeanor and upon conviction, shall be fined in a sum not to exceed one thousand dollars ($1,000.00) for each violation and each day being a separate violation.

(2) The Water Utility Director may discontinue water service to a property where such violations occur to protect the public health and safety. Services discontinued under such circumstances shall be restored only upon compliance.

Secs. 34-~~21~~23—34-42. - Reserved.

DIVISION 2. - PUBLIC WATER SUPPLY WELL

Sec. 34-43. - Purpose.

(a) This division sets forth uniform requirements for the users and the construction of facilities in or on land within 150 feet of the wells in order to promote sanitary conditions in and around such wells, to secure all such land from pollution hazards, and to enable the City to comply with all applicable State and local regulations.

(b) The objective of this division is to prevent certain uses and the construction of facilities in or on land surrounding the wells that might create a danger of pollution to the water produced from such wells.

Sec. 34-44. - Definitions.

The following words, terms and phrases, when used in this division, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

Person means any individual, partnership, co-partnership, firm, company, corporation, association, joint stock company, trust estate, governmental entity, or any other legal entity, or its legal representatives, agents, successors, or assigns.

Public Works Director means the head of the City Department of Public Works.

Wells means the water wells owned and operated by the City.

Sec. 34-45. - State regulation.

For the purposes of this division, improperly constructed water wells are those wells that do not meet the surface and subsurface construction standards adopted by the State Commission on Environmental Quality for a public water supply well.

Sec. 34-46. - Prohibited activities.

The following activities are prohibited within the designated areas of land surrounding the wells:

(1) Construction and/or operation of any underground petroleum and/or chemical storage tank, liquid transmission pipeline, stock, pen, feedlot, dump grounds, privy, cesspool, septic tank, sewage treatment plant, sewage wet well, sewage pumping station, drainage ditch that contains industrial waste discharges or the wastes from sewage treatment systems, solid waste disposal site, land on which sewage plant or septic tank sludge is applied, land irrigated by sewage plant effluent, septic tank perforated drain field, absorption bed, evapotranspiration bed, area irrigated by low dosage, low angle spray on-site sewage facility, military petrochemical production, storage and/or transmission facility, Class 1, 2, 3, and/or 4 injection well, pesticide storage and/or mixing facility, abandoned well, inoperative well, improperly constructed water well of any depth, and all other construction or operation that could create an unsanitary

condition is prohibited within, upon, or across all areas of land within a 150-foot radius of the wells.

(2) Construction and/or operation of tile or concrete sanitary sewers, sewer appurtenances, septic tanks, storm sewers, and cemeteries is specifically prohibited within, upon, or across any area of land within a 50-foot radius of the wells.

(3) Construction of homes or buildings upon any area of land within a 150-foot radius of the wells is permitted, provided the restrictions described in subsections (1) and (2) of this section are met.

(4) Except for non-commercial farming, farming and ranching operations are prohibited in all cases, and livestock shall not be allowed within a 150-foot radius of the wells.

Sec. 34-47. - Right of entry.

In order to protect the health, safety, and welfare of our citizens and water supply, City employees, or authorized representatives of the City, bearing proper credentials and identification shall be permitted to immediately enter upon any premises located within a 150-foot radius of any well to conduct any inspection or observation necessary to enforce this division.

Sec. 34-48. - Required removal.

Any person who shall violate any provision of this division shall be required to remove the prohibited construction or potential source of contamination within seven days after notification that they are in violation of this division.

Sec. 34-49. - Superceding regulation or statute.

Whenever any applicable statute, regulation, or permit of any state, federal, or other agency having jurisdiction over the subject matter of this division is in conflict herewith, the stricter requirement shall apply, unless mandated otherwise.

Secs. 34-50—34-73. - Reserved.

DIVISION 3. - WATER SERVICE CHARGES

Sec. 34-74. - Billing; calculation of charges.

(a) Charges for water service shall be calculated on monthly consumption, in amounts as established from time to time by the City Council.

(b) There shall be a minimum bill in an amount as established from time to time by the City Council.

(c) The net charge for water service to each customer shall be the total amount calculated as stated in subsections (a) and (b) of this section and is due upon receipt. The gross charge will be due the last day of the month of billing.

(d) The gross amount (net plus ten percent) will be due on all bills not paid by the listed due date. Unpaid balances carried to the next billing period will become part of the new net due and therefore subject to the ten percent late penalty.

(e) All new customers to the water system or any customers disconnected for nonpayment shall be charged a fee as a connection deposit. In addition, a fee shall be charged to reconnect service disconnected for any reason. Such fees shall be established by the City Council from time to time. The meter installation fee shall be per lot and shall be established by the City Council from time to time.

(f) The City Health Officer will be notified when water service is discontinued and will take appropriate action necessary as a result of termination of service.

(g) The owner of a property whether resident, lessor or developer, shall be liable for water service charges incurred by the occupants. If such bills remain unpaid, the City Council shall have the option after due process to assess such charges and costs incident to the collection as a lien against the property and to file such lien in the County records.

(h) The Public Works Director or his designee will review all outstanding accounts at the end of the second month of each quarter and take appropriate action for collection of delinquent, problem or uncollectable accounts.

(i) To avoid unnecessary charge and penalties, residents who plan to be away over a billing period are encouraged to place an advance deposit, which will be carried on the account as a credit balance, with the Public Works Director or his designee in an amount sufficient to cover an anticipated quarterly billing.

Secs. 34-75—34-91. - Reserved.

DIVISION 4. - WATER UTILITY FUND

Sec. 34-92. - Rate structure.

The water utility fund rate structure shall be as established from time to time by ordinance.

Sec. 34-93. - Water utility fund.

(a) There shall be transferred from the water utility fund of the City to the general fund of the City such rate of gross receipts as set by City Council, at least annually.

(b) Payments hereunder shall be calculated on the basis of gross receipts from the sale of water within the corporate limits of the City during the calendar quarters ending March 31, June 30, September 30 or December 31 next preceding that during which payment is made and shall be payable on or before April 15, July 15, October 15 and January 15 for the preceding quarter.

Secs. 34-94—34-114. - Reserved.

DENTON NAVARRO ROCHA BERNAL & ZECH PC

ATTORNEY/CLIENT WORK PRODUCT
NOT A PUBLIC RECORD
MEMORANDUM TO CLIENT

TO: BILL HILL, CITY MANAGER
CITY OF SHAVANO PARK

FROM: CYNTHIA TREVINO, ASSISTANT CITY ATTORNEY CT

DATE: MARCH 7, 2019

RE: BACKFLOW PREVENTION ASSEMBLY WHERE AN ON-SITE SEWAGE FACILITY EXISTS

Background: The City is conducting a review of its backflow prevention program and related ordinance provisions. An interpretation of relevant Texas Administrative Code Provisions is needed in order for the City to determine the next steps in its review process.

Summary: The specific provisions requiring reduced pressure principle backflow prevention assemblies ("RP") for irrigation systems on properties with OSSF apply and control over the general provisions covering backflow prevention methods found in Title 30 chapter 344 of the Texas Administrative Code. Further, although 30 Tex. Admin. Code § 290.38(35) does not specifically define an OSSF as a health hazard, the TCEQ has designated an OSSF as a health hazard requiring RP backflow assemblies with the requisite annual testing. Therefore, as TCEQ is the enforcement agency over public water systems and, as such, is entitled to judicial deference towards its interpretations of its rules, we recommend that an RP assembly be required in these situations, as well as annual testing of the same.

Question: Does TAC 344.51 specifically require a reduced pressure principal backflow prevention assembly be installed on an irrigation system installed on a property that is served by an on-site sewage facility (septic)?

Response: Title 30 chapter 344 of the Texas Administrative Code regulates the installation of backflow prevention and cross-control connections relating to irrigation systems. Any irrigation system that is connected to a public or private potable water supply must be connected through a commission-approved backflow prevention method. 30 Tex. Admin. Code § 344.50(a). This section also provides that if conditions that present a health hazard exist, then one of the approved backflow prevention methods must be used, one method of which includes a reduced pressure principle assembly. 30 Tex. Admin. Code § 344.50(b).

The chapter then establishes a specific condition for an irrigation system installed on property served by an on-site sewage facility. (See 30 Tex. Admin. Code § 344.51(d)). This provision

explicitly states that "if an irrigation system is designed or installed on a property that is served by an on-site sewage facility ("OSSF"), as defined in Chapter 285 of this title (relating to OSSF), then any connections using a private or public potable water source must be connected to the water source through a reduced pressure principle backflow prevention assembly ("RP") as defined in § 344.50 of this title (relating to Backflow Prevention Methods).

When there are two statutes that overlap, as is the case for your inquiry, a specific statute controls over the general provision. *See* 67 Tex. Jur. 3d Statutes § 122. Based on the rule of statutory construction it is our interpretation that the specific provisions requiring reduced pressure principle backflow prevention assemblies for irrigation systems on properties with OSSF applies and controls over the general provisions covering backflow prevention methods.

Questions: Does the annual testing required by TAC 344.50(c) apply to properties with on-site septic systems? Is a septic tank identified as a health hazard?

Response: 30 Tex. Admin. Code § 344.50(c) states that "backflow prevention devices used in applications designated as health hazards must be tested upon installation and annually thereafter. This requirement conforms to the general testing requirements provided by 30 Tex. Admin. Code § 290.44(h)(4). Additionally, 30 Tex. Admin. Code § 290.38(35) defines a "health hazard" as "a cross-connection, potential contamination hazard, or other situation involving any substance that can cause death, illness, spread of disease, or has a high probability of causing such effects if introduced into the potable drinking water supply." While we note that 30 Tex. Admin. Code 290 Appendix F lists many health hazards, it does not include on-site sewage disposal systems (OSSF). However, this Appendix also states that the list "is not an all-inclusive list of the hazards which may be found connected to public water systems," thereby establishing an avenue for additional agency discretion to determine other health hazards.

TCEQ is the administering agency for public water systems and it authorized to make reasonable interpretations of the regulations established in the Texas Administrative Code. Accordingly, in TCEQ publication RG-478, the cross-connection rules publication, TCEQ states that "the existence of the OSSF elevates the classification of the irrigation system to a health hazard requiring the installation of an RP [reduced pressure backflow assembly]." TCEQ's designation of an on-site OSSF as a health hazard triggers the application of the annual inspection requirement. A copy of RG-478 is attached and the information is located on pages 15 – 16.

Mr. Hill,

Thank you for your email. Each of your questions is addressed separately below. Please note that the information contained in this response is provided as general information with respect to the questions you asked and may not be a comprehensive list. The information provided in this response is not a substitute for professional advice you would get from an attorney or professional engineer. The information provided does not constitute legal advice or a legal opinion.

Q1) What is your legal interpretation of whether 344.51 specifically requires a reduced pressure principal backflow prevention assembly (or air gap, which is not common practice in residential properties) be installed on an irrigation system installed on a property that is served by an on-site sewage facility (septic).

A1) 30 Texas Administrative Code (TAC) Section (§) 344.51(d)(2) provides:

> *(d) If an irrigation system is designed or installed on a property that is served by an on-site sewage facility, as defined in Chapter 285 of this title (relating to On-Site Sewage Facilities), then:*
>
> > *(2) any connections using a private or public potable water source must be connected to the water source through a reduced pressure principle backflow prevention assembly as defined in §344.50 of this title (relating to Backflow Prevention Methods); and*

The regulation is clear, a Reduced Pressure Principal Backflow Prevention Assembly (RP) is required on an irrigation system installed on a site served by an on-site sewage facility (OSSF).

Q2) You do not pose a specific question but, discuss the health hazard designation of OSSFs and testing requirements.

A2) An OSSF is considered a health hazard in reference to backflow prevention for irrigation systems. Backflow from a cross-connection to an OSSF could cause death, illness, or the spread of disease per the definition of "health hazard" in our rules. The definition of "health hazard" is:

> *30 TAC § 290.38(35) Health hazard--A cross-connection, potential contamination hazard, or other situation involving any substance that can cause death, illness, spread of disease, or has a high probability of causing such effects if introduced into the potable drinking water supply.*

Just because OSSFs are not on the list in 30 TAC § 290.47(f) does not mean that they are not considered health hazards. As the introduction to Appendix F notes, the list is not an all-inclusive list of the hazards which may be found connected to public water systems. There are many other connections, plumbing systems, types of equipment that use water which are not listed in 30 TAC § 290.47(f) but must be protected against backflowing into the potable water supply. Hypothetically speaking, chemical mixing tanks are often supplied with water. If adequate backflow prevention is not provided, the potable water supply will be contaminated with the contents of the tank if a backflow event were to occur. Chemical mixing tanks are not listed in 30 TAC § 290.47(f), yet this scenario would be a health hazard.

The annual testing requirement for backflow prevention assemblies installed to protect the potable water supply from health hazards is specified in:

> *30 TAC § 344.50(c). Backflow prevention devices used in applications designated as health hazards must be tested upon installation and annually thereafter.*

Because an OSSF is a health hazard, any irrigation system connected to a potable water system on property served by an OSSF prorequires annual testing of the backflow prevention assembly.

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Texas Administrative Code

TITLE 30	ENVIRONMENTAL QUALITY
PART 1	TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
CHAPTER 285	ON-SITE SEWAGE FACILITIES
SUBCHAPTER A	GENERAL PROVISIONS
RULE §285.2	Definitions

The following words and terms in this section are in addition to the definitions in Chapter 3 and Chapter 30 of this title (relating to Definitions and Occupational Licenses and Registrations). The words and terms in this section, when used in this chapter, have the following meanings.

(1) Aerobic digestion--The bacterial decomposition and stabilization of sewage in the presence of free oxygen.

(2) Alter--To change an on-site sewage facility resulting in:

(A) an increase in the volume of permitted flow;

(B) a change in the nature of permitted influent;

(C) a change from the planning materials approved by the permitting authority;

(D) a change in construction; or

(E) an increase, lengthening, or expansion of the treatment or disposal system.

(3) Anaerobic digestion--The bacterial decomposition and stabilization of sewage in the absence of free oxygen.

(4) Apprentice--An individual who has been properly registered with the executive director according to Chapter 30 of this title (relating to Occupational Licenses and Registrations), and is undertaking a training program under the direct supervision of a licensed installer.

(5) Authorization to construct--Written permission from the permitting authority to construct an on-site sewage facility showing the date the permission was granted. The authorization to construct is the first part of the permit.

(6) Authorized agent--A local governmental entity that has been delegated the authority by the executive director to implement and enforce the rules adopted under Texas Health and Safety Code, Chapter 366.

(7) Borehole--A drilled hole four feet or greater in depth and one to three feet in diameter.

(8) Certified professional soil scientist--An individual who has met the certification requirements of the American Society of Agronomy to engage in the practice of soil science.

285.2 Definitions

(42) Notice of approval--Written permission from the permitting authority to operate an on-site sewage facility. The notice of approval is the final part of the permit.

(43) Nuisance--

(A) sewage, human excreta, or other organic waste discharged or exposed in a manner that makes it a potential instrument or medium in the transmission of disease to or between persons;

(B) an overflow from a septic tank or similar device, including surface discharge from or groundwater contamination by a component of an on-site sewage facility; or

(C) a blatant discharge from an OSSF.

(44) On-site sewage disposal system--One or more systems that:

(A) do not treat or dispose of more than 5,000 gallons of sewage each day; and

(B) are used only for disposal of sewage produced on a site where any part of the system is located.

(45) On-site sewage facility (OSSF)--An on-site sewage disposal system.

(46) On-site waste disposal order--An order, ordinance, or resolution adopted by a local governmental entity and approved by the executive director.

(47) Operate--To use an on-site sewage facility.

(48) Owner--A person who owns property served by an on-site sewage facility (OSSF), or a person who owns an OSSF. This includes any person who holds legal possession or ownership of a total or partial interest in the structure or property served by an OSSF.

(49) Owner's agent--An installer, professional sanitarian, or professional engineer who is authorized to submit the permit application and the planning materials to the permitting authority on behalf of the owner.

(50) Permit--An authorization, issued by the permitting authority, to construct or operate an on-site sewage facility. The permit consists of the authorization to construct (including the approved planning materials) and the notice of approval.

SUBCHAPTER D: RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS
§§290.38 - 290.47
Effective January 3, 2019

§290.38. Definitions.

The following words and terms, when used in this chapter shall have the following meanings, unless the context clearly indicates otherwise. If a word or term used in this chapter is not contained in the following list, its definition shall be as shown in 40 Code of Federal Regulations (CFR) §141.2. Other technical terms used shall have the meanings or definitions listed in the latest edition of *The Water Dictionary: A Comprehensive Reference of Water Terminology,* prepared by the American Water Works Association.

(1) Affected utility--A retail public utility (§291.3 of this title (relating to Definitions of Terms)), exempt utility (§291.103 of this title (relating to Certificates Not Required)), or provider or conveyor of potable or raw water service that furnishes water service to more than one customer:

(A) in a county with a population of 3.3 million or more; or

(B) in a county with a population of 550,000 or more adjacent to a county with a population of 3.3 million or more.

(2) Air gap--The unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet conveying water to a tank, fixture, receptor, sink, or other assembly and the flood level rim of the receptacle. The vertical, physical separation must be at least twice the diameter of the water supply outlet, but never less than 1.0 inch.

(3) American National Standards Institute (ANSI) standards--The standards of the American National Standards Institute, Inc.

(4) American Society of Mechanical Engineers (ASME) standards--The standards of the ASME.

(5) American Water Works Association (AWWA) standards--The latest edition of the applicable standards as approved and published by the AWWA.

(6) Approved laboratory--A laboratory approved by the executive director to analyze water samples to determine their compliance with certain maximum or minimum allowable constituent levels.

(31) Grantee--For purposes of this chapter, any person receiving an ownership interest in a public water system, whether by sale, transfer, descent, probate, or otherwise.

(32) Grantor--For purposes of this chapter, any person who conveys an ownership interest in a public water system, whether by sale, transfer, descent, probate, or otherwise.

(33) Groundwater--Any water that is located beneath the surface of the ground and is not under the direct influence of surface water.

(34) Groundwater under the direct influence of surface water--Any water beneath the surface of the ground with:

(A) significant occurrence of insects or other macroorganisms, algae, or large-diameter pathogens such as *Giardia lamblia* or *Cryptosporidium;*

(B) significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH which closely correlate to climatological or surface water conditions; or

(C) site-specific characteristics including measurements of water quality parameters, well construction details, existing geological attributes, and other features that are similar to groundwater sources that have been identified by the executive director as being under the direct influence of surface water.

(35) Health hazard--A cross-connection, potential contamination hazard, or other situation involving any substance that can cause death, illness, spread of disease, or has a high probability of causing such effects if introduced into the potable drinking water supply.

(36) Human consumption--Uses by humans in which water can be ingested into or absorbed by the human body. Examples of these uses include, but are not limited to drinking, cooking, brushing teeth, bathing, washing hands, washing dishes, and preparing foods.

(37) Indirect integrity monitoring--The monitoring of some aspect of filtrate water quality, such as turbidity, that is indicative of the removal of particulate matter.

(38) Innovative/alternate treatment--Any treatment process that does not have specific design requirements in §290.42(a) - (f) of this title (relating to Water Treatment).

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Texas Administrative Code

TITLE 30	ENVIRONMENTAL QUALITY
PART 1	TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
CHAPTER 290	PUBLIC DRINKING WATER
SUBCHAPTER D	RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS
RULE §290.44	Water Distribution

City

(iii) When a new waterline crosses under a wastewater main or lateral, the waterline shall be encased as described for wastewater mains or laterals in clause (ii) of this subparagraph or constructed of ductile iron or steel pipe with mechanical or welded joints as appropriate. An absolute minimum separation distance of one foot between the waterline and the wastewater main or lateral shall be provided. When a new waterline crosses under a wastewater main, the procedures in §217.53 (d) of this title (relating to Pipe Design) must be followed.

(iv) Where a new potable waterline crosses a new, pressure rated wastewater main or lateral, one segment of the waterline pipe shall be centered over and shall be perpendicular to the wastewater line such that the joints of the waterline pipe are equidistant and at least nine feet horizontally from the center line of the wastewater main or lateral. The potable waterline shall be at least six inches above the wastewater main or lateral. Whenever possible, the crossing shall be centered between the joints of the wastewater main or lateral. The wastewater pipe shall have a minimum pressure rating of at least 150 psi. The wastewater main or lateral shall be embedded in cement stabilized sand (see clause (v) of this subparagraph) for the total length of one pipe segment plus 12 inches beyond the joint on each end.

(v) Where cement stabilized sand bedding is required, the cement stabilized sand shall have a minimum of 10% cement per cubic yard of cement stabilized sand mixture, based on loose dry weight volume (at least 2.5 bags of cement per cubic yard of mixture). The cement stabilized sand bedding shall be a minimum of six inches above and four inches below the wastewater main or lateral. The use of brown coloring in cement stabilized sand for wastewater main or lateral bedding is recommended for the identification of pressure rated wastewater mains during future construction.

(5) Waterline and wastewater main manhole or lateral manhole or cleanout separation. The separation distance from a potable waterline to a wastewater main manhole or lateral manhole or cleanout shall be a minimum of nine feet. Where the nine-foot separation distance cannot be achieved, the potable waterline shall be encased in a joint of at least 150 psi pressure class pipe at least 18 feet long and two nominal sizes larger than the new conveyance. The space around the carrier pipe shall be supported at five-foot intervals with spacers or be filled to the springline with washed sand. The encasement pipe shall be centered on the crossing and both ends sealed with cement grout or manufactured sealant.

(6) Location of fire hydrants. Fire hydrants shall not be installed within nine feet vertically or horizontally of any wastewater main, wastewater lateral, or wastewater service line regardless of construction.

(7) Location of potable or raw water supply or suction lines. Suction mains to pumping equipment shall not cross wastewater mains, wastewater laterals, or wastewater service lines. Raw water supply lines shall not be installed within five feet of any tile or concrete wastewater main, wastewater lateral, or wastewater service line.

(8) Proximity of septic tank drainfields. Waterlines shall not be installed closer than ten feet to septic tank drainfields.

(f) Sanitary precautions and disinfection. Sanitary precautions, flushing, disinfection procedures, and microbiological sampling as prescribed in AWWA standards for disinfecting water mains shall be followed in laying waterlines.

(1) Pipe shall not be laid in water or placed where it can be flooded with water or sewage during its storage or installation.

(2) Special precautions must be taken when waterlines are laid under any flowing or intermittent stream or semipermanent body of water such as marsh, bay, or estuary. In these cases, the water main shall be installed in a separate watertight pipe encasement and valves must be provided on each side of the crossing with facilities to allow the underwater portion of the system to be isolated and tested to determine that there are no leaks in the underwater line. Alternately, and with the permission of the executive director, the watertight pipe encasement may be omitted.

(3) New mains shall be thoroughly disinfected in accordance with AWWA Standard C651 and then flushed and sampled before being placed in service. Samples shall be collected for microbiological analysis to check the effectiveness of the disinfection procedure. Sampling shall be repeated if contamination persists. A minimum of one sample for each 1,000 feet of completed waterline will be required or at the next available sampling point beyond 1,000 feet as designated by the design engineer.

(g) Interconnections.

(1) Each proposal for a direct connection between public drinking water systems under separate administrative authority will be considered on an individual basis.

(A) Documents covering the responsibility for sanitary control shall accompany the submitted planning material.

(B) Each water supply shall be of a safe, potable quality.

(2) Where an interconnection between systems is proposed to provide a second source of supply for one or both systems, the system being utilized as a second source of supply must be capable of supplying a minimum of 0.35 gallons per minute per connection for the total number of connections in the combined distribution systems.

(h) Backflow, siphonage.

(1) No water connection from any public drinking water supply system shall be allowed to any residence or establishment where an actual or potential contamination hazard exists unless the public water facilities are protected from contamination.

(A) At any residence or establishment where an actual or potential contamination hazard exists, additional protection shall be required at the meter in the form of an air gap or backflow prevention assembly. The type of backflow prevention assembly required shall be determined by the specific potential hazard identified in §290.47(f) of this title (relating to Appendices). See App F

(B) At any residence or establishment where an actual or potential contamination hazard exists and an adequate internal cross-connection control program is in effect, backflow protection at the water service entrance or meter is not required.

(i) An adequate internal cross-connection control program shall include an annual inspection and testing by a licensed backflow prevention assembly tester on all backflow prevention assemblies used for health hazard protection.

(ii) Copies of all such inspection and test reports must be obtained and kept on file by the water purveyor.

(iii) It will be the responsibility of the water purveyor to ensure that these requirements are met.

(2) No water connection from any public drinking water supply system shall be connected to any condensing, cooling, or industrial process or any other system of nonpotable usage over which the public water supply system officials do not have sanitary control, unless the said connection is made in accordance with the requirements of paragraph (1) of this subsection. Water from such systems cannot be returned to the potable water supply.

(3) Overhead bulk water dispensing stations must be provided with an air gap between the filling outlet hose and the receiving tank to protect against back siphonage and cross-contamination.

(4) All backflow prevention assemblies that are required according to this section and associated table located in §290.47(f) of this title shall be tested upon installation by a licensed backflow prevention assembly tester and certified to be operating within specifications. Backflow prevention assemblies which are installed to provide protection against health hazards must also be tested and certified to be operating within specifications at least annually by a licensed backflow prevention assembly tester. ★

(A) Backflow prevention assembly testers shall have completed an executive director-approved course on cross-connection control and backflow prevention assembly testing, pass an examination administered by the executive director, and hold a current license as a backflow prevention assembly tester.

(i) Backflow prevention assembly testers are qualified to test and repair assemblies on any domestic, commercial, industrial, or irrigation service.

(ii) Backflow prevention assembly testers may test and repair assemblies on firelines only if they are permanently employed by an Approved Fireline Contractor. The Texas Department of Insurance's State Fire Marshal's Office requires that any person performing maintenance on firelines must be employed by an Approved Fireline Contractor.

(B) Gauges used in the testing of backflow prevention assemblies shall be tested for accuracy annually in accordance with the University of Southern California's Manual of Cross-Connection Control or the AWWA's Recommended Practice for Backflow Prevention and Cross-Connection Control (AWWA Manual M14). Public water systems shall require testers to include test gauge serial

numbers on the Backflow Prevention Assembly Test and Maintenance Report (commission Form 20700), and ensure testers have gauges tested for accuracy.

(C) A test report must be completed by the recognized backflow prevention assembly tester for each assembly tested. The signed and dated original must be submitted to the public water supplier for recordkeeping purposes. Any form which varies from the format specified in commission Form 20700 must be approved by the executive director prior to being placed in use.

(5) The use of a backflow prevention assembly at the service connection shall be considered as additional backflow protection and shall not negate the use of backflow protection on internal hazards as outlined and enforced by local plumbing codes.

(6) At any residence or establishment where there is no actual or potential contamination hazard, a backflow prevention assembly is not required.

(i) Water hauling. When drinking water is distributed by tank truck or trailer, it must be accomplished in the following manner.

(1) Water shall be obtained from an approved source.

(2) The equipment used to haul the water must be approved by the executive director and must be constructed as follows.

(A) The tank truck or trailer shall be used for transporting drinking water only and shall be labeled "Drinking Water." Tanks which have been used previously for purposes other than transporting potable liquids shall not be used for hauling drinking water.

(B) The tank shall be watertight and of an approved material which is impervious and easily cleaned and disinfected. Any paint or coating and any plastic or fiberglass materials used as contact surfaces must be approved by the United States Environmental Protection Agency, the United States Food and Drug Administration, or the NSF. Effective January 1, 1993, any newly installed surfaces shall conform to ANSI/NSF Standard 61 and must be certified by an organization accredited by ANSI.

(C) The tank shall have a manhole and a manhole cover which overlaps the raised manhole opening by a minimum of two inches and terminates in a downward direction. The cover shall fit firmly on the manhole opening and shall be kept locked.

(D) The tank shall have a vent which is faced downward and located to minimize the possibility of drawing contaminants into the stored water. The vent must be screened with 16-mesh or finer corrosion-resistant material.

(E) Connections for filling and emptying the tank shall be properly protected to prevent the possible entrance of contamination. These openings must be provided with caps and keeper chains.

(F) A drain shall be provided which will completely empty the tank for cleaning or repairs.

(G) When a pump is used to transfer the water from the tank, the pump shall be permanently mounted with a permanent connection to the tank. The discharge side of the pump shall be properly protected between uses by a protective cap and keeper chain.

(H) Hoses used for the transfer of drinking water to and from the tank shall be used only for that purpose and labeled for drinking water only. The hoses shall conform to ANSI/NSF Standard 61 and must be certified by an entity recognized by the commission. Hoses and related appurtenances must be cleaned and disinfected on a regular basis during prolonged use or before start-up during intermittent use. Hoses must be properly stored between uses and must be provided with caps and keeper chains or have the ends connected together.

(I) The tank shall be disinfected monthly and at any time that contamination is suspected.

(J) At least one sample per month from each tank shall be collected and submitted for microbiological analysis to one of the commission's approved laboratories for each month of operation.

(K) A minimum free chlorine residual of 0.5 milligrams per liter (mg/L) or, if chloramines are used as the primary disinfectant, a chloramine residual of 1.0 mg/L (measured as total chlorine) shall be maintained in the water being hauled. Chlorine or chlorine containing compounds may be added on a "batch" basis to maintain the required residual.

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Appendix F: Assessment of Hazards And Selection of Assemblies

The following table lists many common hazards. It is not an all-inclusive list of the hazards which may be found connected to public water systems.

Premises Isolation: Description of Premises	Assessment of Hazard	Required Assembly
Aircraft and missile plants	Health	RPBA or AG
Animal feedlots	Health	RPBA or AG
Automotive plants	Health	RPBA or AG
Breweries	Health	RPBA or AG
Canneries, packing houses and rendering plants	Health	RPBA or AG
Commercial car wash facilities	Health	RPBA or AG
Commercial laundries	Health	RPBA or AG
Cold storage facilities	Health	RPBA or AG
Connection to sewer pipe	Health	RPBA or AG
Dairies	Health	RPBA or AG
Docks and dockside facilities	Health	RPBA or AG
Dye works	Health	RPBA or AG
Food and beverage processing plants	Health	RPBA or AG
Hospitals, morgues, mortuaries, medical clinics, dental clinics, veterinary clinics, autopsy facilities, sanitariums, and medical labs	Health	RPBA or AG
Metal manufacturing, cleaning, processing, and fabrication plants	Health	RPBA or AG
Microchip fabrication facilities	Health	RPBA or AG
Paper and paper products plants	Health	RPBA or AG
Petroleum processing or storage facilities	Health	RPBA or AG
Photo and film processing labs	Health	RPBA or AG

Plants using radioactive material	Health	RPBA or AG
Plating or chemical plants	Health	RPBA or AG
Pleasure-boat marinas	Health	RPBA or AG
Private/Individual/Unmonitored wells	Health	RPBA or AG
Rainwater harvesting system	Health	RPBA or AG
Reclaimed water systems	Health	RPBA or AG
Restricted, classified or other closed facilities	Health	RPBA or AG
Rubber plants	Health	RPBA or AG
Sewage lift stations	Health	RPBA or AG
Sewage treatment plants	Health	RPBA or AG
Slaughter houses	Health	RPBA or AG
Steam plants	Health	RPBA or AG
Tall buildings or elevation differences where the highest outlet is 80 feet or more above the meter	Nonhealth	DCVA

Internal Protection - Description of Cross-Connection	Assessment of Hazard	Required Assembly
Aspirators	Nonhealth†	AVB
Aspirator (medical)	Health	AVB or PVB
Autoclaves	Health	RPBA
Autopsy and mortuary equipment	Health	AVB or PVB
Bedpan washers	Health	AVB or PVB
Connection to industrial fluid systems	Health	RPBA
Connection to plating tanks	Health	RPBA
Connection to salt-water cooling systems	Health	RPBA
Connection to sewer pipe	Health	AG

Cooling towers with chemical additives	Health	AG
Cuspidors	Health	AVB or PVB
Degreasing equipment	Nonhealth†	DCVA
Domestic space-heating boiler	Nonhealth†	RPBA
Dye vats or machines	Health	RPBA
Fire-fighting system (toxic liquid foam concentrates)	Health	RPBA
Flexible shower heads	Nonhealth†	AVB or PVB
Heating equipment		
Commercial	Nonhealth†	RPBA
Domestic	Nonhealth†	DCVA
Hose bibs	Nonhealth†	AVB
Irrigation systems		
with chemical additives	Health	RPBA
without chemical additives	Nonhealth†	DCVA, AVB, or PVB
Kitchen equipment - Commercial	Nonhealth†	AVB
Lab bench equipment	Health or Nonhealth†	AVB or PVB
Ornamental fountains	Health	AVB or PVB
Swimming pools		
Private	Nonhealth†	PVB or AG
Public	Nonhealth†	RPBA or AG
Sewage pump	Health	AG
Sewage ejectors	Health	AG
Shampoo basins	Nonhealth†	AVB
Specimen tanks	Health	AVB or PVB
Steam generators	Nonhealth†	RPBA
Steam tables	Nonhealth†	AVB
Sterilizers	Health	RPBA
Tank vats or other vessels containing toxic substances	Health	RPBA

Trap primers	Health	AG
Vending machines	Nonhealth†	RPBA or PVB
Watering troughs	Health	AG or PVB

NOTE: AG = air gap; AVB = atmospheric vacuum breaker; DCVA = double check valve backflow prevention assembly; PVB = pressure vacuum breaker; RPBA = reduced-pressure principle backflow prevention assembly.

*AVBs and PVBs may be used to isolate health hazards under certain conditions, that is, back siphonage situations. Additional area of premises isolation may be required.

†Where a greater hazard exists (due to toxicity or other potential health impact) additional area protection with RPBAs is required.

(g) Appendix G. Emergency Preparedness Plan Template.

Figure: 30 TAC §290.47(g)

Appendix G: Emergency Preparedness Plan Template

This appendix contains information to assist an affected utility in preparing an emergency preparedness plan. A comprehensive guide and shell form, TCEQ Form No. 20536, for preparing a plan is available from the executive director upon request. A cover letter containing the name of the affected utility; the affected utility representative's name, title, and contact telephone number; and, if applicable, the public water system's identification number (PWS ID) and district number must be included with the plan submittal.

Information provided by an affected utility relating to its emergency preparedness plan is confidential and is not subject to disclosure under Texas Government Code, Chapter 552.

Rules. All of 30 TAC Chapter 291, Subchapter L applies to affected utilities that are not public water systems. The following commission rules apply to affected utilities that are public water systems:

Definitions: §290.38

General Provisions: §290.39(c)(4)(A) - (E) and (o)(1) - (5)

Water Distribution: §290.44(d)
Minimum Water System Capacity Requirements: §290.45(a)(7), (b)(3), (c)(3), (d)(4), (e)(4), (g)(5)(A)(iv), (g)(5)(B), and (h).

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Texas Administrative Code

TITLE 30	ENVIRONMENTAL QUALITY
PART 1	TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
CHAPTER 344	LANDSCAPE IRRIGATION
SUBCHAPTER E	BACKFLOW PREVENTION AND CROSS-CONNECTIONS
RULE §344.50	Backflow Prevention Methods

Residential

(a) Any irrigation system that is connected to a public or private potable water supply must be connected through a commission-approved backflow prevention method. The backflow prevention device must be approved by the American Society of Sanitary Engineers; or the Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California; or the Uniform Plumbing Code; or any other laboratory that has equivalent capabilities for both the laboratory and field evaluation of backflow prevention assemblies. The backflow prevention device must be installed in accordance with the laboratory approval standards or if the approval does not include specific installation information, the manufacturer's current published recommendations.

(b) If conditions that present a health hazard exist, one of the following methods must be used to prevent backflow;

N/A (1) An air gap may be used if:

(A) there is an unobstructed physical separation; and

(B) the distance from the lowest point of the water supply outlet to the flood rim of the fixture or assembly into which the outlet discharges is at least one inch or twice the diameter of the water supply outlet, whichever is greater.

*** (2) Reduced pressure principle backflow prevention assemblies may be used if:

(A) the device is installed at a minimum of 12 inches above ground in a location that will ensure that the assembly will not be submerged; and

(B) drainage is provided for any water that may be discharged through the assembly relief valve.

N/A (3) Pressure vacuum breakers may be used if:

(A) no back-pressure condition will occur; and

(B) the device is installed at a minimum of 12 inches above any downstream piping and the highest downstream opening. Pop-up sprinklers are measured from the retracted position from the top of the sprinkler.

N/A (4) Atmospheric vacuum breakers may be used if:

(A) no back-pressure will be present;

(B) there are no shutoff valves downstream from the atmospheric vacuum breaker;

(C) the device is installed at a minimum of six inches above any downstream piping and the highest downstream opening. Pop-up sprinklers are measured from the retracted position from the top of the sprinkler;

(D) there is no continuous pressure on the supply side of the atmospheric vacuum breaker for more than 12 hours in any 24-hour period; and

(E) a separate atmospheric vacuum breaker is installed on the discharge side of each irrigation control valve, between the valve and all the emission devices that the valve controls.

(c) Backflow prevention devices used in applications designated as health hazards must be tested upon installation and annually thereafter.

(d) If there are no conditions that present a health hazard double check valve backflow prevention assemblies may be used to prevent backflow if the device is tested upon installation and:

(1) a local regulatory authority does not prohibit the use of a double check valve;

(2) backpressure caused by an elevation of pressure in the discharge piping by pump or elevation of piping above the supply pressure which could cause a reversal of the normal flow of water or back-siphonage conditions caused by a reduced or negative pressure in the irrigation system exist; and

(3) test cocks are used for testing only.

(e) If a double check valve is installed below ground:

(1) test cocks must be plugged, except when the double check valve is being tested;

(2) test cock plugs must be threaded, water-tight, and made of non-ferrous material;

(3) a y-type strainer is installed on the inlet side of the double check valve;

(4) there must be a clearance between any fill material and the bottom of the double check valve to allow space for testing and repair; and

(5) there must be space on the side of the double check valve to test and repair the double check valve.

Source Note: The provisions of this §344.50 adopted to be effective January 1, 2009, 33 TexReg 5713

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PART 1	TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
CHAPTER 344	LANDSCAPE IRRIGATION
SUBCHAPTER E	BACKFLOW PREVENTION AND CROSS-CONNECTIONS
RULE §344.51	Specific Conditions and Cross-Connection Control

Resident +

(a) Before any chemical is added to an irrigation system connected to any potable water supply, the irrigation system must be connected through a reduced pressure principle backflow prevention assembly or air gap.

(b) Connection of more than one water source to an irrigation system presents the potential for contamination of the potable water supply if backflow occurs. Therefore, connection of any additional water source to an irrigation system that is connected to the potable water supply can only be done if the irrigation system is connected to the potable water supply through a reduced-pressure principle backflow prevention assembly or an air gap.

(c) Irrigation system components with chemical additives induced by aspiration, injection, or emission system connected to any potable water supply must be connected through a reduced pressure principle backflow device.

(d) If an irrigation system is designed or installed on a property that is served by an on-site sewage facility, as defined in Chapter 285 of this title (relating to On-Site Sewage Facilities), then:

(1) all irrigation piping and valves must meet the separation distances from the On-Site Sewage Facilities system as required for a private water line in §285.91(10) of this title (relating to Minimum Required Separation Distances for On-Site Sewage Facilities);

(2) any connections using a private or public potable water source must be connected to the water source through a reduced pressure principle backflow prevention assembly as defined in §344.50 of this title (relating to Backflow Prevention Methods); and

(3) any water from the irrigation system that is applied to the surface of the area utilized by the On-Site Sewage Facility system must be controlled on a separate irrigation zone or zones so as to allow complete control of any irrigation to that area so that there will not be excess water that would prevent the On-Site Sewage Facilities system from operating effectively.

Source Note: The provisions of this §344.51 adopted to be effective January 1, 2009, 33 TexReg 5713

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TITLE 30	ENVIRONMENTAL QUALITY
PART 1	TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
CHAPTER 344	LANDSCAPE IRRIGATION
SUBCHAPTER E	BACKFLOW PREVENTION AND CROSS-CONNECTIONS
RULE §344.52	Installation of Backflow Prevention Device

(a) If an irrigation system is connected to a potable water supply and requires major maintenance, alteration, repair, or service, the system must be connected to the potable water supply through an approved, properly installed backflow prevention method as defined in this title before any major maintenance, alteration, repair, or service is performed.

(b) If an irrigation system is connected to a potable water supply through a double check valve, pressure vacuum breaker, or reduced pressure principle backflow assembly and includes an automatic master valve on the system, the automatic master valve must be installed on the discharge side of the backflow prevention assembly.

(c) The irrigator shall ensure the backflow prevention device is tested prior to being placed in service and the test results provided to the local water purveyor and the irrigation system's owner or owner's representative within ten business days of testing of the backflow prevention device.

Source Note: The provisions of this §344.52 adopted to be effective January 1, 2009, 33 TexReg 5713

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Figure: 30 TAC §285.91(10)

Table X. Minimum Required Separation Distances for On-Site Sewage Facilities.

	TO					
FROM	Tanks	Soil Absorption Systems, & Unlined ET Beds	Lined Evapotranspiration Beds	Sewer Pipe With Watertight Joints	Surface Application (Edge of Spray Area)	Drip Irrigation
Public Water Wells[2]	50	150	150	50	150	150
Public Water Supply Lines[2]	10	10	10	10	10	10
Wells and Underground Cisterns	50	100	50	20	100	100
Private Water Line	10	10	5	10[5] except at connection to structure	No separation distances	10
Wells Completed in accordance with 16 TAC §76.1000(a)(1)	50	50	50	20	50	50
Streams, Ponds, Lakes, Rivers, Creeks (Measured From Normal Pool Elevation and Water Level); Salt Water Bodies	50	75 LPD with secondary treatment & disinfection - 50	50	20	50	25 when $R_a < 0.1$ 75 when $R_a > 0.1$ (With Secondary Treatment & Disinfection - 50)

(High Tide Only); Retention Ponds/Basin (Spillway elevation)						
Foundations, Buildings, Surface Improvements, Property Lines, Swimming Pools, and Other Structures	5	5	5	5 Pipe may run beneath driveways and sidewalks or up to surface improvements if it is Schedule 80 pipe or sleeved in Schedule 40 pipe Pipe containing secondary effluent has no setbacks from building foundations	No Separation Distances Except: Property lines - 20[6] Swimming Pools - 25	No Separation Distances Except[4]: Property Lines - 5
Underground Easements	1	1	1	1	May spray to edge of easement, but not into. Sprinkler heads must be 1 feet from easement edge	1
Overhead Easements	1 No setbacks if permission is granted by easement holder	1 No setbacks if permission is granted by easement holder	1 No setbacks if permission is granted by easement holder	1 No setbacks if permission is granted by easement holder	1 No setbacks if permission is granted by easement holder	1 No setbacks if permission is granted by easement holder

Slopes Where Seeps may Occur and detention ponds	5	25	5	10	10	10 when R_a< 0.1 25 when R_a>0.1
Edwards Aquifer Recharge Features (See Chapter 213 of this title relating to Edwards Aquifer)[3]	50	150	50	50	150	100 when R_a< 0.1 150 when R_a>0.1

1. All distances measured in feet, unless otherwise indicated.
2. For additional information or revisions to these separation distances, see Chapter 290 of this title (relating to Public Drinking Water).
3. No on-site sewage facility may be installed closer than 75 feet from the banks of the Nueces, Dry Frio, Frio, or Sabinal Rivers downstream from the northern Uvalde County line to the recharge zone.
4. Drip irrigation lines may not be placed under foundations.
5. Private water line/wastewater line crossings should be treated as public water line crossings, see Chapter 290 of this title.
6. Separation distance may be reduced to 10 feet when sprinkler operation is controlled by commercial timer. See §285.33(d)(2)(G)(i) of this title (relating to Criteria for Effluent Disposal Systems).

Revised August 2016
RG-478

Establishing and Managing an Effective Cross-Connection Control Program

printed on
recycled paper

Water Supply Division

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Establishing and Managing an Effective Cross-Connection Control Program

RG-478
Revised August 2016

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www.tceq.texas.gov/publications/rg/rg-478.html

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www.tceq.texas.gov/publications

Published and distributed
by the
Texas Commission on Environmental Quality
P.O. Box 13087
Austin TX 78711-3087

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Contents

Introduction

Who Should Read This Guide?

This guide is intended to help public water system (PWS) managers, operators, and program administrators implement their cross-connection control programs. The audience for this guide is Texas PWSs—for example, a water district, a water-supply corporation, or a city-owned or investor-owned PWS.

Members of the general public—customers of water systems—will also find answers in this guide to many questions they may have about cross-connection control programs. For more information, PWSs and their customers can also contact the TCEQ at 512-239-0028 to request the brochure *A Consumer's Guide to Backflow Prevention in Texas* (TCEQ publication GI-411). The brochure is also downloadable from the TCEQ's website at:

<www.tceq.texas.gov/publications/gi/gi-411.html>

In the text of this document, "you" refers to the PWS and its staff members; "program" is short for 'cross-connection control program'; and "we" refers to the TCEQ or its staff.

This publication is for general guidance only and is not a substitute for the rules or regulations governing cross-connection control and backflow prevention.

Texas Rules

Title 30 of the Texas Administrative Code (30 TAC), Chapter 290, prohibits PWSs from connecting to an actual or potential contamination hazard without first protecting the potable-water supply. The TCEQ rules require PWSs to:

- adopt a plumbing ordinance, regulations, or service agreements
- require customer-service inspections
- require backflow protection using appropriate backflow prevention assemblies
- require those assemblies to be tested to ensure that they are working correctly

This document refers to the Texas rules in the applicable sections throughout. Implementing these rules constitutes a cross-connection control program.

TCEQ rules place the responsibility for recognizing and evaluating hazards within the PWS's distribution system on the PWS. When a hazard is identified, you must ensure that your consumers are protected from contamination by that hazard. The PWS may terminate water service to any connection where an unprotected health hazard is found and only restore service when the health hazard no longer exists or after it has been properly isolated using a backflow prevention assembly.

Any hazard must be isolated from the drinking-water supply regardless of when the hazard was first created or the site was built. Because the effects of a backflow event can be so significant, there are no grandfather clauses that apply to cross-connection control and backflow prevention in the TCEQ's regulations on backflow and siphonage. However, the landscape-irrigation regulations do contain some provisions for existing irrigation systems. This is covered in section 8 of this document.

A backflow incident qualifies as an accident that has a negative impact on the delivery of safe and adequate drinking water and must be reported to the TCEQ [30 TAC 290.46(w)(5)]. The TCEQ maintains a 24-hour toll-free number for reporting backflow

incidents and other emergencies: 888-777-3186. Additionally, you should submit a detailed summary of any backflow incident to:

Coordinator, Cross-Connection Control Program
Technical Review and Oversight Team, MC 159
Texas Commission on Environmental Quality
PO Box 13087
Austin TX 78711-3087

1. Plumbing Ordinance, Regulations, or Service Agreements [30 TAC 290.46(i)]

Every PWS is required to adopt either:

- a plumbing ordinance,
- plumbing regulations, or
- service agreements.

These give the local public water supplier the authority to implement a cross-connection control program. Whichever is adopted, it must have provisions for proper enforcement in order to prohibit cross-connections and other unacceptable plumbing practices.

PWSs serve a wide variety of customers throughout Texas. The potential cross-connections found in a rural area can be very different from those found in an urban setting. Each PWS should carefully consider the types of hazards that may be present in its distribution system before adopting a plumbing ordinance, regulations, or service agreement. This will allow the PWS to tailor the adopted rules to better protect the potable-water supply against a category of specific potential hazards in the PWS's local area. *Important:* the adopted ordinance, regulations, or service agreements may be more stringent than the TCEQ regulations, but cannot be less stringent.

For example, if you supply water to residential customers who have irrigation systems and also have animals on their lot, run a business from their house, or have an auxiliary water supply—which increases the contamination hazard—you may require more rigorous testing of the backflow preventers for those customers. While TCEQ rules address the hazards posed to the potable water supply, specific requirements adopted in the local ordinance, regulations, or service agreement will strengthen your enforcement of these requirements—increasing awareness of the rules and reducing the number of questions.

Note that an investor-owned utility has only limited authority to adopt more stringent requirements than the TCEQ rules [30 TAC 291.93(5)].

Plumbing Ordinance or Regulations

An ordinance is a formal enactment by a local government, adopted by the governing body of that government (for example, a city council). Typically, a plumbing ordinance will contain the requirements for cross-connection control and backflow prevention that comply with state regulations and also meet the local, specific needs for protecting the potable-water distribution system. A sample plumbing ordinance appears in Appendix H of this guide.

Depending on the local municipality, plumbing regulations that contain requirements for cross-connection control and backflow prevention could be contained within a

plumbing ordinance that encompasses the cross-connection control program and all its specific requirements.

Service Agreements

Some public water systems do not have the regulatory or governmental structure to adopt ordinances or regulations. These must use customer-service agreements, which are agreements between the public water systems and their customers, that have provisions for protection against backflow, and cross-connections, and provide for enforcement.

A sample service agreement appears in Appendix B. If the service agreement used by your PWS has been in existence for a long time, it is likely outdated. We recommend that you review and update it, if needed, to include current requirements such as the lead levels allowable by the U.S. Environmental Protection Agency that went into effect on January 4, 2014.

You may use the sample service agreement in the TCEQ's rules or create your own. If you wish to develop your own, it must include all of the required elements.

A few critical elements of an effective service agreement include:

- **Right of entry:** The agreement must give your personnel, particularly customer-service inspectors, the authority to enter facilities in order to evaluate cross-connections, backflow risks, plumbing materials, and internal backflow prevention programs (where present).
- **Lead ban:** The agreement must have provisions for prohibiting lead in excess of the federal standards in the plumbing materials, as demonstrated by the lead test or the labeling of the plumbing.
- **Enforcement:** The agreement must give you the authority to enforce the requirements for cross-connection control and backflow prevention.

Plumbing Codes

The Plumbing License Law in Title 8, Texas Occupations Code, Chapter 1301, requires all municipalities with a population of 5,000 or greater to adopt a plumbing code; smaller municipalities and other types of PWSs may voluntarily adopt a plumbing code.

The two plumbing codes that are authorized to be adopted in the state of Texas by the Texas State Board of Plumbing Examiners are the International Plumbing Code and the Uniform Plumbing Code. These codes are revised every three years. Depending on the particular code and year of revision, the requirements related to cross-connection control and backflow prevention in the code may differ from TCEQ rules.

This very important area of cross-connection control and backflow prevention can become confusing. TCEQ regulations require that a public water supplier adopt a plumbing ordinance, regulations, or service agreements as described in this section. The Plumbing License Law requires the adoption of a plumbing code by municipalities with a population over 5,000; however, adopting a plumbing code does **not** mean that a PWS is in compliance with the TCEQ's plumbing-ordinance regulation. This distinction is critical, because the plumbing code generally governs all plumbing on the customer's side of the meter.

While the Plumbing Codes contain some very important cross-connection control and backflow prevention requirements, they do not address the authority of a cross-connection control program and are not specific to a local municipality. The plumbing ordinance

regulation allows the public water supplier to develop requirements for cross-connection control and backflow prevention specific to its distribution system and gives authority to the cross-connection control program.

2. Customer-Service Inspections

Customer-service inspections (CSIs) are the keystone of a successful cross-connection control program. After you have established an authority, a CSI is the next step in implementing such a program.

The customer service inspector is trained and licensed to examine private water-distribution facilities in order to determine the presence of cross-connections, potential contamination hazards, and illegal materials containing lead and copper, but is **not** permitted to perform plumbing inspections. A CSI can be conducted by a TCEQ-licensed customer-service inspector, a plumbing inspector, or a licensed plumber with a "water supply protection specialist" endorsement (the last two are licensed by the Texas State Board of Plumbing Examiners).

A CSI is required at all new service connections, existing service connections where the PWS has reason to believe that cross-connections or other potential contamination hazards exist, and existing service connections where a material improvement, correction, or addition has been made to the private water-distribution facilities [30 TAC 290.46(j)].

Sometimes, there is some confusion regarding the need for backflow prevention at a site. For example, Appendix F lists dental clinics as posing a health hazard requiring a reduced pressure principle backflow prevention assembly (RP) or an air gap at the meter. Modern dental chairs can be self-contained, with their own water source, and not connected to the potable-water supply. Also, taking x-rays digitally can eliminate the need for potable water to develop them. Thus, a modernized dental clinic may not pose a health hazard. If it can be documented in a CSI that the use of potable water in a dental clinic does not constitute a health hazard then, even though these clinics are named in Appendix F, backflow prevention is not required.

When necessary, the inspector has the option of using more than one CSI certificate to document the inspection results. For example, if the CSI is at a site that is very large and has several different structures, then more than one certificate should be issued to document the locations that were inspected, hazards encountered at each site, and the need for backflow prevention at each site.

The results of the customer-service inspection will identify any cross-connections or actual or potential contamination hazards and determine if backflow prevention is required at the site. More detailed information concerning CSIs will appear in the forthcoming TCEQ publication *Customer-Service Inspections: A Guide for Public Water Systems* (RG-206), which is expected to be available in 2017 at:

<www.tceq.texas.gov/publications/rg/rg-206.html>

Information on acquiring a CSI license may be obtained by contacting the TCEQ's Occupational Licensing Section at:

<www.tceq.texas.gov/goto/cust_serv_lic>

Fees and Payment for the CSI

A PWS that requires a customer-service inspection by its own employees, or provides this service as part of its business, may either:

- charge a fee established by the PWS and approved by its governing body or established by the Public Utility Commission (PUC) in the case of an investor-owned utility, or
- provide the service at no initial cost and then recoup the expenses through rates.

A PWS that requires a customer to arrange for a CSI must:

- ensure that the CSI is conducted by a qualified professional
- ensure that it obtains the original or a copy of the CSI certificate

Payment for the CSI is directly between the customer and the customer-service inspector.

3. Backflow Prevention Assemblies

An effective cross-connection control program must include appropriate means to prevent backflow. This is, typically accomplished by installing backflow prevention assemblies at cross-connections. Whenever possible, the backflow preventer should be located at the point closest to the actual or potential contamination hazard. This will limit the amount of water exposed to backflow, should it occur, and will also make it less likely for someone to tap the water-supply line downstream of the backflow prevention assembly, which would make the downstream connection vulnerable to the contamination hazard.

Selection of Assemblies

TCEQ rules distinguish between health and non-health hazards. A health hazard (or contaminant) involves any substance that can cause death, illness, or the spread of disease: for example, a potable-water connection to a heating system that uses a toxic corrosion-control fluid. A non-health hazard (or pollutant) involves any substance that constitutes a nuisance, or would be aesthetically objectionable if introduced into the public water supply—for example, a potable-water connection to fermentation tanks at a winery.

For protection from a health hazard, the following types of backflow prevention assemblies may be used, provided they are installed per the manufacturer's and plumbing-code requirements:

- RP, RPZ, or RPBA: reduced pressure principle backflow prevention assembly—will function under both back pressure and back siphonage.
- PVB: pressure-vacuum breaker—will function under back siphonage only; it is allowable to have a control valve downstream.
- SVB: spill-resistant vacuum breaker—will function under back siphonage only; it is allowable to have a control valve downstream.
- AVB: atmospheric vacuum breaker—non-testable, will function under back siphonage only, and cannot have a control or shutoff valve downstream.
- AG: air gap—if this method is used, it must meet the definition of an air gap:

  > The unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet conveying water to a tank, fixture, receptor, sink, or other assembly and the flood level rim of the receptacle. The vertical, physical separation must be at least twice the diameter of the water supply outlet, but never less than 1.0 inch. [30TAC 290.38(2)]

Note that, at a customer connection, once the water flows through an air gap, you no longer retain sanitary control of the water and the supply pressure is lost. In addition, both you and the customer must consider that the air gap exposes the water and the container to the environment, allowing for the direct entry of pathogens and debris.

Testing versus inspection

RPs, PVBs, and SVBs are testable assemblies, whereas AVBs are not testable. Thus, RPs, PVBs, and SVBs are the most suitable assemblies for preventing backflow from a health hazard and are preferable to AVBs in almost every situation. If AVBs and air gaps are installed to protect against health hazards, then the authority having jurisdiction should ensure that they are annually inspected for proper installation and operation, and to confirm that they have not been compromised.

Although there are no procedures for testing an air gap or AVB it is possible to determine whether one is working correctly by inspecting it. An air gap or AVB can be inspected by:

- determining if it is installed correctly, in accordance with the recommendations from the manufacturer and requirements in the plumbing code;
- checking any moving parts for free movement; and
- looking for any evidence of modification.

Check valves

Single-check valves are not backflow prevention assemblies and they cannot be tested. The valve seats may become degraded or fouled, which can allow contaminants to backflow through them.

For protection from a non-health hazard, any of the previously mentioned assemblies may be used, as well as a double-check-valve backflow prevention assembly (DCVA), which will function under a back pressure or back siphonage.

Location of Backflow Prevention Assemblies

The TCEQ **does not recommend** the installation of backflow-prevention assemblies at **all** service connections. A typical residential building that has no special water using equipment or processes **does not need** containment backflow prevention. However residences and other buildings or facilities that:

- Use an auxiliary water supply, such as a private well, a rainwater-harvesting system, or a pump in a lake, must install an RP at the meter connection or provide an air gap at the meter. If it can be documented in a CSI that the plumbing system of the auxiliary water supply and the plumbing system of the potable water supply are physically separated and not cross-connected then this separation distance may serve as an air gap. Periodic CSIs will be required to make sure that the two separate systems have not been cross-connected.
- Have an actual or potential contamination hazard on-site must use an appropriate backflow prevention assembly. Appendix E has a partial list of facilities where health hazards are commonly found [30 TAC 290.47(f)].

Typical residences only require minimal backflow prevention such as vacuum breakers on the hose bibbs, an air gap for their water-softener drain line, and a backflow prevention assembly on their irrigation system. Even this minimal backflow prevention is critical because, if backflow occurs, the contaminant will first enter the residential plumbing and those people living there will be the first exposed.

Purchase and Installation of Backflow Prevention Assemblies

A PWS with qualified personnel may install the backflow prevention assembly, charge for its installation, and charge an installation fee established by the PWS and approved by its governing body—or established by the TCEQ, in the case of an investor-owned utility.

Also, a PWS may instead require the customer to purchase the backflow-prevention assembly and have it installed, in which case the PWS must ensure that the correct assembly is installed and a qualified individual installed it.

Regardless of who installs a backflow prevention assembly, it must be tested upon installation. Experience has shown that a brand-new assembly often will fail the test right out of the box and will need a modification or repair.

The regulations of the Texas State Board of Plumbing Examiners determine which qualified individuals can install such assemblies. Licensed plumbers can install backflow prevention assemblies, but exemptions in the Plumbing License Law allow other individuals to install assemblies in specific cases. For example, a homeowner who has obtained the appropriate permit (if required) may install a backflow prevention assembly on her irrigation system or a water operator may install an assembly on his own distribution system. The flowchart in Appendix A can help you determine who is authorized to install backflow prevention assemblies.

4. Containment Programs and Internal Cross-Connection Control Programs

A **containment program**, also called "premises isolation," has backflow prevention at the main water connection to the facility (at the meter). For example, one backflow prevention assembly could be installed at the main water-supply line to a manufacturing facility so that all the actual or potential hazards located at that site are contained within that facility without danger of them backflowing into the public water supply. One benefit is that the public water supply is protected with only one backflow prevention assembly. However, the people within the facility are vulnerable to backflow. **Protection from internal cross-connections to health hazards is critically important, as they can be found in many facilities with relatively large populations—hospitals, schools, large business facilities, manufacturing facilities, etc.** When requiring containment backflow prevention, the PWS should alert the site to the hazards of thermal expansion and the need to turn the water off to the entire site in order to test the backflow preventer. Some sites with containment backflow prevention will install two backflow preventers in parallel, so that water service will not be interrupted. While one backflow preventer is being tested, the other can continue to supply water to the site. If, in a parallel installation, water flows through only one backflow preventer and the second is only there to be used during testing, then the second should at least be pressurized to close the relief valve and prevent entry of any contaminants.

An **internal cross-connection control program** is one that is located within a facility that has actual or potential contamination hazards connected to the internal potable-water distribution system and should not be confused with the cross-connection control program administered by the PWS. These internal hazards and cross-connections are identified when the customer-service inspection is conducted. An internal cross-connection control program consists of backflow prevention at specific locations within a facility where hazards are located. For example, backflow prevention assemblies could be

installed on the water supply lines to water-using equipment in a manufacturing facility. A very important benefit of an internal cross-connection control program is that not only the public water supply, but also the people within the facility, are protected from backflow. A challenge is the possible need to install more than one backflow prevention assembly.

Internal cross-connection control programs are supported by the following:

- **30 TAC 290.44(h)(1)(B)** At any residence or establishment where an actual or potential contamination hazard exists and an adequate internal cross-connection control program is in effect, backflow protection at the water service entrance or meter is not required.
  - **(i)** An adequate internal cross-connection control program shall include an annual inspection and testing by a licensed backflow prevention assembly tester on all backflow prevention assemblies used for health hazard protection.
  - **(ii)** Copies of all such inspection and test reports must be obtained and kept on file by the water purveyor.
  - **(iii)** It will be the responsibility of the water purveyor to ensure that these requirements are met.
- **30 TAC 290.44(h)(5)** The use of a backflow prevention assembly at the service connection shall be considered as additional backflow protection and shall not negate the use of backflow protection on internal hazards as outlined and enforced by local plumbing codes.

These programs pose a challenge because—being internal—they can be compromised without your knowledge.

As stated above, internal cross-connection control programs are required to be "adequate" in order for the PWS to not also require a backflow preventer at the meter. When a PWS is relying **solely** on an internal cross-connection control program, then adequacy of the internal program must be determined by requiring CSIs. The TCEQ recommends periodic CSIs at those sites with an internal cross-connection control program and no backflow prevention at the meter. This will ensure that any **new** cross-connections have the appropriate backflow prevention and existing backflow prevention is still in place. The PWS must retain the original or copies of the inspection reports.

As specified in 30 TAC 290.46(j), whenever a PWS "has reason to believe that cross-connections or other potential contaminant hazards exist," it can conduct or require a customer-service inspection. The fact that internal cross-connection control programs can change without the PWS being aware of the change and the potential location of internal cross-connection control programs at sites with large populations, suffices as "reason to believe" and supports the periodic inspections of internal cross-connection control programs. These CSIs will ensure that unprotected cross-connections have not been created since the initial inspection and will confirm that the backflow prevention assemblies are still in their appropriate locations and have not been modified. Periodic CSIs for internal cross-connection control programs should also be reflected in the local ordinance or other local authority.

Example
A manufacturing facility had several cross-connections on-site. It did not have a containment program, but instead had an internal program in which a backflow preventer was installed at each cross-connection. During the routine testing of the backflow preventer, the BPAT noticed that the backflow preventer was the same type as the one he had tested several weeks ago. This seemed suspicious, so he compared the serial number, as well as the make and model, with test reports from previous tests. He was able to confirm that the manufacturer was actually removing the backflow preventer,

reforming the cross-connection by replacing it with a pipe, and re-installing the backflow preventer at the next cross-connection which was due to have its backflow preventer tested. He had been testing the same backflow preventer at different locations! He immediately informed the PWS, which used this as reason to believe that cross-connections or other potential contaminant hazards existed, and conducted a customer service inspection. After the CSI showed the unprotected cross-connections, the manufacturer installed individual backflow preventers at each one.

5. Coordination, Communication, and Cooperation

A successful backflow prevention and cross-connection control program will include the three *C*s: communication, coordination, and cooperation. Some of the personnel to be included in a cross-connection control program may be:

- city, utility, or district management
- a plumbing inspector
- a building official
- employees in environmental services
- water-department management and personnel
- the fire marshal's office
- industry professionals (irrigators, plumbers, testers, inspectors)

When a PWS supplies water to customers inside incorporated areas where a plumbing code has been adopted, PWSs frequently coordinate cross-connection control with a building- or plumbing-inspection department. The cross-connection control program should reside between the water utility and the building- or plumbing-inspection departments and be composed of staff from both. The building- or plumbing-inspection department administers the plumbing code, which has its own requirements for backflow prevention and cross-connection control; the water utility administers the TCEQ's requirements for backflow prevention and cross-connection control, so their responsibilities naturally overlap.

One of the challenges faced by PWSs is how to protect the people within a site when the system's authority ends at the meter. A common misconception is that a PWS that requires backflow prevention at the metered connection to a site does not have to require backflow protection within the site. One key benefit of a cross-connection control program is that it allows for the protection of the potable-water supply not only in the main distribution system, but also within a site. The point where the PWS's authority generally ends, at the meter, is where the authority of other jurisdictions takes over and continues to prevent backflow.

"The use of a backflow prevention assembly at the service connection shall be considered as additional backflow protection and shall not negate the use of backflow protection on internal hazards as outlined and enforced by local plumbing codes" [30 TAC 290.44(h)(5)]. Thus, according to this regulation, backflow protection at the meter is "considered as additional backflow protection." In other words: in addition to backflow prevention required by other authorities—plumbing codes, the fire marshal's office, etc.—backflow protection may also be required at the meter, allowing for protection of customers from backflow within the site.

Because of the shared responsibility for cross-connection control, it is important that everyone involved develop written protocols for sharing information, storing records, and delineating where one department's jurisdiction ends and another department's

jurisdiction begins. Open lines of communication and good working relationships are essential.

Example (Coordination, Communication, and Cooperation)

The administrator of a cross-connection control program was having trouble getting a local backflow prevention assembly tester to submit the original test forms in a reasonable amount of time. Often, this tester would wait months before turning in the test reports. This delay made it difficult for the program administrator to track where new assemblies had been installed and when they were due for testing. The program administrator coordinated with the building- and plumbing-inspection staff so that approval of the plumbing installation and issuance of a certificate of occupancy for those locations where a test was conducted depended on all necessary documentation, such as the Backflow Prevention Assembly Test and Maintenance Report, to first be submitted to the city. This coordination and cooperation between the administrator and department solved the problem. Relevant to this example is the landscape-irrigation regulation [30 TAC 344.52(c), Appendix H], which requires submission of a test report to the water purveyor within 10 business days of testing. Another option for the administrator was to inform the tester that only those registered with the city could test, and those registered testers must submit timely reports.

Outside incorporated areas, PWS personnel usually do not have the support of a plumbing or inspection department. In those cases, the PWS does not have the benefit of plumbing-code rules and so the responsibility for the cross-connection control program rests solely on the PWS. It then becomes essential that the PWS ensures that its service agreement meets TCEQ standards, that each customer signs the service agreement, and that the PWS is able to follow up on hazards identified through periodic CSIs or the required backflow prevention assembly testing.

6. Testing, Inspection, Certification

Assemblies used for protection from health hazards, whether installed at the meter or part of an internal program, must be tested upon installation and once a year thereafter by a licensed backflow prevention assembly tester and the records must be retained by the PWS for at least three years.

Testing Backflow Prevention Assemblies

Like all mechanical devices, backflow prevention assemblies are subject to failure over time and must be tested to ensure that they are operating properly and are protecting the potable-water supply. As noted above, TCEQ rules require that all backflow prevention assemblies be tested upon installation, and that assemblies installed to protect against health hazards must be tested annually [30 TAC 290.44(h)(4)].

In addition to recording the test results, the Test and Maintenance Report (T&M) form in Appendix C, which a licensed backflow-prevention-assembly tester must fill out and sign, requires that the licensed BPAT certify whether the installation of the assembly complies with manufacturer recommendations and local codes. The BPAT then forwards the **signed original** to the PWS, which is required to retain it. If the BPAT submits a form to the PWS indicating improper installation of a backflow prevention assembly, even though it passed the test, the PWS must arrange for the reinstallation of the assembly in accordance with manufacturer recommendations and local codes.

Licensed BPATs are qualified to test and repair assemblies on any domestic, commercial, industrial, or irrigation service.

There is an additional requirement for BPATs who test and repair assemblies on fire-suppression systems or fire lines. BPATs may test an assembly on these systems **only** if they are permanently employed by an approved fire-line contractor. This is due to the additional alerting apparatus and wiring that is located on the backflow prevention assembly. It is critical that the BPAT be properly trained to leave the assembly in proper functioning order after the test. A mistake could risk lives and property.

Under Texas Insurance Code Section 6003.002 (Fire Sprinkler Rules) there are certain authorities and individuals to which the rules do not apply, like owners or lessees. If the Fire Sprinkler Rules do not apply, then permanent employment of the BPAT by a fire-line contractor may not be necessary; however, the requirement to obtain a backflow prevention assembly license will remain. More information on backflow prevention on fire suppression systems appears in *Backflow Protection on Water-Based Fire Protection Systems* (TCEQ publication RG-345), available at:

<www.tceq.texas.gov/publications/rg/rg-345.html>

If, during a routine test of a backflow prevention assembly, the BPAT determines that the assembly will not pass the test and needs repair, then the assembly must be repaired and retested after repair. Otherwise, it cannot be said that the backflow prevention assembly passed the test. This is documented by the BPAT in the official T&M form located in Appendix C of this guide.

To promote consistency across the state and provide for a common, fundamental knowledge base on testing backflow prevention assemblies, the TCEQ requires approved training providers to teach the testing procedures that appear in the latest edition of the *Manual of Cross-Connection Control* from the University of Southern California's Foundation for Cross-Connection Control and Hydraulic Research. This manual may be obtained from the USC website at <www.usc.edu/dept/fccchr/>.

For maximal protection of the public health, these procedures are designed to fail an assembly **before** it will allow backflow and contaminate the potable-water supply. An individual who wishes to obtain a license to test backflow prevention assemblies must pass a written and practical test based on the USC field-test procedures.

The gauges that BPATs use to test backflow prevention assemblies are very sensitive and accurate in measuring pressure differentials. If these gauges are not working properly, there is a risk that a backflow prevention assembly could pass a test but not be functioning correctly. Therefore, licensed BPATs must have their test gauges tested for accuracy at least once per year [30 TAC 290.44(h)(4)(B)]. The BPAT must then document the date when the gauges were tested for accuracy on each T&M report. More information on testing gauges may be found in *Accuracy Testing of Gauges Used for Testing Backflow-Prevention Assemblies* (RG-493).

Many smaller PWSs do not have licensed BPATs on staff. Instead, they may notify customers when the backflow prevention assembly installed at their site is due for testing and require those customers to have the assembly tested. This letter should notify the customer that the water will have to be temporarily turned off, allowing the customer to make any necessary accommodations.

For convenience, these notifications may include a list of local licensed BPATs that the customer can choose from. The PWS should be aware of any restrictions for recommending private companies before providing a list. Depending on the type of ownership, it may be necessary for you to include a disclaimer establishing that the list of BPATs does not constitute an endorsement by the PWS. Another option is to generate a list of BPATs by conducting a search of the TCEQ online operator-licensing database at:

<www.tceq.texas.gov/goto/lic_reg_search>

The TCEQ's Occupational Licensing Section has information available regarding the BPAT license. You can telephone the section at 512-239-6133 or visit its Web page at:

<www.tceq.texas.gov/licensing>

Some PWSs require BPATs testing assemblies in their service area to register with them. This gives the PWS an advantage because it allows the system to determine that the BPAT's license is current, that the BPAT's test gauge has been tested for accuracy within the last year, and that the testers are using the correct test report or a TCEQ-approved alternate.

Fees and Payment for Backflow Prevention Assembly Testing

Payment for testing a backflow prevention assembly usually takes one of three routes:

- A PWS with one or more appropriately licensed employees may have them conduct tests of backflow prevention assemblies in its service area and charge the customer a fee established by the PWS and approved by its governing body—or established by the PUC in the case of an investor-owned utility.
- A PWS may require its customers to have the backflow prevention assembly tested. In this case, the customer usually hires a private BPAT and pays for the test, and the BPAT submits the test report to the water utility.
- A PWS may give its customers the option of having the backflow prevention assembly tested by a private company or having the water-utility staff come out and conduct the test.

A PWS that requires the customer to have an assembly tested must ensure that a TCEQ-licensed BPAT tested the backflow prevention assembly and that the test results were recorded on the correct form (TCEQ-20700, Backflow Prevention Assembly Test and Maintenance Report).

Exercise caution if you have licensed individuals on the PWS staff and those individuals choose to use their license to generate income on their own time. For example, it would not be appropriate for your staff, as part of doing their job with the PWS, to require the installation or testing of a backflow preventer and then offer to install or test the backflow preventer for a fee payable to the tester, as opposed to a fee included in the monthly water bill payable to the local jurisdiction.

Certification and Approval of Backflow Prevention Assemblies

The TCEQ rules (30 TAC 290) do not currently require certification or approval of backflow-prevention assemblies. If a PWS would like to adopt a requirement or restriction identifying the specific backflow-prevention assemblies that can be installed in its service area, it should clearly state the requirement or restriction in its ordinance, regulations, or service agreement.

For any restrictions a PWS places on which backflow-prevention assemblies it approves, valid reasons are critical. Aesthetics such as color or appearance will not suffice as valid reasons to exclude or not approve a backflow prevention assembly. It is best to rely on approval or certification by an organization that specifically lists or approves backflow prevention assemblies. Field testing by these organizations is a crucial aspect of the

approval process. Several U.S. organizations maintain standards for testing and certification of backflow prevention assemblies, including:

- the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research
- the American Society of Sanitary Engineers
- the International Association of Plumbing and Mechanical Officials

The TCEQ regulations on landscape irrigation **do require** approval of backflow prevention assemblies before use on irrigation systems [30 TAC 344.50(a)].

7. Records and Record Retention

The goal of good record keeping is to maintain accurate, well documented records and to be able to supply records to appropriate persons when needed. People who need the information may be administrators, staff, members of the public, and regulators. This goal can only be accomplished by records management—that is, the application of proven management techniques to the creation, use, maintenance, retention, preservation, and disposal of records. An effective records-management program should allow for the systematic control of records throughout their life cycle—from creation or receipt, through use and maintenance, to final disposition.

The records kept by a PWS show that the system is taking actions to administer an effective cross-connection control program and is protecting the public water supply. For example, if there is a backflow incident in its service area, the PWS can show that a CSI has been conducted, that all appropriate backflow prevention assemblies are present, and that each was working properly at the time of testing.

Backflow Prevention Assembly Test and Maintenance Reports (T&M Forms)

T&M forms are primarily used to record the results of testing a backflow prevention assembly, along with other pertinent information. A sample T&M form appears in Appendix C. Sometimes, a proactive PWS wishes to capture other information from the testing of a backflow prevention assembly that is not listed in the official T&M Form. The TCEQ allows for alternate forms to be developed and used; however, those alternate forms must receive approval from the TCEQ before their being placed in use. Frequently, a PWS will develop its own form, receive approval for its use, and require any BPAT who wishes to test in its service area to use only its approved form. The TCEQ requires that the PWS retain signed, hard-copy original T&M Forms for three years.

At a minimum, before accepting a test report, a PWS should verify that:

- The assembly passed the test.
- The assembly was installed correctly.
- The gauges used were tested for accuracy.
- The date when the assembly was tested is within a year of the date when the test gauge was tested for accuracy.
- The tester's license is current.
- The assembly is not a new installation needing to be added to the tracking program.

PWSs should develop a procedure to address cases in which they receive a report indicating a failed test. Some possible considerations would be to determine the risk

posed by that connection, the cause of the failure, the time needed to correct the failing backflow preventer, and the date for a follow-up test, and monitoring the status of the backflow preventer.

The Customer Service Inspection Certificate

The CSI Certificate is used to record the results of the CSI. As with the T&M Form, you are to use the TCEQ's official CSI Certificate. A sample of that form appears in Appendix D. However, a PWS may develop its own form or make changes to the official form, as long as the alternate form has received TCEQ approval. CSI certificates must be retained for at least 10 years or kept as a permanent record of the PWS.

Experience has shown that distributing records in the following order has proven beneficial to PWSs:

1. The PWS retains the original.
2. The customer receives a copy.
3. The BPAT or CSI inspector keeps a copy.

Electronic Record Keeping

With changes in technology, PWSs are trending toward generating, using, and maintaining electronic versions of records. The TCEQ requires the PWS to retain signed hard-copy original records, or copies in the case of a CSI certificate. For this reason, an electronic form is considered an alternate form and must receive approval. Case by case, a PWS may receive approval to use the internet or another technological medium to comply with the TCEQ's record-keeping requirements. The use of unique user names and passwords in large part serves the same purpose as signing a hard-copy original. Some of the key questions which should be answered when requesting approval are:

1. What are the deviations from the official TCEQ forms?
2. What precautions have you taken to prevent data loss?
3. What precautions have you taken to ensure data integrity (fraud prevention, consistency with USC test procedures)?
4. How will the software comply with record-retention requirements (BPAT retention: three years; CSI retention: 10 years or indefinitely)?
5. Will the PWS be able to produce a hard copy of the records when requested during a comprehensive compliance inspection by the TCEQ regional investigators?
6. Will training be available to the PWS to ensure that its staff knows enough to be able to supply required information during a comprehensive compliance inspection?
7. Will the software identify when values that are out of acceptable parameters are entered?
8. Will the software alert the tester that a backflow preventer has failed a test?
9. Will the software record that a backflow preventer failed a test, was repaired, and passed the test after repair?
10. What precautions are taken when the tester has successfully tested a backflow preventer and, for some reason, the software is not available (malfunction, user error, etc.)?
11. Where an unscrupulous person is misusing the software, can it confirm that the tester actually went on-site to conduct the test?

Keeping track of the locations and test due dates of all the backflow prevention assemblies installed within a PWS's service area can be complicated. Software that has been created

specifically to help PWS personnel with this task is available for purchase. An online search for this software will give you an idea of the options available. An alternative is for you to develop your own electronic tracking system—for example, using a spreadsheet program.

8. Landscape Irrigation

Rules for landscape irrigation in 30 TAC 344 may have an impact on a PWS's cross-connection control program because they have requirements for backflow prevention as well as detailed installation requirements for backflow prevention assemblies. Typically, irrigation systems are a direct cross-connection to the potable-water supply, which requires backflow prevention. Some typical hazards posed by an irrigation system are:

- Organisms (parasites, insect larvae, pathogens) living in the water of the irrigation system.
- Exposure of the sprinkler heads to fertilizers, herbicides, or pesticides in the yard.
- Exposure of the sprinkler heads to fecal material from animals living on the site (dogs, cats, rodents, farm animals).
- Direct connection of chemical additives to the irrigation system.
- Connection of alternative water sources (creeks, rainwater harvesting systems, lakes, private wells, stock tanks, etc.).

Backflow will introduce these elements into the potable-water supply at the site and possibly into the water main. Backflow is especially problematic when pathogenic organisms are introduced into the potable-water supply and may propagate to produce waterborne illness.

The backflow requirements for irrigation systems make it logical that the landscape-irrigation rules and the rules on cross-connection control and backflow prevention are interrelated. PWSs that have not considered the impact of these rules may need to take action to learn about them and implement additional protective measures within their cross-connection control program.

To assist public water suppliers, the TCEQ has published *Landscape Irrigator's Rule Compilation* (RG-470), available online at <www.tceq.texas.gov/publications/rg/rg-470.html>.

You can telephone the TCEQ Landscape Irrigation Program at 512-239-5296 or visit its Web page at <www.tceq.texas.gov/goto/lawn>

In order to conserve water, many irrigation systems are supplied with reclaimed water. RG-470 addresses the use of reclaimed water for irrigation systems. It describes requirements for backflow prevention, color coding, and necessary signs. "Reclaimed water" is defined in 30 TAC 210. It refers to wastewater that is discharged under a TCEQ "210 Permit" for beneficial use. If the beneficial use involves human contact, the water is considered Type 1 reclaimed water; if not, the water is called Type 2 reclaimed water.

Many irrigation systems are installed on sites that have an on-site sewage facility (such as a septic tank). The existence of the OSSF elevates the classification of the irrigation system to a health hazard requiring the installation of an RP. Before 2009, a Double-Check Valve Assembly was allowed on irrigation systems installed on sites that also had an OSSF. As a result, there are currently installed irrigation systems that do not have the correct backflow prevention assembly. To address this, the current version of the landscape-irrigation rules states:

> If an irrigation system is connected to a potable water supply and requires major maintenance, alteration, repair, or service, the system must be connected to the potable water supply through an approved, properly installed backflow prevention method as defined in this title before any major maintenance, alteration, repair, or service is performed. [30 TAC 344.52(a)]

Historically, this regulation was taken to mean that systems that were installed before 2009 were essentially grandfathered until they required "major maintenance, alteration, repair, or service." When the backflow preventer can no longer be repaired in line and must be replaced, it must be upgraded to the required RP.

Since 2009, those installing irrigation systems on sites that also have an OSSF must be aware of the change in the required backflow prevention and install the RP.

Licensed irrigators may install backflow prevention assemblies on irrigation systems. The irrigator must use the correct type of assembly taking into account:

- the hydraulic conditions (back pressure)
- hazard analysis
- testing requirements
- installation requirements

Though a licensed irrigator may install the device, it must be tested by a licensed BPAT upon installation.

9. Education and Training

PWS staff education is important to every aspect of a program. Training, a specific kind of education, is even more critical. Training gives an individual the critical information needed to carry out specific tasks. Specific personnel will require specific training, but backflow, what a cross-connection is, and how contaminated water from a customer's premises can get into the potable water supply, are important concepts **all** personnel need to comprehend. Contamination involving backflow is usually discovered through water quality complaints, and understanding the details of cross-connection control measures is a necessity. Following are two examples emphasizing the importance of trained water-system staff:

Example 1

Personnel at a particular PWS receive basic training on some concepts of cross-connection control. The meter readers, repair personnel, and anyone having a field job are requested to inform the program coordinator of any potential hazards they notice—such as auxiliary water sources or extensive plumbing work.

A meter reader observes that large pieces of equipment are being brought into a facility. The coordinator makes inquiries and determines that the facility has totally changed the type of work it conducts, and will now be using water using equipment that has contaminants under pressure for various processes. It will now need an RP installed at the meter. Without the knowledge and actions of the field personnel, the potable-water supply would have been vulnerable to the contamination hazards at that facility.

Example 2

A water-quality inspector receives a complaint of tiny bubbles in the water at a restaurant. Upon investigating, the inspector finds what appears to be air in the water and tells the restaurant personnel to flush their internal piping system and the PWS will open the fire hydrants to flush any air out of the water main. This doesn't solve the problem. Many times what appears to be air in the water at restaurants is actually carbon

dioxide associated with the carbonated beverage dispensing unit. These dispensers have CO_2 canisters that have from 150 to 400 psi of pressure and can backflow the CO_2 gas into the potable water system if the backflow preventer fails. When the CO_2-water mixture comes in contact with copper, it leaches out copper due to the acidity of the mixture. The leached copper then ends up in drinks, making people sick. The water-quality inspector missed the problem because he did not understand cross-connection control and backflow prevention.

Customer education is also a critical public-relations tool. Whenever a customer is required to spend money on anything, even if it is to protect public health, good customer education helps the process go smoothly. Educating customers about the hazards of cross-connections and backflow will help them recognize the benefits of protecting their potable water supply by reducing their risk from health hazards, reducing their liability, and increasing their willingness to help the PWS protect the potable-water system. Customers who understand cross-connection control can become allies in preventing further cross-connections at their facilities and in educating other customers.

The TCEQ central office has personnel available to answer questions about establishing a program or interpreting state rules and regulations. Contact the Water Supply Division at 512-239-4691 and ask to speak to someone about backflow prevention and cross-connection control.

10. Where to Find More Information

From the TCEQ

Licensing for Backflow Prevention Assembly Testers and Customer-Service Inspectors

Personnel from the TCEQ's Occupational Licensing Section can answer routine inquiries about BPAT and CSI licenses. The office is located on the first floor in Building D of the TCEQ complex, located at 12100 Park 35 Circle in Austin. The office hours are 8 a.m. to 5 p.m. Monday through Friday (excluding holidays). You can contact them by phone at 512-239-6133—press *1* for new applications or exams, or press *2* for renewals. You can reach the Occupational Licensing Section by fax at 512-239-6272 or by e-mail at <licenses@tceq.texas.gov>. The mailing address is:

Backflow Prevention Assembly Tester Licensing Program, MC 178
or
Customer Service Inspection Licensing Program, MC 178
TCEQ
PO Box 13087
Austin TX 78711-3087

Helpful phone numbers include:

Plans and Technical Review Section	512-239-4691
Public Drinking Water Section	512-239-4691
Districts Section	512-239-4691
Publications	512-239-0028

By mail:

Plan and Technical Review Section, MC 159
TCEQ
PO Box 13087
Austin TX 78711-3087

On the Web:

To view the rules that govern public water suppliers, go to <www.tceq.state.tx.us>. For *Rules and Regulations for Public Water Systems* (RG-195), go to <www.tceq.texas.gov/publications/rg/rg-195.html>.

Also available from the TCEQ: *A Consumer's Guide to Backflow Prevention in Texas* (GI-411, available in English and Spanish), available at <www.tceq.texas.gov/publications/gi/gi-411.html> (English) or <www.tceq.texas.gov/publications/gi/gi-411esp.html> (Spanish). Information about the TCEQ's Cross-Connection Control Program is available at <www.tceq.texas.gov/goto/ccc/>.

Texas State Board of Plumbing Examiners

By phone: 800-845-6584

On the Web: <www.tsbpe.state.tx.us>

Purchase a Copy of a State-Approved Plumbing Code

International Plumbing Code

International Code Council Store
11711 West 85th Street
Lenexa KS 66214
800-786-4452
<www.iccsafe.org>

Uniform Plumbing Code

IAPMO Order Desk
5001 East Philadelphia Street
Ontario CA 91761
800-854-2766
<www.iapmostore.org>

Other Sources of Information about Cross-Connection Control

American Society of Sanitary Engineering

ASSE International Office
901 Canterbury, Suite A
Westlake OH 44145
440-835-3040

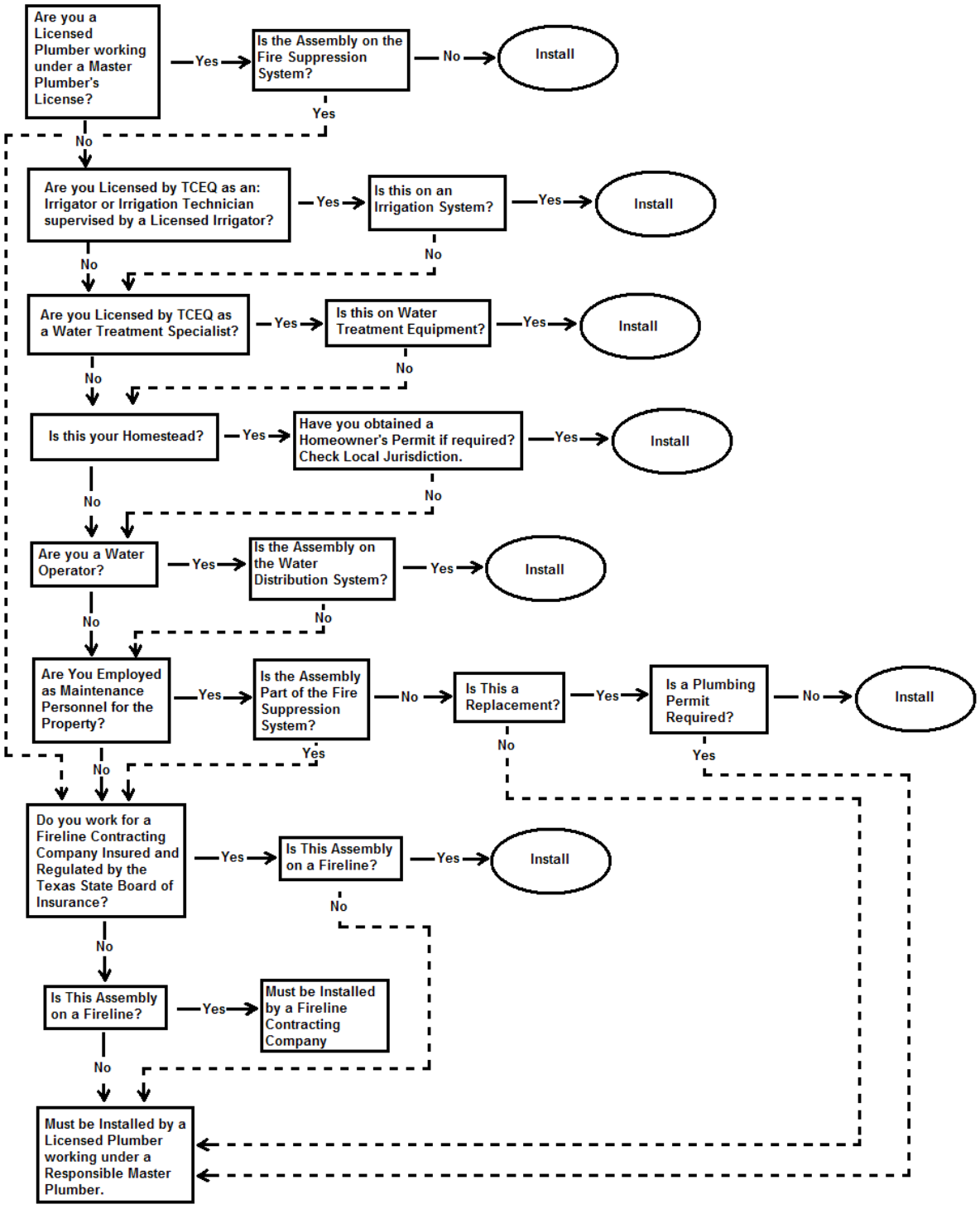
American Water Works Association

6666 West Quincy Ave.
Denver CO 80235-3098
800-366-0107

Foundation for Cross-Connection Control and Hydraulic Research

University of Southern California
KAP-200 University Park MC-2531
Los Angeles CA 90089-2531
866-545-6340

Appendix A: Can I Install a Backflow-Prevention Assembly?



Note: All backflow prevention assemblies must be tested by a licensed BPAT upon installation.

An accessible version of this chart is available at <www.tceq.texas.gov/goto/alt/rg478>.

Appendix B: Sample Service Agreement [from 30 TAC 290.47(b)]

I. PURPOSE. The NAME OF WATER SYSTEM is responsible for protecting the drinking water supply from contamination or pollution which could result from improper system construction or configuration on the retail connection owner's side of the meter. The purpose of this service agreement is to notify each customer of the restrictions which are in place to provide this protection. The public water system enforces these restrictions to ensure the public health and welfare. Each retail customer must sign this agreement before the NAME OF WATER SYSTEM will begin service. In addition, when service to an existing retail connection has been suspended or terminated, the water system will not re-establish service unless it has a signed copy of this agreement.

II. RESTRICTIONS. The following unacceptable practices are prohibited by State regulations.

A. No direct connection between the public drinking water supply and a potential source of contamination is permitted. Potential sources of contamination shall be isolated from the public water system by an air-gap or an appropriate backflow prevention device.

B. No cross-connection between the public drinking water supply and a private water system is permitted. These potential threats to the public drinking water supply shall be eliminated at the service connection by the installation of an air-gap or a reduced pressure-zone backflow prevention device.

C. No connection which allows water to be returned to the public drinking water supply is permitted.

D. No pipe or pipe fitting which contains more than 8.0% lead may be used for the installation or repair of plumbing at any connection which provides water for human use.

E. No solder or flux which contains more than 0.2 percent lead can be used for the installation or repair of plumbing at any connection which provides water for human use.

III. SERVICE AGREEMENT. The following are the terms of the service agreement between the NAME OF WATER SYSTEM (the Water System) and NAME OF CUSTOMER (the Customer).

A. The Water System will maintain a copy of this agreement as long as the Customer and/or the premises is connected to the Water System.

B. The Customer shall allow his property to be inspected for possible cross-connections and other potential contamination hazards. These inspections shall be conducted by the Water System or its designated agent prior to initiating new water service; when there is reason to believe that cross-connections or other potential contamination hazards exist; or after any major changes to the private water distribution facilities. The inspections shall be conducted during the Water System's normal business hours.

C. The Water System shall notify the Customer in writing of any cross-connection or other potential contamination hazard which has been identified during the initial inspection or the periodic reinspection.

D. The Customer shall immediately remove or adequately isolate any potential cross-connections or other potential contamination hazards on his premises.

E. The Customer shall, at his expense, properly install, test, and maintain any backflow prevention device required by the Water System. Copies of all testing and maintenance records shall be provided to the Water System.

IV. ENFORCEMENT. If the Customer fails to comply with the terms of the Service Agreement, the Water System shall, at its option, either terminate service or properly install, test, and maintain an appropriate backflow prevention device at the service connection. Any expenses associated with the enforcement of this agreement shall be billed to the Customer.

CUSTOMER'S SIGNATURE: _____

DATE: _____

Appendix C: Backflow Prevention Assembly Test and Maintenance Report (Form TCEQ-20700)

This is a sample only. For the official form please go to <www.tceq.texas.gov/goto/cc>.

Texas Commission on Environmental Quality

BACKFLOW PREVENTION ASSEMBLY TEST AND MAINTENANCE REPORT

The following form must be completed for each assembly tested. A signed and dated original must be submitted to the public water supplier for recordkeeping *purposes:

NAME OF PWS:	
PWS ID#:	
MAILING ADDRESS:	
CONTACT PERSON:	
LOCATION OF SERVICE:	

The backflow prevention assembly detailed below has been tested and maintained as required by commission regulations and is certified to be operating within acceptable parameters.

TYPE OF ASSEMBLY: ☐ Reduced Pressure Principle ☐ Reduced Pressure Principle-Detector
☐ Double Check Valve ☐ Double Check-Detector
☐ Pressure Vacuum Breaker ☐ Spill-Resistant Pressure Vacuum Breaker

Manufacturer:		Size:	
Model Number:		Located At:	
Serial Number:			

Is the assembly installed in accordance with manufacturer recommendations and/or local codes? ☐ Yes ☐ No

	Reduced Pressure Principle Assembly			Pressure Vacuum Breaker	
	Double Check Valve Assembly		Relief Valve	Air Inlet	Check Valve
	1st Check	2nd Check			
Initial Test	Held at ____ psid Closed Tight ☐ Leaked ☐	Held at ____ psid Closed Tight ☐ Leaked ☐	Opened at ___ psid Did not open ☐	Opened at ____ psid Did not open ☐	Held at _____ psid Leaked ☐
Repairs and Materials Used**					
Test After Repair	Held at ____ psid Closed Tight ☐	Held at ____ psid Closed Tight ☐	Opened at ___ psid	Opened at ____ psid	Held at _____ psid

Test gauge used:

Make/Model:		SN:		Date tested for accuracy:	
Remarks:					

The above is certified to be true at the time of testing.

Firm Name:		Certified Tester Name (Print/Type):	

Firm Address:		Certified Tester Name (Signature):			
Firm Phone #:		Cert. Tester No.:		Date of Test:	

* TEST RECORDS MUST BE KEPT FOR AT LEAST THREE YEARS
** USE ONLY MANUFACTURER'S REPLACEMENT PARTS

Appendix D: Customer Service Inspection Certificate (Form TCEQ-20699)

This is a sample only. For the official form please go to <www.tceq.texas.gov/goto/cc>.

Texas Commission on Environmental Quality
Customer Service Inspection Certificate

Name of PWS:	
PWS ID #:	
Location of Service:	

Reason for Inspection: New construction ..... ☐†
Existing service where contaminant hazards are suspected ..... ☐†
Major renovation or expansion of distribution facilities ..... ☐†

I _____, upon inspection of the private water distribution facilities connected to the aforementioned public water supply do hereby certify that, to the best of my knowledge:

Compliance	Non-Compliance		
☐ ☐	☐	(1)	No direct connection between the public drinking water supply and a potential source of contamination exists. Potential sources of contamination are isolated from the public water system by an air gap or an appropriate backflow prevention assembly in accordance with Commission regulations.
† ☐	☐	(2)	No cross-connection between the public drinking water supply and a private water system exists. Where an actual air gap is not maintained between the public water supply and a private water supply, an approved reduced pressure principle backflow prevention assembly is properly installed and a service agreement exists for annual inspection and testing by a certified backflow prevention assembly tester.
† ☐	☐	(3)	No connection exists which would allow the return of water used for condensing, cooling or industrial processes back to the public water supply.
☐ ☐	☐	(4)	No pipe or pipe fitting which contains more than 8.0% lead exists in private water distribution facilities installed on or after July 1, 1988 and prior to January 4, 2014.
☐ ☐	☐	(5)	Plumbing installed after January 4, 2014 bears the expected labeling indicating ≤0.25% lead content. If not properly labeled, please provide written comment.
☐ ☐	☐	(6)	No solder or flux which contains more than 0.2% lead exists in private water distribution facilities installed on or after July 1, 1988.

I further certify that the following materials were used in the installation of the private water distribution facilities:

Service lines; Lead ☐ Copper ☐ PVC ☐ Other ☐
Solder; Lead ☐ Lead Free ☐ Solvent Weld ☐ Other ☐

I recognize that this document shall become a permanent record of the aforementioned Public Water System and that I am legally responsible for the validity of the information I have provided.

Remarks:	

Signature of Inspector:		Registration Number:	
Title:		Type of Registration:	
Date:			

Appendix E: Rules Related to Cross-Connection Control and Backflow Prevention

The following rules have been extracted from the TAC and reformatted for ease of use. In the case of any discrepancy between this guide and the rules published at the Texas Secretary of State's website <www.sos.state.tx.us>, the SOS site shall apply.

§290.38. Definitions

The following words and terms, when used in this chapter shall have the following meanings, unless the context clearly indicates otherwise. If a word or term used in this chapter is not contained in the following list, its definition shall be as shown in Title 40 Code of Federal Regulations (CFR) §141.2. Other technical terms used shall have the meanings or definitions listed in the latest edition of The Drinking Water Dictionary, prepared by the American Water Works Association.

§290.38(2) Air gap—The unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet conveying water to a tank, fixture, receptor, sink, or other assembly and the flood level rim of the receptacle. The vertical, physical separation must be at least twice the diameter of the water supply outlet, but never less than 1.0 inch.

...

§290.38(16) Contamination—The presence of any foreign substance (organic, inorganic, radiological or biological) in water which tends to degrade its quality so as to constitute a health hazard or impair the usefulness of the water.

§290.38(17) Cross-connection—A physical connection between a public water system and either another supply of unknown or questionable quality, any source which may contain contaminating or polluting substances, or any source of water treated to a lesser degree in the treatment process.

...

§290.38(20) Disinfection—A process which inactivates pathogenic organisms in the water by chemical oxidants or equivalent agents.

§290.38(21) Distribution system—A system of pipes that conveys potable water from a treatment plant to the consumers. The term includes pump stations, ground and elevated storage tanks, potable water mains, and potable water service lines and all associated valves, fittings, and meters, but excludes potable water customer service lines.

§290.38(22) Drinking water—All water distributed by any agency or individual, public or private, for the purpose of human consumption or which may be used in the preparation of foods or beverages or for the cleaning of any utensil or article used in the course of preparation or consumption of food or beverages for human beings. The term "Drinking Water" shall also include

all water supplied for human consumption or used by any institution catering to the public.

§290.38(23) Drinking water standards—The commission rules covering drinking water standards in Subchapter F of this chapter (relating to Drinking Water Standards Governing Drinking Water Quality and Reporting Requirements for Public Water Systems).

...

§290.38(31) Health hazard—A cross-connection, potential contamination hazard, or other situation involving any substance that can cause death, illness, spread of disease, or has a high probability of causing such effects if introduced into the potable drinking water supply.

§290.38(32) Human consumption—Uses by humans in which water can be ingested into or absorbed by the human body. Examples of these uses include, but are not limited to drinking, cooking, brushing teeth, bathing, washing hands, washing dishes, and preparing foods.

...

§290.38(53) Nonhealth hazard—A cross-connection, potential contamination hazard, or other situation involving any substance that generally will not be a health hazard, but will constitute a nuisance, or be aesthetically objectionable, if introduced into the public water supply.

...

§290.38(57) Plumbing inspector—Any person employed by a political subdivision for the purpose of inspecting plumbing work and installations in connection with health and safety laws and ordinances, who has no financial or advisory interest in any plumbing company, and who has successfully fulfilled the examinations and requirements of the Texas State Board of Plumbing Examiners.

§290.38(58) Plumbing ordinance—A set of rules governing plumbing practices which is at least as stringent and comprehensive as one of the following nationally recognized codes:

§290.38(58)(A) the International Plumbing Code; or

§290.38(58)(B) the Uniform Plumbing Code.

§290.38(59) Potable water customer service line—The sections of potable water pipe between the customer's meter and the customer's point of use.

§290.38(60) Potable water service line—The section of pipe between the potable water main to the customer's side of the water meter. In cases where no customer water meter exists, it is the section of pipe that is under the ownership and control of the public water system.

§290.38(61) Potable water main—A pipe or enclosed constructed conveyance operated by a public water system which is used for the transmission or distribution of drinking water to a potable water service line.

§290.38(62) Potential contamination hazard—A condition which, by its location, piping or configuration, has a reasonable probability of being used incorrectly, through carelessness, ignorance, or negligence, to create or cause to be created a backflow condition by which contamination can be introduced into the water supply. Examples of potential contamination hazards are:

§290.38(62)(A) bypass arrangements;

§290.38(62)(B) jumper connections;

§290.38(62)(C) removable sections or spools; and

§290.38(62)(D) swivel or changeover assemblies.

...

§290.38(73) Service line—A pipe connecting the utility service provider's main and the water meter, or for wastewater, connecting the main and the point at which the customer's service line is connected, generally at the customer's property line.

§290.42. Water Treatment

§290.42(d)(2) All plant piping shall be constructed so as to be thoroughly tight against leakage. No cross-connection or interconnection shall be permitted to exist in a filtration plant between a conduit carrying filtered or post-chlorinated water and another conduit carrying raw water or water in any prior stage of treatment.

§290.42(d)(2)(A) Vacuum breakers must be provided on each hose bibb within the plant facility.

§290.42(d)(2)(B) No conduit or basin containing raw water or any water in a prior stage of treatment shall be located directly above, or be permitted to have a single common partition wall with another conduit or basin containing finished water.

§290.42(d)(2)(C) Make-up water supply lines to chemical feeder solution mixing chambers shall be provided with an air gap or other acceptable backflow prevention device.

§290.42(d)(2)(D) Filters shall be located so that common walls will not exist between them and aerators, mixing and sedimentation basins or clearwells. This rule is not strictly applicable, however, to partitions open to view and readily accessible for inspection and repair.

§290.42(d)(2)(E) Filter-to-waste connections, if included, shall be provided with an air gap connection to waste.

§290.42(d)(2)(F) Air release devices on treated waterlines shall be installed in such a manner as to preclude the possibility of submergence or possible entrance of contaminants. In this respect, all openings to the atmosphere shall be covered with 16-mesh or finer corrosion-resistant screening material or an equivalent acceptable to the executive director.

§290.42(d)(11)(F)(vi) When used, surface filter wash systems shall be installed with an atmospheric vacuum breaker or a reduced pressure principle backflow assembly in the supply line. If an atmospheric vacuum breaker is used it shall be installed in a section of the supply line through which all the water passes and which is located above the overflow level of the filter.

§290.42(d)(13)(A) A plant that is built or repainted after October 1, 2000 must use the following color code. The color code to be used in labeling pipes is as follows:

Letters	Color of Pipe
Potable Water	Light Blue
Compressed Air	Light Green
Instrument Air	Light Green with Dark Green Bands
Chlorine (gas, liquid, or vent)	Yellow
Chlorine (solution)	Yellow with Red Bands
Liquid Alum	Yellow with Orange Bands
Alum (solution)	Yellow with Green Bands
Ammonia	Yellow with Brown Bands
Chlorine Dioxide (solution)	Yellow with Blue Bands
Ferric chloride	Brown with Red Bands
Ferric sulfate	Brown with Yellow Bands
Polymers	White with Green Bands
Liquid caustic	White with Red Bands
Caustic (solution)	White with Orange Bands
Fluoride	White with Yellow Bands
Ozone	Stainless Steel with White Bands
Settled Water	Green
Filter Effluent	Light Blue
Backwash Supply	Light Blue
Backwash Waste	Dark Gray
Drain	Dark Gray
Raw Water	Tan

§290.42(d)(13)(B) A plant that was repainted before October 1, 2000 may use an alternate color code. The alternate color code must provide clear visual distinction between process streams.

§290.42(d)(13)(C) The system must maintain clear, current documentation of its color code in a location easily accessed by all personnel.

§290.43. Water Storage.

§290.43(c)(7) Each clearwell or potable water storage tank shall be provided with a means of removing accumulated silt and deposits at all low points in the bottom of the tank. Drains shall not be connected to any waste or sewage disposal system and shall be constructed so that they are not a potential agent in the contamination of the stored water.

§290.43(c)(9) No tanks or containers shall be used to store potable water that have previously been used for any non-potable purpose. Where a used tank is proposed for use, a letter from the previous owner or owners must be submitted to the Commission which states the use of the tank.

§290.44. Water Distribution.

§290.44(b) Lead ban. The following provisions apply to the use of lead in plumbing.

§290.44(b)(1) The use of pipes and pipe fittings that contain more than 0.25% lead or solders and flux that contains more than 0.2% lead is prohibited in the following circumstances:

§290.44(b)(1)(A) for installation or repair of any public water supply; and

§290.44(b)(1)(B) for installation or repair of any plumbing in a residential or nonresidential facility providing water for human consumption and connected to a public drinking water supply system.

§290.44(b)(2) This requirement will be waived for lead joints that are necessary for repairs to cast iron pipe.

...

§290.44(h) Backflow, siphonage.

§290.44(h)(1) No water connection from any public drinking water supply system shall be allowed to any residence or establishment where an actual or potential contamination hazard exists unless the public water facilities are protected from contamination.

§290.44(h)(1)(A) At any residence or establishment where an actual or potential contamination hazard exists, additional protection shall be required at the meter in the form of an air gap or backflow prevention assembly. The type of backflow prevention assembly required shall be determined by the specific potential hazard identified in §290.47(i) of this title (relating to Appendices).

§290.44(h)(1)(B) At any residence or establishment where an actual or potential contamination hazard exists and an adequate internal cross-connection control program is in effect, backflow protection at the water service entrance or meter is not required.

§290.44(h)(1)(B)(i) An adequate internal cross-connection control program shall include an annual inspection and testing by a certified backflow prevention assembly tester on all backflow prevention assemblies used for health hazard protection.

§290.44(h)(1)(B)(ii) Copies of all such inspection and test reports must be obtained and kept on file by the water purveyor.

§290.44(h)(1)(B)(iii) It will be the responsibility of the water purveyor to ensure that these requirements are met.

§290.44(h)(2) No water connection from any public drinking water supply system shall be connected to any condensing, cooling, or industrial process or any other system of nonpotable usage over which the public water supply system officials do not have sanitary control, unless the said connection is made in accordance with the requirements of paragraph (1) of this subsection. Water from such systems cannot be returned to the potable water supply.

§290.44(h)(3) Overhead bulk water dispensing stations must be provided with an air gap between the filling outlet hose and the receiving tank to protect against back siphonage and cross-contamination.

§290.44(h)(4) All backflow prevention assemblies that are required according to this section and associated table located in §290.47(i) of this title shall be tested upon installation by a recognized backflow prevention assembly tester and certified to be operating within specifications. Backflow prevention assemblies which are installed to provide protection against health hazards must also be tested and certified to be operating within specifications at least annually by a recognized backflow prevention assembly tester.

§290.44(h)(4)(A) Recognized backflow prevention assembly testers shall have completed an executive director approved course on cross-connection control and backflow prevention assembly testing, pass an examination administered by the executive director, and hold a current license as a backflow prevention assembly tester.

§290.44(h)(4)(A)(i) Backflow prevention assembly testers are qualified to test and repair assemblies on any domestic, commercial, industrial, or irrigation service.

§290.44(h)(4)(A)(ii) Backflow prevention assembly testers may test and repair assemblies on firelines only if they are permanently employed by an Approved Fireline Contractor. The State Fire Marshal's office requires that any person performing maintenance on firelines must be employed by an Approved Fireline Contractor.

§290.44(h)(4)(B) Gauges used in the testing of backflow prevention assemblies shall be tested for accuracy annually in accordance with the University of Southern California's Manual of Cross-Connection Control or the American Water Works Association Recommended Practice for Backflow

Prevention and Cross-Connection Control (Manual M14). Public water systems shall require testers to include test gauge serial numbers on "Test and Maintenance" report forms and ensure testers have gauges tested for accuracy.

§290.44(h)(4)(C) A test report must be completed by the recognized backflow prevention assembly tester for each assembly tested. The signed and dated original must be submitted to the public water supplier for recordkeeping purposes. Any form which varies from the format specified in commission Form No. 20700 must be approved by the executive director prior to being placed in use.

§290.44(h)(5) The use of a backflow prevention assembly at the service connection shall be considered as additional backflow protection and shall not negate the use of backflow protection on internal hazards as outlined and enforced by local plumbing codes.

§290.44(h)(6) At any residence or establishment where there is no actual or potential contamination hazard, a backflow prevention assembly is not required.

…

§290.44(i) Water hauling. When drinking water is distributed by tank truck or trailer, it must be accomplished in the following manner.

…

§290.44(i)(2)(E) Connections for filling and emptying the tank shall be properly protected to prevent the possible entrance of contamination. These openings must be provided with caps and keeper chains.

…

§290.44(j) If a structure is connected to a public water supply system and has a rainwater harvesting system, the structure must have appropriate cross-connection safeguards in accordance with subsection (h)(1) of this section.

§290.44(j)(1) A privately owned rainwater harvesting system with a capacity of more than 500 gallons that is connected to a public water system for a back-up supply shall have a backflow prevention assembly or an air gap installed at the storage facility for the harvested rainwater to ensure physical separation between the rainwater harvesting system and the public water system.

§290.44(j)(2) At each residence or facility where water from a rainwater harvesting system is used for potable purposes and there is a connection to a public water system, the public water system shall ensure that the rainwater harvesting system is installed and maintained by a master plumber or journeyman plumber licensed by the Texas State Board of Plumbing Examiners and who holds an endorsement issued by the Texas State Board of Plumbing Examiners as a Water Supply Protection Specialist.

§290.44(j)(3) A person who intends to connect a rainwater harvesting system to a public water system must give written notice of that intention to the municipality or the owner or operator of the public water system in which the rainwater harvesting system is located.

§290.44(j)(4) The public water system used as a back-up supply for the rainwater harvesting system may be connected only to the water storage tank and may not be connected to the plumbing of a structure.

§290.46. Minimum Acceptable Operating Practices for Public Drinking Water Systems

§290.46(f)(3) All public water systems shall maintain a record of operations.

...

§290.46(f)(3)(B) The following records shall be retained for at least three years: ...

§290.46(f)(3)(B)(v) the records of backflow prevention device programs; ...

§290.46(f)(3)(E) The following records shall be retained for at least ten years: ...

§290.46(f)(3)(E)(iv) copies of the Customer Service Inspection reports required by subsection (j) of this section; ...

[CSI Certificate retention: The CSI Certificate requires that it be retained permanently, whereas the rule references 10 years; therefore, a discrepancy exists. The TCEQ recommends that CSI Reports be retained permanently, as long as the inspected facility is in existence.]

...

§290.46(i) Plumbing ordinance. Public water systems must adopt an adequate plumbing ordinance, regulations, or service agreement with provisions for proper enforcement to insure that neither cross-connections nor other unacceptable plumbing practices are permitted (See §290.47(b) of this title (relating to Appendices)). Should sanitary control of the distribution system not reside with the purveyor, the entity retaining sanitary control shall be responsible for establishing and enforcing adequate regulations in this regard. The use of pipes and pipe fittings that contain more than 0.25% lead or solders and flux that contain more than 0.2% lead is prohibited for installation or repair of any public water supply and for installation or repair of any plumbing in a residential or nonresidential facility providing water for human consumption and connected to a public drinking water supply system. This requirement may be waived for lead joints that are necessary for repairs to cast iron pipe.

§290.46(j) Customer service inspections. A customer service inspection certificate shall be completed prior to providing continuous water service to new construction, on any existing service either when the water purveyor has reason to believe that cross-connections

or other potential contaminant hazards exist, or after any material improvement, correction, or addition to the private water distribution facilities. Any customer service inspection certificate form which varies from the format found in commission Form No. 20699 must be approved by the executive director prior to being placed in use.

§290.46(j)(1) Individuals with the following credentials shall be recognized as capable of conducting a customer service inspection certification.

§290.46(j)(1)(A) Plumbing Inspectors and Water Supply Protection Specialists licensed by the Texas State Board of Plumbing Examiners (TSBPE).

§290.46(j)(1)(B) Customer service inspectors who have completed a commission-approved course, passed an examination administered by the executive director, and hold current professional license as a customer service inspector.

§290.46(j)(2) As potential contaminant hazards are discovered, they shall be promptly eliminated to prevent possible contamination of the water supplied by the public water system. The existence of a health hazard, as identified in §290.47(i) of this title, shall be considered sufficient grounds for immediate termination of water service. Service can be restored only when the health hazard no longer exists, or until the health hazard has been isolated from the public water system in accordance with §290.44(h) of this title (relating to Water Distribution).

§290.46(j)(3) These customer service inspection requirements are not considered acceptable substitutes for and shall not apply to the sanitary control requirements stated in §290.102(a)(5) of this title (relating to General Applicability).

§290.46(k) Interconnection. No physical connection between the distribution system of a public drinking water supply and that of any other water supply shall be permitted unless the other water supply is of a safe, sanitary quality and the interconnection is approved by the executive director.

Appendix F: Assessment of Hazard and Selection of Assemblies [from 30 TAC 290.47(f)]

The following table lists many common hazards. It is not an all-inclusive list of the hazards that may be found connected to public water systems.

Premises Isolation: Description of Premises	**Assessment of Hazard**	**Required Assembly**
Aircraft and missile plants	Health	RPBA or AG
Animal feedlots	Health	RPBA or AG
Automotive plants	Health	RPBA or AG
Breweries	Health	RPBA or AG
Canneries, packing houses and rendering plants	Health	RPBA or AG
Commercial car wash facilities	Health	RPBA or AG
Commercial laundries	Health	RPBA or AG
Cold storage facilities	Health	RPBA or AG
Connection to sewer pipe	Health	AG
Dairies	Health	RPBA or AG
Docks and dockside facilities	Health	RPBA or AG
Dye works	Health	RPBA or AG
Food and beverage processing plants	Health	RPBA or AG
Hospitals, morgues, mortuaries, medical clinics, dental clinics, veterinary clinics, autopsy facilities, sanitariums, and medical labs	Health	RPBA or AG
Metal manufacturing, cleaning, processing, and fabrication plants	Health	RPBA or AG
Microchip fabrication facilities	Health	RPBA or AG
Paper and paper products plants	Health	RPBA or AG
Petroleum processing or storage facilities	Health	RPBA or AG
Photo and film processing labs	Health	RPBA or AG
Plants using radioactive material	Health	RPBA or AG
Plating or chemical plants	Health	RPBA or AG
Pleasure-boat marinas	Health	RPBA or AG
Private/Individual/Unmonitored Wells	Health	RPBA or AG
Reclaimed water systems	Health	RPBA or AG
Restricted, classified or other closed facilities	Health	RPBA or AG
Rubber plants	Health	RPBA or AG
Sewage lift stations	Health	RPBA or AG
Sewage treatment plants	Health	RPBA or AG
Slaughter houses	Health	RPBA or AG
Steam plants	Health	RPBA or AG
Tall buildings or elevation differences where the highest outlet is 80 feet or more above the meter	Nonhealth	DCVA

Internal Protection: Description of Cross Connection	**Assessment of Hazard**	**Required Assembly**
Aspirators	Nonhealth†	AVB
Aspirator (medical)	Health	AVB or PVB
Autoclaves	Health	RPBA
Autopsy and mortuary equipment	Health	AVB or PVB
Bedpan washers	Health	AVB or PVB
Connection to industrial fluid systems	Health	RPBA
Connection to plating tanks	Health	RPBA
Connection to salt-water cooling systems	Health	RPBA
Connection to sewer pipe	Health	AG
Cooling towers with chemical additives	Health	AG
Cuspidors	Health	AVB or PVB
Degreasing equipment	Nonhealth†	DCVA
Domestic space-heating boiler	Nonhealth†	RPBA
Dye vats or machines	Health	RPBA
Fire-fighting system (toxic liquid foam concentrates)	Health	RPBA
Flexible shower heads	Nonhealth†	AVB or PVB
Heating equipment		
Commercial	Nonhealth†	RPBA
Domestic	Nonhealth†	DCVA
Hose bibbs	Nonhealth†	AVB
Irrigation systems		
with chemical additives	Health	RPBA
without chemical additives	Nonhealth†	DCVA, AVB,or PVB
Kitchen equipment—Commercial	Nonhealth†	AVB
Lab bench equipment	Health or Nonhealth†	AVB or PVB
Ornamental fountains	Health	AVB or PVB
Swimming pools		
Private	Nonhealth†	PVB or AG
Public	Nonhealth†	RPBA or AG
Sewage pump	Health	AG
Sewage ejectors	Health	AG
Shampoo basins	Nonhealth†	AVB
Specimen tanks	Health	AVB or PVB
Steam generators	Nonhealth†	RPBA
Steam tables	Nonhealth†	AVB
Sterilizers	Health	RPBA
Tank vats or other vessels containing toxic substances	Health	RPBA
Trap primers	Health	AG
Vending machines	Nonhealth†	RPBA or PVB
Watering troughs	Health	AG or PVB

NOTE: AG = air gap; AVB = atmospheric vacuum breaker; DCVA = double check valve backflow prevention assembly; PVB = pressure vacuum breaker; RPBA = reduced-pressure principle backflow prevention assembly

AVBs and PVBs may be used to isolate health hazards under certain conditions, that is, back-siphonage situations. Additional area of premises isolation may be required.

†Where a greater hazard exists (due to toxicity or other potential health impact) additional area protection with RPBAs is required.

Appendix G: Rules for Licensing CSI Inspectors, BPATs, and Landscape Irrigators

The following rules have been extracted from the TAC and reformatted for ease of use. In the case of any discrepancy between this guide and the rules published at the Texas Secretary of State's website <www.sos.state.tx.us>, the SOS site shall apply.

Licensing Requirements for Backflow Prevention Assembly Testers (from 30 TAC Chapter 30, Subchapter B)

§30.51 Purpose and Applicability

§30.51(a) The purpose of this subchapter is to establish qualifications for issuing and renewing licenses to an individual who tests and repairs backflow prevention assemblies.

§30.51(b) An individual who tests and repairs backflow prevention assemblies must meet the qualifications of this subchapter and be licensed according to Subchapter A of this chapter (relating to Administration of Occupational Licenses and Registrations).

§30.57 Definitions

The following word and term, when used in this subchapter, shall have the following meaning, unless the context clearly indicates otherwise.

Backflow prevention assembly tester (BPAT)—An individual who tests and repairs backflow prevention assemblies.

§30.60 Qualifications for Initial License

To obtain a license, an individual must have:

§30.60(1) met the requirements in Subchapter A of this chapter (relating to Administration of Occupational Licenses and Registrations);

§30.60(2) passed an examination;

§30.60(3) received a high school diploma or equivalent certificate;

§30.60(4) completed an approved 40-hour backflow prevention assembly testing training course; and

§30.60(5) worked at least two years in an approved area which includes, but is not limited to:

§30.60(5)(A) operating or maintaining a public drinking water system;

§30.60(5)(B) installing or repairing residential, commercial, or industrial drinking water treatment equipment;

§30.60(5)(C) installing or repairing lawn irrigation systems;

§30.60(5)(D) performing activities requiring a master or journeyman plumbing license;

§30.60(5)(E) installing or servicing fire suppression sprinkler systems and lines;

§30.60(5)(F) operating or maintaining a domestic wastewater treatment facility;

§30.60(5)(G) performing health inspections that requires a registered sanitarian; or

§30.60(5)(H) performing other duties approved by the executive director.

§30.60(6) An individual may substitute one year of the required experience with:

§30.60(6)(A) one year of college credit (32 semester hours); or

§30.60(6)(B) 20 hours of approved training in addition to the required 40-hour backflow prevention assembly testing training course.

§30.62 Qualifications for License Renewal

To renew a license, an individual must have:

§30.62(1) met the requirements in Subchapter A of this chapter (relating to Administration of Occupational Licenses and Registrations); and

§30.62(2) completed 24 hours of approved continuing education which includes eight hours of approved practical skills training.

Licensing Requirements for Customer-Service Inspectors (from 30 TAC Chapter 30, Subchapter C)

§30.81 Purpose and Applicability

§30.81(a) The purpose of this subchapter is to establish qualifications for issuing and renewing licenses to individuals who conduct and certify customer service inspections.

§30.81(b) An individual who performs customer service inspections must meet the qualifications of this subchapter and be licensed according to Subchapter A of this chapter (relating to Administration of Occupational Licenses and Registrations).

§30.81(c) An endorsement for customer service inspections shall expire when an individual renews a water operator's license or the license expires. To obtain a customer service inspector license, an individual holding an endorsement must submit a new application with the appropriate fee.

§30.81(d) A licensed customer service inspector shall not perform plumbing inspections required under Plumbing Licensing Law 15(a) (Texas Civil Statutes, Volume 17-1/2, Article 6243-101).

§30.87 Definitions

The following words and terms, when used in this subchapter, shall have the following meanings, unless the context clearly indicates otherwise.

§30.87(1) Cross-connection—A physical connection between a public water system and either another supply of unknown or questionable quality, any source which may contain contaminating or polluting substances, or any source of water treated to a lesser degree in the treatment process.

§30.87(2) Customer service inspection—An examination of the private water distribution facility for the purpose of providing or denying water service. The inspection is limited to the identification and prevention of cross-connections, potential contaminant hazards, and illegal lead materials. Customer service inspections are completed before providing continuous water service to new construction, on any existing service where there is reason to believe that cross-connections or other potential contaminant hazards exist, or after any material improvement, correction, or addition to private water distribution facilities (see §290.46(j) of this title (relating to Minimum Acceptable Operating Practices for Public Drinking Water Systems)).

§30.87(3) Customer service inspector—The person who is licensed by the executive director to perform customer service inspections.

§30.90 Qualifications for Initial License

§30.90(a) To obtain a license, an individual must have:

§30.90(a)(1) met the requirements in Subchapter A of this chapter (relating to Administration of Occupational Licenses and Registrations);

§30.90(a)(2) received a high school diploma or equivalent certificate;

§30.90(a)(3) completed an approved customer service inspector training course;

§30.90(a)(4) worked at least two years in an approved area which includes, but is not limited to:

§30.90(a)(4)(A) operation or maintenance of a public drinking water treatment or distribution system;

§30.90(a)(4)(B) performing activities requiring a master or journeyman plumbing license;

§30.90(a)(4)(C) conducting building or construction inspections; or

§30.90(a)(4)(D) performing duties related to this profession approved by the executive director.

§30.90(b) One year of college (32 semester hours) or an additional 20 hours of training credits may be substituted for one year of the experience requirement.

§30.92 Qualifications for License Renewal

To renew a license, an individual must have:

§30.92(1) met the requirements in Subchapter A of this chapter (relating to Administration of Occupational Licenses and Registrations); and

§30.92(2) completed 16 hours of approved continuing education.

§30.95 Exemptions

Plumbing inspectors and water supply protection specialists licensed by the State Board of Plumbing Examiners are exempt from these requirements.

Licensing Requirements for Landscape Irrigators, Installers, Irrigation Technicians, and Irrigation Inspectors (from 30 TAC Chapter 30, Subchapter D)

§30.111 Purpose and Applicability

§30.111(a) The purpose of this subchapter is to establish qualifications for issuing and renewing licenses to individuals who:

§30.111(a)(1) sell, design, install, maintain, alter, repair, or service an irrigation system;

§30.111(a)(2) provide consulting services relating to an irrigation system;

§30.111(a)(3) connect an irrigation system to any water supply; or

§30.111(a)(4) inspect irrigation systems and perform other enforcement duties as an employee or as a contractor.

§30.111(b) An individual who performs any of the tasks listed in subsection (a) of this section must meet the qualifications of this subchapter and be licensed according to Subchapter A of this chapter (relating to Administration of Occupational Licenses and Registrations), unless they are exempt under §30.129 of this title (relating to Exemptions); and must comply with the requirements in Chapter 344 of this title (relating to Landscape Irrigation).

§30.117 Definitions

The following words and terms, when used in this subchapter, shall have the following meanings, unless the context clearly indicates otherwise.

§30.117(1) Installer—An individual who connects irrigation systems to any water supply.

§30.117(2) Irrigator—An individual who sells, designs, installs, maintains, alters, repairs, or services an irrigation system; provides consulting services relating to an irrigation system; or connects an irrigation system to any water supply.

§30.120 Qualifications for Initial License

§30.120(a) To obtain an installer license prior to January 1, 2009, an individual must:

§30.120(a)(1) meet the requirements in Subchapter A of this chapter (relating to Administration of Occupational Licenses and Registrations); and

§30.120(a)(2) pass the applicable examination.

§30.120(b) Effective January 1, 2010, the installer license will no longer be valid and will be replaced by an irrigation technician license. No new installer license applications will be accepted after June 1, 2009. New installer licenses issued after the effective date of these rules will remain valid through December 31, 2009. The fee for initial installer licenses issued after the effective date of these rules will be prorated to reflect the validity period.

§30.120(c) To obtain an irrigator license, an individual must:

§30.120(c)(1) meet the requirements in Subchapter A of this chapter (relating to Administration of Occupational Licenses and Registrations);

§30.120(c)(2) complete and pass the basic irrigator training course; and

§30.120(c)(3) pass all sections of the applicable examination.

§30.120(d) To obtain an irrigation technician license, an individual must:

§30.120(d)(1) meet the requirements in Subchapter A of this chapter;

§30.120(d)(2) complete the basic irrigation technician course; and

§30.120(d)(3) pass the applicable examination.

§30.120(e) To obtain an irrigation inspector license, an individual must:

§30.120(e)(1) meet the requirements in Subchapter A of this chapter.

§30.120(e)(2) successfully complete:

§30.120(e)(2)(A) the basic irrigator training course;

§30.120(e)(2)(B) an approved backflow prevention assembly testing training course; and

§30.120(e)(2)(C) an approved water conservation or water audit course; or

§30.120(e)(2)(D) an approved landscape irrigation inspection course.

§30.120(e)(3) pass the applicable examination.

§30.120(f) An individual is ineligible to obtain an irrigation inspector license if the individual engages in or has financial or advisory interest in an entity that:

§30.120(f)(1) sells, designs, installs, maintains, alters, repairs, or services an irrigation system;

§30.120(f)(2) provides consulting services relating to an irrigation system; or

§30.120(f)(3) connects an irrigation system to any water supply.

§30.122 Qualifications for License Renewal

§30.122(a) To renew an installer license that expires prior to June 1, 2009, an individual must meet the requirements in Subchapter A of this chapter (relating to Administration of Occupational Licenses and Registrations).

§30.122(b) Effective January 1, 2010, the installer license will no longer be valid and will be replaced by an irrigation technician license. No installer license renewal applications will be accepted after December 31, 2008.

§30.122(c) Installer licenses renewed after the effective date of these rules, but prior to June 1, 2009, will remain valid until December 31, 2009. The fee for installer licenses renewed after the effective date of these rules will be prorated to reflect the validity period.

§30.122(d) To renew an irrigator license, an individual must:

§30.122(d)(1) meet the requirements in Subchapter A of this chapter; and

§30.122(d)(2) complete 24 hours of approved training credits.

§30.122(e) To renew an irrigation technician license, an individual must:

§30.122(e)(1) meet the requirements in Subchapter A of this chapter; and

§30.122(e)(2) complete 16 hours of approved training credits.

§30.122(f) To renew an irrigation inspector license, an individual must:

§30.122(f)(1) meet the requirements in Subchapter A of this chapter; and

§30.122(f)(2) complete 24 hours of approved training credits.

§30.129 Exemptions

§30.129(a) The licensing requirements of this chapter do not apply to a person who:

§30.129(a)(1) is licensed by the Texas State Board of Plumbing Examiners and is working within the scope provided by the plumbing laws;

§30.129(a)(2) is registered or licensed as a professional engineer or architect or landscape architect if the work is related to the pursuit of the profession;

§30.129(a)(3) is under the direct supervision of a licensed irrigator and assists in the installation, maintenance, alteration, repair, or service of an irrigation system; or

§30.129(a)(4) is an owner of a business that employs a licensed irrigator to supervise the business' sale, design, consultation, installation, maintenance, alteration, repair, and service of irrigation systems. For the purpose of this subchapter, employs means steadily, uniformly, or habitually working in an employer-employee relationship with the intent to earn a livelihood, as opposed to working casually or occasionally.

§30.129(b) The licensing requirements of this chapter do not apply to:

§30.129(b)(1) irrigation or yard sprinkler work that is performed by a property owner in a building or on premises owned or occupied by the owner as the owner's home;

§30.129(b)(2) irrigation or yard sprinkler repair work, other than extension of an existing irrigation or yard sprinkler system or installation of a replacement system that is:

§30.129(b)(2)(A) performed by a maintenance person who does not act as an irrigator or engage in yard sprinkler construction or maintenance for the public; and

§30.129(b)(2)(B) incidental to and on premises owned by the business in which the person is regularly employed or engaged;

§30.129(b)(3) irrigation or yard sprinkler work that is performed:

§30.129(b)(3)(A) by a regular employee of a railroad who does not act as an irrigator or engage in yard sprinkler construction or maintenance for the public; and

§30.129(b)(3)(B) on the premises or equipment of the railroad;

§30.129(b)(4) irrigation and yard sprinkler work that is performed on public property by a person who is regularly employed by a county, city, town, special district, or political subdivision of the state;

§30.129(b)(5) irrigation or yard sprinkler work that is performed by a person using a garden hose, hose sprinkler, hose-end product, including soaker hose, or agricultural irrigation system;

§30.129(b)(6) an activity that includes a commercial agricultural irrigation system;

§30.129(b)(7) irrigation or yard sprinkler work that is performed by an agriculturist, agronomist, horticulturist, forester, gardener, contract gardener, garden or lawn caretaker, nurseryman, or grader or cultivator of land on land owned by the individual performing the work;

§30.129(b)(8) irrigation or yard sprinkler work that is performed by a member of a property owners' association as defined by Property Code, §202.001, on real property owned by the association or in common by the members of the association if the irrigation or yard sprinkler system water real property that is less than 1/2 acre in size and is used for aesthetic or recreational purposes.

§30.129(c) A person who is exempt from the license requirements of this subchapter shall comply with the standards established by Chapter 344 of this title (relating to Landscape Irrigation). The term irrigation system does not include a system used on or by an agricultural operation as defined in Texas Agriculture Code, §251.002.

Appendix H: Landscape-Irrigation Program Rules Related to Cross-Connection Control Programs

The following rules have been extracted from the TAC and reformatted for ease of use. In the case of any discrepancy between this guide and the rules published at the Texas Secretary of State's website <www.sos.state.tx.us>, the SOS site shall apply.

§344.1. Definitions.

The following words and terms, when used in this chapter, have the following meanings, unless the context clearly indicates otherwise.

§344.1(1) Air gap—A complete physical separation between the free flowing discharge end of a potable water supply pipeline and an open or non-pressure receiving vessel.

§344.1(2) Atmospheric Vacuum Breaker—An assembly containing an air inlet valve, a check seat, and an air inlet port. The flow of water into the body causes the air inlet valve to close the air inlet port. When the flow of water stops the air inlet valve falls and forms a check against back-siphonage. At the same time it opens the air inlet port allowing air to enter and satisfy the vacuum. Also known as an Atmospheric Vacuum Breaker Back-siphonage Prevention Assembly.

§344.1(3) Backflow prevention—The mechanical prevention of reverse flow, or back siphonage, of nonpotable water from an irrigation system into the potable water source.

§344.1(4) Backflow prevention assembly—Any assembly used to prevent backflow into a potable water system. The type of assembly used is based on the existing or potential degree of health hazard and backflow condition.

§344.1(5) Completion of irrigation system installation—When the landscape irrigation system has been installed, all minimum standards met, all tests performed, and the irrigator is satisfied that the system is operating correctly.

...

§344.1(7) Cross-connection—An actual or potential connection between a potable water source and an irrigation system that may contain contaminates or pollutants or any source of water that has been treated to a lesser degree in the treatment process.

...

§344.1(10) Double Check Valve—An assembly that is composed of two independently acting, approved check valves, including tightly closed resilient seated shutoff valves attached at each end of the assembly and fitted with properly

located resilient seated test cocks. Also known as a Double Check Valve Backflow Prevention Assembly.

...

§344.1(14) Health hazard—A cross-connection or potential cross-connection with an irrigation system that involves any substance that may, if introduced into the potable water supply, cause death or illness, spread disease, or have a high probability of causing such effects.

...

§344.1(16) Inspector—A licensed plumbing inspector, water district operator, other governmental entity, or irrigation inspector who inspects irrigation systems and performs other enforcement duties for a municipality or water district as an employee or as a contractor.

...

§344.1(18) Irrigation inspector—A person who inspects irrigation systems and performs other enforcement duties for a municipality or water district as an employee or as a contractor and is required to be licensed under Chapter 30 of this title (relating to Occupational Licenses and Registrations).

...

§344.1(30) Major maintenance, alteration, repair, or service—Any activity that involves opening to the atmosphere the irrigation main line at any point prior to the discharge side of any irrigation zone control valve. This includes, but is not limited to, repairing or connecting into a main supply pipe, replacing a zone control valve, or repairing a zone control valve in a manner that opens the system to the atmosphere.

...

§344.1(34) Non-health hazard—A cross-connection or potential cross connection from a landscape irrigation system that involves any substance that generally would not be a health hazard but would constitute a nuisance or be aesthetically objectionable if introduced into the potable water supply.

§344.1(35) Non-potable water—Water that is not suitable for human consumption. Non-potable water sources include, but are not limited to, irrigation systems, lakes, ponds, streams, gray water that is discharged from washing machines, dishwashers or other appliances, water vapor condensate from cooling towers, reclaimed water, and harvested rainwater.

...

§344.1(37) Potable water—Water that is suitable for human consumption.

§344.1(38) Pressure Vacuum Breaker—An assembly containing an independently operating internally loaded check valve and an independently operating loaded air inlet valve located on the discharge side of the

check valve. Also known as a Pressure Vacuum Breaker Back-siphonage Prevention Assembly.

§344.1(39) Reclaimed water—Domestic or municipal wastewater which has been treated to a quality suitable for beneficial use, such as landscape irrigation.

…

§344.1(41) Reduced Pressure Principle Backflow Prevention Assembly—An assembly containing two independently acting approved check valves together with a hydraulically operating mechanically independent pressure differential relief valve located between the two check valves and below the first check valve.

§344.24. Local Regulation and Inspection.

§344.24(b) Any city, town, county, other political subdivision of the state, or public water supplier that is not required to adopt rules or ordinances regulating landscape irrigation may adopt a landscape irrigation program by ordinance or rule and may be responsible for inspection of connections to its public water supply system up to and including the backflow prevention device.

§344.36. Duties and Responsibilities of Installers and Irrigation Technicians.

§344.36(a) A licensed installer may connect an irrigation system to a water supply through December 31, 2009. This includes installing an approved backflow prevention method pursuant to §344.50 of this title (relating to Backflow Prevention Methods) when connecting an irrigation system to a potable water supply. Beginning January 1, 2009, a licensed irrigation technician may connect an irrigation system to a water supply, including installing an approved backflow prevention method pursuant to §344.50 of this title and may maintain, alter, repair, service, or direct the installation of irrigation systems under the supervision of an irrigator.

§344.36(b) If an installer or irrigation technician connects an irrigation system to a potable water supply, the connection and installation of the backflow prevention method must be as indicated on the site irrigation plan or as directed by the licensed irrigator and documented on the site irrigation plan.

§344.36(c) Through December 31, 2009, an installer is responsible for the connection of an irrigation system to a water supply under the supervision of a licensed irrigator.

§344.36(d) Beginning January 1, 2009, an irrigation technician, under the supervision of a licensed irrigator, is responsible for:

§344.36(d)(1) connecting an irrigation system to a water supply; and

§344.36(d)(2) providing on-site supervision of the installation, maintenance, alteration, repair, service of an irrigation system including the final walk through

with the irrigation system owner or owner's representative to explain the maintenance and operation of the irrigation system.

§344.50. Backflow Prevention Methods.

§344.50(a) Any irrigation system that is connected to a public or private potable water supply must be connected through a commission-approved backflow prevention method. The backflow prevention device must be approved by the American Society of Sanitary Engineers; or the Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California; or the Uniform Plumbing Code; or any other laboratory that has equivalent capabilities for both the laboratory and field evaluation of backflow prevention assemblies. The backflow prevention device must be installed in accordance with the laboratory approval standards or if the approval does not include specific installation information, the manufacturer's current published recommendations.

§344.50(b) If conditions that present a health hazard exist, one of the following methods must be used to prevent backflow;

§344.50(b)(1) An air gap may be used if:

§344.50(b)(1)(A) there is an unobstructed physical separation; and

§344.50(b)(1)(B) the distance from the lowest point of the water supply outlet to the flood rim of the fixture or assembly into which the outlet discharges is at least one inch or twice the diameter of the water supply outlet, whichever is greater.

§344.50(b)(2) Reduced pressure principle backflow prevention assemblies may be used if:

§344.50(b)(2)(A) the device is installed at a minimum of 12 inches above ground in a location that will ensure that the assembly will not be submerged; and

§344.50(b)(2)(B) drainage is provided for any water that may be discharged through the assembly relief valve.

§344.50(b)(3) Pressure vacuum breakers may be used if:

§344.50(b)(3)(A) no back-pressure condition will occur; and

§344.50(b)(3)(B) the device is installed at a minimum of 12 inches above any downstream piping and the highest downstream opening. Pop-up sprinklers are measured from the retracted position from the top of the sprinkler.

§344.50(b)(4) Atmospheric vacuum breakers may be used if:

§344.50(b)(4)(A) no back-pressure will be present;

§344.50(b)(4)(B) there are no shutoff valves downstream from the atmospheric vacuum breaker;

§344.50(b)(4)(C) the device is installed at a minimum of six inches above any downstream piping and the highest downstream opening. Pop-up sprinklers are measured from the retracted position from the top of the sprinkler;

§344.50(b)(4)(D) there is no continuous pressure on the supply side of the atmospheric vacuum breaker for more than 12 hours in any 24-hour period; and

§344.50(b)(4)(E) a separate atmospheric vacuum breaker is installed on the discharge side of each irrigation control valve, between the valve and all the emission devices that the valve controls.

§344.50(c) Backflow prevention devices used in applications designated as health hazards must be tested upon installation and annually thereafter.

§344.50(d) If there are no conditions that present a health hazard double check valve backflow prevention assemblies may be used to prevent backflow if the device is tested upon installation and:

§344.50(d)(1) a local regulatory authority does not prohibit the use of a double check valve;

§344.50(d)(2) backpressure caused by an elevation of pressure in the discharge piping by pump or elevation of piping above the supply pressure which could cause a reversal of the normal flow of water or back-siphonage conditions caused by a reduced or negative pressure in the irrigation system exist; and

§344.50(d)(3) test cocks are used for testing only.

§344.50(e) If a double check valve is installed below ground:

§344.50(e)(1) test cocks must be plugged, except when the double check valve is being tested;

§344.50(e)(2) test cock plugs must be threaded, water-tight, and made of non-ferrous material;

§344.50(e)(3) a y-type strainer is installed on the inlet side of the double check valve;

§344.50(e)(4) there must be a clearance between any fill material and the bottom of the double check valve to allow space for testing and repair; and

§344.50(e)(5) there must be space on the side of the double check valve to test and repair the double check valve.

§344.51. Specific Conditions and Cross-Connection Control.

§344.51(a) Before any chemical is added to an irrigation system connected to any potable water supply, the irrigation system must be connected through a reduced pressure principle backflow prevention assembly or air gap.

§344.51(b) Connection of more than one water source to an irrigation system presents the potential for contamination of the potable water supply if backflow occurs. Therefore, connection of any additional water source to an irrigation system that is connected to the potable water supply can only be done if the irrigation system is connected to the potable water supply through a reduced-pressure principle backflow prevention assembly or an air gap.

§344.51(c) Irrigation system components with chemical additives induced by aspiration, injection, or emission system connected to any potable water supply must be connected through a reduced pressure principle backflow device.

§344.51(d) If an irrigation system is designed or installed on a property that is served by an on-site sewage facility, as defined in Chapter 285 of this title (relating to On-Site Sewage Facilities), then:

> **§344.51(d)(1)** all irrigation piping and valves must meet the separation distances from the On-Site Sewage Facilities system as required for a private water line in §285.91(10) of this title (relating to Minimum Required Separation Distances for On-Site Sewage Facilities);
>
> **§344.51(d)(2)** any connections using a private or public potable water source must be connected to the water source through a reduced pressure principle backflow prevention assembly as defined in §344.50 of this title (relating to Backflow Prevention Methods); and
>
> **§344.51(d)(3)** any water from the irrigation system that is applied to the surface of the area utilized by the On-Site Sewage Facility system must be controlled on a separate irrigation zone or zones so as to allow complete control of any irrigation to that area so that there will not be excess water that would prevent the On-Site Sewage Facilities system from operating effectively.

§344.52. Installation of Backflow Prevention Device.

§344.52(a) If an irrigation system is connected to a potable water supply and requires major maintenance, alteration, repair, or service, the system must be connected to the potable water supply through an approved, properly installed backflow prevention method as defined in this title before any major maintenance, alteration, repair, or service is performed.

§344.52(b) If an irrigation system is connected to a potable water supply through a double check valve, pressure vacuum breaker, or reduced pressure principle backflow assembly and includes an automatic master valve on the system, the automatic master valve must be installed on the discharge side of the backflow prevention assembly.

§344.52(c) The irrigator shall ensure the backflow prevention device is tested prior to being placed in service and the test results provided to the local water purveyor and the irrigation system's owner or owner's representative within 10 business days of testing of the backflow prevention device.

§344.61. Minimum Standards for the Design of the Irrigation Plan.

§344.61(c) All irrigation plans used for construction must be drawn to scale. The plan must include, at a minimum, the following information:

...

§344.61(c)(7) location, type, and size of each:

...

§344.61(c)(7)(B) backflow prevention device;

...

§344.62. Minimum Design and Installation Requirements.

§344.62(k) Isolation valve. All new irrigation systems must include an isolation valve between the water meter and the backflow prevention device.

§344.62(n) Water contained within the piping of an irrigation system is deemed to be non-potable. ...

§344.65. Reclaimed Water.

Reclaimed water may be utilized in landscape irrigation systems if:

§344.65(4) the domestic potable water line is connected using an air gap or a reduced pressure principle backflow prevention device, in accordance with §290.47(i) of this title (relating to Appendices);

§344.65(6) backflow prevention on the reclaimed water supply line shall be in accordance with the regulations of the water purveyor.

Appendix I: Sample Plumbing Ordinance

Please note that this is a **sample** ordinance and should not be modified or adopted without review by the public water system's legal counsel.

This ordinance adds a new section to the City's Code of Ordinances.

ORDINANCE NO. _____

An ordinance of the city council of the City of _____, Texas, amending Chapter __ of the Code of Ordinances of _____, Texas, by adding a new section _____ to be entitled "Cross-Connection Control Program," providing a repeal clause and a severability clause, establishing penalties for the violation of these restrictions and provisions for their enforcement, and finding and determining that the meeting at which this ordinance is passed is open to the public as required by law.

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF _____, TEXAS:

SECTION 1—That Chapter ___ of the Code of Ordinances of the City of _____, Texas, be amended to add a new section _____, such section to read as follows:

Section _____: Cross-Connection Control Program

a. **Definitions**

(1) **Manual M14:** The American Water Works Association's *Recommended Practice for Backflow Prevention and Cross-Connection Control*, current edition.

(2) **TCEQ:** The Texas Commission on Environmental Quality.

(3) **290 Rules:** The TCEQ's rules and regulations for public water systems, which appear in Title 30, Texas Administrative Code, Chapter 290.

b. **General**

(1) No water-service connection shall be made to any establishment where a potential or actual contamination hazard exists unless the water supply is protected in accordance with the 290 Rules and this ordinance. The water purveyor shall discontinue water service if a required air gap or backflow prevention assembly is not installed, maintained, and tested in accordance with the 290 Rules and this ordinance.

(2) No backflow protection at the water service meter is required where an adequate internal cross-connection control program is in place.

c. **Installation, Testing, and Maintenance of Backflow Prevention Assemblies**

(1) All backflow prevention assemblies must be tested upon installation by a licensed backflow prevention assembly tester and certified to be operating within specifications. Backflow prevention assemblies that are installed to protect against health hazards must also be tested and certified to be operating within specifications at least annually by a recognized backflow prevention assembly tester.

(2) Backflow prevention assemblies installed on fire suppression systems must be tested by a backflow prevention assembly tester permanently employed by an approved fireline contractor.

(3) Gauges used for backflow prevention assembly testing must be tested for accuracy at least annually in accordance with the AWWA's Manual M14 or the current edition

of the University of Southern California's *Manual of Cross-Connection Control*. A copy of the gauge accuracy test report must be submitted to the City of _____ to demonstrate the gauge has been tested for accuracy.

(3) A recognized backflow prevention assembly tester must hold a current license issued from the TCEQ.

c. **Customer Service Inspections**

(1) A customer service inspection must be completed before the provision of continuous water service to all new construction, on any existing service when the water purveyor has reason to believe that cross-connections or other contaminant hazards exist, or after any material improvement, correction, or addition to the private water-distribution facilities.

(2) Only individuals with the following credentials shall be recognized as capable of conducting a customer service inspection:

(A) Plumbing inspectors and water-supply-protection specialists that have been licensed by the Texas State Board of Plumbing Examiners.

(B) Customer service inspectors that have been licensed by the TCEQ.

(3) The customer service inspection must certify that:

(A) No direct connection between the public drinking water supply and a potential source of contamination exists. Potential sources of contamination must be isolated from the public water system by a properly installed air gap or an appropriate backflow prevention assembly.

(B) No cross-connection between the public water supply and a private water source exists. Where an actual, properly installed air gap is not maintained between the public water supply and a private water supply, an approved reduced-pressure-zone backflow prevention assembly is properly installed and a service agreement exists for annual inspection and testing by a recognized backflow prevention assembly tester.

(C) No connection exists that allows water to be returned to the public drinking water supply.

(D) No pipe or pipe fitting that contains more than 0.25 percent lead is used for the installation or repair of plumbing at any connection that supplies water for human use.

(E) No solder or flux that contains more than 0.2 percent lead is used for the installation or repair of plumbing at any connection that provides water for human use.

Irrigation Systems

(1) Any irrigation system that is connected to a public or private potable water supply must be connected through a backflow prevention assembly approved by the Texas Commission on Environmental Quality.

(2) Backflow prevention assemblies installed on irrigation systems that are classified as health hazards must be tested at least annually.

SECTION 2—REPEAL

All ordinances that are in conflict with the provisions of this ordinance are hereby repealed, and all other ordinances of the City not in conflict with the provisions of this ordinance shall remain in full force and effect.

SECTION 3—SEVERABILITY

The phrases, clauses, sentences, paragraphs, and sections of this ordinance are severable and, if any phrase, clause, sentence, paragraph, or section of this ordinance shall be declared unconstitutional by the valid judgment or decree of any court of competent jurisdiction, such unconstitutionality shall not affect any of the remaining phrases, clauses, sentences, paragraphs, and sections of this ordinance.

SECTION 4—ENFORCEMENT

A violation of this ordinance is a misdemeanor and, upon conviction, any person who violates this ordinance shall be punished by a fine of not less than _____ and not more than _____. Each day that one or more of the provisions in this ordinance is violated shall constitute a separate offense. If a person is convicted of _____ or more distinct violations of this ordinance, the _____, _____, _____ shall, upon due notice to the customer, be authorized to discontinue water service to the premises where such violations occur. Services discontinued under such circumstances shall be restored only upon payment of a reconnection charge, hereby established at $_____, and any other costs incurred by the City of _____ in discontinuing service. In addition, suitable assurance must be given to the _____, _____, or _____ that the same action shall not be repeated while the ordinance is in effect. Compliance with this ordinance may also be sought through injunctive relief in district court.

Optional Provisions for the Section "Installation, Testing and Maintenance of Backflow Prevention Assemblies":

All backflow prevention assemblies must be installed and tested in accordance with the manufacturer's instructions, Manual M14, or the University of Southern California's *Manual of Cross-Connection Control*.

Assemblies must be repaired, overhauled, or replaced whenever the assemblies are found to be defective. Original forms recording testing, repairs, and overhaul must be kept and submitted to the City of _____ within five working days of the test, repair or overhaul of each backflow prevention assembly.
No backflow prevention assembly or device may be removed from use, or relocated, or other assembly or device substituted for it, without the approval of the City of _____.

Optional Provision for the Section "Irrigation Systems":

Backflow prevention assemblies installed on irrigation systems that are not classified as health hazards must be tested every _____ years or as required by the adopted plumbing code.

Optional Section:

Fire-Hydrant Protection

An approved reduced-pressure principle backflow prevention assembly (RPBA) is be the minimum protection for fire-hydrant water meters that are being used for a temporary water supply during any construction or other uses which would pose a potential hazard to the public water supply.

(A) An RPBA must be installed if any solution other than potable water can be introduced into the system.
(B) It is the responsibility of all persons engaging in the use and rental of a fire-hydrant water meter to abide by the conditions of this article. All fire-hydrant meter rentals shall meet the current requirements of the City.