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November 6, 2014

Ingrid Ferrell, Executive Secretary
West Virginia Public Service Commission
201 Brooks Street
Charleston, WV 25301

Re: 14-0872-W-GI

Dear Ms. Ferrell:

On behalf of Advocates for a Safe Water System, I enclose for filing in the above-captioned proceeding, the original and twelve copies of the Direct Testimony of Fred D. Stottlemyer on Behalf of Advocates for a Safe Water System.

Please call me if there are any questions regarding this filing.

Sincerely,

Paul R. Sheridan
Attorney at Law

Enclosure

cc: John Philip Melick and Christopher L. Callas, Esqs. (w/ enc.)
Jacqueline Lake Roberts, Tom White and Heather Osborn, Esqs. (w/ enc.)
Anthony Majestro, Esq. (w/ enc.)
Timothy C. Bailey, Esq. (w/ enc.)
Jonathan Marshall, Esq. (w/ enc.)
David A. Sade, Esq. (w/ enc.)

PUBLIC SERVICE COMMISSION OF WEST VIRGINIA

West Virginia-American Water Company	)	Case No. 14-0872-W-GI
	)	
General investigation into the actions of	)	
West Virginia-American Water Company	)	
in reacting to the January 9, 2014	)	
chemical spill	)	

DIRECT TESTIMONY
OF
FRED D. STOTTLEMYER

ON BEHALF OF
ADVOCATES FOR A SAFE WATER SYSTEM

November 6, 2014

Q. PLEASE STATE YOUR NAME AND ADDRESS.

A. My name is Fred Darryl Stottlemyer and my home address is 751 Gordon Drive Charleston, WV.

Q. ARE YOU CURRENTLY EMPLOYED?

A. No. I am retired but work approximately half time as the Central American volunteer program manager for the International Rural Water Association. Prior to my retirement I was General Manager of the Teays Valley and South Putnam Public Service Districts, predecessors to the Putnam PSD, for 28 years, from 1976 until 2004. In 1976, I was employed as a planner with the Kanawha County Regional Development Authority. From 1973 to 1975 I was a special assistant to the President of the United Mine Workers in Washington D.C. From 1971 to 1972, I worked as a planner with the Community Services program at West Virginia Tech. From 1970 to 1972, I was the Director of the Knowledge Power community action program with Designs for Rural Action in Charleston. From 1966 to 1969, I was a planner and then Director of the State Planning office in the WV Department of Commerce and the Office of Federal State Relations. From 1962 to 1964, I was a Peace Corps volunteer serving in Pakistan.

Q. PLEASE DESCRIBE YOUR EDUCATION AND PROFESSIONAL BACKGROUND.

A. I am a 1962 graduate of Bethany College, Bethany WV with a degree in sociology and did graduate work in Urban and Regional planning at the University of Pittsburgh. I was on the board of directors of the National Rural Water Association for 20 years and served as Vice President of that organization. I was also a board member of the West Virginia Rural Water Association for 20 years I served as a board member of the International Rural Water Association and as President of that board for a number of years.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PUBLIC SERVICE COMMISSION OF WEST VIRGINIA?

A. Yes. I have testified numerous times before the Commission in certificate and rate cases as part of my employment with the Teays Valley and South Putnam Public Service Districts.

Q. HAVE YOU DONE ANYTHING TO SPECIFICALLY PREPARE FOR YOUR DIRECT TESTIMONY?

A. I have reviewed the direct testimony provided in this case by West Virginia American Water Company (hereafter WVAWC, or "the Company") and the responses to the discovery requests. In particular I have reviewed the report dated Feb 25, 2014 (Respondents Exhibit BWN-2) prepared by the Company for submission to the U S Chemical Safety Board. In addition I have reviewed the daily plant operations records including the tank level records for the periods of Jan 6-9, 2014 and Dec21 and 22nd 2013 and made calculations based on this review.

Q. WHAT IS THE SCOPE OF YOUR DIRECT TESTIMONY?

A. I will provide testimony relative to the following subjects:

1. The WVAWC Kanawha Valley Treatment Plant is insufficiently equipped to cope with a chemical spill.

2. It appears that the Company's distribution system may be operating with insufficient storage capacity.

3. WVAWC did not operate its system in the days prior to January 9th to maintain adequate storage levels in accordance with standard industry practice.

4. Contamination of the system with MCHM at greater than 1ppm could likely have been avoided had the plant been operating with adequate monitoring and testing equipment and adequate finished water storage.

5. A backup water supply would further reduce the risk to the public of another contamination event

1. The WVAWC Kanawha Valley Treatment Plant is insufficiently equipped to cope with a chemical spill.

Q. WHAT OPTIONS DID WVAWC HAVE TO RESPOND TO A CHEMICAL CONTAMINATION EVENT, SUCH AS OCCURRED ON JANUARY 9TH, 2014?

A. The Company did not have either a backup water supply such as a secondary supply intake on the Kanawha or a protected raw water reservoir to turn to in the event its Elk River supply became contaminated. Also there were no neighboring systems capable of meeting the full Kanawha Valley system demand. Thus, if the Company was going to keep water flowing in the system, the Company's response in the event of such a contamination of its Elk River supply was limited to two options: shutting down the plant for a limited time to allow a spill to pass the intake or trying to modify its treatment process to remove the contaminant.[1]

Q. IS THE KANAWHA VALLEY PLANT APPROPRIATELY EQUIPPED TO UNDERTAKE EITHER OF THESE STRATEGIES?

A. No. In the case of chemical contamination of the raw water, the first option of shutting down the plant to allow the spill to pass the intake requires the ability to monitor the river water supply to determine when the plume has passed. This plant was better equipped to do this monitoring a decade ago. During the period when the WVAWC's system was owned by a German company, RWE, approximately ten years ago the water quality testing capability of the Kanawha Valley treatment plant was downgraded, and the plant and water quality personal did not have the capability during the Freedom Industries MCHM spill to monitor the river water quality on a real time basis.[2]

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[1] "Most major sources of chemical contamination are within a few miles of the plant. This leaves the most likely alternatives of either shutting down the plant for some period of time to allow the spill to pass or trying to treat the spill using various technologies available (PAC, KMnO4, increased chlorine feed). Should a spill occur that is slow moving or has a very large plume, decisions would have to be [sic] as to where to locate a temporary intake on the Kanawha River or bring in on barge temporary supplies of source water. The time required to put these plants into place would be prohibitive, and the system would have already gone dry ..." Source: Response to Joint Discovery Binder, Attachment GI0000032_0001 ("Source Water Assessment and Pollution Prevention Plan and Activities for the Central Division")

[2] Response to ASWS 2-1

WVAWC selected the 2nd option of attempting to treat the water by modifying its treatment process on January 9th. However, its ability to appropriately use a modified treatment regime is also affected by its inability to accurately monitor levels of contamination. Due to the Company's failure to have proper testing equipment, the Company initiated this option totally in the dark without knowing the concentration levels of the chemical contaminant in the water coming into the plant. The Company's submissions in this case state that the treatment modification was effective in removing the MCHM for a period of time.[3]

But because the modified treatment process was attempted when the MCHM concentration was too high, it failed and both the treatment plant and the system became contaminated.

Had the operational staff had real data on the concentration of the chemical in the water, they would have had the opportunity to combine short term plant shut downs with the treatment modifications option. If they had had the testing capability, they may have been able to more effectively operate the treatment plant during the periods when the concentration of MCHM was lower and not when it was high and thus avoided the contamination of the treatment plant and system at levels of MCHM above 1ppm. As I will discuss later in this testimony, I believe that the plant could have been operated in the days prior to Jan 9th in a way that would have allowed the intake to have been shut down for 8 and 1/2 to 14 hours on January 9th.

If WVAWC's policy was not to have the testing capability on site it should have been prepared to have such testing done in an emergency by one of the chemical industries in the area which have the necessary testing equipment or by the State's mobile laboratory operated by the W V Department of Environmental Protection.

[3] Direct Testimony of Jeffrey L. McIntyre, p. 10-11.

Q. BUT ISN'T IT TRUE THAT WVAWC CANNOT BE TESTING FOR EVERY POSSIBLE CONTAMINANT IN REAL TIME?

A. Yes, while specific information would have been required to conduct testing for the specific substance of MCHM, real time monitoring equipment is available which would have detected a presence of a general class of chemicals with properties similar to MHCM. For example, monitoring equipment is available to test for hydrocarbons on a real time basis, and MCHM's presence in the water would have resulted in a higher than usual level of hydrocarbons. Such equipment is available at a cost under $50,000 and was recently installed by the Putnam PSD. The fact that WVAWC knew of the potential for a chemical contamination of its Elk River supply and failed to have monitoring equipment, or to have a plan in place to monitor the raw water quality in the event of such a contamination event, is a clear indication of the Company's failure to be adequately prepared for such an event.

2. It appears that the Company's distribution system may be operating with insufficient storage capacity.

Q. WHY IS FINISHED WATER STORAGE RELEVANT TO THE COMPANY'S RESPONSE TO THE ELK RIVER SPILL?

A. The amount of water stored in the distribution system, and particularly in the 850 gradient (serving downtown Charleston), was the crucial factor in the Company's decision to not shut off the intake on January 9th.[4]

Q. PLEASE EXPLAIN THE BUREAU FOR PUBLIC HEALTH'S DESIGN STANDARDS FOR FINISHED WATER STORAGE.

A. The West Virginia Bureau for Public Health (WVBPH) has adopted a standard for the amount of water storage that should be built into a water system (W. Va. C.S.R. § 64-77-9). WVAWC has cited this standard in its responses as evidence that the system complied with the standard.[5] Basically this standard provides for a system's water storage tanks to have the

[4] Respondent Exhibit BWM-2.
[5] Response to Staff 1-17 and 1-20.

capacity to hold a two day supply of water based on the average customer daily demand of 150 gallons per day.

In WVAWC's calculations it has used a more liberal demand factor by utilizing its average normal system daily demand which includes higher demand factors for commercial and industrial customers and a factor for line leakage.[6]

The WVBPH standard allows a system to reduce the tank storage requirement by the amount of excess treatment capacity a water system has available for meeting peak demands. In the case of WVAWC's Kanawha Valley plant the excess treatment capacity is calculated at 21.5 million gallons by deducting the average daily demand of 28.5 million gallons from the treatment plant's rated daily capacity of 50 million gallons. The two day storage requirement for the system based on two days of average demand is 57.6 million gallons. The excess treatment plant capacity of 21.5 million gallons thus sets the required storage capacity for the system at 36.1 million gallons when applying the WVBPH standard. WVAWC states in its submission that its system wide storage of 39.3 million gallon for the Kanawha Division system thus exceeds the WVBPH design standard.[7]

Q. DO WVAWC WATER STORAGE FACILITIES MEET THE WVBPH DESIGN STANDARD?

A. In theory, yes - but in practice, it appears that they may not.

Q. PLEASE EXPLAIN.

A. WVAWC states that the system wide storage capacity of 39.3 million gallon exceeds the amount required by the WVBPH standard by several million gallons. However in its calculation of how long the water in storage on Jan 9th would have lasted until the system went dry the Company utilizes a totally different formula. In these calculations, which were set forth to justify the Company's decision to not shut the Elk River intake, the Company's calculation implies that the internal or 850 gradient tanks were required to meet the full demand of the system or 1.75 million gallons per hour on Jan 9th.[8] If this is the actual

[6] Response to Staff 1-20.
[7] Ibid.
[8] Respondent Exhibit BWM-2.

operational requirement placed on the system then the Company falls far short of meeting the WVBPH standard with only 18.72 million gallon of storage capacity in the 850 gradient tanks.[9]

Q. HOW DEFICIENT IS THE COMPANY'S STORAGE SYSTEM?

A. If it is the case that the entire system demand must be met by the 850 gradient tanks then these tanks should have a capacity of 36.1 million gallons rather than 18.72 million gallons. Thus it appears that the WVAWC 850 gradient storage system had a storage deficiency of approximately 17.4 million gallons at the time of the Freedom Industries MCHM spill.

3. WVAWC did not operate its system in the days prior to January 9th to maintain adequate storage levels in accordance with standard industry practice.

Q. WAS WVAWC OPERATING ITS TREATMENT PLANT AND STORAGE FACILITIES DURING THE PERIOD OF JAN 6 THROUGH NOON JAN 9 IN A MANNER TO BE ADEQUATELY PREPARED FOR AN EMERGENCY EVENT SUCH AS THE CHEMICAL CONTAMINATION OF THE ELK RIVER?

A. No. WVAWC in its submissions and in public statements made on January 9 stated that the system storage only had a few hours of capacity before it would go dry and result in a loss of a water supply for sanitation and fire protection.[10] A review of the tank level information provided by the Company in this case confirms that portions of the system would have gone dry within a period of 3 to 6 hours.

The WVBPH standard anticipates that excess treatment capacity will be utilized to offset the peak demands by producing more water to both meet those demands and to maintain water storage tank levels. Unfortunately, WVAWC failed to utilize the excess plant treatment capacity to maintain storage tank levels and meet the excess demand over a three day period beginning Jan 6. As a result of this failure, the tank levels were extremely

[9] Ibid.
[10] Response to ASWS 1-7.

low at the time of the notification of the MCHM spill. In fact, several of the principal tanks serving what WVAWC identified as the "downtown" area were, and had been, nearly or totally empty for several days.[11]

WVAWC has repeatedly stated in public releases and in submissions in this case that the treatment plant has the capacity to produce 50 million gallons of water but during this high demand period from Jan 6-8 the plant only operated at 70 to 80 percent of this capacity leaving a portion of the peak demands to be met through a substantial decline in the amount of water in storage.[12] This failure to utilize the reserve plant capacity to produce additional water to maintain proper tank levels appears to have been the decisive factor in creating the circumstances which caused WVAWC's decision to not shut down its Elk River intake to allow the MCHM spill, or at least the highest concentration of it, to pass the plant.

Q. WAS WVAWC OPERATING ITS STORAGE FACILITIES IN A PRUDENT MANNER WHICH WOULD FACILITATE EMERGENCY RESPONSE OPTIONS IF A PROBLEM WERE TO OCCUR?

A. No. The operational decision by WVAWC not to utilize its excess treatment capacity in the days prior to the MCHM spill resulted in the tanks designed to supply the "downtown" or 850 gradient area only holding 31% of their design capacity - or around 5.9 million gallons rather than 18.7 million gallons.[13] While some fluctuations in tanks levels are anticipated due to usage patterns over the day, it is a prudent practice to maintain at least 80% tank levels at all times. If WVAWC had been operating its system in such a manner there should have been around 15 million gallons of water stored in the "downtown" or 850 gradient tanks at the time of notification of the spill.

Q. IS IT RISKY TO OPERATE THE SYSTEM WITH SUCH LOW TANK LEVELS IN THE 850 GRADIENT?

A. Yes. In addition to the risk of a chemical contamination of the water supply, WVAWC had been operating its treatment and tank facilities in such an inadequate manner during the

[11] Response to ASWS 2-23 and 2-24.
[12] Response to Joint Discovery Binder, Attachment GI0000345 (Daily Treatment Plant Operator Logs)
[13] Respondents Exhibit BWM-2.

Jan. 6 to Jan. 9 period that if it had experienced a power outage on Jan 9th similar to the 6 hour outage that occurred on Dec 22nd it appears that much of the 850 gradient or downtown area would have lost service, including fire and sanitation service. Cold weather power outages are a relatively common occurrence, and WVAWC was clearly not operating its system in a manner to properly manage such an event.

Q. HOW MUCH ADDITIONAL STORAGE CAPACITY COULD HAVE BEEN AVAILABLE ON JANUARY 9TH HAD WVAWC USED ITS EXCESS TREATMENT CAPACITY IN THE PRECEDING DAYS TO REFILL ITS STORAGE TANKS?

A. Over the three days prior to the MCHM spill the plant (based on its 50 million gallons of treatment capacity) could have treated an additional 35 to 40 million gallons of additional water and, even with 40% of this water being lost to leakage, 21 to 24 million would have been available to fill the systems water tanks.[14] Had this mode of operations been followed by WVAWC, the system wide storage could have been over 30 million gallons in storage rather than the 17 reported by WVAWC at the time of its decision to issue the "Do Not Use" order on Jan 9.

If WVAWC had utilized its excess treatment capacity to maintain proper tank levels, it would have been in a much better position to provide operational staff with options for dealing with the emergency created by the MCHM spill.

Q. ARE THERE ANY RECENT EXAMPLES OF WVAWC SHUTTING DOWN ITS INTAKE FOR LONGER THAN TWO HOURS AND RELYING ON STORAGE TO AVOID DEPRESSURIZING ITS SYSTEM?

A. Yes. In December 2013 WVAWC actually experienced a six hour plant shutdown due to a power failure. Due to the fact that at this point in time the Company had been operating it storage facilities in a manner more consistent to the WVBPH design standard, there was some reserve and there were no service interruptions as a result of this extended treatment

[14] If the leakage rate had been lower, more water would have been available to fill the tanks.

plant shutdown.[15] While the system demand was significantly lower during the Dec 22nd event, the treatment capacity was available to WVAWC in the days prior to the Jan 9 MCHM spill for the system storage to have been in a similar or better condition to allow the Company to shut down its water plant.

Q. ISN'T IT TRUE THAT THE WVBPH STANDARD IS A DESIGN STANDARD, NOT AN OPERATIONAL STANDARD, BECAUSE TANKS LEVELS NEED TO BE REFILLED THROUGHOUT THE DAY SO THAT WATER DOES NOT STAGNATE IN THE TANKS?

A. Yes. The WVBPH standards are design and not operational standardS with the exception that they do require the design to incorporate a minimal 20% turnover in the tank water each day. Generally this is not an issue due to the fact that normal customer demand usually exceeds the 20% turnover column. And definitely this requirement was not an issue during the period of Jan 6th to 9th 2014 when increased customer demand and increased leakage created a substantially higher demand on the system. The WVBPH standards require that at least a 20% turnover in the water in tanks occurs each day to assure proper chlorine levels are maintained and that the water does not become stagnant. But this does not require draining of tanks - or even allowing their level to drop below 80% - as customer demand on the system generally exceeds the daily 20% turnover requirement. Plus, during periods of high use such as was experienced on January 9th, the demand from customers and the high rate of line leakage ensured the water in the tanks would not become stagnant.

4. Contamination of the system with MCHM at greater than 1ppm could likely have been avoided had the plant been operating with adequate monitoring and testing equipment and adequate finished water storage.

Q. IN YOUR OPINION, COULD THE SYSTEM CONTAMINATION OF JANUARY 9TH BEEN AVOIDED IF WVAWC HAD BEEN BETTER PREPARED FOR SUCH AN EVENT AND IF IT HAD

[15] Response to ASWS 3-3.

OPERATED ITS TREATMENT PLANT AND STORAGE FACILITIES IN A MANNER TO FULLY UTILIZE THEIR DESIGN CAPACITIES?

A. Yes, or at least reduced below 1ppm. My review of the information submitted in this case shows that had WVAWC equipped its plant with the proper testing equipment to monitor and test for chemical contaminants and had WVAWC been operating its treatment plant in a manner to utilize its excess treatment capacity in the days prior to the Jan. 9th spill, its operational and water quality staff could have most likely managed the system in a manner to have avoided the system contamination by MCHM. If the 850 storage tanks had been at an 80% level rather than 31% they would have held 15 million gallons of water rather than 5.9 million. The system wide tankage would have been 30 million gallons rather than 17 million. This additional water stored in the non 850 gradient tanks would have reduced the demand on the 850 gradient tanks to a 1.1 to 1.3 million gallon per hour rate which would have allow the operational staff a plant shut down period of 11 to 14 hours before the 850 gradient or downtown area went dry. Even if, as discussed in section (2) above, the Company actually operates its system in such a way that the 850 gradient tanks had to meet the entire system demand of 1.75 million gallons per hour the intake could have been shut down for approximately 8 and 1/2 hours.[16]

Q. WOULD HAVING INCREASED WATER IN STORAGE HAVE INCREASED THE OPTIONS AVAILABLE TO STAFF AT THE TREATMENT PLANT?

A. Yes. If the treatment plant excess treatment capacity had been utilized during the days prior to the MCHM spill the storage facilities could have contained sufficient water to allow for a plant shut down during the period of highest levels of chemical contamination, and the operational and water quality staff could have likely managed the treatment process in a manner that would have avoided the system contamination with levels above 1ppm. While only limited test results were provided in the WVAWC submission in this case, according to the information provided in Company witness Morgan's testimony the first two results for

[16] Had the Company also issued a Do Not Use order when it began its crisis response, then the demand on the system would have decreased and the intake could have remained shut off longer.

the MCHM levels in the raw water supply show there was a substantial drop in the contamination level from13.66 ppm to 1.56 ppm during the time period from 5:00pm to 10:25pm on January 9th.[17] Test results for the level of MCHM in the finished water leaving the plant corresponding to the estimated two hours the water is in the treatment process indicate that the modified treatment process was effective in reducing the MCHM level substantially and to below the 1 ppm level once the raw water concentration came down into the 2ppm range. This suggests that the modified treatment process would have been effective in reducing MCHM to below 1ppm no later than 10:25pm.

Thus it appears that if the operational and water quality staff had had the option to shut the plant down for a number of hours while the MCHM raw water concentrations were especially high, the modified treatment method could have been used on raw water from the Elk River probably earlier but no later than 10:25 pm and would have been successful.

While subsequent testing and experience have indicated that the 1ppm standard used by WVBPH and WVAWC at the time of the spill may have been inadequate to eliminate odor and possible health impacts, I am using 1ppm as a benchmark here because it is the benchmark used by WVAWC in deciding to lift the "Do Not Use" order.

Q. WOULDN'T THIS SCENARIO HAVE REQUIRED THE COMPANY TO HAVE HAD A BETTER IDEA OF CONCENTRATIONS OF MCHM IN THE ELK RIVER IN REAL TIME IN ORDER TO MANAGE WHEN TO SHUT OFF THEIR INTAKE?

A. Yes. That is why I previously stated that the Company should have monitoring and testing equipment at its Kanawha Valley Treatment Plant.

Q. DOES THIS HYPOTHETICAL SCENARIO REQUIRE THE COMPANY TO HAVE KNOWN MORE ABOUT THE NATURE OF MCHM AND ITS TOXICITY THAN THEY ACTUALLY DID ON JANUARY 9TH?

A. Yes and no. More information would have been very useful, and it would have been essential for an assessment of whether the strategy had fully protected the system. Not

[17] Direct Testimony of Brett W. Morgan, Attachment 5.

having a full disclosure of the nature of the chemicals involved would most likely still have required the issuance of a "Do Not Use" for a day or so until it was certain that the MCHM level was below 1ppm. Such an order could have been lifted quickly, as the system would never have been contaminated with higher levels of MCHM.

Q. IS IT POSSIBLE THAT THERE WOULD STILL HAVE BEEN SERVICE OUTAGES IF THE INTAKE HAD BEEN SHUT FOR AN EXTENDED PERIOD ON JANUARY 9TH, EVEN IF THE TANKS WERE 80% FULL?

A. Yes. If the intake had been shut off for an extended period in the way that I've described above, there likely would have been some localized system outages due to localized leaks but the recovery period for these areas would have been far less than the lengthy recovery period that was required to decontaminate the entire system once it become contaminated. Also the demand from the downtown area and particularly the eastern portion of that area could have been reduced by the early closing of major users in that area such as State government offices and commercial establishments. Again such a shutdown would have created some short term inconveniences but nothing compared to the significant economic losses and public confidence and health concerns experienced by the long term system contamination that occurred. It is also likely that had WVAWC released water with 1ppm MCHM concentrations, that water would still have had an odor that may have prompted water quality complaints from customers.

Q. PLEASE SUMMARIZE YOUR CONCLUSIONS REGARDING THE COMPANY'S PREPAREDNESS FOR THE ELK RIVER SPILL.

A. I am simply saying that, had the Company had real-time information about the concentration of the contaminant in the Elk River, and had they been operating their storage system in accordance with standard industry practice, there would have been more options available to plant and water quality staff on January 9th for dealing with the Elk River spill. Under those circumstances, it is possible that decisions could have been made that would have averted the contamination of the distribution system with MCHM at levels greater than 1ppm.

While WVAWC was clearly not responsible for the chemical spill, its lack of preparations for such an event and its decision to not operate its treatment plant and storage facilities in a manner to provide the fullest capability to meet an emergency situation left its operational staff with limited options. Unfortunately, not being able to monitor on a real time basis the concentration of chemical entering the treatment plant and the inability to shut down the plant to allow the contaminated water to pass the plant due to the failure to have an adequate amount of water in storage, led to the system contamination when the treatment modification effort failed. From the WVAWC submissions it appears likely that this system contamination could have been avoided.

5. A backup water supply would further reduce the risk to the public of another contamination event.

Q. IN RESPONSE TO THE SPILL, THERE HAS BEEN MUCH PUBLIC DISCUSSION AROUND THE FACT THAT WVAWC HAS NO BACKUP WATER SUPPLY – NO RESERVOIR OR SECONDARY INTAKE. GIVEN THAT YOU BELIEVE THE CHEMICAL CONTAMINATION MIGHT HAVE BEEN AVOIDED WITH MORE EFFICIENT USE OF EXISTING STORAGE CAPACITY, IS IT YOUR OPINION THAT A BACKUP WATER SUPPLY SHOULD NOT BE DEVELOPED?

A. No. Had the plant operators been able to turn to an alternate supply on Jan 9th they could have avoided contamination of the system.

Q. HAVE YOU HAD ANY EXPERIENCE WITH THE BENEFITS AND THE COSTS OF HAVING A SECONDARY SOURCE?

A. Yes. In the early 1980's the South Putnam PSD experienced a similar accidental system contamination from a railroad accident. Following that experience we made a diligent effort to be prepared for future accidents and in the 1990s built an off stream, protected, 480 million gallon raw water reservoir capable of supplying the system for four to five months. The cost of this reservoir and associated piping and pumps was approximately five million

dollars in 2014 dollars, and this investment has paid for itself several times over the past twenty years.

Q. DO YOU HAVE RECOMMENDATIONS TO AVOID FUTURE CONTAMINATION EVENTS?

A. Yes. My first recommendation is that WVAWC should be required to install upstream monitoring equipment and to restore the chemical testing laboratory that was removed in 2004. Specifically, I recommend the installation of monitoring equipment to detect hydrocarbon and other appropriate contaminant levels upstream of the intake and the reinstallation of a gas chromatograph or similar equipment in the treatment plant laboratory.

Second, I recommend that WVAWC be required to operate its treatment plant in a manner to ensure proper storage tank levels are maintained at all times and that a report be provided to the PSC staff on a monthly basis so that the public can be assured of an adequate water supply in the event of another chemical spill.

Third, I recommend that WVAWC prepare a study to determine if the tanks in the 850 gradient area are indeed required to meet the full system demand as the Company's evidence in this case seems to imply. If so, the Company should be required to prepare a plan for upgrading the capacity of the 850 tanks to the determined necessary capacity and to submit that plan to the PSC staff.

Q. DOES THIS COMPLETE YOUR DIRECT TESTIMONY?

A. Yes.

CERTIFICATE OF SERVICE

I, Paul R. Sheridan, counsel for the Advocates for a Safe Water System, hereby certify that I have served a copy of the foregoing DIRECT TESTIMONY OF FRED D. STOTTLEMYER ON BEHALF OF ADVOCATES FOR A SAFE WATER SYSTEM upon all parties of record by First Class, U.S. Mail, postage pre-paid.

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Dated: November 6, 2014