

Approved: Carl Dean Holmes
4/29/94 Date

MINUTES OF THE HOUSE COMMITTEE ON ENERGY AND NATURAL RESOURCES.

The meeting was called to order by Vice Chairperson Walker Hendrix at 3:30 p.m. on March 10, 1994 in Room 423-S of the Capitol.

All members were present except:

- Representative Holmes - Excused
- Representative Grotewiel - Excused
- Representative McClure - Excused
- Representative Charlton - Excused
- Representative Krehbiel - Excused

Committee staff present:

- Raney Gilliland, Legislative Research Department
- Dennis Hodgins, Legislative Research Department
- Mary Torrence, Revisor of Statutes
- Shirley Wilds, Committee Secretary

Conferees appearing before the committee:

- Brett Blackburn, Blackburn Nursery
- Daryl Myers, Blueville Nursery, Manhattan
- Mark Taussig, KS State University
- David Adkins, KS State Representative
- Dr. Mark Herschey, University of Kansas
- Dennis Rosen, Lawrence Sprinkler System
- Al Conner, KS Irrigation Association
- Glen Westervelt - Lawrence Irrigation Association
- Ron Baker, Professional Lawn Care Association of America
- Richard Wolf, Wolf Nursery, Lawrence
- Jim DeHoff, AFL-CIO
- Roy Cromer, Wichita Water and Sewer System
- Dennis Schwartz, KS Rural Water
- Larry Shannon, City of Topeka
- Carl Muldener, KS Department of Health and Environment
- Chris McKenzie, KS League of Municipalities

Others attending: See attached list

Hearing on SB 611:

Brett Blackburn. (See Attachment #1) Speaking on behalf of select homeowners; business owners; and employees of lawn sprinkler companies; and backflow and irrigation wholesale dealers, Mr. Blackburn said they feel they are continually being held to higher standards. He maintained that water utilities allow open drains on dry barrel fire hydrants and leaking water meters that have continually been sources of contaminated or polluted water. Water utilities and regulatory agencies do not require plumbing contractors to install testable, high-hazard devices on the most common cause of cross contamination incidents, i.e. the hose bib or common water faucet. Having been told that lawn sprinkler systems are a high-hazard risk, they have not found legitimate documentation to support the claim.

Since their main focus is the relative risk relating to lawn sprinkler systems and the proper method of backflow protection, Mr. Blackburn expressed concern on how best to protect the water supply. He said **SB 611** specifically addresses this issue and would allow the use of the Double Check Valve Assembly (DCA) which is the safest and best device for lawn sprinkler backflow protection. (In support of his testimony, Mr. Blackburn furnished a sample of the DCA and illustrated the operation of same.)

Offering potential adverse debate that might arise in the meeting today, Mr. Blackburn said when presented with the facts, and the proven record of the Double Check Valve (both on and off lawn sprinkler systems), it is the most safe and reliable choice for maximum protection. He suggests the regulators of backflow devices should determine better systems for fire hydrants, hose bibbs and the like. He said these have been proven to be continual sources of contamination as opposed to the use of the DCV for lawn sprinkler systems. He concluded by suggesting that this legislation would help in refining the protection of the drinking water supply for the populace. (Accompanying Mr. Blackburn's testimony are charts indicating testing and failure rates and related

CONTINUATION SHEET

MINUTES OF THE HOUSE COMMITTEE ON ENERGY AND NATURAL RESOURCES, Room 526-S Statehouse, at 3:30 p.m. on March 10, 1994.

letters regarding backflow assemblies.)

Staff devoted time to clarify for the Committee the dynamics of this particular legislation as is written in the statutes. (See Attachments #2 and #3) In the mid 1980's individuals from within the industry approached the Kansas Legislature initially asking for legislation that would require anti-siphonage devices to be placed on irrigation systems (commonly called the Irrigation Act) to protect the water supply. At that time, it was a common practice for agriculture producers to apply chemicals through irrigation systems. Consequently, the Chemigation Safety Act was passed and has been in effect for several years. Later some were of the opinion that there might be a problem with the injection of fertilizers, chemicals, pesticides, etc. in lawn irrigation systems, similar to that within agricultural production. As a result, there is a section in the statutes that currently prohibits "the application of fertilizers, pesticides or other chemicals by any person through any lawn irrigation system connected to a public water supply system except that in areas where the public water supply system has adopted a program for the detection and elimination of cross connections and prevention of backflow and backsiphonage which has been approved by the secretary of health and environment." As a result of this, the Agency promulgated a memorandum. Staff explained this differs from rules and regulations, because rules and regulations are not reviewed by the Legislature and do not have the force and effect of law. However, in some circumstances when these policies were distributed among some local communities, the communities adopted these as their criteria. Therefore, some local communities have required the RPZs in lieu of the Double Check Valves. **SB 611** is now in response to those requirements by local communities. Staff added they interpret this bill to supersede any prior law passed at the local level. Staff provided a copy of KSA 65-171r and the policy memorandum from the Kansas Department of Health and Environment.

The Honorable David Adkins. Representative Adkins reported that he was first contacted by his constituents (largely a suburban homeowner district) with complaints they had received notices from the local water district with a requirement to install backflow devices. Prompted by these contacts and upon studying the statutes, Representative Adkins learned that this requirement was not an EPA stipulation, nor is there any statutory authority to enforce these regulations. Through the Department of Health and Environment, Representative Adkins said the state (more than ten years ago) had an administrative regulation stating that all community water systems, and any high-risk non-community systems, designated by the Department, shall have a regular program approved by the Department for the detection and elimination of cross connections and prevention of backflow and back siphonage. In the case of lawn irrigation systems, he offered the example of a fire hydrant being hit on a neighborhood street, creating a negative pressure, causing a residue from one's yard to be sucked back through the water supplies. There was an attempt to eliminate such a problem. In the approximate ten years this regulation has been in effect, the Department has not executed this regulation. There was some attempt to rectify this issue in the Department policy memorandum (as referred to by staff). Water districts throughout the state construed this to mean it was the approved regulation by the Department; the local providers of water interpreted this to mean they had to come up with a program to comply with Department policy. Consequently, many local communities adopted this as their ordinance.

Representative Adkins said that in March 1993 Senators Frahm, Sallee and Praeger questioned the force and effect of law that the Department policy memorandum conveyed. They approached the Department seeking clarification and answers to this situation. At that time the Department responded and the Kansas Government Journal issued its indication that these guidelines weren't regulations, and that local units could submit their own plan. The Bureau of Water admitted that the cross-connection control policy indicated in the 1991 policy memorandum had no enforcement of law. As a result, water districts that had been enthusiastically enforcing the cross-connection control policy (having so notified homeowners) were ultimately in a quandary. Representative Adkins reported that due to meetings with his local water providers and the State Department of Health and Environment, there is now a new set of regulations which have been promulgated and are currently being reviewed. They are designed to better determine the exact obligations of local water providers.

Representative Adkins asked this committee to enter into a cost benefit analysis to analyze the cost to the homeowner. That cost is anywhere from \$300 to \$1,400 to retro-fit existing systems that have been in use for 15 years. The cost to homeowners to put in an above-ground apparatus or build a pit with a concrete protection to enclose the high-risk backflow devices is not necessary, given the risk involved.

Being of the opinion that **SB 611** does not address the issue, since it still carries the requirement to install the Double Check Valve and, further, since this has not been a problem for years, the expense is out of line for the risk. He sees no problem keeping the water systems as they are for lawn sprinkler owners. Representative Adkins will submit a balloon to the Committee on this bill depicting what he deems might be a more equitable solution.

Daryl Myers. (See Attachment #4) Mr. Myers posed the question, why ban a product that has been working in our state (and others) when there is no supporting documentation indicating the product hasn't

done the job it was designed to do. He reported the double check valve backflows have a record of being more maintenance free and less expensive, while doing an adequate job. In addition, the DCV devices can be installed in valve boxes underground and tested, so they don't have the freeze problem that above-ground backflows do.

Mr. Myers reasoned that with the passage of this bill the citizens of Kansas would benefit rather than the special interest groups, and he concluded by asking if the citizens of Kansas aren't already amply taxed.

CONTINUATION SHEET

MINUTES OF THE HOUSE COMMITTEE ON ENERGY AND NATURAL RESOURCES, Room 526-S Statehouse, at 3:30 p.m. on March 10, 1994.

Mark Taussig: (See Attachment #5) Speaking in support of provisions for constructing safe irrigation systems, rather than regulations that creates not only more hazardous irrigation systems, but much more costly systems, Mr. Taussig provided a diagram of the DCV. He explained the use of this type of an assembly as opposed to the above-ground Reduced Pressure Device (RPD) as is supported by the KDHE. He said the RPD device installed in the environment is a higher hazard than a DCV and is also subject to freezing, accidental damage, vandalism and, due to its complex nature, has a greater failure potential.

Mr. Taussig said considering that lawn irrigation systems are low hazard, (and that the RPD cost is greater with an increased failure risk (and other associated technical shortcomings) the DCV should be recommended in lawn sprinkler applications. He contends there is no justification to apply an ordinance that has such broad ranging obstacles to so many people when the intended target group is less than one percent of the total affected.

Mark Hirschey. (See Attachment #6 and #7) Dr. Hirschey appeared before the Committee speaking of his concerns and those of Lawrence homeowners who have questioned the backflow prevention regulations set by the Kansas Department of Health and Environment.

He reported that he had done an in-depth investigation over a period of 18 months to learn all the particulars regarding the regulations related to lawn sprinkler backflow prevention devices. Among some of his findings:

- Below-ground double-check backflow prevention devices are a durable and effective method for backflow prevention from lawn sprinkler systems.
- KDHE illegally tried to compel homeowners to install inferior and potentially dangerous above-ground devices.
- Lawrence homeowners have documented evidence of thousands of above-ground device failures due to freezing, vandalism and theft; whereas, KDHE is unable to provide instances of water system contamination due to the failure of a below-ground double-check backflow prevention device.
- To replace below-ground DCV devices with inferior above-ground devices is costly. Water purveyors estimate retrofitting costs at \$500 to \$2,000 per lawn sprinkler system.

Speaking personally as a homeowner, taxpayer, and voter, Dr. Hirschey expressed concerns that the above-ground devices endanger the quality of water and are prone to freeze and rupture (as is required by the KDHE); the private interests that distort the regulatory process (to sell, repair, and replace defective devices); and his dismay if Kansans would be willing to endure the discrepancy.

Dr. Hirschey provided detailed information, including phone calls and background investigation on this subject. He concluded by outlining the benefits to be gained by adopting **SB 611**. He said that by allowing sprinkler systems to be fitted with testable low-hazard backflow devices it would benefit all Kansas homeowners through safe and effective backflow prevention. Homeowners avoid obvious and well-known winterization, vandalism, theft and freezing problems. Further, that it is an unnecessary waste of millions of dollars for retrofitting safe and proven backflow prevention devices that are superior to the above-ground alternates.

The Honorable Sheila Frahm. Senator Frahm said that testimony thus far is a clear indication of why this legislation was introduced. She said there very well may be something that needs to be reviewed, but that they are resisting having any agency tell them what kind of device that should be used, without any evidence to support that effort.

Ron Baker. Mr. Baker commended Dr. Hirschey for the work and time he has devoted to understanding this issue and the information he has shared with the Committee. He said his sprinkler system is two years old and, at the time of installation, he was told of the attributes of his system. Six months later he was then told he did not have an adequate system. In addition, by having to install a new system (adding extra piping to re-route the system, etc.) the extra cost to him will be anywhere from \$500 to \$1000 (varying with the installing company). Although the average homeowner is not an engineer, using some logic from the old adage, "if it ain't broke, don't fix it," Mr. Baker said if something is broken (lawn sprinkler system) there is some evidence that it is broken. Thus far, there has been nothing tangible to show this system to be "broken." When considering the use of above-ground systems, Mr. Baker offered the scenario of leaving one's home during the winter months only to return and find water virtually everywhere, due to the freezing that occurs in this area of the country. He maintains that an in-ground device is needed to keep it safe from the weather, is out of harms way - and that it works. He said it is the job of the Legislature to protect the citizens from wasted money and unsafe conditions.

To accommodate Committee members with several inquiries, Vice Chairperson Hendrix asked that conferee Karl Mueldener address the Committee at this point to offer some clarification and evaluations.

Karl Mueldener. (See Attachment #8) Departing from prepared testimony, Mr. Mueldener said from conferee's that have

CONTINUATION SHEET

MINUTES OF THE HOUSE COMMITTEE ON ENERGY AND NATURAL RESOURCES, Room 526-S Statehouse, at 3:30 p.m. on March 10, 1994.

already spoken on the issue, as he sees it, backflow conditions can occur from a number of devices - with lawn sprinkler being only one. There are also a number of other backflow possibilities. There are a lot of places that are high hazard and definitely a device is needed; for example, feed installations and chemical usage facilities, etc. In implementing the backflow prevention program the question often comes up as to which device is needed where. Although the high hazard facilities are well documented, 99.9% of the problems and questions generated are related to lawn sprinklers (lawn sprinklers are only one of many places where backflow can occur.)

Mr. Mueldener said last summer they held informal meetings on this issue in Topeka, Hays and Wichita. He said at these hearings some sentiments as are being expressed in today's meeting were mentioned. Also, many of the utilities around the state were asking that KDHE give them the support and help they need in trying to implement the programs at the local level; hence the establishment of their proposed regulations that are presently being reviewed.

In addition to Mr. Mueldener standing for questions and discussion with the Committee, written testimony is also provided (See Attachment #9).

Jim DeHoff. (See Attachment #10) Speaking on behalf of the 1500 members who work in the plumbing and pipefitting trade with the state, he opposed **SB 611**. Even though KDHE has designated lawn irrigation systems high hazard and require above-ground backflow prevention systems, this bill determines lawn sprinklers to be low hazard. Mr. DeHoff contents that lawn irrigation systems can be very dangerous to homeowners, citing the possibilities of improperly installed and poorly maintained systems that can cause contaminate occurrences. Further, he said these contaminants can cause flu-like symptoms and even cancer.

Mr. DeHoff said the change in systems would cost an average of \$350 to conform with the high hazard regulations - a small price to pay for assurance against health hazards. He urged unfavorable consideration of this bill.

Mr. DeHoff said there is a simple solution to this problem - he strongly suggested to the Committee that all existing systems be grandfathered in.

Chris McKenzie. Mr. McKenzie said he thinks members of the League were caught in the middle of this problem. They were told many times, and believed that this was a KDHE regulation, and that they had to have a program that would meet the Department standards and, over time, many were in agreement with KDHE's position. Mr. McKenzie does not agree with how this issue was handled and he feels many local officials were misled. He reported that the League's legal staff, being told this was a regulation, did not check it (taking it only on faith), and helped draft ordinances to implement the programs - they now feel betrayed.

Mr. McKenzie said it is far better to leave this matter in the hands of local governing bodies, wherein they can apply appropriate standards to conform to the needs of their own communities.

Vice Chairperson Hendrix invited Mr. McKenzie to confer with his legal staff and submit any proposed amendments embracing his concept to be presented on the bill.

Roy Cromer. Mr. Cromer made a brief comment, referring to the letter from David Warren (See Attachment #11). He added that the Federal Safe Drinking Water Act was basically written to address the problem of water purveyors who were sued. He said people are being poisoned every day through the existing systems. He said he has no problem agreeing with grandfathering in the present systems; however, within any water system contaminants can only be ascertained through property testing, still leaving existing systems in question.

Dennis Schwartz. (See Attachment #12) Mr. Schwartz handed out written testimony and reported to the Committee that after all that he had heard today, his suggestion would be to ask the Legislature to legislate what a degree of hazard is. He said that is possibly the greatest question. He was of the opinion that some of the today's testimony confused the issue by submitting information inappropriate for this particular discussion.

Larry Shannon. (See Attachment #13) Mr. Shannon also deferred from written testimony and pointed out that KDHE may be under more pressure than is necessary on this issue. He said the City of Topeka adopted the Uniform Plumbing Code several years ago. He supported Mr. McKenzie's recommendation to direct this issue to the local levels of government.

Vice Chairperson Hendrix expressed appreciation to the conferees and Committee members for their presentations and interest during this lengthy hearing. He announced that Chairman Holmes arrived late into the hearing following other legislative duties.

Upon completion of its business, the meeting adjourned at 6:10 p.m.

The next meeting is scheduled for March 14, 1994.



Date: 3/10/94

[illegible]

Presentation By: Brett M. Blackburn
Vice President - Blackburn Nursery & Lawn Service, Inc. (Irrigation Installer)
Vice President - Topeka Sprinkler Supply (Irrigation Equipment and Backflow
Preventer Wholesaler)

Lawn Sprinkler Homeowner
Certified Backflow Prevention Device Tester
Degree: Bachelor of Science in Mechanical Engineering - University of Kansas

To the Committee:

Comments on Senate Bill 611

I am speaking on behalf of a number of citizens including homeowners and business owners with lawn sprinkler systems, owners and employees of lawn sprinkler companies, backflow and irrigation wholesale dealers and concerned citizens.

We feel that we (lawn sprinkler homeowners and contractors) are continually being held to a higher standard than all others, especially Public Water Utilities and Plumbing Contractors. Water utilities allow themselves to have open drains on dry barrel fire hydrants, and leaking water meters, that have continually been sources of contaminated or polluted water. Water Utilities and regulatory agencies (such as the K.D.H.E.) do not require plumbing contractors to install testable, high-hazard devices on the most common cause of cross contamination incidences: the Hose Bib or common water faucet.

No one wants to put the water supply at risk. The regulatory agencies and inspection departments are, however, continually chasing "ghosts-in-the dark" that probably do not exist. We are told that lawn sprinkler systems are a high-hazard risk, yet no legitimate documentation exists to rationally support the claim.

Our main focus is the relative risk relating to lawn sprinkler systems and the proper method of backflow protection. We are concerned with public safety, and our main concern is HOW to best protect the water supply considering all realistic factors and conditions. House Bill 611 specifically addresses this issue. It would allow the use of the Double Check Valve Assembly (DCA) which is the safest and best device for lawn sprinkler backflow protection.

Energy & Natural Resources

#1
3/10/94

We feel that lawn sprinklers are a very low hazard and will be properly protected by Double Check, safely installed out of harms way in a Fiberglass or high-density plastic Valve pit. (This low-hazard designation would only apply to Lawn Sprinkler Systems without chemical injection, and those with no additional cross connected water supply.). Concrete Pits are not commonly used for double checks as has been misleadingly stated by KDHE officials.

We know of no instances of contamination (In Kansas and in the U.S.) due to a Lawn Sprinkler System properly protected by a Double Check Assembly. Taking it one step further, We do not know of any instances in Kansas history of contamination as a result of the thousands of totally unprotected Lawn sprinkler systems. Probability professors have told me that if an incident has not occurred in the last 100 years, it is not likely to happen in the next hundred years and so on.

We are told by the regulators and water suppliers that the risk involved (including their track record of contamination) of the previously mentioned items (fire hydrants, hose bibs, etc.) is not great enough to warrant any or higher degree of protection versus the cost of implementing a high degree of protection.

Why are the backflow industry and water suppliers so intent on chasing ghosts that probably don't exist (the mythical high hazard lawn sprinkler and supposed inadequate double check valve) and yet they ignore the items that stare them in the face, day after day. Allowing unprotected items such as fire hydrants, water meters, sink pistol nozzles, and improperly protected (in Backflow Guru Terms) Hose bibs: which have been known hazards, can certainly be viewed as a double standard. The reason for this double-standard must surely be that the financial numbers involved in addressing the above problems make it a problem not worth tackling. However, it is easy to show a "WE CARE" attitude by using selective enforcement on, what they feel, is a small group of poorly organized individuals. Holding the small group to an unrealistic higher standard, would show effort, even if it means eliminating that group

The regulators, inspectors, and some backflow salespeople are generally pushing for the above ground Reduced Pressure Zone Device (RPZ) to become the required device for lawn sprinklers. This is regarded to be the most expensive and hardest to service device. We prefer the time-proven, safe, Double Check Valve Assembly (DCA).

Some comparison of the two devices:

If temperatures fall below freezing, an above ground RPZ can freeze and break, leaving the water supply exposed to outside contaminants. A Double Check in a pit or valve box would be safe and protected for freezing conditions and the water supply would not be at risk.

In a flooding situation, an RPZ has an open vent, which if submerged, leaves only a single check valve protection for the water supply. A submerged Double Check remains safely intact, affording the same high level of protection to the water supply.

The RPZ is above ground, making an attractive target to vandals. A RPZ, if broken off, not only puts the water supply at risk, but wastes large amounts of water. A Double Check is safely hidden, below ground in a securely locked valve box or pit.

It is a common practice to remove above ground devices in the winter to protect them from freezing. This practice creates an instant breach of the protection of the water supply, leaving it open to the atmosphere and making it a great target for vandals. (Today, a quick trip to Westridge Mall could verify this as common practice)

These above reasons alone are obvious reasons why the Double Check Assembly should be the device of choice for Underground lawn sprinkler systems. The advantages are many as compared to the problems associated with the Reduced Pressure Zone device. If water safety is the important issue, why require anything but the best device available, for all conditions. If high hazard containment is a primary issue, correct the problems that exist, and do not react to the theoretical threats that may be born in a testing lab.

While testing labs are regarded as independent, their funding is dependent on backflow continuing education, enforcement, regulation and testing of new devices. Labs are paid great sums of money from backflow manufacturers to test, certify, and approve new devices. Manufacturers can not sell their devices if they are not approved by the various testing labs. Testing laboratories can charge manufacturers in excess of \$500.00 per lab hour on each type of device. This applies to each approved size of the device (sometimes as many as 11 different sizes). Many manufacturers have two or three models of the same device and can have as many as 15-25 devices that require the labs testing approval. Even the most simple of backflow devices require 5-10 hours of inside testing (Some devices take weeks to test).

After the lab (Inside) testing, the manufacturer also pays the lab rate for field testing of the devices that usually lasts one year. Higher standards and new devices help perpetuate their existence. Very few lawn sprinkler homeowners, installers and wholesalers belong to the membership of the testing labs.

Opponents of this bill will talk of the financial gains that sprinkler installers hope to make if this bill is past. Here are a few facts concerning the financial interests related to ridiculously stringent backflow laws that can be lucrative for those wanting to propose, legislate, and enforce them.:

1. Many plumbing officials are hired by schools and organizations; to teach, and/or participate in, cross connection control classes. Strict rules and regulations help to sell class space to future testers and installers, and with the increased inspection load it helps an inspector attain job security.
2. Water districts and water organizations are also commonly known to hold instructional classes at \$200.00 per student (or more).
3. Retro-fitting existing systems with a high priced RPZ can create a lucrative job for a plumbing contractor relocating a device to a suitable above ground location or even lead to an installation of a new water service. (See Table 1)
4. RPZ, and PVB are the most expensive devices to rebuild and maintain. (See Table 1)

Opponents of this bill will testify that the double check valve is not as reliable as other devices in preventing backflow contamination. On Table 2 in the back we have provided independent test results comparing the above ground devices to the double check. You will see that a double check has a much better record than the PVB and the AVB.

Opponents of this bill will talk of the higher level of safety afforded by a supposed, "foolproof--rpz" as compared to the double check valve. In April 1988 a reduced pressure principle assembly device failed and allowed a cleaning solution to enter the potable water supply. The device had been rebuilt and re certified in past years and had been tested the previous June. I (See Exhibit 1)

4

KDHE representatives have cited sources favoring the use of RPZ's but fail to mention the many sources favoring the use of the Double Check Assembly in areas where freezing is a factor. (Including the President of the American Backflow Prevention Association, Patti Fawver). Attached are letters from four backflow preventer manufacturers or their representatives (Exhibits 2,3,4,5) favoring the use of the double check assembly on lawn sprinklers (Without chemical injection or dual water sources) in climates where freezing potential and vandalism potential exists. Many of the supposed supporters of the RPZ device are given no choice when faced with the threat of fines, termination of water supply or elimination of their trade (i.e. Lawn sprinkler companies). One could only guess how many would opt for the double check on lawn sprinklers if they were given the choice.

Opponents of this bill have inferred that the American Water Works Association (AWWA) supports their position. However, on February 8, 1994, the KDHE received a letter contradicting this inferred support. (See Exhibit 6 & 7).

Opponents of this bill have said that lawn sprinkler systems are only for people of means and that sprinklers are an unnecessary luxury item. Why should they want to punish those who are watering by the most efficient method possible, thus conserving water.

KDHE opposes this bill, but in recent years they have approved backflow plans for the cities of Wellington and McPherson allowing the use of Double Check Assemblies on (in their own terms) low hazard lawn sprinkler systems.

The Double Check Valve does not wear out every five years as was stated by KDHE officials in previous testimony. DCA's, RPZ's, and PV's recommended/required to be rebuilt every 5 years whether they fail a test or not. (See Table 1)

Backflow preventer wholesalers are continually asked to support the higher priced devices by some manufacturer's representatives. It is often said that if a high priced, above ground device is required, there will be not only high margin in the sale of the devices; but also, a new market for expensive heated enclosures will be created. Heating systems for above ground, one inch backflow preventers, can cost as much as \$500-\$600.00. (Most of these devices are only marginally effective during extreme cold temperatures.)

5

. The proper motives for selling a protection device should be safety and performance of the device. The double check valve has a great history of protection, and lawn sprinklers have proven to be a relatively small risk (especially as compared to Hose bibs, fire hydrants and other items).

When presented with the facts, and the proven track record of the Double Check Valve (both on an off lawn sprinkler systems), it is obviously the most safe and reliable choice for maxim protection on a lawn sprinkler system. If the backflow regulators were serious about water safety, they would not be worrying about the lawn sprinkler system. They would, instead, look at those items (i.e. fire hydrants & hose bibbs) that have been proven to be continual sources of contamination. If we apply the same standards the backflow gurus attach to sprinkler systems, to all other areas of the law; citizens would be required to wear bullet proof vests, never be allowed outside during a storm watch, and never allowed to drive in cars. Life is not without risk, but don't worry about a spilled glass of water when your house lies in the path of an onrushing flood.

Senate Bill 611 will help better protect the drinking water supply for all of us.

Table 1

Approximate cost of complete backflow rebuild (in Topeka) including Labor.*

-VS-

Approximate cost of installation of new device (Noted in Parenthesis)**

SIZE	RPZ		DCA		PVB		AVB	
	Rebuild	New Install	Rebuild	New Install	Rebuild	New Install	Rebuild	Install
1"	\$133.90	(\$438.80)	\$48.00	(210.20)	\$63.20	(\$147.30)	NA	(\$83.90)
1.5"	\$150.00	(\$541.10)	\$56.80	(312.30)	\$105.80	(\$289.90)	NA	(\$125.90)
2"	\$150.00	(\$573.50)	\$56.80	(\$342.10)	\$105.80	(\$329.50)	NA	(\$173.00)

* Includes labor cost to test, rebuild time, parts, and re-test.

** Includes plumbing charge to install new device . Does not include any additional expenses if device needs to be relocated. (Relocation would be required to retrofit most existing underground devices to a RPZ)

The above chart indicates that the cost to install a new RPZ would be 9 to 10 times the cost involved in rebuilding a double check. Not including any relocation expense)

AVB's are not presently allowed for use on most Lawn Sprinklers in Kansas. PVB's are only used if surrounding terrain allows.

Additional Comments:

Installing a RPZ backflow device in a basement can present a special hazard. If backflow would occur and the device worked properly, as much as 40 gpm could be vented through the opening in a 1" RPZ. This amount could lead to numerous hazards in a basement setting. The average sump pump or floor drain can easily be overwhelmed by such a flow of water.

Most lawn sprinklers do not need monthly inspection and maintenance as was stated by the KDHE official. The only time many homeowners need any service, is when the Backflow Preventer needs to be tested. Sprinkler systems can last many years requiring little or no maintenance. Before Expensive backflow preventers were invented and widely used, most homeowners winterized their own systems.

Also backflow would have to occur for this contamination begin. In most areas, when a water main breaks, pumps automatically turn on to bring the pressure up to standards. So for a contamination to occur (if toxic substances were present in sufficient amounts), the sprinkler zone would have to be running at the same time the pumps did not keep the water main pressure from becoming negative. The main break or pressure vacuum would have to be occurring in the same general location at the operating sprinkler system. The probabilities of this are very, very, small. (In the millions, probably the 100's of millions)

PNWS-AWWABACKFLOW ASSEMBLY FAILURE RATES

SUMMARY OF ANNUAL TEST REPORTS - 1979 to 1987
Backflow Prevention Assemblies

PRESSURE VACUUM BREAKER ASSEMBLIES

Percent Failure

Check Valve	9.8%
Air Inlet	8.5%
Both C.V & Inlet	<u>7.1%</u>

DOUBLE CHECK VALVE ASSEMBLIES

Percent Failure

Check Valve # 1	4.0%
Check Valve # 2	2.7%
Both Check Valves	<u>2.0%</u>

TABLE #2

REDUCED PRESSURE PRINCIPLE ASSEMBLIES

Percent Failure

Check Valve # 1	8.2%
Check Valve # 2	2.0%
Both Check Valves	2.2%
Relief Valve	2.6%
Relief Valve and one or both CV failed	0.7%

Utilities contributing test results:

Portland Water Bureau, OR
City of Beaverton, OR
Medford Water Commission, OR
Seattle Water Dept., WA
Vancouver Water Dept., WA
Tacoma Water Div., WA
Modern Electric Water Co. (Spokane), WA
Vancouver Water Dept., B.C.
Richmond Water Dept., B.C.

Total number of test results - RPBA, DCVA, & PVBA: 31,563

R-79-002

DATE OF OCCURRENCESeptember, 1979
LOCATIONPortland, Oregon
SOURCE OF INFORMATIONPortland Water Bureau

SUMMARY:

The backflow of water containing detergent occurred through a faulty reduced pressure backflow prevention assembly.

DETAILS:

On September 18th, 1979 a concrete plant at the foot of S.E. Ivon Street reported foamy water in their plant. Two water samples taken from within the plant by a Portland Water Bureau water quality inspector confirmed the foaming agent. Samples were taken from three fire hydrants in the area; at two of the hydrants foamy water was found. Water Bureau crews were dispatched to flush water mains in the affected area.

A dairy in the area was suspected as the source of the contaminate since the backflow of a similar agent occurred there in 1970 before the installation of backflow prevention devices on the dairy's service connections. A check of the dairy's detergent wash station found an indication of a possible backflow from the detergent pump lines.

Both of the dairy's reduced pressure principle backflow prevention devices were tested and both were found to be in poor condition with a 4-inch device completely failing the test (both check valves and the relief valve). The Water Bureau records showed that the dairy's devices were installed by a contractor in 1971; one 4-inch and one 3-inch. In their last annual performance test in February 1979 both devices met the minimum test specifications, i.e. relief valve opened at 2.0 psi.

Complete repair kits were installed on both devices, replacing discs, gaskets and all worn parts.

Exhibit #1



WILKINS REGULATOR DIVISION

February 18, 1994

Mr. Ron Baker
Willawridge Landscape Inc.
Rt. 1 Box 129 HI
Lawrence, KS 66044

Dear Ron,

This is in response to our phone conversation regarding the use of Double Check Backflow Prevention Assemblies for irrigation systems.

Though the use of a Reduced Pressure Principle Assembly or a Pressure Type Vacuum Breaker is preferred for these types of systems, the issue of freezing conditions should be addressed. The above grade installation of this type of device generates the possibilities of removal or damage to the device during, and after freezing conditions. This issue raises some serious concerns, especially in cases where it is virtually impossible to protect the device from freezing and or vandalism.

Based on these factors, we feel the installation of a Double Check Backflow Prevention Assembly in a vault, for irrigation systems, that are susceptible to freezing is acceptable and appropriate granted the following conditions are met:

1. All test cocks are plugged.
2. Adequate clearance is provided to ensure valve can be repaired and tested.
3. No fertilizer or chemical injectors are located downstream of the Double Check Assembly.
4. An established Cross Connection Control Program is in place in which the Double Check Assembly is to be tested at least once per year.
5. The local jurisdiction or municipality approves of such installations.

I trust this information will be sufficient for your review. Do not hesitate to contact me if you have any questions.

Sincerely,

Brad L. Noll
Engineering Manager

EXHIBIT #2



The Toro Company — Irrigation Division

5825 Jasmine Street — Riverside, California 92504-1183 • 714/688-9221
P.O. Box 489, Riverside, California 92502-0489

February 23, 1994

Willowridge Landscape Inc.
Attention: Ron Baker
Rt. 1 Box 129 H1
Lawrence, KS 66044

Re: Backflow prevention

Dear Mr. Baker:

I am sending you this letter in hopes of clarifying backflow prevention standards. Toro currently sells Pressure Vacuum Breakers as a standard whole good. The states of Indiana, Kentucky, Ohio, Michigan, Pennsylvania, and several others maintain that a PVB is a safe backflow prevention device. It is my understanding the other manufacturers who specialize in these products feel a Double Check Valve is a safer device than a PVB. Please note this is only true for lawn irrigation systems without fertigation injectors.

It is also true that a Double Check Valve can be mounted below grade. This makes it less susceptible to freezing conditions. Thus it is the best backflow device in freeze/thaw environments.

I hope this helps clarify any questions you might have.

Sincerely:

A handwritten signature in dark ink, appearing to read "Scott Glahn", with a stylized flourish at the end.

Scott Glahn
District Manager

cc: Joe Scheetz - Modern Distributing Co.

EXHIBIT #3

THE DWORKIN COMPANY

manufacturers ★ representative

(816) 531-2505

3314 Roanoke Rd.

Kansas City, Mo. 64111

FAX: (816) 756-0326

Subject: Backflow prevention on Lawn Sprinkler Systems

To Whom it may concern,

For several years now, because of laws, codes and statutes, the irrigation industry has been installing testable backflow prevention devices on lawn sprinkler systems. We, as manufacturers' representatives for Febco Backflow Prevention Co., a major supplier of these types of devices, sells all types of these valves. The different types most commonly used today in Kansas are the reduced pressure type and the pressure vacuum breaker. These valves are used in "high hazard" systems. The double check valve assembly is used for systems considered "low hazard".

We, at Febco do not push one type of backflow preventer over another. We will sell whichever the customer prefers, which usually goes along with local plumbing codes or backflow prevention ordinances.

However, we, are in a position to state a few facts about our local history of selling these backflow valves in our territory, which is the State of Kansas and parts of Missouri.

1. State of Kansas, along with other states in the union considers lawn irrigation to be a high hazard cross connection. The State of Missouri, along with other areas of the country, consider irrigation to be low hazard, therefore, the double check valve may be used.
2. As a service oriented manufacturer's rep, we get many calls on service in regards to our backflow devices. Because the pressure vacuum breaker and the reduced pressure backflow preventer are usually placed above ground outdoors, we do get calls or hear many reports of broken backflow valves or parts because of occasional cold snaps. Contractors continue to attempt to train the consumer on freeze proofing thier backflow valves.
3. The reduced pressure device may be placed indoors, usually on the lower level of the residence, coming off the main water tap. These valves have the capabilities of spitting more than 50 gallons per minute. We have, on more than one occassion, heard of irrate consumers, after a valve dumped in their finished basement.
4. This office has provided many double check valve assemblies for lawn irrigation in the last ten years. We cannot recall many problems, if any, that double checks have experienced in sprinkler systems.
5. In the writers' territory, Kansas and Western Missouri, we have never heard of a reported cross connection backflow incident in a lawn sprinkler system.
6. We do encourage the reduced pressure backflow prevention device be placed on chemically injected lawn sprinkler systems.

We do encourage a strong local backflow prevention ordinance, requiring backflow prevention devices on all sprinkler systems, whatever the type, whether it be double check, reduced pressure, or pressure vacuum breaker. Whatever the device may be, a strong backflow prevention program in that town or city, will ensure that all devices be kept on record to be annually tested and serviced. And a continued effort to locate existing cross connections be found and eliminated.

Thank You,



Sam Dworkin, Representative,
Febco Backflow Prevention

EXHIBIT #4

ACK

McCLAIN

ASSOCIATES

March 8, 1994

15090 West 116th Street
Olathe, Kansas 66062
(913) 339-6677
Fax # (913) 339-9518

1537 Ohio
Des Moines, Iowa 50314
(515) 288-0184
Fax # (515) 288-5049

Willowridge Landscape Co.
Attn: Mr. Ron Baker
Rt 4 Box 186 A
Lawrence, KS 66044

Ron:

Per our conversation this morning, the following is Watts Regulator Company's position on the type of backflow device to be used on typical residential lawn irrigation.

1. A determination needs to be made by the local water purveyor as to the degree of hazard lawn irrigation presents.

A. High Hazard: Any toxic pollutant that can reach the potable water supply that would cause harm (sickness, death) to human, animal or plant life.

B. Low Hazard: Any contaminant that reached the potable water supply that may change its taste, color or smell.

Backflow devices designed for High Hazard protection such as Pressure Vacuum Breakers and Reduced Pressure Zone Backflow Preventors, do take more planning in their installation. In the case of irrigation they must be installed above grade and protected against the elements. In this part of the country, freezing is a major concern. If the valves are not drained properly in the fall or we have an early freeze, the likelihood of the valve bursting due to freezing is very great.

Backflow devices designed for protection against Low Hazard, such as Double Check Valve Assembly are much simpler in their installation. The valve can be mounted below frost, in a pit away from the elements. These valves do not vent to atmosphere thus have no need for adequate drainage.

2. Local ordinance should require annual testing of all testable devices whether they are on High Hazard or Low Hazard applications.

Sincerely,

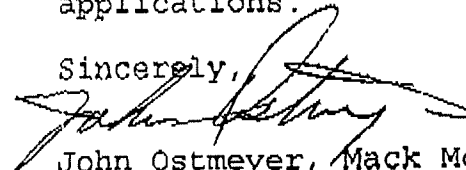

John Ostmeier, Mack McClain & Associates
Watts Regulator Representatives

EXHIBIT
#5



American Water Works Association

PACIFIC NORTHWEST SECTION

Oregon • Washington • Idaho

P.O. Box 19581, Portland, OR 97280

6501 S.W. Taylors Ferry Road, Portland, OR 97223

February 8, 1994

Mr. Mark E. Gerard, P.E.
Bureau of Water
Kansas Department of Health and Environment
Building 283, Forbes Field
Topeka, KS 66620-0001

Dear Mr. Gerard;

STATISTICS ON THE FAILURE RATES OF BACKFLOW ASSEMBLIES

In reply to your telephone request of February 7, 1994, and to the request of February 7th from Mr. Ron Baker of Willowridge Landscape, please find attached a summary of our failure rate statistics compiled from data submitted by several of the large water utilities in the Pacific Northwest. This summary is based on data collected from 1979 to 1987. Unfortunately, we have not summarized the available data for the last several years.

All test data are for assemblies approved by the USC FCCCHR. All testing is done by state certified testers in Oregon, Washington or British Columbia.

Our detailed analysis includes the failure rate of assemblies for each type, size, make and model. To prevent the detailed information from being used by manufacturers in sales promotion, the tabulation of failure rates for each manufacturer is given only to the participating utility and state health department members of the committee.

Before requiring the annual testing of pressure vacuum breakers, the Portland Water Bureau tested all atmospheric and pressure vacuum breakers in local hospitals. They reported a failure rate of approximately 50 percent for both pressure and atmospheric vacuum breakers. The tests were made on vacuum breakers that were installed for various time periods without ever having been tested or maintained. When Portland required the pressure vacuum breakers to be tested annually, they had a failure rate approximately the same as that for a double check valve assembly.

For lawn irrigation systems, most water utilities in the Pacific Northwest require the installation of a DCVA in a below-ground vault (with test cocks plugged). The DCVA location is near the water meter for ease of inspection and testing.

EXHIBIT #6

1-14

Unless the premises or plumbing is isolated by a DCVA or RPBA, an atmospheric vacuum breakers would not be accepted because they can not be tested. Any backflow preventer used to protect the water system from a health hazard (low or high) must be USC FCCCHR approved and designed for testing. Without annual testing, maintenance is not performed and the likelihood of the vacuum breaker (or any other backflow preventer) failing is significantly increased.

Pressure vacuum breakers are acceptable under the above criteria of being USC approved and designed for testing. However, many water utilities will disapprove a PVB installation because of:

- ... the potential for their removal following freeze damage,
- ... the potential for the irrigation piping to be modified (e.g., raised with the growth of shrubs) to allow a back pressure condition, and
- ... in some locations, the possibility for damage from vandals, theft, etc.

I hope that this information will be of assistance. Please feel free to call me at (206) 678-4552 if you have any questions.

Sincerely,



George Bratton, P.E.
Chairman, PNWS AWWA Cross
Connection Control Committee

pc Ron Baker
Willowridge Landscape
1453 E. 800 Rd.
Lawrence, KS 66049-9133

Hank Sims, CCC Commmittee Secr.

Exhibit #7

ice with an applicable
vel or treatment tech-
r a testing procedure
drinking water stan-
S.A. 65-171m, and

onitoring, testing, an-
equired; or
iance or exception; or
nce with the require-
ariance or exemption;

ntial lead contamina-
of the following: (1)
construction materials
oution system; (2) cor-
ply sufficient to cause

lth and environment
on prescribe the form
ch notice.

. 212, § 7; L. 1979,
1. 248, § 1; April 21.

ater supply systems;
ice; requests for pub-
pliance. (a) The sec-
ronment may grant a
ble primary drinking
water supply system
not result in an un-
blic health and where,
stics of the raw water
le to the public water
water supply system
m contaminant levels
ater standards despite
echnology, treatment
e which the secretary
ble, taking costs into

a variance, the sec-
e in a newspaper of
g the area served by
stem of the proposed
ted persons may re-
n the proposed vari-
g is requested the
e and place for the
l be conducted in ac-
ons of the Kansas ad-
act. Frivolous or
a hearing may be de-

conditioned on mon-
g or other require-

ments to insure the protection of the public health. A variance granted shall include a schedule of compliance under which the public water supply system is required to meet each contaminant level for which a variance is granted within a reasonable time as specified by the secretary.

History: L. 1977, ch. 212, § 8; L. 1988, ch. 356, § 182; July 1, 1989.

65-171q. Same; exemptions; required findings; notice; requests for public hearings; scheduled compliance. (a) The secretary of health and environment may grant an exemption from any requirement relating to a maximum contaminant level or from any treatment technique requirement, or from both, of an applicable primary drinking water standard to a public water supply system upon a finding that: (1) The exemption will not result in an unreasonable risk to the public health; (2) the public water supply system is unable to comply with the contaminant level or treatment technique requirement due to compelling factors, which may include economic factors; and (3) the public water supply system was in operation on the effective date of the contaminant level or treatment technique requirement.

(b) Prior to granting an exemption, the secretary shall provide notice in a newspaper of general circulation serving the area served by the public water supply system of the proposed exemption and that interested persons may request a public hearing on the proposed exemption.

(c) If a public hearing is requested the secretary shall set a time and place for the hearing. Frivolous and insubstantial requests for a hearing may be denied by the secretary. An exemption shall be conditioned on monitoring, testing, analyzing or other requirements to insure the protection of the public health. An exemption granted shall include a schedule of compliance under which the public water supply system is required to meet each contaminant level or treatment technique requirement for which an exemption is granted within a reasonable time as specified by the secretary.

History: L. 1977, ch. 212, § 9; April 14.

65-171r. Same; prohibited acts. The following acts are prohibited:

(a) The operation of a public water supply system without first obtaining a valid public water supply system permit under K.S.A. 65-163, and amendments thereto;

(b) the operation of a public water supply system in violation of the conditions of the public water supply system permit under K.S.A. 65-163, and amendments thereto;

(c) the failure of a supplier of water under investigation to furnish information to the secretary under K.S.A. 65-163, and amendments thereto;

(d) the failure of a supplier of water to comply with any final order of the secretary issued under the provisions of K.S.A. 65-163 or 65-163a, and amendments thereto;

(e) the failure of a supplier of water to comply with a primary drinking water standard established under K.S.A. 65-171m, and amendments thereto, and rules and regulations adopted pursuant thereto unless a variance or exception has been granted;

(f) the failure of a supplier of water to comply with the rules and regulations of the secretary for monitoring, maintenance of records and submission of reports, sampling and analysis of water and inspections adopted under K.S.A. 65-171m, and amendments thereto;

(g) the failure of a supplier of water to give notice as required under K.S.A. 65-171o, and amendments thereto, and rules and regulations adopted pursuant thereto;

(h) using any pipe, solder or flux in the installation or repair of any public water supply system or any plumbing in a residential or non-residential facility providing water for human consumption, which is not lead-free, except that this paragraph shall not apply to leaded joints necessary for the repair of cast iron pipes. As used in this paragraph, "lead-free" means: (1) With respect to its usage in conjunction with solder and flux, solder and flux containing not more than .2% lead, and (2) with respect to its usage in conjunction with pipes and pipe fittings, pipes and pipe fittings containing not more than 8% lead;

(i) the sale of unmarked lead solders and fluxes. A seller of lead solders and fluxes in Kansas shall not sell any solder or flux containing more than .2% lead unless the seller displays a sign and a label is affixed to such product which states: "Contains lead: Kansas law and federal law prohibits the use of this product in any plumbing installation providing water for human consumption.";

(j) the application of fertilizers, pesticides or other chemicals by any person through any lawn irrigation system connected to a public water supply system except that in areas where the public water supply system has adopted a

*Energy & Natural Resources
Attachment #2*

3/10/94

program for the detection and elimination of cross connections and prevention of backflow and backsiphonage which has been approved by the secretary of health and environment, such application may be permitted by the public water supply system upon its periodic inspection and current approval of the installed air gap or reduced pressure zone backflow prevention device which isolates the irrigation system; and

(k) the use by any person of a public water supply system as a source of make-up water for bulk chemical application tanks except that: (1) In areas where the public water supply system has adopted a program for the detection and elimination of cross connections and prevention of backflow and backsiphonage which has been approved by the secretary of health and environment, such use may be permitted by the public water supply system upon its periodic inspection and current approval of an air gap or reduced pressure zone backflow prevention device to protect the public water supply; and (2) in areas where the public water supply system has not adopted a program approved by the secretary of health and environment, such use shall be permitted if an air gap or reduced pressure zone backflow prevention device is used and such device meets nationally recognized standards, as determined by the secretary of health and environment.

History: L. 1977, ch. 212, § 10; L. 1988, ch. 248, § 2; L. 1991, ch. 180, § 1; July 1.

Law Review and Bar Journal References:

"Groundwater Pollution I: The Problem and the Law," Robert L. Glicksman, George Cameron Coggins, 35 K.L.R. 75, 153 (1986).

65-171s. Same; violation of standards; penalties; procedure; hearing; judicial review.

(a) Any person who violates any provision of K.S.A. 65-171r and amendments thereto shall incur, in addition to any other penalty provided by law, a civil penalty in an amount not more than \$5,000 for each violation. In the case of a continuing violation, every day such violation continues shall be deemed a separate violation. The secretary, upon a finding that a person has violated any provision of K.S.A. 65-171r and amendments thereto, may impose upon the person a civil penalty of not to exceed the limitations provided in this section. In determining the amount of the civil penalty, the secretary shall take into consideration all relevant circumstances, including but not limited to, the extent of harm caused by the violation, the nature and persistence of the violation, the

length of time over which the violation occurs and any corrective actions taken.

(b) All civil penalties assessed shall be due and payable within 35 days after written notice of the imposition of a civil penalty is served on the person upon whom the penalty is being imposed, unless a longer period of time is granted by the secretary or unless the person appeals the assessment as provided in this section.

(c) No civil penalty shall be imposed under this section except upon the written order of the secretary to the person upon whom the penalty is to be imposed, stating the nature of the violation, the penalty imposed and the right of the person upon whom the penalty is imposed to appeal to the secretary for a hearing on the matter. A person upon whom a civil penalty has been imposed may appeal, within 15 days after service of the order imposing the civil penalty, to the secretary. If appealed, a hearing shall be conducted in accordance with the provisions of the Kansas administrative procedure act. The decision of the secretary shall be final unless review is sought under subsection (d).

(d) Any action of the secretary pursuant to this section is subject to review in accordance with the act for judicial review and civil enforcement of agency actions.

History: L. 1977, ch. 212, § 11; L. 1986, ch. 318, § 87; L. 1988, ch. 356, § 183; July 1, 1989.

65-171t. Same; attorney general to seek injunctive relief. The attorney general, upon the request of the secretary of health and environment, shall bring an action in the name of the state of Kansas to seek injunctive relief to prevent the violation, or to enjoin any continuing violation, of any provision of this act [*] or any rule and regulation adopted pursuant to the provisions of this act [*].

History: L. 1977, ch. 212, § 12; April 14.

* "This act," see, also, 65-162a, 65-163, 65-163a, 65-170b and 65-171m et seq.

Attorney General's Opinions:

Cited in reference to KDHE administration of National Pollutant Discharge Elimination System. 87-130.

65-171u. Liability for damages to environment; recovery by attorney general, when; disposition of damages recovered. As used in this act, "person" means any individual, company, corporation, institution, municipality, township, county, federal agency or legally constituted sewer district. Any person who vi-



State of Kansas

Joan Finney, Governor
Department of Health and Environment
Division of Environment

Stanley C. Grant, Ph.D., Secretary
Acting

Forbes Field, Bldg. 740, Topeka, KS 66620-0001

Respond to:
FAX (913) 296-6247

POLICY MEMORANDUM #91-2 APRIL 1991

FROM: KARL W. MUELDENER, DIRECTOR
BUREAU OF WATER *Karl W. Mueldener*

SUBJECT: CROSS CONNECTION CONTROL POLICY

PURPOSE:

The intent of this policy document is to help establish local programs which protect public water supplies from contamination due to backflow. This policy document establishes guidelines for creation and management of local cross connection control programs.

BACKGROUND:

The Kansas Department of Health and Environment (KDHE), Division of Environment, Bureau of Water, is responsible for enforcement of state laws concerning cross connection control. Kansas Statute Annotated (KSA) 65-163a provides that the water supplier may cease the delivery of water to any premises where a condition exists which might lead to the contamination of the public water supply. If the water supplier does not enforce this law, the Secretary of Health and Environment may order the supplier to cease delivery of water to said premises. KSA 65-171g prohibits the connection of sewage systems to the public water supply.

Kansas Administrative Regulation (KAR) 28-15-18(h) requires that all community water systems and any high risk, as designated by the department, non-community system, shall have a regular program, approved by the department, for the detection and elimination of cross connections and prevention of backflow and backsiphonage.

POLICY:

KDHE policy is to have public water supplies establish locally an appropriate cross connection control program confirming to guidelines presented herein. The local program shall provide for detection, prevention, and elimination of cross connections. Public water supplies are expected to be diligent in implementing and administering cross connection control programs as they provide an important link in protecting the public drinking water from contamination.

PRINTED ON RECYCLED PAPER

Charles Konigsberg, Jr., M.D., M.P.H.,
Director of Health
(913) 296-1343

Director of Environment
(913) 296-1535

Lorne Phillips, Ph.D.,
Director of Information
Systems
(913) 296-1415

Energy & Natural Resources
Roger Carlson, Ph.D.,
Director of the Kansas Health
and Environmental Laboratory
(913) 296-1620
attachment 1/3

KDHE will track development of and will approve local cross connection programs meeting the intent of this policy. KDHE will support educational efforts to inform water supply personnel of the hazards of cross connections.

KDHE will review and approve local programs meeting the following guidelines:

The "regular program" as noted in the regulation shall have the following basic elements:

1. A Kansas Department of Health and Environment approved ordinance, rule, bylaw or regulation.
 - (a) Acceptable model ordinances include the model prepared by League of Kansas Municipalities, KDHE, and Kansas Rural Water Association (KRWA).
 - (b) Ordinances following other models may be approved by KDHE.
2. An outline of how the ordinance will be enforced and who will be responsible for this enforcement.
 - (a) The outline must state the agency or agent responsible for carrying out the enforcement of the ordinance.
 - (b) The outline must state the procedure for assuring that all devices are properly installed, inspected, and tested.
3. A device inspection, testing and repair schedule.
 - (a) All backflow preventers must be inspected and tested regularly (at least annually).
 - (b) Repairs must be made as necessary to protect the integrity of the device.
 - (c) Inspection, testing, and repair of devices should be performed by trained technicians.
4. A list of available trained device tester/repairmen.

The designated agency/agent needs to maintain a list of tester/repairmen in their immediate area. The list should be updated regularly. This list needs to include all persons who are qualified to perform testing, overhaul and repair of their devices.
5. A record of all backflow prevention devices, installation date, inspection date, inspector name, condition of the device, repairs, name of repair technician, and date of repairs must be maintained by the agency/agent responsible for the program. In addition to this record, a tag containing the above data is to be attached to each backflow preventer.

INFORMATIVE DATA:

The following information is provided for more specific guidance in cross connection control:

DEGREE OF HAZARD

The water supplier needs to define degree of hazard and prescribe an appropriate backflow preventer. This approach is suggested since it is consistent with nationally accepted standards. The following should be considered a minimum definition:

"Degree of Hazard" shall be classified as either: (a) high (health hazard) or (b) low (non-health hazard). Health hazard is the potential threat of a physical or toxic nature to the public water supply that would be a danger to the health of the consumer of the water.

High hazards must be provided a physical separation (approved air gap), an approved reduced pressure principal backflow prevention device or must be protected by an approved pressure vacuum breaker.

EXPLANATION OF TERMS

High Health Hazard. Any substance that when introduced into the potable water may create a health hazard.

Low Non-Health Hazard. Any substance that may create a moderate hazard if introduced into the potable source.

Air Gap (AG). A physical separation between the potable water and any contaminating source. Must be two pipe diameters but not less than one inch above the flood level rim.

Reduced Pressure Principal Device (RPPD). A mechanical device used to prevent backflow due to back pressure and backsiphonage. Suitable for both toxic and nontoxic substances.

Pressure Vacuum Breaker (PVB). A mechanical device used to prevent backflow due to backsiphonage. May be used under continuous line pressure.

Atmospheric Vacuum Breaker (AVB). A mechanical device used to prevent backflow due to backsiphonage. May not be used under continuous line pressure.

Double Check Valve Assembly (DCVA). A mechanical device used to prevent backflow due to back pressure and backsiphonage. Suitable for non-toxic substances only.

RECOMMENDED TYPES OF BACKFLOW PREVENTION DEVICES

HIGH DEGREE OF HAZARD SUBJECT TO BACK PRESSURE

Type of Device

- | | |
|---|----------|
| 1. Pumps, tanks, and lines handling: | |
| a. Sewage and lethal substances | AG, RPPD |
| b. Toxic substances | AG, RPPD |
| 2. Connections to steam or steam boilers: | |
| a. Boilers 400,000 btu/hr or larger | AG, RPPD |
| b. Boilers with chemical feeders | AG, RPPD |
| 3. Lawn sprinkler systems | AG, RPPD |
| 4. Bulk chemical tanks | AG, RPPD |

HIGH DEGREE OF HAZARD NOT SUBJECT TO BACK PRESSURE

- | | |
|---|--------------------|
| 1. Sewer connection waste lines | AG, RPPD, PVB, AVB |
| 2. Low inlets to receptacles containing toxic materials (includes lawn sprinkler systems) | AG, RPPD, PVB, AVB |
| 3. Coils or jackets used as heat exchangers in compressors, degreasers, or other equipment: | |
| a. In sewer lines | AG, RPPD |
| b. In toxic materials | AG, RPPD |
| 4. Flush valve toilets | AVB |
| 5. Toilet and urinal tanks | AG, AVB |
| 6. Trough urinals | AVB ¹ |
| 7. Valved outlets with hose threads | AG, RPPD, PVB, AVB |
| 8. Lawn sprinkler systems | AG, RPPD, PVB |
| 9. Bulk Chemical Tanks | AG, RPPD |

LOW DEGREE OF HAZARD SUBJECT TO BACK PRESSURE

- | | |
|-------------------------------------|----------------|
| 1. Pumps, tanks and lines handling: | |
| a. Non-toxic materials | AG, RPPD, DCVA |

¹AVB must be installed not less than 30 inches above flush tube.

NOTE: 1. Double Wall Heat Exchangers with atmospheric vent must always be used when heating potable water.
2. Low hazard boilers must have a properly air gapped blow-off.

2. Connections to steam or steam boilers:

- a. Boilers smaller than 400,000 btu/hr

AG, RPPD, DCVA

LOW DEGREE OF HAZARD NOT SUBJECT TO BACK PRESSURE

1. Low inlets to receptacles containing non-toxic materials without chemical feeders
2. Low inlets to domestic water tanks
3. Coils or jackets used as heat exchangers in compressors, degreasers, or other equipment:
 - a. In non-toxic substances

AG, RPPD, PVB, AVB,
DCVA

Treat each case individually

AG, RPPD, DCVA

DUAL CHECK VALVES

A common issue is the installation of backflow preventers, usually dual check valves, at each service connection. Installation of these devices at each service connection to the public water supply is not a requirement of KDHE. A backflow preventer needs only be installed where it is determined a cross connection exists, or the potential for a cross connection is imminent. Protection at every meter or any connection to the public water supply is an option of the water supplier.

Containment by installation of dual check valves may be used as an optional part of an overall local cross connection control program, but may not be considered the total answer to cross connection control. Isolation of contaminants at the point where they may enter the potable water is essential to the cross connection control program.

Installation of a dual check valve results in the consumers piping beyond the dual check valve becoming an enclosed system. The consumer may need to install a pressure relief device to allow for thermal expansion. The water supplier needs to inform the property owner of this potential problem.

Dual check valves need to be inspected, cleaned, and repaired at least every third year to protect the integrity of the device. This type of backflow preventer like any other device requires regular inspection and maintenance.

The dual check valve is approved for use only at the meter or service connection, and cannot be used in place of the double check valve assembly. The dual check valve cannot be tested whereas the double check valve assembly can. The dual check valve may be located in a meter box below ground while the double check valve assembly must be accessible for regular inspection, testing, and repair.

A single check valve is not an acceptable cross connection control device.

ISOLATION AND CONTAINMENT

Containment is a policy of protecting a water supply system by preventing cross connections in a building or premises from causing backflow into the distribution system. This is accomplished by requiring backflow prevention devices at the point of delivery of water to the customer. A containment policy does not serve to detect and eliminate cross connections and prevent backflow and backsiphonage as required by KAR 28-15-18(h).

An acceptable cross connection control program should stress finding and eliminating cross connections within the customer's plumbing system.

GRANDFATHER CLAUSE

It is not appropriate to grandfather a premises where a cross connection or the potential for a cross connection may exist. It is appropriate to give highest priority to new construction. However, the program goal should be to detect and eliminate cross connections and prevent backflow and backsiphonage throughout the water supply system.

Reference:

The following documents are recommended as sources of information on cross connection control:

Manual of Cross Connection Control, Eighth Edition, Foundation for Cross Connection Control and Hydraulic Research, University of Southern California.

Cross Connection Control Manual, USEPA Edition June 1989.

AWWA No. M14 Backflow Prevention and Cross Connection Control and Cross Connections and Backflow Prevention 2nd Edition, American Water Works Association.

Energy and Natural Resource Committee

I and the contractors of Manhattan support Senate Bill 611. Lawn sprinkler systems have been unfairly classified as a high hazard, no matter whether they have injection systems on them for chemicals and fertilizers or not. There has to be a separation of degree of hazard. Systems with injectors have to provide a lot higher degree of hazard than those without them. Let's keep the separation of hazard as it has been in the past, instead of trying to put a blanket coverage on them. There is a difference.

There are other states that allow double check valve backflows on their sprinkler systems and that is really what we are talking about here. This may be contrary to what some groups or organizations may tell you today. Why ban a product that has been working in our state and others, when there isn't any documentation that the product hasn't done the job it was designed to do. It has a record of being more maintenance free and cheaper, while doing the same job. I think you will find that most distributors will tell you that 90% of the parts sold for backflows are for backflows installed above ground that freeze. This doesn't include the pipes leading to the backflow that may have burst and cause hazard. Double check backflow devices can be installed in valve boxes in the ground and tested, so they don't have the freeze problem that above ground backflows do.

Let's vote for Senate Bill 611 and vote for the citizens of Kansas instead of special interest groups. What they're really looking at is the making money angle, instead of their customers interest. Aren't the citizens of Kansas settled with enough taxes

Energy & Natural Resources
Attachment # 4
3/10/94

and fixed cost without another? I think the old saying goes "If it ain't broke don't try to fix it." Thank you for your time. If you have any other questions feel free to contact me.

Daryl Myers
Blueville Nursery Inc.
4539 Anderson Avenue
Manhattan, KS 66502
(913)-539-2671

March 10, 1994

M E M O R A N D U M

TO: Kansas Senate Hearings

FR: Mark A. Taussig

RE: SB 611 Proponent

I. Vita: Mark Taussig

- KSU, Bachelor of Landscape Architecture, 1979
- KSU, Master of Public Administration, 1990
- Experience in design and operation of lawn irrigation systems in institutional setting, 1979 to Present
- Presently serving as university landscape architect, Kansas State University

II. Purpose

My purpose is to speak in behalf of legislation that would support provisions for constructing safe irrigation systems. And, to speak against regulations that, in my judgment creates not only more hazardous irrigation systems but much more costly systems.

III. Lawn Irrigation System Description

A. Typical Existing Irrigation Systems Are Low Hazards

Six Safety Barriers That Make Existing Systems Low Hazard

- 1) **Side Opening:** Water outlet opening on side not top of irrigation head so that materials do not drop into system.
- 2) **Head Seal:** Rubber gasket around riser that seals out foreign materials.

*Energy & Natural Resources
Attachment #5
3/10/94*

3) **Head Check Valve:** When the water stops running, this valve automatically shuts and prevents water from flowing up stream. Consider for example, when you have a straw filled with water, it will not drain out when you place your finger on one end of it.

4) **Remote Control Valve:** This valve, located at the beginning of each irrigation zone, is normally shut and prevents water from flowing in either direction.

5) **First Check Valve:** This valve is the first in a series of two valves (Double Check Valve - DCV) that prevents the water from flowing back into the potable water supply anytime there is a backflow condition. No water will come out of the system unless a remote control valve is open.

6) **Second Check Valve:** In the event that the first check valve failed and that a remote control valve was open, this valve would prevent a backflow condition.

B. Atypical Irrigation Systems

Some irrigation systems built can be classified as High Hazards and should be regulated as a High Hazard.

1) **Fertilizer Injection:** Some systems, mostly commercial green houses and nurseries will inject fertilizer into their irrigation system to fertilize automatically.

2) **Non-Potable Connections:** On rare occasions a system may be connected to both a potable and non-potable water supplies.

3) **Improper Design or Construction:** As with any project that can be systems that improperly designed or constructed. This scenario could happen with or with KDHE regulations.

IV. Proposed KDHE System Description and Associated Problems

A. Reduced Pressure Device (RPD): This device, required for high hazard systems, must be located above ground in a freeze safe environment.

B. Cost Associated With RPD

- RPD costs about 30% more than a DCV (\$300 more for 2 inch)
- Maintenance for RPD is more because it is more complex than DCV
- Utility hot box required to protect RPD from weather and damage
- Electricity must be run to RPD to protect from freezing
- Larger pipe and additional valves required because of the 300% increase in pressure losses due to RPD
- Costs involved in removing perfectly good existing DCV's

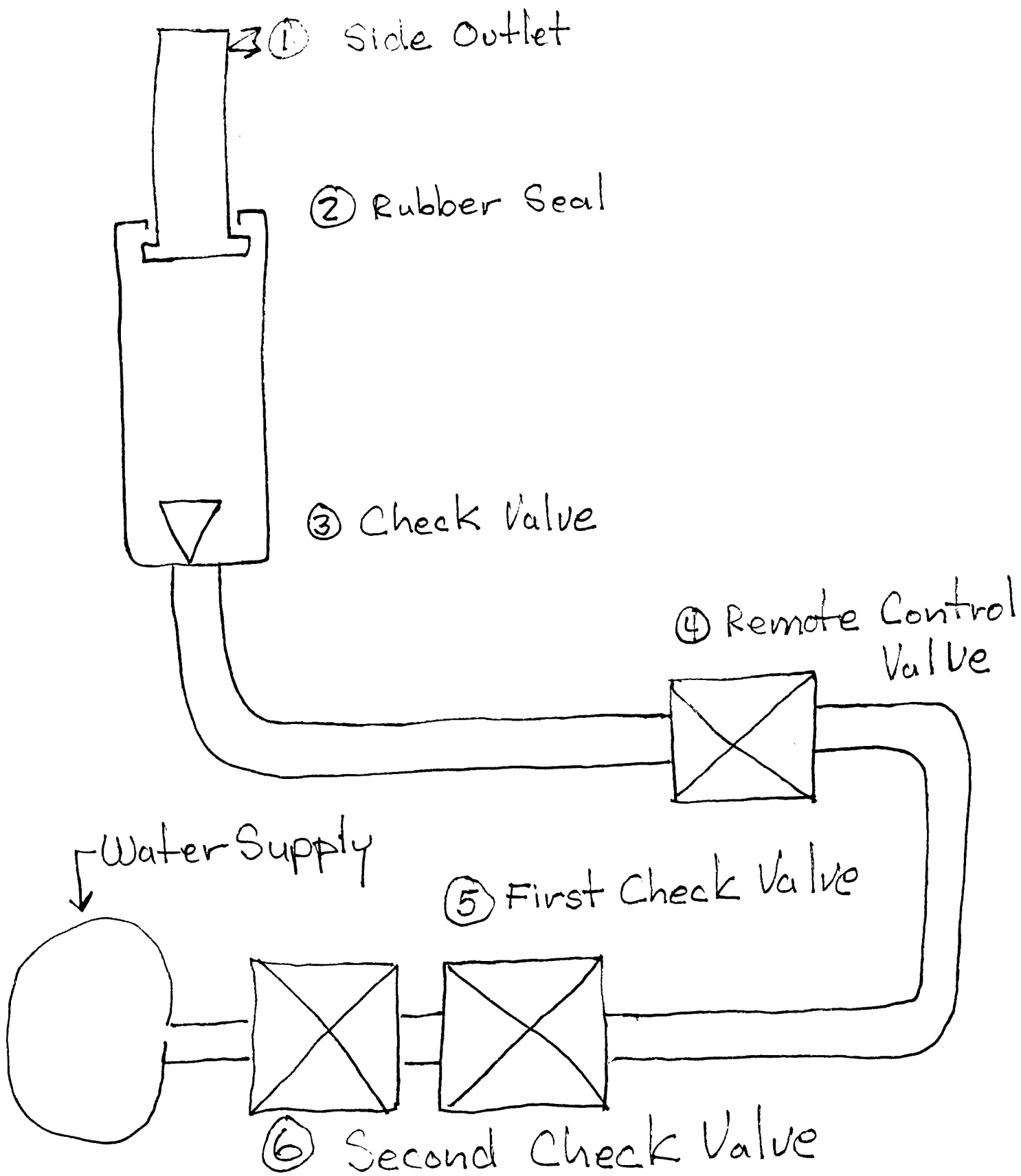
The cost to Kansas State University to conform to regulations is approximately \$200,000. We presently irrigate 70 acres with 35 irrigation systems.

C. Increased Hazard

The proposed RPD device installed in our environment is a higher hazard than a DCV. The RPD is subject to freezing, accidental damage, vandalism, and due to its more complex nature, it has greater potential for failure.

V. Summary

Considering that lawn irrigation systems are low hazard, and that the RPD costs much more, has an increased risk of failure, and other associated technical shortcomings, the DCV should be recommended in lawn sprinkler applications. It is unjustified to apply an ordinance that has such broad ranging obstacles to so many people when the intended target group is less than one percent of the total affected.



LAWRENCE HOMEOWNER SUPPORT FOR SENATE BILL No. 611

March 10, 1994

Who?

- Spokesperson, Mark Hirschey, PhD University of Wisconsin-Madison (Economics), dissertation research on how to improve federal, state and local government subsidy programs.
- KU Professor of Business, with over 35 articles and 7 books. Written extensively on the Role of Government.
- President of AME, editor of *MDE*, expert witness before State Regulatory Commissions, state and federal courts—always on behalf of good government.

What?

Lawrence homeowners have raised legitimate concerns about KDHE backflow prevention regulations that, if unchallenged, would create the risk of public water supply contamination and waste millions of Kansas taxpayer dollars. After eighteen months of careful investigation, we have learned:

- Below-ground double-check backflow prevention devices are a durable and effective method for backflow prevention from lawn sprinkler systems.
- At the behest of selfish private interests, KDHE illegally tried to compel homeowners to install inferior and potentially dangerous above-ground backflow prevention devices on lawn sprinkler systems.
- KDHE is unable to provide a *single* instance of water system contamination due to the failure of a below-ground double-check backflow prevention device on a lawn sprinkler system. Meanwhile, Lawrence homeowners have documented evidence of *thousands* of above-ground device failures due to freezing, vandalism and theft.
- It is costly to replace below-ground double-check backflow prevention devices with inferior above-ground devices. Water purveyors estimate retrofitting costs at \$500 to \$2,000 per lawn sprinkler system.

Why?

In response to concerns expressed by over 150 Lawrence homeowners, among others, the Kansas Senate has recently passed SB 611 to permit the continued use of safe and effective below-ground double-check backflow prevention device on lawn sprinkler systems in Kansas. If passed by the Kansas House and signed by the Governor, this law will help protect the environment and avoid the unnecessary waste of *millions* of dollars of Kansas taxpayer money.

- As a citizen, I am shocked that KDHE would endanger our water quality by compelling replacement of effective below-ground double-check backflow prevention devices with above-ground devices that are prone to freeze and rupture in the Kansas environment.
- As a taxpayer, I am stunned that KDHE ignores homeowner concerns in favor of selfish private interests that distort the regulatory process to sell, repair, and replace defective backflow prevention devices.
- As a voter, I am dismayed if good Kansans are willing to put up with this.

The Bottom Line: Net Benefits Gained Through Adopting Senate Bill No. 611

- Allowing lawn sprinkler systems to be fitted with testable low-hazard backflow devices benefits all Kansas homeowners through safe, effective backflow prevention.
- Kansas homeowners avoid obvious and well-known winterization, vandalism, theft and freezing problems of above-ground devices.
- Kansas homeowners avoid unnecessary waste of millions of dollars for retrofitting safe and proven backflow prevention devices that are *superior* to above-ground alternatives.

Energy & Natural Resources
Attachment #6
3/10/94

Mark Hirschey, PhD
4604 Merion Court
Lawrence, KS 66047-1811
(913)864-7563 (913)749-1175

Cross-Connection Phone Conversations

October 16, 1992

Ron Baker at Willowridge (842-7022) called to discuss the winterization problem. Above-ground valves cannot be winterized in such a manner to maintain system integrity. Gives name of Mark Gerard with KDHE (296-5520) as a cross-connection expert.

October 20, 1992

Glen at Lawrence Landscape (843-4370) gives Watts and Febco as the manufacturers of the Dual check, Double Check and RPZ (reduced pressure) backflow prevention devices. Glen says that a new cross-connection group is forming to get in on the gravy train.

October 20, 1992

I called Industrial Sales in Kansas City (800/662-6750) at the suggestion of Glen at Lawrence Landscape. I talked with Doug Dallman. Dallman relates that Dan Grover, RWD #1, Johnson County (722-2852) has encountered stiff resistance to the PVB (pressure vacuum breaker) imposed retrofit. Only 2-3% voluntary compliance. Winterizing the PVB is also a problem, they take the device off at the union joint, thus creating a cross-connection that is potential more dangerous than the one they are trying to cure!

- Again note: backflow from washers (without air gaps), hot tubs, swimming pools, toilets are all potentially more dangerous than lawn sprinkler systems. Why not put in a double check valve at the meter? Dallman suggests that this would cure any such problem.

October 20, 1992

I got a call back from Bob Johanning (843-1882, 865-8382 mobile), the local manufacturer's representative for Industrial Sales. Johanning relates that RPZ valves burst in Las Vegas a few years ago following an early freeze.

October 22, 1992

Dave Corliss (832-3000) called to set up meeting before City Commission.

October 22, 1992

I called Mark Gerard with KDHE (296-5520) as a cross-connection expert. No cross-connection control device of any kind in San Louis Obispo case, June 1986--County Engineering Department San Louis Obispo County, defective operating valves. *Water purveyor*, not KDHE, must determine degree of hazard (high or low). High hazard is injury or death (with fertilizer, insecticide or herbicide), low is aesthetic (dirty water).

- KDHE requires a cross-connection program. Must have an ordinance or regulation, survey system for potential cross-connections, must determine the degree of hazard, require appropriate backflow prevention installation.
- High hazard KDHE requires an air gap, RPV or PVB (pressure vacuum breaker) devices.
- Dual check not testable, not usable. Double check is testable, and approved for low hazards only.
- Winterizing system exposes risk.
- KDHE has not done any assessment of the dollar or other benefits of this program.
- University of Southern California College of Engineering (backflow prevention

*Energy & Natural Resources
Attachment 7
3/10/94*

devices) does the testing and recommendation of high risk valves. They do not have a winterizing problem, nor any suggested solution.

- McPherson and Wellington, Kansas, have determined that lawn sprinkler systems are low hazard. Both allow double check valves to be installed. KDHE respects their decision and does not plan to force changes. KDHE recommends device choices only (does not dictate). Device manufacturer and tester are, in the opinion of KDHE, solely responsible for the performance of each device. KDHE does not have a solution to winterization problem, and KDHE is not responsible for failures.
- I may want to contact Mike Logston (314/751-4594) environmental engineer in Jefferson City Missouri.
- I may want to contact Al Hermsen (272-4959) runs a cross-connection training program for American Backflow Prevention Association (ABPA), and is a retired plumbing inspector for the City of Topeka. (Conversation time: 11:20 AM-12:30 PM.)

October 22, 1992

I received a call from A.B. Preston, City Manager of Wellington, Kansas (316/326-2811), and Charles Soules, City Engineer. Double-check is both permissible and approved for lawn sprinkler systems in Wellington, Kansas. (Conversation time: 2:00 PM-2:30 PM.)

October 22, 1992

I called Francis Anderson, Deputy City Clerk of McPherson, Kansas (316/241-6300). Spoke with City Administrator, Bill Goering, and Tim Maier, Assistant General Manager, Board of Public Utilities. Double-check is both permissible and approved for lawn sprinkler systems in McPherson, Kansas, provided that there is no fertilizer injection. (Conversation time: 2:30 PM-3:40 PM.)

- Underground device is more secure, deter vandals (from college students), avoids above-ground accidents.
- Underground devices are better protected from freezing problems.
- Freezing/rupture problems at least once a year with above-ground PVB or AVB (atmospheric vacuum breaker).
- Devices have to be approved by one of: University of Southern California (USC), American Water Works Association (AWWA), or American Society of Sanitary Engineers (ASSE).
- Only plumbers can inspect, average charge \$75. This provision appears to be overly restrictive and cuts competition, cites price gouging. It would be better to allow all trained personnel do inspections.

October 22, 1992

I called Daryl Huff at Turf Masters (842-2888). Left message.

October 22, 1992

I called County Engineering Department San Louis Obispo County (805/781-5252), Tony Boyd, County Engineering Department, in charge of hydraulic (water and sewer) operations. Winterizing problems make above-ground devices impractical for Kansas. Given name of Doug Bird (805/781-5114), water systems chemist in water quality; you may want to talk to County Health Department.

October 22, 1992

I called Dan Grover, RWD #1, Johnson County (722-2852). RPZ (in basements, problem with flooding basements) or the PVB (pressure vacuum breaker) are allowed. (\$500-\$2,000 installation, now \$350-\$800 (now); \$25-\$120, \$35-\$55 (now) for testing.)

- Absolutely no evidence of a lawn sprinkler backflow problem in Johnson County.
- Only 3,600 of 30,000 systems have "voluntarily" complied (new construction is required). This 3,600 is largely comprised of new construction, where RPZ devices are mandatory.
- Winterizing safely is difficult and requires training.
- Unexpected freezes will rupture systems. If RPZ breaks you have a fountain head, water just dumps out of it.
- Homeowners now urged to disconnect backflow prevention device at the "U" joint and store in the garage for winterization.
- Following disconnection, nothing is left to protect against backflow--you have an exposed pipe.
- Grover is not aware of vandalism and theft problems with above-ground devices.
- Grover suggests that guarding against freezes is best prevented with installation of an insulated and heated "hot box." He himself, does not have such a system, nor a lawn sprinkler system, "a ridiculous device, doesn't like them and wouldn't have one."
- Cost to Johnson County homeowners for replacement of double-check valves is \$30 million; no evidence of economic benefits. As a water engineer, Grover does not feel it is necessary to justify the cost of water regulations with any resulting economic benefits. (Conversation time: 2:30-3:15 PM.)

October 22, 1992

I called Doug Bird (805/781-5114), County Engineering Department San Louis Obispo County, water systems chemist in water quality. San Louis Obispo case *did not* have a backflow prevention device. (Conversation time: 3:30-4:00 PM.)

- You may want to call Bud Veach (805/781-5544), County Environmental Health Department San Louis Obispo County, Cross-Connection Program Control Coordinator.

October 22, 1992

I called Bud Veach (805/781-5544), County Environmental Health Department San Louis Obispo County, Cross-Connection Program Control Coordinator. Left message.

October 22, 1992

I returned call of Dave Corliss (832-3000), City Manager's Office. Agenda item set for November 24th. (Conversation time: 4:00-4:15 PM.)

October 23, 1992

I got a call back from Bob Johanning (843-1882, 865-8382 mobile), the local manufacturer's representative for Industrial Sales. Johanning will get data on RPZ valve burst in Las Vegas a few years ago following an early freeze. (Conversation time: 10:00-10:30 AM.)

October 23, 1992

I called Daryl Huff at Turf Masters (842-2888). Left message.

October 23, 1992

I called Doug Bird (805/781-5114), County Engineering Department San Louis Obispo County, water systems chemist in water quality, to get better information on the San Louis Obispo case. He reiterated that the case in point represented a faulty operating valve, and had no backflow prevention device. (Conversation time: 2:50-3:00 PM.)

October 23, 1992

I called City Manager in Wichita, Kansas (316/268-4351). Left message. Dave Warren will call Friday or Monday to provide particulars. (Conversation time: 3:00-3:05 PM.)

October 23, 1992

I called Commissioner Schumm (842-7337), to report on findings to date. Left message.

October 26, 1992

I received a call back from Joe Botinelly, Water Distribution Superintendent, Wichita, Kansas (316/268-4908). Require a pressure vacuum breaker (PVB) for new systems, double checks are allowed to remain in use if properly installed and inspected regularly (once a year, with five-year overhaul). (Conversation time: 9:50-10:15 AM.)

October 26, 1992

John Ostmeyer, Watts Regulator, stopped by KU office to discuss backflow codes and problems. With backflow prevention device installation by a plumbing contractor, and system turn on and maintenance by a lawn irrigation professional, who is it that provides warranty protection on the backflow prevention device?

- Lawrence code does not address other backflow prevention problems, e.g., fire sprinkler systems, mortuaries, hospitals, chemical labs, car washes, vet clinics. Above-ground devices are easier to test, but are subject to freezing, vandalism, theft of brass couplings for scrap (Florida, Georgia, Carolinas). Hot Box enclosures cost is \$200 for homeowners (additional costs for security padlocks).
- Water purveyor is responsible for water quality to the last free-flowing tap in their system according to the 1974 Federal Clean Drinking Water Act (EPA requirements) (Conversation time: 1:30-3:00 PM.)

October 26, 1992

I called back Roy Cromer, Wichita-Sedgwick County Health Department (316/268-8359). After September 1, requires a pressure vacuum breaker (PVB), or RPZ device for systems with chemical irrigation injection systems (feed stores nurseries, etc.). Double checks are allowed to remain in use if properly installed and inspected and tested regularly with routine maintenance (once a year, with five-year overhaul). County health will try to force replacement after five years, unless and until challenged. Winterization using Schrader valve below grade, which itself could cause a cross connection. With an early freeze, and a thaw, then there is a possible problem with cross connection. *Would like to keep double checks, but was dissuaded from doing so by KDHE.* Retrofitting is done by lawn irrigation contractors with plastic (PVC) pipe allowed (or copper), cost is variable (Conversation time: 3:00-3:30 PM.)

November 19, 1992

I called Ms. Katie Paulson (702/871-3240) and left message.

November 20, 1992

I called Ms. Katie Paulson (702/871-3240) and left message; also called (702/221-0009) and left message.

November 20, 1992

I called Bud Veach, Environmental Health, San Louis Obispo, California (805/781-5544) and left message.

November 20, 1992

I called Ms. Katie Paulson (702/379-4940). In the first week of January 1990, the temperature in Las Vegas reached 7 to 8 degrees F. All above-ground double-check (DCA), pressure vacuum breaker (PVB) and reduced pressure (RPA) valves burst and water flowed; pot iron split wide open. Several thousand valves were affected; all Rainbird, Toro, Febco stock nationwide was sent to Las Vegas (over 10,000 in all). Double check (DCA) is overkill, an expensive and durable 100% effective backflow prevention device for lawn sprinkler systems. A properly functioning DCA valve is *more* effective than a properly functioning PVB valve because it has *two* rather than one spring loaded valves to prevent backflow contamination. (Conversation time: 3:00-3:45 PM.)

November 20, 1992

I called Jerry Heater (816/234-4297), business editor for the Kansas City Times, and left message; called Shirl Kasper (816/234-4326), reporter for the Kansas City Times. (Conversation time: 4:10-4:30 PM.)

November 23, 1992

I called Daryl Huff at Turf Masters (842-2888). Talked about definition of various types of valves. (Conversation time: 9:00-9:30 AM.)

November 23, 1992

I called Mark Gerard with KDHE (296-5520). Lawn sprinkler systems are in grey area; some may regard as high, some consider it low. Not aware of any wide-spread winterization problems with above-ground devices. (Conversation time: 3:25-3:30 PM.)

November 23, 1992

Talked to Jerry Heater (816/234-4297), business editor for the Kansas City Times. Heater will contact reporter from the Johnson County News Desk. (Conversation time: 3:25-3:30 PM.)

November 23, 1992

I called Mike Wildgen, City of Lawrence (832-3401) is at 6:30 in City Hall, 6th and Massachusetts, Ground Floor City Commission Room. Time of meeting is at roughly 7:15 PM. Range from 5 to 15-20 minutes.

November 24, 1992

I called Mark Gerard with KDHE (296-5520). To get name of boss and Secretary. Left message for Gerald Grant with KDHE (296-5508). (Conversation time: 10:25-10:30 PM.)

I called Rod Bremby, City of Lawrence (832-3401) to tell him about KDHE letter. (Conversation time: 2:25-2:30 PM.)

January 19, 1993

I called Daryl Huff at Turf Masters (842-2888). Talked about Al Hermson opposition to lawn sprinkler systems. (Conversation time: 11:35-11:45 AM.)

January 19, 1993

Call back to David Corliss, City staff (832-3400). Double check is ok. (Conversation time: 3:45-4:00 PM.)

January 19, 1993

I called Roy Cromer, Wichita-Sedgwick County Health Department (316/268-8359). On vacation (Conversation time: 3:45-4:00 PM.)

July 22, 1993

I called Glen Westervelt at Lawrence Landscape (843-4370). Left message. (Conversation time: 2:20-2:21 PM.)

July 22, 1993

I called Daryl Huff at Turf Masters (842-2888). Left message. (Conversation time: 2:21-2:22 PM.)

July 22, 1993

Call back from Daryl Huff at Turf Masters (842-2888). Told him I will send copies of my letter to the homeowners. (Conversation time: 3:00-3:05 PM.) Left message. (Conversation time: 2:21-2:22 PM.)

July 22, 1993

Call back from Glen Westervelt at Lawrence Landscape (843-4370). Told him I will send copies of my letter to the homeowners. (Conversation time: 3:20-3:25 PM.)

July 22, 1993

I called Mike Wilgen, City of Lawrence (832-3401) to ask for addresses of City Commissioners. (Conversation time: 3:25-3:30 PM.)

July 22, 1993

I called Mark Gerard with KDHE (296-5520) to ask for address for Mr. Jones. (Conversation time: 4:05-4:10 PM.)

February 1, 1994

Daryl Huff, Turf Masters, (842-2888) called to invite me to meet over lunch to discuss the introduction of Senate Bill No. 611. Met for lunch at Caspers (dutch treat) from 12:30-1:30 PM.

February 2, 1994

Daryl Huff, Turf Masters, (842-2888) called to invite me to go to Topeka hearing on Senate Bill No. 611. Hearing at 8:00 AM on Thursday February 2, 1994. (Conversation time: 3:50-3:53 PM.)

February 7, 1994

I called Ms. Katie Paulson (702/379-4940); Barbara Cosse related that Katie is out of town until Friday. She corroborated that in the first week of January 1990, the temperature in Las Vegas reached 7 to 8 degrees F. All above-ground double-check (DCA), pressure vacuum breaker (PVB) and reduced pressure (RPA) valves burst and water flowed. *Thousands of valves were*

affected. Ms. Cosse suggested I talk to the maintenance staff at the Tropicanna Hotel to confirm an example of the problem (702/739-2222). (Conversation time: 12:30-12:35 PM.)

February 7, 1994

I called the Tropicanna grounds crew maintenance department (702/739-2222). Left a message for Don Davis. Many DCA and PVB valves broke, as did outdoor faucets, and so on. (Conversation time: 12:40-12:45 PM.)

February 7, 1994

Don Davis, Tropicanna grounds crew maintenance department, called back and corroborated that I called the Tropicanna grounds crew maintenance department (702/739-2222). Left a message for Don Davis. Many DCA and PVB valves broke, as did outdoor faucets, and so on. Turf Equipment (702/873-2468) largest supplier of sprinkler parts in Nevada. Suggested I talk to Larry Kennedy. (Conversation time: 1:30-1:40 PM.)

February 7, 1994

I called Larry Kennedy at Turf Equipment (702/873-2468), the largest supplier of sprinkler parts in Nevada. Surprise freezes expose the above-ground backflow prevention devices to potential damage. In January, 1990, or in December, 1989, wind chill hit below 0 degrees F in Las Vegas, the once-in-a-lifetime freeze. Above-ground systems, even the ones that were properly wrapped with drip tape, and so on, were severely damaged. While there is no way of knowing exactly how many systems were damaged in the area, Turf Equipment itself (just one supplier) supplied parts or replacement valves for in excess of 1,000 units in which the backflow prevention devices were rendered inoperable. If homeowner is unable to use a double-check valve below grade, recommends reduced pressure (RPA) valves with proper drainage below the vault. FAX (702/873-7548). (Conversation time: 1:45-2:00 PM)

February 14, 1994

I called back Ms. Katie Paulson (702/221-0009), Star Nursery. Katie confirmed the facts of our November 20, 1992 conversation, and will send a letter. (Conversation time: 3:50-4:05 PM.)

March 9, 1994

I called Daryl Huff at Turf Masters (842-2888) to ask about the time of the House hearing. Left message.

March 10, 1994

Daryl Huff at Turf Masters (842-2888) called and left message that House hearing in Room 526 South at the Capitol Building at 3:30 PM.

**EQUIPMENT SUPPLY CO.****CORPORATE OFFICE****3558 S. PROCYON AVE. • LAS VEGAS, NV 89103
(702) 873-2488**

February 8, 1994

Mark Hirschey
Professor of Business
Faculty Suite
Summerfield Hall
Lawrence, Kansas

Dear Professor Hirschey:

Per our telephone conversation yesterday, I'm sending you this note to substantiate the following facts:

I am Larry Kennedy of Turf Equipment Supply Co., a leading irrigation supplier.

Surprise freezes can expose above-ground backflow devices and cause damage to the devices.

In December, 1990; a hard freeze hit Las Vegas and above-ground backflow devices, even the ones that were properly wrapped with tape, were damaged.

Turf Equipment has no way of knowing how many devices were damaged in the area. We supplied replacement parts that exceeded 1,000 units.

There were five other irrigation suppliers that participated in the repair of the above-ground backflow devices.

I hope this information is helpful.

Sincerely,

Larry Kennedy
Secretary/Treasurer

LK:mm

TURF WEST (702) 367-2287
6555 W. Sahara • Las Vegas, NV 89102

TURF EAST (702) 456-4620
32 Commerce Center Dr. • Henderson, NV 89014

TURF NORTH (702) 856-8150
6164 W. Alexander • Las Vegas, NV 89108

FEB 8 '94 16:10

7028730648 PAGE.002

=== COVER PAGE ===

TO: _____

FAX: 19138645328

FROM: TURF EQUIPMENT

FAX: 7028730648

TEL: 7028732468

COMMENT:

FEB 8 '94 16:10

7028730648 PAGE.001

State of Kansas

Joan Finney, Governor



Department of Health and Environment

Robert C. Harder, Secretary

Testimony Presented to
House Energy & Natural Resources Committee

by

The Kansas Department of Health and Environment
Senate Bill 611

The Kansas Department of Health and Environment is presenting testimony in opposition to Senate Bill 611.

Cross connections are connections between potable water systems and any source of contamination which would contaminate the drinking water.

Examples of cross connections range from a garden hose immersed in a wading pool or mop sink to a submerged potable water inlet to a metal plating tank. A loss of pressure due to a main break or even a partial loss of pressure due to excessive demand can cause a reversal of flow, bringing the contaminants back into the potable water system. For instance, a break in a water main allows the water to blow out of the main faster than it can be replenished, causing a vacuum in the water main; any cross connection to the main will allow contaminated water to be drawn into the water supply.

The water purveyor is responsible for the quality of water delivered to the consumer. The water must meet stringent standards for quality as defined by the Safe Drinking Water Act. Suppliers of water go through tremendous expense to bring the consumer a safe, high quality water. It is as important that the water be protected from subsequent contamination as it is to adequately treat the water in the first place.

Specific examples of backflow from irrigation systems are rare. We have two incidents which have been documented, however. In the first instance a water main break caused back-siphonage of contaminated water from a lawn sprinkler system into residences. The incident was particularly noticeable to the residents because of the nematodes (small, slender, worm-like organisms) which appeared in their water. This incident was caused by the main break which created the vacuum in the main, and a malfunctioning backflow protection device. The device was not suitable for the application and was installed incorrectly.

In the second example, one area of the San Luis Obispo County, California, water system did not meet drinking water standards during the months of April and June, 1986. It was found that an underground sprinkler system had been installed without an approved backflow prevention device. Tests showed that the operating valves for the sprinkler system were defective, allowing

Energy & Natural Resources
Attachment #8

3/10/94

contaminated water to be backsiphoned into the water main. This resulted in bacteriological contamination. The water supply to the sprinkler system was turned off and later tests showed the problem to be solved.

Clearly some type of protection is needed as we cannot guarantee full pressure will always be maintained in water distribution systems. The question is how much protection is enough?

There are three basic types of devices which can be utilized for backflow protection:

1. air gaps
 2. vacuum breaker type devices
 3. devices utilizing check valves
1. Air gaps are the best protection of all as a physical separation is maintained between potable and non-potable water. This type of protection is rarely used on lawn systems.
 2. Vacuum breaker devices are suitable for high hazard applications when installed correctly. They must be installed above the highest outlet of the irrigation system, necessitating above ground installation. When supply pressure drops, the device opens -- allowing air into the system -- thereby preventing a siphon from being formed. The proposed KDHE regulations require the pressure vacuum breaker rather than the atmospheric vacuum breaker. The pressure vacuum breaker is equipped with test cocks so that it can be tested and can be used under continuous pressure conditions. Both the pressure vacuum breaker and the atmospheric vacuum breaker are listed for high-hazard applications. These devices control backsiphonage only; they will not prevent water under pressure from reverse flow. Both must be installed above ground as immersion in water will cause a potential backsiphonage hazard.
 3. Two devices use check valves: the double check valve assembly and the reduced pressure principle backflow preventer (RPPD). The check valve is the heart of both systems. In backflow prevention devices the check valve is a spring-loaded disc which, in the event of backflow, seats against a resilient seat. If the valve seats perfectly, reversal of flow is prevented. However, there is an inherent tendency toward the failure of a check valve to properly seat. Thus there are two independently acting check valves in a double check valve assembly. Generally devices are tested annually to make sure adequate protection is provided. Several factors can, with time, cause a failure of a check valve to seat correctly:
 - a. A water which precipitates calcium carbonate scale.
 - b. Groundwater which contains dissolved iron and manganese which precipitates in the water supply mains and service lines. Precipitated iron and manganese tends to coat the inside of water mains and appurtenances and form deposits.

- c. Groundwater which contains sand. A few water supply wells in western Kansas pump sand. Some are equipped with sand traps, others simply pump a small amount of sand into the distribution system causing malfunction of service meters, clogging of strainers, etc. Sand can cause a check valve to fail.
- d. Eventual loss of elasticity of the valve seat and springs.

The double check valve assembly is basically two independently acting check valves in series. The unit has two gate valves, one at either end, with the two check valves, in series, in between. Test cocks are provided. The weakness of the device is its reliance on check valves only, which may not seat properly, and that of all the devices, the double check assembly can fail without any visual indication. However, of the backflow prevention devices the double check valve assembly is the only one that can be installed in a vault without undue risk of becoming a backflow hazard. The installation of these units in a pit is not recommended as it makes testing and servicing of the unit inconvenient and corrosion of the units is accelerated in the damp conditions.

To counter the inherent problem of check valves failing to seat, the reduced pressure principle backflow preventer was developed. This unit has two independently acting check valves in series similar to the double check valve assembly. An added feature is a spring-loaded diaphragm located in a chamber between the two check valves which will release backflow to the atmosphere upon failure of the downstream check valve under conditions which would cause backflow. The relief valve between the two check valves opens when the pressure in the chamber comes to within one psi of the water main pressure. Thus the unit will prevent backflow, even if the check valves fail to seat. The RPPD is suitable for prevention against back siphonage and back pressure. The unit cannot be installed in a pit or vault as it would present a backsiphonage hazard.

Several model ordinances were developed to assist local water supplies in administration of their programs. As more questions arose on technical details KDHE developed a cross connection policy document to provide the guidance that was requested. Seven hundred and eighty (780) public water supplies have begun a cross connection control program. This total represents 95% of the cities and 87% of the rural water districts. SB 611 would cause most of these local programs to modify their sprinkler system requirements.

KDHE believes adoption of requirements less stringent than those of national plumbing codes and recommendations of those entities involved in training and formulation of standards, will leave the water purveyor legally responsible for damages should an accident occur.

KDHE bases many of its rules and regulations upon standards developed by outside organizations which are considered to be the best in the field. KDHE uses technical criteria developed by the American Water Works Association and National Sanitation Foundation, for instance, in requirements for pipe, coatings, and other materials used in water supply systems. In this case, standards developed by national plumbing codes, AWWA, University of Southern California Foundation for Cross Connection Control and Hydraulic Research,

and several other states were used in developing Kansas standards.

The question of cost to the homeowner is always presented as evidence that the double check valve assembly should be used. Since the risk is so small, it is argued, the double check valve assembly should be used because it is much less expensive for the homeowner. The following costs were obtained from a Kansas City supplier:

	<u>1"</u>	<u>1-1/2"*</u>
Pressure vacuum breaker (High Haz)	\$165.10	\$353.80
RPPD (High Haz)	\$452.10	\$727.30
Double Check Valve Assembly (Low Haz)	\$232.00	\$401.00

*Costs from Watts 1992 Catalog

These are list prices for 1" and 1-1/2" devices and do not include installation costs. However, correct installation of the double check valve assembly would be in a well-constructed water tight vault with drainage to the atmosphere. The pit or vault should be large enough to provide room to install test gauges and for servicing of the unit. Construction of this pit or vault would make the cost of the double check valve assembly comparable to the cost of the RPPD. Please note that the cost of the double check valve assembly is more than that of the vacuum breakers which are suitable for high hazard. Only the property owners with steeply sloping lots may not be able to use the vacuum breakers and would instead have to install the RPPD.

In summary KDHE wishes to emphasize the following points:

1. KDHE believes that the difference in total cost between the RPPD and the properly installed double check valve assembly is not enough to justify the increased risk.
2. Water suppliers allowing low hazard devices in the lawn sprinkler application may be at risk for liability as national standards are stricter.
3. Freezing of the above ground high hazard devices has been widely proclaimed as being a major threat to the public water supply system and a great inconvenience to the homeowner. But in Kansas the above-ground devices have not had major freezing problems.
4. KDHE recommends that existing double check valve assemblies used for protection on lawn irrigation systems be allowed to remain in place until a major overhaul of the device is necessary, provided the unit is functioning properly. KDHE's proposed cross connection regulations are written to allow this option.
5. The use of the term "non-community" in the bill could be confusing as the normal use of the term is to distinguish among types of public water supplies.
6. The proposed bill could also be interpreted as prohibiting the use of any but low hazard devices on lawn sprinkler systems. Certainly, a

water purveyor should have the option of requiring the other devices if desired. Clarification of the language in this part of the bill is suggested.

Testimony presented by: Karl Mueldener
Director, Bureau of Water
Division of Environment
March 10, 1994

Testimony presented to
Senate Committee on Public Health and Welfare
by
The Kansas Department of Health and Environment
Senate Bill 157

The Department of Health & Environment supports S.B. 157. The term cross connection describes a connection between a drinking water system and a potential source of contamination. Cross connections represent a threat to the quality of the public water supply and the consumer's well being. Cross connections can be as simple as a hose lying in the sink, or more complex, or hidden within industrial installations, hospitals, boiler feed systems, and high rise buildings.

Last summer controversy arose in Johnson County concerning cross connections from residential lawn irrigation systems. The concern arose over the possible injection of fertilizer and pesticides into residential irrigation systems, and the resultant threat to users of the public water supply. To guard against potential high risk to the water supply from chemical injection, the local water utility required a complex, expensive, and proper device be installed with home irrigation systems. This device is considerably more expensive and difficult to install than other cross connection devices accepted for use when chemical injection is not anticipated. In other words, to guard against the potential of residential chemigation, home lawn sprinkler systems were being required to install an expensive backflow prevention device. The costs, management problems, and controversy associated with the high cost backflow device caused the utility to re-examine their proposed method of protecting against possible chemical injection. The local utility, in concurrence with the State, concluded it would be more practical to prohibit the practice of residential chemigation thereby reducing the need for the more expensive devices on all home irrigation systems.

The bill would also prohibit the direct connection of public water supplies and bulk chemical tanks. This provision was added because of the Department's concern with backflow from the filling of mobile chemical tanks, or spray systems. Occasionally, we discover a chemical spray truck filling its large tank directly from a fire hydrant, without a backflow prevention device. Due to concentrated chemicals, and the large diameter direct connection to the water supply, we believe these potential connections need to be specifically prohibited. If such a connection is found, the local

utility might take action under the appropriate local ordinance, if any. Health & Environment's administrative response to such a cross connection is generally limited to action against the public water supply, not the person making the cross connection. This bill would specifically prohibit the practice under State law, thereby clearly stating that the practice shall be prohibited, and also allowing State administrative action as appropriate.

KDHE discussed this issue with the State Board of Agriculture, Plant Health Division, which administers the State chemigation law. We are aware of no conflicts with the State chemigation law since it excludes lawn irrigation systems.

Testimony presented by: Karl W. Mueldener
Director, Bureau of Water
Division of Environment
March 20, 1991

Kansas AFL-CIO

110 W. 6th St.

Topeka, KS 66603

(913)357-0396



President
Dale Moore

Executive Secretary
Treasurer
Jim DeHoff

Executive Vice
President
Wayne Maichel

Executive Board

*Walt Bernhardt
Mike Bellinger
Bill Brynds
Eugene Burrell
Jessie Cornejo
Ken Doud, Jr.
David Han
Jim Hastings
John Hoover
Greg Jones
Frank Mueller
Dwayne Peaslee
Craig Rider
Wallace Scott
Debbie Snow
Tony Stattelmann
John Weber
Jack Wilson*

House Committee on Energy & Natural Resources
Representative Carl Holmes, Chairman
SB 611 - March 10, 1994
Room 526 S

Mr. Chairman & Committee Members:

I am Jim DeHoff, Executive Secretary of the Kansas AFL CIO. I am here on behalf of the 1500 members who work in the plumbing and pipefitting trade within our state. I appear before you today to oppose SB 611.

SB 611 seeks to make a determination that lawn irrigation systems shall be low hazard, even though the Kansas Department of Health & Environment has designated lawn irrigation systems high hazard and requires an above ground high hazard backflow prevention system.

Lawn irrigation systems can be very dangerous to home owners. An improperly installed or poorly maintained system can cause a siphoning action to occur that can contaminate the water that we drink, cook with and use for other sanitary uses.

The home owner can suffer flu like symptoms, and even get cancer from systems that have failed to stop chemicals and other harmful things which are deposited on lawns from entering their water systems. Most home owners would never know their level of exposure or the potential danger that comes from their water systems. This is why it is important that the Kansas Department of Health and Environment, cities and counties adopt regulations to protect its citizens.

Neighboring states such as Colorado, Nebraska, Iowa, Michigan, South Dakota and Illinois have adopted this type of protection, and Missouri is in the process of doing so.

The proponents of SB 611 will tell you it will drive up the costs of lawn sprinkler systems if SB 611 is not passed. It would cost an average of \$350.00 to conform with the high hazard regulations. This is a small price for the home owner's assurance against this health hazard.



*Energy & Natural Resources
Attachment #10
3/10/94*

It is very important to all residents in Kansas to have above ground high-hazard backflow prevention devices for their lawn sprinkler systems, which can be tested easily. Underground preventive devices are not subject to periodic inspection, simply because, home owners don't want to have their nice lawn dug up to do so. Above-ground high hazard backflow preventers are easy to maintain and to test. Freezing of the pipes is not a problem because every lawn sprinkler system must be drained for winter months anyway. If freezing were a problem, wouldn't there be lots of problems in South Dakota?

Above ground backflow preventers are a very important function to assuring safe, sanitary conditions. Unfortunately, backflow preventers do fail if not checked and replaced when required.

We ask that you look at this issue very carefully, and we urge you to report SB 611 unfavorably.

Thank you.

Jim DeHoff
Executive Secretary

THE CITY OF WICHITA



WATER & SEWER DEPARTMENT

WATER DISTRIBUTION DIVISION

CITY HALL - EIGHTH FLOOR

455 NORTH MAIN STREET

WICHITA, KANSAS 67202

PHONE: (316) 268-4908

Kansas Legislature
House Energy and Natural Resources Committee
State Capitol - 526 South
Topeka, Kansas 66612

3/8/94

Attn: Honorable Carl D. Holmes

The Wichita Water and Sewer Department would like to express its opposition to legislation proposed by Senate Bill No. 611. This Bill would designate all in-ground lawn sprinkler systems, not equipped with chemical injection, to be considered as low or non-health hazards. The impact of this legislation would be minimal on most sprinkler systems, where the only risk is that of possible back-siphonage, and vacuum breakers can be effectively used to prevent contamination. However, in situations where irrigation systems pose a threat not only of back-siphonage, but back-pressure against the potable supply, double check valve assemblies (low hazard backflow preventers) would be allowed instead of the more costly reduced pressure type backflow preventer.

The problem with this approach is that it is at odds with virtually all current published cross connection control standards. While there have been some past instances of local codes treating irrigation water as a low hazard, most of these were enacted prior to the proliferation of hazardous materials such as herbicides, pesticides, and fertilizers which are now routinely applied to lawns by homeowners and commercial applicators. When you combine these with the obvious hazards of viruses, bacteria and parasites found on the average yard, and the fact that residual chlorine evaporates rapidly when exposed to atmosphere, the hazardous nature of irrigation water is even more apparent. Currently, prestigious organizations such as the University of Southern California Foundation for Cross Connection Control and Hydraulic Research, and nation wide plumbing codes such as the 1991 Uniform Plumbing Code are unanimous in their opinion that such waters constitute a health hazard.

*Energy & Natural Resources
Attachment #11*



3/10/94

Honorable Carl D. Holmes
March 8, 1994
Page 2 of 2

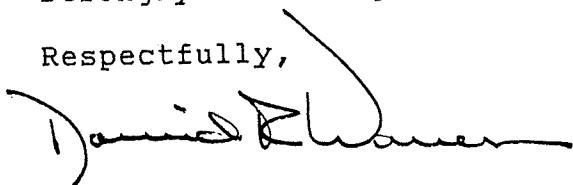
The second problem posed by Senate Bill 611 concerns the actual cost savings to the water user, assuming we choose to ignore the hazards enumerated above. Several hundred double check valve assemblies had been installed on lawn sprinkler systems in Wichita prior to 1990, when the Wichita City Council required annual testing of these devices. We discovered that in many cases, the existing devices were not testable when installed in "yard boxes". Since these boxes have no bottom and are not water proof, many devices were completely buried in silt or inundated by irrigation water. All steel parts attached to the valve body were rusted to the point that they were unusable.

All cross connection control manuals require that double check valve assemblies be installed in a water proof vault, if not installed above grade. Thus, unless those who propose this legislation also intend to bend the rules for installation of such devices, no cost savings will be realized by the water customer.

I believe that this legislation is ill advised for two reasons; first the savings in cost, which is certainly desirable, will not be realized unless cross connection control standards are further eroded, and second the risk to safe community drinking water is unacceptable. In the past, courts have held water suppliers liable for damages caused by backflow through cross connections, even when the water supplier had no control over the customers piping system. The Federal Safe Drinking Water Act addresses the "implied warranty" incumbent upon all water purveyors to provide safe drinking water to the customer's "last free flowing tap". While the City's legal staff is currently researching whether or not we can require stricter standards than those of Senate Bill 611, passage of such legislation would certainly undercut our ability to require devices appropriate to the degree of hazard.

The KDHE should be free to establish standards in accordance with the latest and best information and technology available to the field of cross connection control. In fact, to do otherwise, could leave a governing body liable to charges of negligence. Senate Bill 611 is clearly a step in the wrong direction, and I would strongly advise against its passage.

Respectfully,



David R. Warren
Director of Water and Sewer
Wichita, Kansas



KANSAS
RURAL
WATER
association

Quality water, quality life

P.O. Box 226 • Seneca, KS 66538 • 913/336-3760 • FAX 913/336-2751

March 10, 1994

TO: House Committee on Energy and Natural Resources

Mr. Chairman and Members of the Committee, the Kansas Rural Water Association appreciates the opportunity to comment on the proposed SB 611. Our Association has active membership of 270 rural and public wholesale water districts and over 225 cities across the state. I am a director for the state Association but more importantly, I also speak to you as the Manager of Rural Water District No. 8 of Shawnee County. We serve over 2400 users southeast of Topeka.

Senate Bill 611 is an attempt to legislate a reduction in the degree of hazard that underground lawn sprinkler systems pose when connected to public water systems. We oppose this legislation.

First of all, the water supply industry, nationally and internationally, holds that underground lawn sprinkler systems constitute high health hazards. We do not believe it is appropriate that the Kansas Legislature attempt to legislate a differing opinion. The largest manufacturer of residential lawn irrigation systems, which incidentally does not manufacture backflow prevention assemblies, puts out a backflow prevention handbook with their products noting that "irrigation systems may be subject to contamination from submerged sprinklers."

Obviously, no one wants to drink herbicides or pesticides, much less animal waste which can be backsiphoned into underground sprinkler heads. Several years ago, a major water supplier in Kansas was confronted with lawn treatment application companies proposing to pressurize the sprinkler systems with herbicides and pesticides or fertilizers. Who is to police every sprinkler system to ensure that such practices never happen. This is all the more reason to retain the highest level of protection possible.

Additional evidence of the need for adequate backflow prevention on lawn irrigation systems can be found in every plumbing code. These include: The Uniform Plumbing Code; the BOCA (Building Officials Conference); the Southern Plumbing Code and the National Plumbing Code. All are nationally accepted plumbing codes. All have specific sections that deal with irrigation systems connected to potable water systems. Every one of these plumbing codes treats lawn irrigation systems as high hazards, which require vacuum breakers (if there is no possibility of back pressure) or a reduced pressure backflow prevention assembly is there is any means of creating backpressure. Backpressure on lawn irrigation systems is usually created by elevation above the backflow preventer.

It is my understanding that the Uniform Plumbing Code has been adopted by at least the following cities in Kansas: Topeka, Lawrence, Manhattan, Wichita, Lenexa and Olathe.

The Kansas Rural Water Association and its hundreds of municipal members, encourage you to give serious consideration to the potential legal ramifications that may be created through inconsistencies with nationally known and recognized standards. This will result if SB 611 is approved. We encourage you to oppose this legislation in the name of public health safety.

Respectfully,

Dennis Schwartz
Director: Kansas Rural Water Association

Energy & Natural Resources
Attachment #12

3/14/94



Kansas Section-American Water Works Association

March 10, 1994

Chairman Carl Holmes
House Committee on Energy
and Natural Resources
State Capitol, Room 115-S
Topeka, KS 66612

Re: Senate Bill 611 - An Act Relating to Water Pollution;
Concerning Lawn Irrigation Systems.

Chairman Holmes:

I am Larry Shannon, Acting Superintendent for the City of Topeka Water Division. I am here representing the Kansas Section - American Water Works Association.

The Kansas Section opposes Senate Bill No. 611 because the terms used in the bill are not adequately defined, and it limits the degree of safety that a property owner can install on his irrigation system.

Terms such as high hazard non-community water system, high hazard backflow prevention device, and low hazard backflow prevention device are not defined. Requiring a low hazard backflow prevention device to be installed when a property owner may want to install a high hazard device appears to limit the property owners option. It may take the responsibility and liability for possible contamination from the irrigation system from the property owner, water purveyor, or municipality and place the liability on the state.

Paragraph (h) of Section 1003 of the 1988 Edition of the Uniform Plumbing Code deals with lawn sprinkler systems. It states:

Lawn sprinkling systems shall be equipped with an approved vacuum breaker installed on the discharge side of each of the last valves. The vacuum breaker shall be installed at least six (6) inches (152.4 mm) above the surrounding ground and above a sufficient number of heads so at no time will the vacuum breaker be subjected to back pressure or drainage.

Energy & Natural Resources
attachment #13

3/10/94



Kansas Section-American Water Works Association

Chairman Carl Holmes
March 10, 1994
Page 2

The City of Topeka has adopted the 1988 Edition of the Uniform Plumbing Code. The Topeka Code itself requires vacuum breakers for lawn sprinklers. If Senate Bill 611 becomes law, local codes and regulations concerning cross connection control will have to be reworked to comply.

It is the feeling of the Kansas Section - American Water Works Association that possible contamination of water systems from backflow be dealt with through a backflow prevention program. Passing a state law to deal with a specific application of a backflow prevention program will set a precedent for allowing others to petition the legislature for relief from backflow prevention programs.

Thank you for the opportunity to testify before this committee.

Sincerely yours,

Larry Shannon

Larry Shannon
Trustee Kansas Section
American Water Works Association

LDS:dc

#13-2