Exhibit No.	:	87
Witness	:	ROBERT F. RENNICK
Type of Exhibit	:	Surrebuttal Testimony
Party	:	CITY OF JEFFERSON
Case No.	:	WR-2003-0500
Issue	:	Fire Suppression

CITY OF JEFFERSON

Case No. WR-2003-0500

SURREBUTTAL TESTIMONY

OF

ROBERT F. RENNICK

Jefferson City, Missouri
December, 2003

BEFORE THE MISSOURI PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Missouri-American Water Company's Tariff to Revise Water and Sewer Rate Schedules	))	Case No. WR-2003-0500

AFFIDAVIT OF ROBERT F. RENNICK

STATE OF MISSOURI)
) ss.
COUNTY OF COLE)

I, ROBERT F. RENNICK, of lawful age, being duly sworn, do hereby depose and state:

1. My name is ROBERT F. RENNICK. I am the Fire Chief for the Jefferson City Fire Department.

2. Attached hereto and made a part hereof for all purposes is my surrebuttal testimony.

3. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and correct to the best of my personal knowledge, information and belief.

Robert F. Rennick

Subscribed and sworn to before me, a Notary Public, this 26th day of November, 2003.

Katie J. Everett
Notary Public

My Commission expires:
May 12, 2007

Katie J. Everett, Notary Public
Cole County, State of Missouri
My Commission Expires 5/12/2007

SURREBUTTAL TESTIMONY

Q. WHAT IS YOUR NAME, TITLE AND BUSINESS ADDRESS?

A. My name is Robert Frank Rennick, and I am the Fire Chief for the Jefferson City Fire Department. My business address is City Hall, 320 East McCarty, Jefferson City, Missouri.

Q. ARE YOU THE SAME ROBERT F. RENNICK WHO FILED WRITTEN DIRECT TESTIMONY IN THIS CASE?

A. Yes, I am.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. I want to address several points that were raised by Company witness Frank Kartmann in his Rebuttal testimony that was filed on or about November 10, 2003.

Q. ON PAGE 6 OF HIS TESTIMONY, MR. KARTMANN STATES THAT THE FIRE DEPARTMENT, POLICE DEPARTMENT, LEPC AND OTHER LOCAL PUBLIC SERVICES HAVE PHONE NUMBERS THAT WILL DIRECTLY CONNECT THEM TO THE COMPANY'S LOCAL MANAGER AT ANY TIME OR DAY. DO YOU HAVE THIS INFORMATION?

A. The only information which has been officially filed with my office is a "Capital City Water Company Emergency Preparedness Manual" dated July 20, 1994 and I have attached a copy to my testimony as RFR Schedule 2. Many of the employees identified in the 1994 manual have been terminated, transferred or are retired. If Mr. Kartmann is referring to a preparedness manual or some other emergency manual containing the names of current managers or employees and emergency phone numbers, that has not been submitted to my office. As this testimony is being written, I have authorized my staff to contact the Company for a new set of emergency numbers. Until this time, I was not aware that the Company had a special list of contacts by which to report emergency conditions at the plant. If fire department officials have recently contacted the current local manager by cell phone

or special emergency numbers, the fire administration office was not the source of the numbers.

Q. AT PAGES 7 THROUGH 9, MR. KARTMANN ADDRESSES THE POWER OUTAGE AND LOSS OF PRESSURE YOU DESCRIBED IN YOUR DIRECT TESTIMONY. HE STATES THAT THERE WERE NO COMPANY RECORDS OR EMPLOYEE RECOLLECTIONS OF ANY OPERATIONAL ABNORMALITIES ON SEPTEMBER 7, 2003. HAVE YOU AND YOUR STAFF REVIEWED YOUR INFORMATION ABOUT THE EVENING OF SEPTEMBER 7, 2003?

A. Yes, I contacted Assistant Chief Dennis Horn, who was the officer who reported the loss of pressure to me, and together we checked our memories of this incident. Assistant Chief Horn has prepared separate surrebuttal testimony about this matter and to the best of our knowledge, there was a serious loss of water pressure in the system in the evening of Sunday, September 7, 2003. As far as a cause, it was our conclusion that power was probably interrupted at a high pressure pump at the treatment facility site. At page 10 of his testimony, Mr. Kartmann refers to the automatic switching mechanism at the treatment plant that automatically transfers the power supply from the interrupted source to the redundant source. This switch has failed in the past, most notably in my memory was the failure in 1999 as we were preparing for Y2K. Regarding the length of the pressure loss, I will defer to Assistant Chief Horn's estimate of the time involved which is shorter than what I testified to earlier. Lastly, there were two stations that evening that did not report a pressure loss. Those were the stations that are served by water district facilities.

Q. AT PAGE 11 OF HIS TESTIMONY, MR. KARTMANN REFERS TO A COMPANY PROPOSAL TO INSTALL A BACK UP GENERATOR FOR POWER INTERRUPTIONS AT EITHER THE "NEW" TANK SITE BOOSTER PUMPS OR THE SOUTHWEST 1 AND 2 BOOSTER STATION. WHAT ARE YOUR COMMENTS ABOUT THIS PROPOSAL?

A. I think that the proposal is a very important step toward solving the problem. However, to better handle these contingencies the Company should have a generator installed at both the new tank and the booster station. If the generator Mr. Kartmann describes is a portable generator, the issue of storage becomes an issue. If it is stored at the new tank for example, and a pump failure occurs at the Southwest Booster station, the failure will first need to be discovered, then the generator will need to be transported and connected to the system. This means time delay. Also it involves manual operation. The emergency power generation equipment at these sites should be equipped for remote activation so that time delay is practically eliminated.

Q. MR. KARTMANN HAS DESCRIBED THE REDUNDANT POWER SYSTEMS CONNECTED TO THE TREATMENT PLANT. DESPITE THESE POWER SOURCES, SHOULD THE COMPANY ADD EMERGENCY GENERATION EQUIPMENT AT THE PLANT AS WELL?

A. It is clear that the Company has considerable confidence in the power systems that connect at the plant site. I have mentioned in my testimony that the electric power back ups at the plant have failed in the past and this is still a concern to me. While the Company is in the process of purchasing a generator for the new tank site and the booster station, I recommend that it also purchase emergency generation equipment that can automatically engage, or be remotely engaged, in the event of catastrophic power failure or interruption at the treatment plant location.

Q. AT PAGE 13 OF HIS TESTIMONY, MR. KARTMANN STATES THAT EVEN THOUGH THE TANK LEASE AGREEMENT BETWEEN THE COMPANY AND COLE COUNTY PUBLIC WATER SUPPLY DISTRICT (CCPWSD or DISTRICT) NO. 2 REQUIRED THE DISTRICT TO SHARE ALL OF ITS TANKS WITH THE COMPANY, ONLY TWO COULD BE UTILIZED BECAUSE OF HYDRAULIC LIMITATIONS. WAS THIS YOUR UNDERSTANDING OF THE ARRANGEMENT?

A. No, it is not. It is true that the Christy and Vieth Drive towers are the closest to the point of interconnection between CCPWSD No. 2 facilities and the Company's facilities, but the District water tower at Schott Road and the District tower at Brazito are on an open water system with the Christy and Vieth towers. That open system permits a sharing with the Company in overall storage, system pressure and water supply. All of the District tanks were considered an integral part of the Company's water supply during the term of the tank lease agreement and were so noted in paragraph 8 of its "1998 ISO Documentation" a copy of which I have attached to my surrebuttal testimony as RFR Schedule 3.

Q. YOU HAVE USED THE ABBREVIATION "ISO" IN YOUR TESTIMONY. COULD YOU EXPLAIN THAT PLEASE?

A. The ISO, also known as the "Insurance Services Office," maintains a Fire Suppression Rating Schedule and Public Protection Classification (PPC) program that is relied upon by fire and casualty insurers in determining the appropriate fire insurance premiums for residential and commercial property within a municipality. The information set out on RFR Schedule 3 was submitted to ISO by the Company in connection with the City of Jefferson's PPC. During the term of the tank lease agreement, I understood that there were no limitations on the use of the water stored in all of the District towers in the event of a fire. Those tanks counted as part of the water supply available for fire suppression. With the expiration of the Company's tank lease agreement with the District, there has been a consequential reduction in water storage capacity from pre-2000 levels for purposes of fire suppression.

Q. ON PAGE 15 OF HIS TESTIMONY, MR. KARTMANN REPORTS ON THE PROGRESS OF THE HYDRANT REPLACEMENT PROGRAM. IS THERE MORE TO REPORT ABOUT THIS PROGRAM?

A. I am glad to report that the Company has completed the hydrant replacement program according to and in compliance with the City's expectations.

Q. ON PAGE 17 OF HIS TESTIMONY, MR. KARTMANN SETS OUT EXAMPLES OF THE COMPANY'S WATER MAIN IMPROVEMENTS THAT WERE COMBINED WITH MUNICIPAL PUBLIC WORKS PROJECTS. ARE YOU FAMILIAR WITH THESE EXAMPLES?

A. Yes, I am, and although my department supports each of them and would encourage the Company to participate in more like them, they are very small compared to the need. For instance, the upgrade on Hart Street was for only one block, as Mr. Kartmann notes, and regarding the 1,300 feet of 8" diameter main on Hyde Street, that is a reference to a street extension being built at the City's expense. Even though it does reinforce fire flows, the Hyde Street project is not really a "replacement" project but rather a new installation. Mr. Kartmann also refers to Lachant Court in his testimony, but I believe that is a street located beyond the city corporate limits. The inadequacy of the narrow diameter mains in the system was the focus of my direct testimony, and I reassert my recommendation that the Company, in conjunction with my department, undertake a program to replace them.

Q. ON PAGE 18 OF MR. KARTMANN'S REBUTTAL TESTIMONY, HE ADDRESSES YOUR CONCERNS ABOUT THE LOW LEVEL OF THE MISSOURI RIVER LAST SUMMER, AND IDENTIFIES EMERGENCY PROCEDURES THE COMPANY WILL FOLLOW DURING EXTREME LOW FLOW CONDITIONS. ARE THOSE EMERGENCY PROCEDURES SUFFICIENT IN YOUR OPINION?

A. I question the long term reliability of the submersible pumping units Mr. Kartmann describes. He does not state the pumping capacity of the units but I am assuming that the submersible variety would not have as much capacity as the units regularly employed at the intake facility. The emergency interconnects with the neighboring public water supply districts would provide relief for a brief period of low flow conditions but for a week or more, the city demand for water would threaten the districts' ability to meet the needs of their own customers. In 1998, the Company reported that normal daily water consumption was 4.6 million gallons per day. Mr. Kartmann has confirmed that the Company's maximum

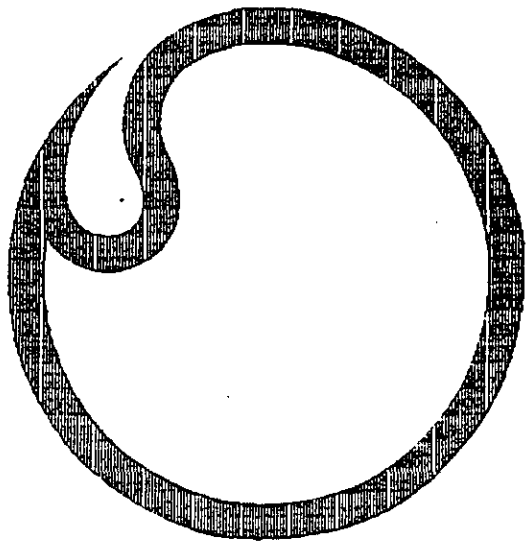
storage capacity is 3.5 million gallons. Use of a submersible pumping unit or units, that are sized at capacities smaller than normally relied upon, when the Missouri River is at dangerously low levels would not appear to assure enough water to meet the city's daily demand, let alone maintain the volume and pressure needed for adequate fire protection.

Q. DOES THIS CONCLUDE YOUR TESTIMONY AT THIS TIME?

A. Yes it does.

CAPITAL CITY WATER COMPANY

EMERGENCY PREPAREDNESS MANUAL



Update: 7/20/94

Schedule RFR-2

EMERGENCY OPERATIONS PLAN

Company Personnel who have the Plan Booklet:

1. W.C. Linam
2. Susan Skomorucha
3. Paul Bernskoetter
4. Steve Ridenhour
5. Mike Scheperle
6. Elwyn Shikles
7. Dean Button
8. City Emergency Plan (Local Copy - SS Oc.)
9. Three extra copies of booklet

Those outside the Company who have copies of Plan:

1. Bob Rennick - Fire Chief, 320 E. McCarty
2. Gary Kempker - Police Chief, 320 E. McCarty
3. Marty Brose - Public Works, 320 E. McCarty
4. Larry Rushing - Union Electric, 310 Madison
5. David Kempf - PWSD#1, 4246 Rainbow Dr.
6. Randy Kay - PWSD#2, 1944 Vieth Dr. P.O.Box 104238
7. David Shorr - DNR, P.O. Box 176
8. Bob Hentges - DNR, P.O. Box 176
9. David Spicer - Cole County Commissioner, 301 E. High
10. Bill Sankpill - PSC, P.O. Box 360

Revisions

April	1986	July 1994
September	1986	
April	1987	
August	1987	
January	1988	
March	1988	
April	1988	
July	1988	
April	1989	
September	1989	
January	1990	
July	1990	
April	1991	
July	1992	
August	1993	

APPENDIX (A)
EMERGENCY OPERATIONS

CAPITAL CITY WATER COMPANY - EMPLOYEE LIST

Andert, Terry E.	Operator A	1707 Hayselton	635-7081
Ashby, Kevin	Eng. Aid	1302 St. Marys	893-8468
Bellafiore, Gary	Operator C	2431-B Beasley Ct.	761-5174
Berhorst, Greg S.	Utility I	County Rd. 4037 H.S.	896-4196
Bernskoetter, Paul	Const. Super.	1922 Bald Hill Rd.	636-3948
Button, Dean	Engineer	1623 W. Main St.	635-8164
Coffman, Dale	Accountant	Rt. 1, Wooldridge	(816) 839-2261
Cook, Gail	Utility I	Rt. 1, Box 100 Jamestown 65026	(816) 849-2560
Joan, Cage	Cust Serv.	313 Verdant Ln.	893-4752
Draffen ,Herbie	Operator D	902 Rabbit Run Rd.	584-9663
Eveler, Kevin J.	Const. Fore.	2919 Rt.Z Centertown	584-3881
Farris, Debbie K.	Secretary	188 Partridge Pl.H.S.	896-5092
LaCkore, Kathryn I.	Cust Serv.	3930 Greenbriar Rd.	365-0977
Larimore, B.J.	Serv. Person	4306 State Rt.NN Centertown 65023	584-9926
McClanahan, Monty	Meter Person	8218 Kings Chapel Centertown 65023	584-9491
Murray, Goldie M.	Sr. Clerk	1817 Sun Valley	635-5980
Oppenheim, Dennis	Inspector	2611 Briarwood	635-6053
Overstreet, Troy	Mechanic	12064 Neiman Rd.	896-8762
Ridenhour, Steve	Prod.Supt	126 Woodridge Dr.	635-1229
Sartain, Debbie	Cust.Serv.	1601 Oakview H.S.	896-4328
Skomorucha, Susan	Manager	119 Hunter's Run,	893-6506
Shelton, John	Operator A	540 Aurora	636-8487
Scheperle, Mike	Ofc. Manager	1000 Tanya Lynn	635-0870
Schnieders, Jim	Meter Person	3324 Rt.J, JC	395-4812

Employee List (cont.)

Shikles, Elwyn D.	Serv. Super	2738 Wesley Dr.	893-2407
Vanderfeltz, Dan	Utility I	1321-A Rackers Rd.	635-3657
Wyatt, Ron	Operator C	11542 Fletcher Ln.	896-8024

Appendix (B)

Capital City Water Company Contact List

Name	Position	Ofc. Phone	Hm Phone
Susan Skomorucha	Manager	634-3801	893-6506
Mike Scheperle	Office Manager	635-6111	635-0870
Dean Button	Engineer	635-6111	365-8164
Steve Ridenhour	Production Super.	636-8616	635-1229
Paul Bernskoetter	Construction Super.	635-6111	636-3948
Elwyn Shikles	Service Supervisor	635-6111	893-2407

(All persons authorized to expend funds)

Local Authorities

Name	Contact	Phone No.	Emergency No.
J.C. Fire Depart	Chief Bob Rennick	634-6401	911
J.C. Police Depart	Chief Gary Kemper	634-6400	911
J.C. Public Works	Marty Brose	634-6450	636-6239
D.N.R. 24 Hour		(314)	634-2436
D.N.R. Director	David Shore Dir.	751-4422	634-2436
Drinking Water	Jerry Lane	751-5331	496-3392
Central Ofc.	Bob Hentges	751-2729 Hm	635-1490
	Jim Locke	751-2729 Hm	295-4266
	Mike Logston	751-4594 Hm	636-7644
M.P.S.C.	Bill Sankpill	751-7074 Hm	896-8143
	Jim Merciel	751-3027 Hm	896-4057
National Guard		751-2321	
LEPC	David Spicer	634-9146 Hm	636-6670
National Weather Service	River Stages	1-816-426-6135	
E.P.A.		813-236-3778	
St. Mary's Hosp.	John Dubis	635-7642	761-4888
Memorial Hosp.	Gordon Butler	635-6811	893-8296
Still Regional	Ed Farnsworth	635-7100 x1120	
Division of Aging	Jerry Simen	751-3082	
(Nursing Homes)	Peggy Simmons	893-2060	
Union Electric	Larry Rushing	635-0171	
	Dave Hagen	681-7513	
United Telephone	Richard Lawson	634-1511	
P.W.S.D. #1	David Kempf	893-2848	893-2398
P.W.S.D. #2	Randy Kay	635-7011	635-4628
City of Booneville	Vince/Tim	816-882-5257	

Appendix B (cont.)

Media

KJMO/KWOS Radio	Frank Newell	893-5100	
KLIK/KKFA Radio	Amy Wese Steve Dappen	893-5696	
News Tribune	Richard McGonegal Jerry Tritz Nancy Vessel	636-3131 636-3131 x255	Hm 635-3316
TCI Cablevision	Eric Wallut Chief Technician	635-0245	
KRCG-TV 13	Dick Aldrich Jeff Karnowski (News Director)	896-5144	
KMIZ-TV 17	Teresa now (News Director)		1-449-0917
KMOU-TV 8	Stacey Woelfel (News Director)		1-884-6397
Associated Press			1-800-852-4844

Capital City Water Company Contact List (cont.) Appendix (B)

This is an addendum to the local call out requirements. When an emergency occurs as defined below, The manager of Capital City Water Company will initiate the notification process of the General Waterworks Corporation Corporate Officers.

> "Any time the emergency operating procedures are put into effect and there is a potential requirement for public notification for the violation of water quality; a potential for major property damage; or a potential loss of life, the local company manager or his designee shall be responsible for notifying one of the following in the order listed."
>
> Region Vice President/District Manager
>
> Region/District Engineer
>
> Senior Vice President - Operations
>
> Vice President - Engineering & Administration
>
> President & Chief Executive Officer

Following are the telephone numbers you will need:

	Office	Home
W.C. Linam	208-278-2959	610-358-2360
Frank Hildabrand	215-278-2948	610-695-9086
Todd Mackey	215-278-2944	610-363-9388
Bob Johnstone	215-278-2914	215-647-8792
Tom Cleveland	215-278-2905	215-647-7242
Ron Dungan	215-278-2901	215-355-3768

Vendors/Contractors

		Contact	Phone No.
Van Waters & Rogers (VWR)		Dale Brooks	314-522-6400 800-284-6995
Mississippi Lime		Steve Janssen	1-800-437-5463
Sidener Supply		Mike Metzner	1-800-392-7211
Water & Sewer Supply		Thad Fisher	800-722-2330
Twehous Excavating		Frank Twehous	395-4354
Sterling Excavating			893-4455 893-4466
JCI/HRB			636-2711
Contractors Supply 2601 Hwy 63 North Old Hwy 63 North	Trailer Mounted Pump) 2 - 20' Suction Hoses 2 - 50' Discharge Hoses	Jim Burns	442-7500
Fabic Power Systems Fenton Mo. Jefferson City, Fabic Co.	(Generator)	Tim Bauer Jim Bellow Dale Adkinson	314-349-5500 314-368-5529 HM 449-5520 HM 473-3074
Central Missouri Plumbing		Loyd Klosterman	893-2626 HM 893-5364
Opies Transport Inc. (Bulk Water Hauling)		Danny Opie	Day 392-6525 Night 392-6724 HM 365-5456
Emergency Response DNR			634-2426

4. Additional sources of water (wells):
   a. Capitol Complex - contact Joe Conderl, George Ridel - 751-8618
   b. State Prison - contact 751-3224.

III. Low Service Pump Failure Procedures

1. Verify vacuum pump is in operation.
2. Contact Production Superintendent and Manager.
3. Establish start up on District wells.
4. Contact Construction Superintendent for possible installation of Emergency River Pump.

TYPES OF DISASTERS ANALYZED

I. Tornado - Floods - Lightning

II. Earthquake (located along the New Madrid Fault Line)

III. Nuclear (Union Electric Callaway Nuclear Plant and Nuclear War)

IV. Contamination of Water (due to cross connection, vandalism, upriver spills, etc.)

DEFINITIONS OF AREAS STUDIED

I. Sources - Missouri River, Interconnection with Public Water Supply District No. 2 (four wells supplies), interconnection with PWSD #1

II. Collection System - river intake lines, low service pumps and motors, well pumps

III. Treatment Plant - settling basins, backwash standpipe, filters, chemical feeders, high service pumps and motors, clearwells

IV. Transmission and Distribution System - mains, valves, hydrants, boosters, storage tanks (elevated tanks owned by PWSD No. 2)

V. Personnel - Available local company personnel - 27, available, PWSD No. 2 personnel - 6, other GWC companies

VI. Power - only available source is Union Electric Company (Treatment Plant has automatic switch over relay to separate substations)

VII. Materials and Supplies - inventory of chemicals, fuel, valves, pipe, fittings, and repair clamps

VIII. Buildings, Equipment and Vehicles - owned, rental companies, utility exchange

IX. Communications - use of media, telephone system, two-way radio system, telemetering, city services (fire, police)

X. Emergency Plans - Local Emergency Plan, State Emergency Plan, Company Emergency Plan

Capital City Water Company
Vulnerability Analysis

I. Sources

	Effects of Disaster	Comments & Corrective Measures
1. Tornado-Flood-Lightning		
Missouri River	None to minor	Better contamination detection
District Wells	None to minor	Elevation of top of well reduces potential for contamination.

Location of primary source (Mo. River) and Corp. of Engineers control river flooding by lock and dam system reduce effects of flooding. Secondary source elevations reduce potential for contamination.

Suggestions: During periods of potential disaster, continuous monitoring of river for contamination should be done.

2. Earthquake		
Missouri River	None to minor - levy system could break, reducing volumes and causing potential contamination.	Monitor source during period
District Wells	Minor to partial	Check for potential loss of well shaft and breakup of well column

Depending on magnitude of earthquake - secondary source could be partially or totally lost.

Suggestions: Additional source of supply should be developed.

3. Nuclear		
Missouri River	Partial	Monitor for contamination from radioactive fallout or releases from power plant(40 mls. away)

Vulnerability Analysis

II. Collection System

	Effects of Disaster	Comments & Corrective Measures
1. Tornado-Flood-Lightning		
River Intake Lines Pre-Mitigation of flood	Partial	Valve off effected intake Remove motors, Sandbag south of RR tracks Install backup sumps
Low Service Pumps & Motors	Total - loss of power, low service building, motors flooded, fire loss of transformer or switchgears	Auxiliary power source should be developed, use wells as backup
Well Pumps & Motors	Partial to total - location would suggest only one of three would be affected, except for power outage	Valve off this part of collection system until repairs could be made

Suggestions: Existing power source is extremely limited. Alternate power source or portable power generating equipment should be available.

2. Earthquake		
River Intake Lines	Total - collapse of low service intake lines	Assuming service pumps and motors remain serviceable, utilize emergency pump. Use wells as backup.
Low Service Pumps & Motors	Partial to total	Use wells as backup. Auxiliary power sources should be developed

Vulnerability Analysis (cont.)

Well Pumps, Motors & Towers	Partial to total	Primary collection at low service to be repaired first. Secondary source repairs after primary in service

II. Collection System

	Effects of Disaster	Comments & Corrective Measures

Suggestions: Adequate repair materials should be readily available at each location. Also outside contractors such as well and pump repair, welders, machine shop should be contacts on emergency plan. Auxiliary source of power should be developed.

3. Nuclear

River Intake Lines	None	None required
Low Service Pumps & Motors	Minor to total (for nuclear war - loss of power)	Could be without power - alternative source of power
Well Pumps, Motors & Towers	Minor to total (for nuclear war - loss of power)	Same as above

Suggestions: Auxiliary source of power should be developed.

4. Contamination of Water

River Intake Lines	None	Backwash methods adequate to disinfect
Low Service Pumps & Motors	None	Adequate monitoring of upstream problems should allow time to shut down system
Well Pumps, Motors & Towers	None	None required - assuming adequate security at wells

Vulnerability Analysis

III. Treatment Plant

	Effects of Disaster	Comments & Corrective Measures
1. Tornado-Flood-Lightning		
High Service Pumps	Total - loss of power damage to buildings & structure (more on flood)	Alternate source of power should be developed
Basins	None to minor	Motors driven by electricity out
Standpipe	None to partial from tornado	Backwash could be accomplished with high service pumps if usable
Filters	None to partial	Based upon above ground damage
Chemical Feeders	None to minor	Loss of power could require manual operation
Clearwells	None to 50% from tornado	One above ground-one below
2. Earthquake		
High Service Pumps	Partial to total	Use wells as backup Alternate power needed
Basins	Partial to total	Concrete and brick structure could be by-passed if piping not damaged
Standpipe	Partial	Backwash could be accomplished with high service pumps if operable
Filters	Partial	Based upon above ground damage

III. Treatment Plant (cont.)

	Effects of Disaster	Comments & Corrective Measures
Chemical Feeders	Partial to total	Loss of power could require manual operation
Clearwells	Partial to total	Could be by-passed depending on extent of damage
3. Nuclear		
High Service Pumps & Motors	Total - loss of power (damage extensive under nuclear attack)	Alternate source of power needed
Basins	Total - loss of power or contamination from power plant releasing radioactivity	By-pass
Standpipe	Total - contamination from power plant releases radioactivity	By-pass
Filters	Partial to total	Depending on extent of radioactive releases (inside building)
Chemical Feeders	None to total (for nuclear attack)	None required
Clearwells	None to total (for nuclear attack)	By-pass in nuclear attack
4. Contamination of Water		
High Service Pumps & Motor	None	Should be controlled before high service pump or in field
Basins	Partial to total - open to all elements	Could be by-passed

IV. Transmission & Distribution

	Effects of Disaster	Comments & Corrective Measures
1. Tornado-Flood-Lightning		
Mains	None to minor -	Valve off and repair
Valves	Unaccessible	Attach floating markers
Hydrants	Same as above	Same as above
Booster Stations	None to minor - loss of power problem (below ground stations)	Alternative power should be developed
Storage Tanks	Minor to partial - tornado could destroy tanks	Have outside contractor available for repairs
2. Earthquake		
Mains	Partial - breaks	Valve off and repair
Valves	Partial	Same as above
Hydrants	Partial	Same as above
Booster Stations	Partial - loss of power problem & possible structure damage	Alternative power should be developed, immediate repair necessary
Storage Tanks	Partial - loss of tanks	By-pass tanks until repaired
3. Nuclear		
Mains	None (partial to total in nuclear attack)	None required
Valves	None (partial in nuclear attack)	None required
Hydrants	None (partial in nuclear attack)	None required

OUTLINE of LOW RIVER CONDITIONS APPENDIX (F)
CCWC EMERGENCY PROCEDURE for LOW RIVER CONDITIONS & LOSS OF SUCTION

Monitoring
Internal & field
Obtain Army Corp forecast - (816) 426-6135 or (402) 221-7448

Operators increase monitoring - River stage 3 ft.: 1 call/8 hrs.
Jefferson City river gauge. 2 ft.: 2 calls/8 hrs.
(Requires Computer Modem)
Operators increase monitoring of
low service pumping.

T&D to maintain opening in ice and tracks.
Bring emergency pump and piping into place.
Test run pump to waste.

Flush interconnect with PWSD#1.

Maintain full storage. Shut down SW booster. Put PWSD#2 wells in automatic.

Contacts to Advise of Conditions by Manager
Local Office- Susan Skomorucha 893-6506
Regional Office- W.C. Linam 278-278-2959

Missouri Department of Natural Resources - 24 Hour 634-2436

	WK	HM
Mike Logston	751-4594	636-7644
Bill Price	751-1035	635-8630
Jim Locke	751-2729	295-4266

Missouri Public Service Commission- Bill Sankpill, 751-7074
Jim Merciel, 751-3027

City of Jefferson - Louise Gardener, Mayor 634-6303

Downstream Mo. River Water Supplies -
St. Louis County, Gary Durney, 991-3404 x 348
St. Louis City, David Visintainer, 868-5640

Interruptible Users -
Missouri State Penitentiary, 751-2621
Gary Sutterfield
Capital Complex, Joe Conderl 751-8618

Public Water Service District #1 -
David Kempf - WK 893-2848 - HM 893-2398

Public Water Service District #2 -
Randy Kay - WK 635-7011 - HM 635-4628
NEWS MEDIA - See listing in the disaster manual-section "B".

Loss of Suction (cont.)

Operator's Actions To Be Taken Once Suction Is Lost

Notify Production Superintendent & Manager.
(Manager is to be called next if PS is out of touch.)

Call Construction Crew. (Foreman first)

Modify plant processes, (Chemicals, filter flows, etc.)

Decrease high service pumping to conserve clearwells.
(Minimum of 75 psi)

Call in second operator.

Production Superintendent's Duties

Open interconnect with PWSD #1 and notify them of the need.

Failure of Low Service pumps (any reason) - notify Manager at appropriate time.

Make contact with spare emergency pump contractor.
Construction Supply
Bob Ball
Richard Knopke, President - 800-669-7788
or 816-221-7788
24 hour beeper # 816-466-7402

Coordinate procedures with T&D.

Keep Manager Informed.

Manager's Duties
All news media contacts.

Contact with all concerned outside parties.

Notify interruptible users.

Notify significant users.

CHLORINE SPILL PROCEDURE

A. Start exhaust fan.

B. Severity Determination.

1. Minor leak. Call supervisor or other operator and establish short period recall time for repair and/or well being advisory. Dress in protective clothing, gloves and breathing apparatus. Locate leak with vapors of ammonia water.

   a. loose valve packing.
      ACTION: tighten packing.

   b. cracked feed line or loose nut.
      ACTION: replace feed line, tighten feed line nuts and replace lead washers if necessary or switch to alternate tank.

   c. Cl2 injector/feed equipment.
      ACTION: locate possible leak point, mark and switch to alternate injector if possible.

2. Major leak (gas). Greenish gas along floor. Call 911. Call supervisor. Wait for assistance. Dress in protective clothing, gloves and breathing apparatus. Supervisor will contact management and/or chlorine supplier.

   a. locate leak with vapors of ammonia water.

   b. pin hole in tank.
      ACTION: using Kit A or Kit B depending on tank size use drive pin or compression patch.

   c. ruptured fusible plug.
      ACTION: use sealing cap and compression device.

   d. tank breach.
      ACTION: use correct patch or pressure plate with compression devices.

   e. feed tubing (tank to manifold).
      ACTION: shut tank off and replace tubing or switch to standby tank.

3. Major leak (liquid). Greenish gas and ice formations at exit point. Call 911. Call supervisor. Wait for assistance. Dress in protective clothing, gloves and breathing apparatus. Supervisor will contact management and chlorine supplier.
    a. If possible roll tank so that rupture is at higher point than rest of tank. This will bring tank liquid volume to lowest point and gas volume to highest point. Gas volume easier to deal with. See Item 2 above.

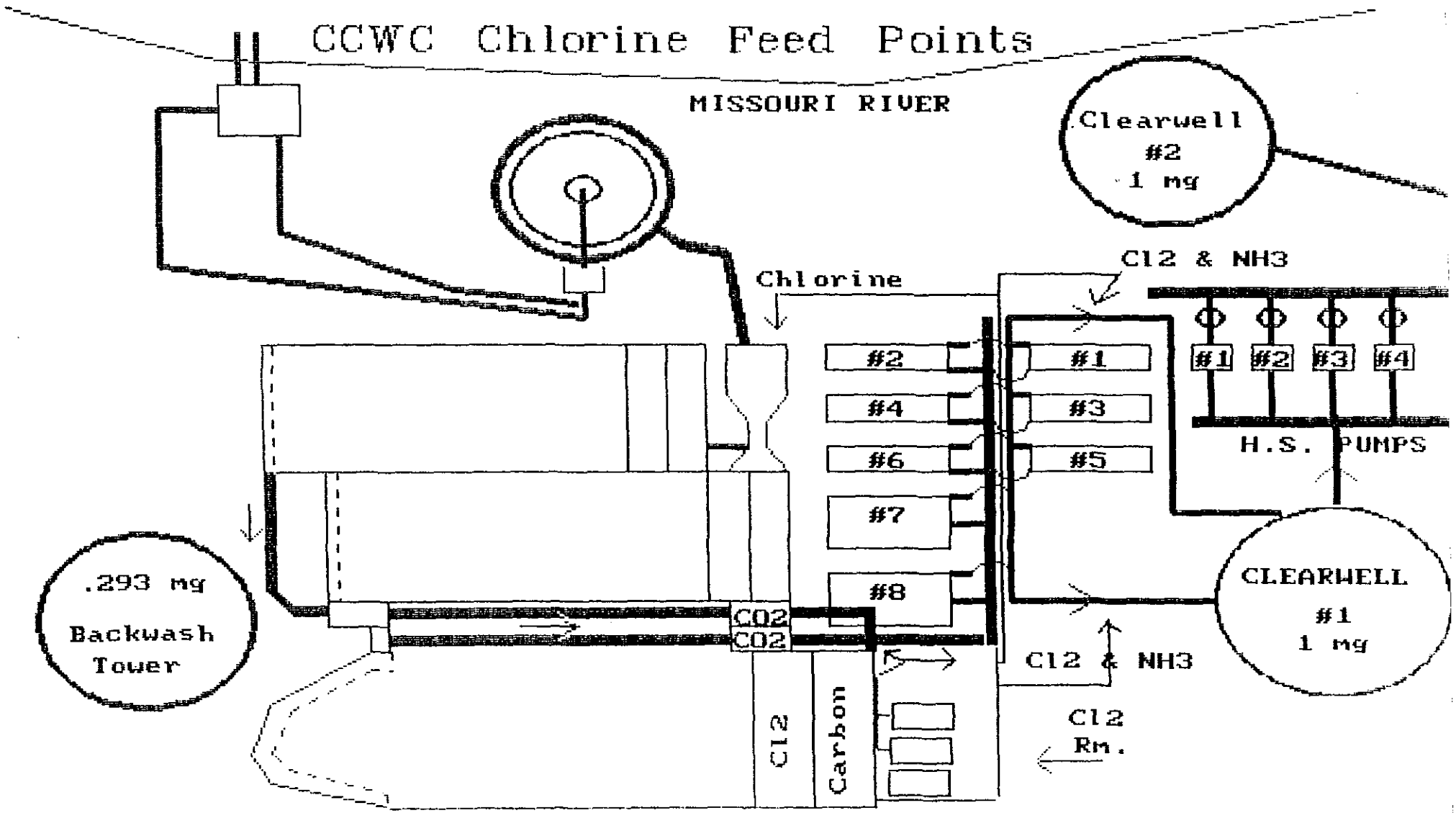
C. Post control procedure.
1. Most small leaks can be capped or sealed with no disruption of feed to process. Larger leaks should be capped and other possible means of gas removal be considered if tank is in an inconvenient storage area. Supervisor will contact Chlorine supplier or Chemtec for guidance.
    a. If you have an empty cylinder on hand feed through transfer lines into it.
    b. Feed chlorine gas into neutralizing solution of soda ash or caustic soda and water as described in AWWA Water Chlorination Principles (# M20).

D. Emergency Training.
1. Yearly training and up-date with A & B Leak Kits.
2. Semi-annual refresher and training with Scott Air Packs.
3. Chlorine leak containment drills.

E. Emergency Contact
1. Van Waters & Rodgers - 1-800-999-5802
2. Chemtrec - 1-800-424-9300

F. Reporting Chlorine Release
1. DNR 24 hour # (314) 634-2436

7/26/94


CCWC Chlorine Feed Points
MISSOURI RIVER
Clearwell
#2
1 mg
Cl2 & NH3
Chlorine
#2
#4
#6
#7
#8
#1
#3
#5
#1
#2
#3
#4
H.S. PUMPS
.293 mg
Backwash
Tower
CO2
CO2
CLEARWELL
#1
1 mg
Cl2 & NH3
Cl2
Carbon
Cl2
Rm.

HYDROFLUOROSILICIC ACID 23%
SPILL PROCEDURE

A. Description: Hydrofluorosilicic Acid is a yellow to colorless, fuming liquid with a pungent odor. At Capital City Water Company it's piping color is light blue with red banding. Hazard rating is "3" or high on the health scale and "1" on the reactivity scale.

B. Leak Procedure: Several valves are located on the day tank feed line to isolate sections of feed line should they develop leaks.

1. Small Leaks. Small spills or leaks should be flushed into sewer and the area washed down and diluted with water.

2. Larger Leaks. In the event of a line rupture, the operator should contact plant supervisory personnel, or another operator for assistance with the problem. Larger spills or leaks should be neutralized with crushed limestone, soda ash or lime. Dispose of contaminated material in a approved dumping site.

3. Tank Rupture. In the event of a tank rupture where large pools of HFS are released an earthen dam or dike should be constructed to encompass the pools to prevent them from spreading. They should then be neutralized and disposed of in the above manner.

C. Personal Protection: This liquid compound is an acid. It will burn the skin and eyes should contact occur. It is also a nasal irritant (fuming odor). For this reason protection is required when extended exposure is necessary.

1. Respiratory Protection. Respirator with acid gas cartridge or supplied air full face respirator should be used. Provide ventilation in closed areas.

2. Protective Gloves. Rubber gloves should be worn.

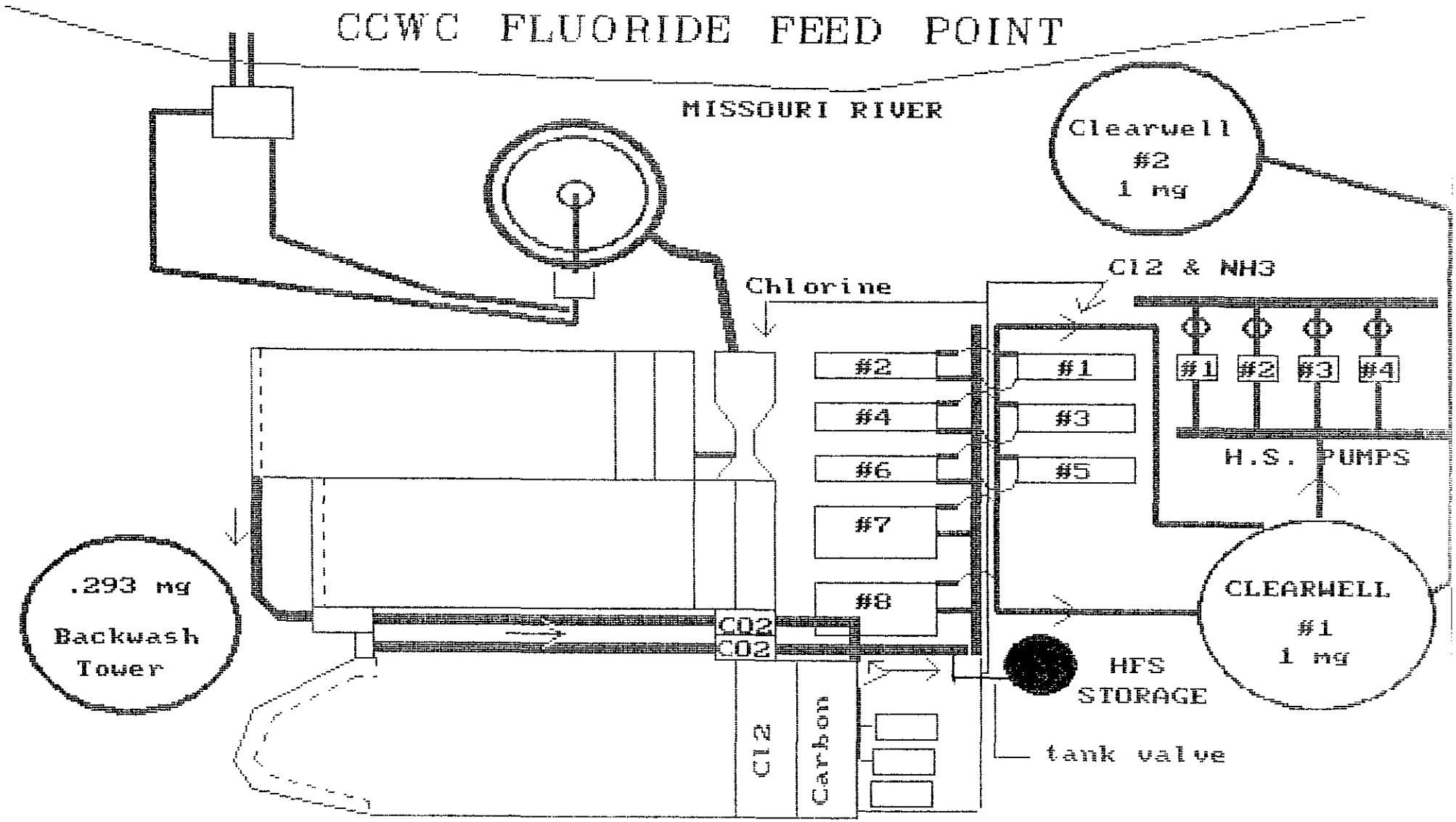
3. Eye Protection. Chemical safety goggles should be worn.

4. Other Protection. Acid suits, chemical apron, eye wash station and safety shower should be available.

D. Emergency Contacts
1. Chemtrec 1-800-424-9300
2. Current supplier

E. Reporting Hydrofluorosilicic Acid spill
1. DNR 24 hour # (314) 634-2436

7/26/94


CCWC FLUORIDE FEED POINT
MISSOURI RIVER
Clearwell
#2
1 mg
Chlorine
Cl2 & NH3
#2
#4
#6
#7
#8
#1
#3
#5
#1
#2
#3
#4
H.S. PUMPS
.293 mg
Backwash
Tower
CO2
CO2
CLEARWELL
#1
1 mg
HFS
STORAGE
tank valve
Cl2
Carbon

MISSOURI PUBLIC SERVICE COMMISSION
NATURAL DISASTER REPORT

DATE _____ REPORT NO. _____

This report is to be faxed to the Missouri Public Service Commission Staff on a daily basis during the disaster unless otherwise advised by the Commission Staff. If questions cannot be answered at this stage of the disaster, enter "unknown". Additional sheets should be used if necessary. This information may be released to the public (attach confidential information separately and appropriately designated).

TO PSC:	Name: _____	Dept.: _____
	Telephone: _____	FAX: _____
FROM COMPANY:	Name: _____ (person filling out report)	Utility: _____ (Name of Company)
	Telephone: _____	FAX: _____
	Type of Utility Service Being Reported (circle one) ELECTRIC -- GAS -- SEWER -- TELCOMMUNICATIONS -- WATER	

This report is to contain a description of status of your utility during this natural disaster. Subsequent reports should only contain updated information.

Town or geographic area affected: _____

Priority Customers without service (public emergency service institutions such as hospitals, city halls, court houses, water supply stations, sewer treatment stations, fire stations, police stations and other critical outages):

_____

_____

Approximate number of customers without service: _____

Anticipated future disruption of service: _____

_____

Extent of physical damage to utility system due to natural disaster: _____

_____

_____

_____

Type of equipment, coordination or assistance needed from the Commission or its staff: _____

_____

_____

Status Summary (include a narrative report of any other relevant information regarding the natural disaster or the status of your utility as it relates to the natural disaster, including measures to prevent disruption of service, alternate means of providing service, conservation measures taken, public service announcements, etc. Also estimated restoration date and time if known at this time.): _____

_____

_____

_____

_____

_____

1998 ISO Documentation
For
United Water Missouri

1. United Water Missouri (UWMO) obtains its water from the Missouri River. A 6.5 MGD water softening plant treats the water before it is delivered to the distribution system. The plant's pumping facilities consists of five low service pumps, which pump the water from the river to the head of the plant and five high service pumps that pump the water into system:

Table I.

Pump	Yr. Installed	GPM	TDH
Low Service # 1	1991	1100	160
Low Service # 2	1989	2720	140
Low Service # 3	1985	2300	160
Low Service # 4	1989	3200	140
Low Service # 5	1995	2100	140
High Service # 1	1995	2100	210
High Service # 2	1997	1400	200
High Service # 3	1978	2100	200
High Service # 4	1947	2800	200

The plant also has eight filters. Six filters are 11 by 16 feet and the other two filters are 15 by 16' all rated at 3 gpm per square foot.

UWMO has an agreement with Cole County Public Water Supply District #2 to lease its elevated storage facilities. The two systems are interconnected together (see question 10). Because of the elevation of the District Tanks water is pumped into these facilities by two UWMO booster stations (Southwest Booster and Bald Hill Booster) as well as the District five wells.

The distribution system is divided into two pressure zones commonly referred to as the "Plant Side" and the Tower Side" Two booster stations and four pressure reducing valves regulate the pressure between the two systems.

(See Appendix "A" for more detailed information)

2. A map is enclosed (See Appendix "B")

3. The total number of square miles that UWMO serves is estimated at 15 square miles.

4. The maximum daily consumption for the past three years is included in the Table II:

5. The average daily consumption for the past three years is included in the Table II.

Table II.

Year	Average Day Demand	Maximum Day Demand
1995	3.76	5.20
1996	4.21	6.01
1997	4.08	5.92

6. The "plant side" average day demand is estimated at 3,200,000 gallons per day while the "tower side" average day demand is estimated at 880,000 gallons per day. The maximum day demands are estimated at 4,600,000 gallons per day and 1,300,000 gallons per day respectively.

7. Enclosed is a hydraulic profile of the system. (See Appendix C)

8. Table III provides the necessary information on the various tanks.

Table III.

Tanks	Capacity MG	Overflow Elev.	Dimension	Avg. Min Level	Connect Size	Pressure Zone
Clearwell 1	1.00	649.00	See Sketch	645	14 inch	Plant
Clearwell 2	1.00	648.75	103'dia x 19.5'	645	16 inch	Plant
Schott	1.00	941.00	35 ' head range	930	12 inch	Tower
Christy	1.00	946.00	40' head range	930	12 inch	Tower
Vieth	0.20	941.00	29 ' head range	930	12 inch	Tower
Brazito	0.250	965.00	21' head range	955	8 inch	Tower

9. Table IV provides the necessary information on the various wells and booster pumps.

Table IV.

Pump	Well or Booster	Yr Installed	GPM	Pressure Zone
Christy	Well	1990	420	Tower
Vieth	Well	1996	370	Tower
Schott	Well	1998	500	Tower
Brazito	Well	1989	830	Tower
Seven Hills	Well	1997	450	Tower
Southwest #1	Booster	1997	1000	Tower
Southwest #2	Booster	1978	1000	Tower
Bald Hill #1	Booster	1997	300	Tower
Bald Hill #2	Booster	1954	670	Tower
Shellridge #1	Booster	1993	300	Tower
Shellridge #2	Booster	1993	300	Tower
Shellridge #3	Booster	1993	300	Tower

10. There are two metered interconnections between UWMO and District 2 (Southwest Interconnection and Route B Interconnection) Both interconnections have two six inch turbo meters each allowing water to flow in either direction.

11. UWMO has one emergency interconnection with Cole County Public Supply District No. 1. The interconnection is designed to flow water in either direction. It takes less than one hour to activate this interconnection.

12. Of the 850 fire hydrants in the system all have 2 –2 ½ outlets and only 5 do not have a 4" or larger outlet. Forty four of the hydrants are on a 4 inch branch while all the rest have 6 inch branches. 16 hydrants are on 4 inch mains; 469 on 6 inch; 271 on 8 inch; 89 on 10 inch; 40 on 12 inch; 9 on 16 inch; and 1 on 20 inch.
A data sheet of all the hydrants in the UWMO system is enclosed. (See Appendix "D")

13. Fire Flow data is enclosed. (See Appendix "E")

14. All hydrants are inspected and flowed yearly. Records are enclosed. (See Appendix "F")