Exhibit No.:	_____
Issues:	* Fencing of Facilities * MDNR Violations * Chlorine Complaints * Water Pressure Complaints * Local Public Hearing Complaints
Witness Name:	Steve G. Loethen
Type of Exhibit:	Cross-Surrebuttal Testimony
Sponsoring Party:	MoPSC Staff
Case Nos.:	WC-2002-155 & SC-2002-160
Date Testimony Prepared:	April 24, 2002

MISSOURI PUBLIC SERVICE COMMISSION

UTILITY OPERATIONS DIVISION

WATER & SEWER DEPARTMENT

CROSS-SURREBUTTAL TESTIMONY

OF

STEVE G. LOETHEN

CASE NOS. WC-2002-155 & SC-2002-260

OFFICE OF THE PUBLIC COUNSEL

VS.

WARREN COUNTY WATER & SEWER COMPANY

Jefferson City, Missouri
April 2002

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Case Nos. WC-2002-155 & SC-2002-160

Office of the Public Counsel
vs.
Warren County Water & Sewer Company

CROSS-SURREBUTTAL TESTIMONY
OF
STEVE G. LOETHEN

CASE NOS. WC-2002-155 & SC-2002-160
OFFICE OF THE PUBLIC COUNSEL
VS.
WARREN COUNTY WATER & SEWER COMPANY

INTRODUCTION

Q. Please state your name and business mailing address.

A. Steve G. Loethen, P.O. Box 360, Jefferson City, Missouri 65102.

Q. By whom are you employed and in what capacity?

A. I am employed by the Missouri Public Service Commission (Commission) as a Utility Operations Technical Specialist II in the Water and Sewer Department (W/S Dept) of the Utility Operations Division.

Q. Have you previously submitted testimony in this case?

A. Yes, I did. I filed Rebuttal Testimony on March 27, 2002.

PURPOSE OF TESTIMONY

Q. What is the purpose of the cross-surrebuttal testimony you are providing in this case?

A. The purpose of my cross-surrebuttal testimony is to respond to the rebuttal testimony filed by Gary L. Smith in this case on March 28, 2002. I will be commenting on the following issues:

1) Fencing of wastewater treatment facilities;

2) MDNR violations at treatment plants & lift stations;

3) Chlorine complaints;

4) Water pressure complaints; and

5) Local hearing complaints.

FENCING OF WASTEWATER TREATMENT FACILITIES

Q. In Mr. Smith's testimony on page 5, lines 10-11 and lines 13-14, he stated that wastewater treatment plant fences "serve as a screen and are not designed for security purposes or to keep anyone out." Are these correct statements?

A. No, they are not. Fences can serve as a screen but the main purpose of a fence is for security and to keep people out. Fences would not be necessary at treatment plants where all basins have locked grates, control panels are locked and equipment housing is locked.

Q. What are you basing you answer on?

A. Rules and regulations of the State, proper management of a company, proper operations of a certified wastewater operator and common sense. Attached to this testimony as Schedule 1 is the Missouri Clean Water Commission's Rule 10 CSR 20-8.020(11)(C)11 (Safety), which clearly defines the purpose of, and provides a design guide for, a fence around a wastewater treatment facility. Wastewater treatment facilities, and lift stations as well, have basins ten (10) feet deep or greater. If such basins are empty, people or animals could fall into them resulting in serious injury

or death, or if such basins are full of raw or treated wastewater, people or animals could fall into them resulting in serious health problems or drowning. Treatment facilities have moving and electrical parts, which present entanglement and shock hazards. Without proper fences, people and animals are unprotected from these hazards. The fences are also there to protect from vandalism. Otherwise, vandals might change settings that are crucial to proper operations and cause environmental damage or vandals could also destroy expensive equipment, which would cause the Company unnecessary expenses. Mr. Smith is the owner of this company and stated that he is a "B" certified operator. It is my opinion that it is his duty, as an owner and an operator, to protect his employees, customers, environment and equipment.

Q. Can you respond to the testimony Mr. Smith presented on page 5, line 11, where he states that "we repair fences at least twice a year"?

A. Yes. On 3/27/02, when I visited the Warren County Water and Sewer Company (Company) facilities, the gate that I had mentioned in my rebuttal testimony on page 4 was secure. Three nails were driven to hold the gate shut, which is sufficient to stop a child or animals form entering the facilities. For over two years this was a problem that was pointed out to Mr. Smith. Driving three nails is all that had to be done. If Mr. Smith

fixes fences twice a year this would have been done sooner. I have had other similar problems with this company.

MDNR VIOLATIONS AT TREATMENT PLANTS & LIFT STATIONS

Q. Do you agree with Mr. Smith's testimony on page 6, line 8, that the MDNR sample violations "basically involve plant one"?

A. No, I do not. There have been numerous violations at both Treatment Plant One and Treatment Plant Two.

Q. Upon what are you basing your answer?

A. The MDNR sends the W/S Dept. notices of violations to put in our files. I have reviewed our files and we have record of violations issued to both Treatment Plant One and Treatment Plant Two. Most of these violations were included as schedules to the direct and supplemental direct testimonies of OPC witness Kimberly K. Bolin. Also, based on a letter I received from Paul Mueller of the MDNR (see Attachment 2 to my rebuttal testimony), I believe more may be issued on both plants.

Q. In Mr. Smith's testimony on page 6, lines 11-12, he mentions that treatment Plant One "has been in compliance a substantial percentage of the past 120 plus months." Is this adequate?

A. No, it is not. It is a company's and wastewater operator's responsibility to never pollute waters of the state and to keep the facilities in compliance all the time.

Q. On page 6, line 12, of Mr. Smith's testimony, he states that "there is a continuing problem with return sludge." Do you think this is the reason the plant is not meeting MDNR limits?

A. I think it is part of the problem, however it is hard to determine because the "return sludge" equipment has been broken since before my first visit to the plant on 2/2/00. Plant #2 has had the same broken "return sludge" equipment since before the same date too. Both have operational "return sludge" equipment but it does not work as the plants were originally designed. Returning sludge is one of many important parts of the treatment processes and I do feel this is part of the reason the plants have been out of compliance.

Q. In his testimony on page 6, lines 12-14, regarding Treatment Plant One not meeting MDNR limits, Mr. Smith states that "various experts and consultants have made suggestions over the years but no one has found a permanent solution." Do you have an opinion on why it will not meet limits?

A. Yes, I do. As stated in my rebuttal testimony on page 3, I haven't seen any records of operational maintenance or testing for either facility. This maintenance and testing is essential for "trouble shooting" and proper operations of a facility. It is my opinion, based on what I have observed, that the facilities do not meet MDNR limits due to poor operations.

Although I think a big problem with Plant One is that it is "overloaded," Mr. Smith stated the plant "has been in compliance a substantial percentage of the past 120 plus months." To me, that would indicate the plant is capable of providing treatment and should be in compliance all the time. I have also offered my assistance, and given Mr. Smith advice, to which I have received poor or no response.

Q. In his testimony on page 6, lines 20-21, Mr. Smith states "I immediately respond to calls on individual lift stations and am able to take care of most problems immediately or after I can get a repairman on the job." Do you agree with this statement?

A. No, I do not. If Mr. Smith is responding immediately to calls regarding individual lift stations, he is not informing the customers of what he found or if the problem is fixed. I have received several complaints where customers did not know if the Company had done anything and could not contact the Company. I have included a timeline of a complaint a customer sent me this year on what happened and how long it took to fix an "individual lift station" (see Schedule 2 to this testimony). I don't think this was adequate service, and it is far from immediate. I realize this is only one incident, but I have had experience with other similar instances, one of which was a formal complaint (the Turner complaint).

Q. In Mr. Smith's testimony on page 6, line 21, and page 7, line 1, he states how he responds to and fixes the large lift stations. He states, "we respond immediately and try to repair at the lowest possible cost." Do you agree with this statement?

A. No, I do not. It is my opinion that if Mr. Smith was responding to problems immediately and repairing them adequately he would not be on probation as a result of pollution violations, and would not have a pending charge for breaking his probation terms.

CHLORINE COMPLAINTS

Q. On page 23, lines 19-20, of Mr. Smith's testimony, he suggests chlorine complaints from customers are "exaggerated" and "imagined". Do you agree with this?

A. No, I do not. I believe there is a problem in the system and some serious attention needs to be given to it. Mr. Smith states on page 22, lines 7-8, "Nonetheless once the level was tested at an amount in excess of 2.0 mg/l and that was very noticeable the morning it reached my house," so he has experienced the problem himself. On 3/2/01, Paul Mueller of the MDNR issued a letter of warning for a chlorine level of 4.4, while the Maximum Residual Disinfectant Level is 4.0 (see Schedule 3 to this testimony). I am sure time elapsed between when Mr. Mueller got the complaint call and when he arrived in the subdivision, as his office is approximately 30

minutes away. Because of this, the residual level may well have been even higher at the time the customer called in the complaint. I haven't tested any high levels of chlorine, but I am at least an hour's drive from the subdivision, and it is thus hard for me to get there while the problem is happening and get a true reading. I have received several complaints on high chlorine levels that burned skin, eyes, and nose, and even bleached clothing. Although it seems unlikely to me there is enough chlorine in the water to bleach clothing, I am worried by the number of callers who make this complaint. Some stringent testing needs to be done to isolate what is causing these high levels of chlorine in the system, but I have not seen any testing results from the Company. Because of these problems, people are scared and don't drink the water, and I think this is clearly inadequate service. Testing should be done and the results, along with educational materials, should be provided to the customers so they feel safe to use the water they are paying for.

WATER PRESSURE COMPLAINTS

Q. Are there water pressure problems in the Company's system?

A. Yes, there definitely are. I have recordings at homes with low water pressure (pressure dropping below 20 psi, the minimum required by DNR) these homes are at approximately the same elevation as the standpipe. It is my understanding that Mr. Smith developed this area. Mr. Smith states

in his testimony on page 13, line 21, and page 14, line 1, that "The pressure is determined by the elevation of water in the storage tank relative to the elevation of a particular home." If the water system could not deliver adequate pressure to this area, it should not have been developed. The water company should not have allowed development until the system was upgraded to accommodate this area. Mr. Smith also states in his testimony on page 14, lines 10-11, that "as long as the elevations remain the same, it should make no difference how many homes are on the system." Although I didn't use Mr. Smith's method of looking at a sweat ring on the water tower, my pressure recordings show that the elevations are fluctuating already and as more homes are added to the system, it will make a difference, especially in the homes that are at higher elevations relative to the water level in the tank.

LOCAL PUBLIC HEARING COMPLAINTS

Q. On page 13 of his testimony, Mr. Smith makes comments about a customer's complaint at the local public hearing. Would you please respond to these comments?

A. Yes. Mr. Smith comments on lines 10-11 about "the idea that sludge could be pumped to the lake rather than being hauled away." I have talked to a customer of the Company that stated "sewer" was being pumped into the lake. After talking to him longer, it was my understanding

that the customer was talking about the effluent pipe. Although this is not "pumped," it is possible for sludge to leave the plant through the effluent pipe. I have also spoken with customers of the Company that stated when there was a problem with their "individual lift station", instead of hauling the raw sewage off, the Company pumped it on the ground. These homes are near the lake and the customers were worried the "pumped" sewage would run into the lake. Mr. Smith also states on lines 13–15 that "sludge has the consistency of very liquid mud, dumping any significant amount into a shallow body of water would simply fill the lake and be very obvious." I have seen and have pictures of the shallow body of water Plant One discharges into, and it has significant amounts of sludge in it. Mr. Smith is right, the presence of sludge is very obvious. I have also seen sludge in the lake behind Plant Two. Sludge in the receiving stream is a good indicator that the facility is not meeting MDNR limits.

Q. In Mr. Smith's testimony on page 13, line 17, he states, "This complaint borders on the absurd." Do you agree with this statement?

A. No, I do not. I agree with the customer's complaint. Although the customer may have been wrong in stating the sludge was actually "pumped" into the lake, the treatment plants did and do lose sludge,

resulting in a discharge of sludge to the lake. I think it is likely that the customer did see a sludge discharge.

SUMMARY OF TESTIMONY

Q. Could you please summarize your cross-surrebuttal testimony?

A. Yes. It is my opinion that Mr. Smith's testimony actually reflects negatively on Mr. Smith's operations. He doesn't seem to take complaints or problems seriously, nor does he have solutions for them. As I stated in my rebuttal testimony, it is my opinion he is not providing safe and adequate service.

CONCLUSION

Q. Does this conclude your pre-filed cross-surrebuttal testimony?

A. Yes, it does.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

Office of the Public Counsel	)	
	)	
Complainant	)	
	)	
vs.	)	**Case Nos. WC-2002-155 & SC-2002-160**
	)	
Warren County Water & Sewer Company and Gary L. Smith	)	
	)	
Respondents	)	

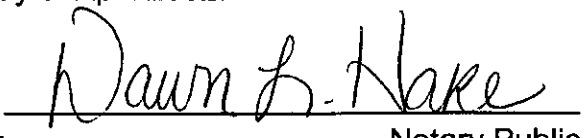
AFFIDAVIT OF STEVE G. LOETHEN

STATE OF MISSOURI)
) ss
COUNTY OF COLE)

Steve G. Loethen, of lawful age, on his oath states: that he has participated in the preparation of the foregoing written testimony in question and answer form, consisting of 11 pages and 2 schedules, to be presented in this case; that the answers in the testimony were given by him; that he has knowledge of the matters set forth in such answers; and that such matters are true and correct to the best of his knowledge and belief.

Steve G. Loethen

Subscribed and sworn to before me this 24th day of April 2002.



Notary Public

DAWN L. HAKE
Notary Public – State of Missouri
County of Cole
My Commission Expires Jan 9, 2005

My Commission Expires: _____

8. Potable water supply protection. No piping or other connections shall exist in any part of the treatment works which, under any conditions, might cause the contamination of a potable water supply. Potable water from a municipal or other supply may be used above grade for water closet, lavatory, drinking fountain or similar fixtures. A reduced pressure backflow preventer or break tank shall be used to isolate the potable system from all plant uses other than the ones provided for in this rule. Where a break tank is used, water shall be discharged to the break tank through an air-gap at least six inches (6") above the maximum flood line, ground level or the spill line of the tank, whichever is higher. Backflow preventers shall be located above the maximum flood line or ground level. A sign shall be permanently posted at every hose bib, faucet, hydrant or sill cock located on the water system beyond the break tank or backflow preventer to indicate that the water is not safe for drinking. Where a separate nonpotable water system is to be provided, backflow prevention will not be necessary but all system outlets shall be posted with a permanent sign indicating that the water is not safe for drinking.

9. Sewage flow measurement. Flow measurement shall be provided for all wastewater treatment facilities. Flow measurement should not be less than pump calibration time clocks or calibrated flume or weir and stilling basins as required.

10. Protection from the elements. All sewage treatment facilities except those which operate only seasonally shall be designed to assure effective operation under all weather conditions. Protection from the elements must be given special consideration since small wastewater treatment facilities will frequently be located in remote areas and may not receive daily attention. Freezing temperatures affect most treatment facilities to some degree. Open sand filters and small extended aeration plants are likely to be affected the most. Provisions for covering exposed process areas with boards or insulating panels may be sufficient in many cases. The use of heat tapes around sludge and scum return piping may be helpful in addition to covering the tanks. Sufficient electrical outlets should be provided at the plant site for this purpose. Tanks which are not completely backfilled on all sides may require additional protective measures during freezing weather. Any such measures taken to comply with these provisions shall not present a hazard to the operator nor hinder the operation of the treatment facility.

11. Safety. Adequate provisions should be made to protect the operator and any visitors from unnecessary hazards.

A. All wastewater treatment facilities must be fenced sufficiently to restrict entry by children, livestock and unauthorized persons as well as to protect the facility from vandalism.

B. Fences shall be a minimum of five feet (5') in height and shall be constructed of durable materials appropriate to the site and nature of the treatment facilities. Posts shall be imbedded to a sufficient depth or otherwise securely anchored to prevent displacement and shall not be spaced more than twenty feet (20') apart. Barbed wire, woven wire fabric or chain link mesh shall be securely fastened to the posts with fasteners designed for the type of material used.

C. Fences shall be located far enough back from all process units to permit easy access for operation and maintenance and for access of mowing equipment, sludge trucks and similar equipment. A minimum four foot (4') clearance from all units is recommended.

D. Woven wire fabric will generally be acceptable for fencing lagoons and other small facilities having a minimum of mechanical equipment. The fabric should nearly touch the ground surface and should have small enough mesh in the lower two feet (2') to prevent passage of small animals. Larger and more complex treatment facilities should be provided with chain link or similar fencing.

E. At least two (2) strands of barbed wire shall be provided above the fence fabric spaced no more than six inches (6") apart.

F. At least one (1) gate shall be provided for access of maintenance equipment and vehicles and each gate shall be provided with a lock. Gates shall be constructed in a manner and of materials comparable to those used for the fence. Gates shall be designed to prohibit entry of the enclosure by crawling underneath. When sizing the gate, consideration must be given to the need for entry of mowing equipment, sludge trucks or other vehicles or equipment necessary for routine maintenance and operation.

G. At least one (1) warning sign shall be placed on each side of the facility enclosure in such positions as to be clearly visible from all directions of approach. A sign shall be placed on each gate. Minimum wording shall be SEWAGE TREATMENT FACILITY—KEEP OUT. Signs shall be made of durable materials with characters at least two inches (2") high and shall be securely fastened to the fence, equipment or other suitable locations.

(12) Primary Treatment. For general requirements applicable to all types of treatment facilities, refer to section (11) of this rule.

(A) Grease Traps. Grease traps shall be provided on kitchen drain lines from institutions, hotels, restaurants, school lunch rooms and other establishments from which relatively large amounts of grease may be discharged to the treatment facility.

1. Grease traps should be located as close to the fixtures being served as possible and should receive only the waste streams from grease-producing fixtures. Sanitary waste streams, garbage grinder waste streams and other waste streams which do not include grease should be excluded from passing through the grease traps. Grease traps must be cleaned on a regular basis and must be readily accessible for this purpose.

2. Sizing of grease traps is based on wastewater flow and can be calculated from the number and kind of sinks and fixtures discharging to the trap. In addition, a grease trap should be rated on its grease retention capacity, which is the amount of grease (in pounds) that the trap can hold before its average efficiency drops below ninety percent (90%). Current practice is that grease-retention capacity in pounds should equal at least twice the flow capacity in gallons per minute. The following two (2) equations may be used to determine the capacity of grease traps for restaurants and other types of commercial facilities:

A. Restaurants.

$$D \times Gl \times Sc \times \frac{Hr}{2} \times Lf = \text{Size of grease trap in gallons, where:}$$

D = Number of seats in dining area;
Gl = Gallons of wastewater per meal, normally 5 gallons;
Sc = Storage capacity factor, minimum of 1.7;
Hr = Number of hours open; and
Lf = Loading factor,

1.25 interstate highways
1.0 other freeways
1.0 recreational areas
0.8 main highways
0.5 other highways.

B. Hospitals, nursing homes, other type commercial kitchens with varied seating capacity.

$$M \times Gl \times Sc \times 2.5 \times Lf = \text{Size of grease trapin gallons, where:}$$

M = Meals per day;
Gl = Gallons of wastewater per meal, normally 4.5;
Sc = Storage capacity factor, minimum of 1.7; and

SEWER BACKUP & BROKEN PUMP

Feb. 2, 2002 at about 11:45 PM the neighbor across the street (John Orlando) rang doorbell and knocked on door to a wake us. He told us that a red light was flashing on the side of our house and he thought it might be a gas indicator. It is the indicator that the sewage lift pump is not working. We checked our basement and sure enough we had sewage backing up into the unfinished area of the basement. Immediately called Warren County Sewer & Water Company to report the problem. No response.

Feb. 3rd Sunday 9:00AM called WCS&W and spoke with Gary Smith and he told me someone would be right over to pump sewage out.

11:30AM Called again as no one had come out yet. Left message on recorder.

2:30 PM left home and no one had come to pump sewage out of basement. We were unable to flush toilets, shower, do laundry or dishes.

7:00 PM came home and sewage had been pumped out. We assumed that the pump had been repaired. Flushed toilets, which were then clogged and used water as needed.

Monday, Feb. 4th 8:00AM checked the sump hole and it was filled with sewage. Called WCSW and left message. Wife called at about noon and talked with Gary Smith and he said someone would be over shortly. At 2:30PM no one had come to pump out sewage. Wife was quite aggravated as she was unable to use water as needed and she was home recovering from major surgery just 3 weeks prior. She called PSC to file a complaint.

5:30 PM WCSW employee came out and pumped sewage and told me that a fuse was the problem and he would be back the next day to replace the fuse.

Tuesday, Feb. 5th fuse replaced but pump was not working. I, Roger Nichols, pumped sewage from the hole twice that day.

Wed. Feb 6th called WCSW twice and left messages on recorder. Homeowners pumped sewage twice.

Thurs. Feb.7th PSC called Gary Smith and he told them that he couldn't get an electrician out to fix the pump until Monday the 11th of Feb. PSC called homeowners. Homeowners pumped sewage twice that day.

Feb. 8 & 9th wife was home alone so she had to pump the sewage as I was out of town.

Sunday pumped out sewage again twice as no repair made.

Monday Feb. 11th electrician from Wentzville showed up and diagnosed the problem, but Gary Smith didn't have him make the repair. Later in day WCSW employee came and pulled the switch breaker and left the hot wires exposed. Then there was no way to pump the sewage from the holding tank.

Schedule 2-1

Feb. 12 Tuesday at about 10:55 WCSW employee came by; looked; left; nothing done. Homeowners left for a week but left keys with a contractor.

Feb 14th Thursday, contractor reported to homeowners that WCSW came and installed a new electrical box and switch to operate the pump.

Feb. 19th Tuesday, homeowner arrived home to find a new box on the side of house. Thought everything was fixed.

Feb. 20th Wednesday, homeowner heard water running outside of house and looked to find 3 people around the sump hole. Later, homeowner was told that 2 of them were PSC employees inspecting the work. Steve Latham reported to Mrs. Nichols that they had found the pump incorrectly installed and the floats were backwards causing the pump to turn off and on constantly when sewage was coming from the house into the holding tank. Left uncorrected the pump would have burned up and been inoperable again. PSC employees flagged down a WCSW employee and told him that the pump needed to be fixed immediately and correctly. He then contacted Gary Smith.

The house at 2470 Village Lane was without a properly working sewage system for 19 days. During that time WCSW never called or talked with the homeowners to let them know the status of the problem.

Schedule 2-2

STATE OF MISSOURI
Bob Holden
Governor • Stephen M. Mahfood, Director
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
St. Louis Regional Office
10805 Sunset Office Drive, Suite 100 St. Louis, MO 63127-1038
(314) 301-7100
FAX (314) 301-7107

March 2, 2001

CERTIFIED MAIL #7099 3220 0008 0571 0025
RETURN RECEIPT REQUESTED

Mr. Gary Smith
Warren County Water & Sewer Company
1248 Mimosa Court
Foristell, MO 63348

Dear Mr. Smith: LETTER OF WARNING

On February 15, 2001, Mr. Paul Mueller of this office was at Incline Village, served by the Warren County Water & Sewer Company, and found violations of the Missouri Public Drinking Water Regulations.

A water sample collected in the distribution system found the chlorine levels at 4.4 mg/L of total chlorine and a free chlorine level greater that 2.2 mg/L. A level of 4.4 mg/l is 10 percent greater than is allowed. Missouri Safe Drinking Water Regulation 10 CSR 60-4.055(1)(A) sets the Maximum Residual Disinfectant Levels (MDRL) at 4.0 mg/L.

If your tests do not reflect these high levels you may wish to contact Mr. Jack Baker of this office to aid you in the calibration of your equipment.

Regulation 10 CSR 60-4.055 requires public water systems that disinfect to monitor daily the free chlorine residual entering the distribution system and maintain the residual at 0.5 mg/L. The regulation also requires the total chlorine be tested at the time of the bacteriological sampling, and be maintained at no less than 0.2 mg/L at the far ends of the distribution system. These readings should be kept on file and available for Department of Natural Resources review. A chlorine colorimeter or spectrophotometer, which use DPD chemistry, must be used for chlorine analysis. The results of the analysis should be kept on file and submitted to the Department (by the 10th of the following month) as required by State Regulation 10 CSR 69-4.080 and 10 CSR 69-7.010.

The difference of almost 50 percent between the total chlorine residual and the free chlorine residual indicates that there is a substantial chlorine demand within the system. Quite possibly this may be the result of a biofilm coating the water lines. Biofilms are common in water systems, which may have previously not used disinfection or may not have maintained a sufficient chlorine residual.

Immediately, take action to bring the chlorine levels below the 4.0 mg/L MDRL.

Within 10 days, submit chlorine records for the months of January and February 2001.

It would be advisable to do the daily chlorine residuals at three locations; one close to the well, one in mid-distribution, and the final one at a far end of the distribution. Both free and total residuals should be done daily. Eventually you should see free residual raise to approach almost 90 percent of the total residual. This will occur over time as the chlorine demand is satisfied throughout the system. The residuals at the far end will always be lower than those closest to the well.

Should you wish to meet with or to discuss this Letter of Warning, please contact Mr. Mueller at the Lincoln County Satellite Office at (636) 528-4779 or Mr. Dan Daugherty at this office.

Sincerely,

ST. LOUIS REGIONAL OFFICE

/s/ Mohamad Alhalabi, P.E.
Regional Director

MA/PEM/jh

c: Warren County Department of Health

Schedule 3-2