

IOWA DEPARTMENT OF NATURAL RESOURCES

ADMINISTRATIVE ORDER

IN THE MATTER OF: BOARD OF TRUSTEES, CITY OF CRESTON WATER WORKS Public Water Supply Facility No. 8816089	ADMINISTRATIVE ORDER NO. 2010-WS-03
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TO: Dennis Bailey, Chairperson
Board of Trustees
City of Creston Water Works
820 South Park, P.O. Box 405
Creston, IA 50801

I. SUMMARY

This administrative order (order) is issued to the Board of Trustees, City of Creston Water Works (Water Works), concerning the public water supply system serving City of Creston residents and Southern Iowa Rural Water Association (SIRWA) customers. Any questions regarding this order should be directed to:

Relating to technical requirements:

Terisa Thomas, Environmental Specialist
Water Supply Operations Section
Iowa Department of Natural Resources
401 SW 7th Street, Suite M
Des Moines, Iowa 50309
Ph: 515/725-0283

Relating to legal issues:

Diana Hansen, Attorney at Law
Legal Services Bureau
Iowa Department of Natural Resources
502 East 9th Street
Des Moines, Iowa 50319-0034
Ph: 515/281-6267

Mail payment of penalty to:

Iowa Department of Natural Resources
502 East 9th Street
Des Moines, Iowa 50319-0034

II. JURISDICTION

This order is issued pursuant to Iowa Code section 455B.175(1), which authorizes the Director to issue any order necessary to secure compliance with or prevent a violation of Iowa Code chapter 455B, Division III, Part 1, and the rules promulgated or permits issued

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pursuant thereto, and Iowa Code section 455B 109 and 567 Iowa Administrative Code (IAC) 10(455B), which authorize the Director to assess administrative penalties.

III. STATEMENT OF FACTS

1. The City of Creston, Iowa owns this public water supply facility. The Water Works Board of Trustees, appointed by the Mayor and confirmed by the Creston City Council, operates this public water supply facility. Dennis Bailey is the current chairperson of the Water Works Board of Trustees. Steve Green is the general manager of the Water Works. The plant manager is Steve Marley.

This public water supply obtains its water from Three Mile Lake, an 880 acre reservoir, and Twelve Mile Lake, a 635 acre reservoir. The system is served by a water treatment facility referred to as the Twelve Mile Water Plant. Treatment consists of the addition of sodium permanganate at the reservoir intake buildings; the addition of ferric chloride, aluminum sulfate, aluminum chlorohydrate, and cationic polymer at the alum building located north of the treatment plant; and the addition of an anionic polymer and chlorine dioxide in the plant prior to pulsating upflow clarification, gas chlorination, rapid sand filtration, fluoridation, sodium hydroxide addition, and gas chlorination at the treatment plant. Treatment plant storage is provided by a 2.5 million gallon clearwell, a 1 million gallon clearwell, and a 77,000 gallon clearwell. Just prior to leaving the treatment plant and entering the distribution system, chlorine and ammonium sulfate are added for chlorination. Distribution storage and pressure are provided by 500,000 gallon, 750,000 gallon and 1,250,000 gallon elevated storage tanks (ESTs).

2. This public water supply sells approximately 2.67 million gallons of water per day to SIRWA. The Water Works serves water to approximately 7,870 persons, which includes the census population of 7,597 Creston residents plus 273 persons outside the city limits. SIRWA has 8,471 service connections that serve approximately 21,177 customers. In addition, SIRWA serves eight communities including Davis City (275 persons served), Bedford (1,620 persons served), Blockton (192 persons served), Kellerton (372 persons served), Diagonal (312 persons served), Mount Ayr (1,822 persons served), Lenox (1,401 persons served), Ellston (57 persons served), and Murray (766 persons served). The total number of customers served water by the Water Works, including SIRWA and their bulk load customers, is 35,861 persons.

3. On December 27, 2008 at 1:50 AM, a Field Office No. 4 (FO 4) environmental specialist received a page from the Water Works. The Water Works general manager reported that the sludge blankets in the clarifiers had risen and entered the filters at the Water Works water treatment plant. Due to this the filters had become completely plugged and the plant was unable to produce additional water. The plant typically produces three to four million gallons of water per day. The plant at that time had less than one million gallons in storage. It was reported that the plant would run out of water

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in approximately one to three hours. The general manager requested the assistance of the environmental specialist at the plant.

4. On December 27, 2008 at approximately 3:15 AM, the FO 4 environmental specialist arrived at the plant. At the plant, he met with the general manager, the plant supervisor, the SIRWA general manager, and the county emergency management coordinator. The specialist was given a tour of the facility and the intake facility at Three Mile Lake. The specialist was informed that sodium permanganate is added at the intake and that an aluminum sulfate blend, an anionic polymer, and chlorine dioxide are added to the water at the plant prior to entering the clarifiers. The clarifiers generally produce a sludge blanket that lies several feet below the water. The specialist was informed that early that day the sludge blanket rose to the surface and entered the filters through the distribution lines. The sludge blanket plugged the filters and made it impossible to produce additional water. The specialist observed that the Water Works staff were initiating the filter backwash process.

5. Water Works staff reported to the FO 4 specialist that the problems began around December 15, 2008 when the Water Works switched its water source from Three Mile Lake to Twelve Mile Lake. The reservoirs were switched to allow contractors to repair a water main that had been exposed during the 2008 summer floods. The FO 4 specialist recommended that a water conservation notice be issued to all Water Works and SIRWA customers immediately. It was also suggested to advise local grocery stores to stock up on bottled water.

6. On Saturday December 27, 2008 between 4:00 to 5:00 AM, the FO 4 specialist noted that filters were gradually put back on-line as each one was successfully backwashed. It was decided to cease adding the aluminum sulfate blend and the anionic polymer since it might send more sludge into the filters. It was decided to send the partially treated water into the system to avoid running out of water and depressurizing the system. Typically, the water leaving the Water Works treatment facility remains below 0.3 Nephelometric Turbidity Unit (NTU). The partially treated water leaving the Water Works treatment facility was between 0.9 and 1.0 NTU. The water was still testing at 0.9 to 1.0 NTU four to five hours later. The FO 4 specialist recommended that a boil water advisory be issued for precautionary reasons. The FO 4 specialist left the facility at about 10:00 AM on December 27, 2008.

7. On Monday December 29, 2008 a Department engineer senior and two FO 4 staff persons arrived at the Water Works between 11:00 and 11:30 AM. They were advised that the Water Works ceased the addition of sodium permanganate on Saturday afternoon since it interfered with the chlorine residual testing. It was also reported to Department staff that the Water Works exceeded the combined filter effluent (CFE) standard of 1 NTU at 4:00 AM on Sunday December 28, 2009, with a value of 1.69 NTU. Department staff immediately provided the Water Works supervisor with the Tier 1 public notification requirements and the language for a boil water advisory. Shortly after noon

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on December 29, 2008, a Water Supply Operations Section environmental specialist sent out by email the Tier 1 public notification requirement attachment and a boil water advisory attachment. The Water Works supervisor was advised by a FO 4 specialist to complete both requirements as quickly as possible. The Water Works general manager arrived shortly after that and was given the public notice and boil water documents. He was advised by Department staff to comply with these requirements as quickly as possible. After receiving notification of the requirements, the Water Works general manager left the treatment facility.

During the Monday, December 29, 2008 site visit, Department inspectors confirmed that the Creston water treatment plant exceeded the CFE standard on December 28, 2008. Based on this violation a Tier 1 Notice of Violation (NOV) was issued by the Department's Water Supply Operation Section on December 29, 2008 stating that this supply had exceeded the CFE turbidity limit of 1 NTU with levels as high as 1.69 NTU. This was a violation of Department subrule 567 IAC 43 10(4)"a"(3): "The turbidity of the combined filter effluent must never exceed 1 NTU at any time during the month."

8. Department staff observed further work at the treatment facility at about 2:15 PM on December 29, 2008. The Water Works staff drained one of the clarifiers and were in the process of cleaning the clarifier as quickly as possible. Water Works staff were also cleaning the distribution lines between the clarifiers and the filters.

9. At about 3:00 PM on December 29, 2008, Department staff met with the Water Works general manager and the SIRWA general manager. The Water Works general manager and the SIRWA general manager informed Department staff that they disagreed with the Department's request to give public notice and to issue the boil water advisory. Department staff reinforced the need to issue the public notice and the boil water advisory as quickly as possible. The two general managers finally agreed with Department staff on the public notice requirements. The Water Works general manager questioned whether there was adequate time to issue the public notice to the media that afternoon. Department staff again stressed that it must be completed as quickly as possible using whatever means necessary. Prior to the end of the meeting the two general managers arranged a meeting with the local newspaper and radio station. They requested that Department staff attend these meetings. Department staff participated in a meeting attended by reporters from the local newspaper and radio station and the two general managers. The Water Works general manager described the recent activities at the treatment plant. Department staff stressed that public notice and the boil water advisory were necessary and that public health must take priority over all other concerns.

10. Department staff contacted the Department's Communications Bureau at about 3:30 PM on December 29, 2008 concerning issuance of a press release. At about 7:30 PM on December 29, 2008, the Department's Communication Bureau issued a boil water advisory press release. On December 31, 2008 the Department's Communication Bureau issued a second press release concerning the Water Works. The press release stated that

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the boil water advisory continued in Creston and portions of seven southern Iowa counties.

11. On December 30, 2008 a FO 4 environmental specialist visited the Water Works treatment facility and met with the plant supervisor. The facility was continuing to clean the clarifiers and distribution lines. It was reported that the facility planned to finish the process later that day. The treatment plant staff was hopeful that the entire water treatment process could be restored soon.

12. On Friday January 2, 2009 at about 8:00 AM, the SIRWA general manager contacted FO 4 to inquire as to what would be needed to lift the boil water advisory. The FO 4 environmental specialist told him that the Water Works should shut off the fluoride chemical feed system once good quality water was being delivered into the system. The FO 4 specialist informed the general manager that fluoride could be used as a tracer to determine when good water replaced bad water. The FO 4 specialist further recommended that both the Water Works and SIRWA collect total coliform bacteria samples throughout the distribution system. The FO 4 specialist also advised the general manager that the Department would want to review chlorine residual data and fluoride data throughout the distribution system.

13. On January 2, 2009 at about 11:30 AM, the FO 4 environmental specialist received a phone call from the SIRWA general manager and the Water Works general manager. They inquired as to lifting the boil water advisory. The FO 4 specialist repeated the information that he had given the SIRWA general manager earlier that day. The two general managers were reluctant to shut off the fluoride chemical feed system and questioned the need to collect total coliform bacteria samples. The FO 4 specialist advised the general managers that the decision to lift the boil water advisory would be decided by the FO 4 supervisor and the Water Supply Operation Section supervisor.

14. On January 2, 2009 at about 1:30 PM, the FO 4 supervisor held a telephone conference with the SIRWA general manager and the Water Works general manager. The FO 4 supervisor identified the four target criteria that needed to be met prior to the lifting of the boil water advisory. The first item was that total coliform samples were to be collected throughout the entire distribution system with acceptable results. The second was that chlorine residuals must be maintained throughout the entire distribution system. The third requirement was that the fluoride chemical feed system was to be turned off once the system began producing good quality water, in order to act as a tracer to determine when the water turned over in the distribution system. The fourth requirement was that the Department must be confident that the treatment plant was functioning properly and was stable.

15. On January 5, 2009 Department staff held a teleconference call with the Water Works general manager and plant supervisor, the SIRWA general manager and a consulting engineer retained by the Water Works. The Water Works and SIRWA

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provided the Department with test results from 75 total coliform bacteria samples collected throughout the distribution system. All 75 samples tested as absent for total coliform bacteria. Information was provided to indicate the chlorine residuals found in the system at three separate locations. The fluoride chemical feed was turned off at approximately 11:00 AM on Friday January 2, 2009. A raw water sample taken previously on Wednesday December 31, 2009 tested at 0.22 mg/L for fluoride. The SIRWA supervisor reported that fluoride levels of 0.6 to 0.7 mg/L remained in the SIRWA system in areas where they had spent considerable time flushing. He also indicated that fluoride concentrations of 0.9 mg/L were found at the ends of the system. The Water Works general manager reported fluoride concentrations of 0.2 to 0.5 mg/L remaining within the distribution system in the City of Creston. In response to the fourth item to be met, Water Works staff reported that the functioning of the clarifiers was improving. It was reported that turbidity concentration had remained at below 0.3 NTU since about 12:00 PM on Friday January 2, 2009.

16. On January 5, 2009 at 12:30 PM the FO 4 supervisor and environmental specialist visited the Water Works treatment facility. They met with the Water Works general manager and the plant supervisor. FO 4 staff observed that the plant was operating more efficiently and that the turbidity levels were much better than the prior week. It was also observed that fluoride concentrations at several locations in the City of Creston distribution system were at 0.6 mg/L or higher. FO staff had not been informed of these higher fluoride concentrations in the teleconference earlier that day.

FO 4 staff requested that the Water Works test the water in each of its ESTs to determine if the water had turned over in each tank. The results from the Industrial EST and the Uptown EST indicated that the water had turned over while the results from the Cromwell EST, which served the SIRWA area, indicated that the water in the Cromwell EST had not turned over. This explained in part why the fluoride concentrations in the SIRWA distribution system were not decreasing to the desired level. The SIRWA general manager arrived later that afternoon. He provided fluoride results of 0.5 mg/L for Adams, 0.6 mg/L for Lenox, 1.07 mg/L for Bedford, 0.97 mg/L for Blockton, and 1.04 mg/L for Lake of Three Fires. FO 4 staff informed the Water Works general manager that they were not comfortable with the fluoride test results from the Cromwell EST and several locations within the City of Creston. FO 4 staff requested that the Water Works general manager turn over the water in the Cromwell EST and flush the distribution system near the sites that tested at 0.6 mg/L or higher for fluoride.

The SIRWA general manager ceased additional flushing of the SIRWA system until the Water Works turned over the water in the Cromwell EST. The SIRWA general manager asked what fluoride level the Department wanted within the distribution system before the boil water advisory could be lifted. After conferring with the Water Supply Operations Section supervisor, FO 4 recommended that a goal of 0.4 mg/L fluoride be reached.

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At about 7:30 PM on January 5, 2009, the FO 4 specialist received a phone call from the Water Works general manager. The Water Works general manager advised that the sites that had previously tested high for fluoride had been resampled. The samples tested at 0.35 mg/L, 0.32 mg/L, and 0.23 mg/L for fluoride. The Department lifted the boil water advisory for customers in the City of Creston only at about 2:45 PM on January 6, 2009.

17. The FO 4 specialist received a phone call from the Water Works general manager on January 8, 2009 at about 10:30 PM. The general manager informed him that the clarifiers were not functioning properly. The Water Works treatment plant was preparing to shut down the chemical feed systems and begin sending raw water through the filters again. The FO 4 specialist advised the general manager that the boil water advisory must be reissued immediately if the Water Works did this. The FO 4 specialist recommended that the Water Works contact its engineering consultants and request their presence at the plant immediately. The FO 4 specialist also requested that he be contacted immediately if the chemical feed systems were shut down again.

18. The FO 4 specialist contacted the Water Works general manager at about 5:40 AM on Friday January 9, 2009. He was informed that the consultant arrived at the treatment plant at about 1:30 AM. The general manager informed the specialist that a chemical adjustment was made that seemed to save the clarifiers. It was reported that the clarifiers had functioned normally since that point. The general manager stated that the highest turbidity measurement observed during the night before was 0.60 NTU. The current turbidity reading was 0.54 NTU.

19. On Friday January 9, 2009 at 4:30 PM, the Department lifted the boil water advisory for eight additional communities. These included the Cities of Bedford, Blockton, Diagonal, Ellston, Kellerton, Mount Ayr, Murray and Lenox. The boil water advisory was lifted for all communities and rural areas served by SIRWA on Saturday January 10, 2009 at 2:00 PM.

20. On February 27, 2009 an NOV was issued to the Water Works for violations that occurred during the Water Works' late December 2008 through early January 2009 plant interruption. The NOV letter included notice of violations for the following:

- Failure to achieve 99.9 percent removal or inactivation of *Giardia lamblia* cysts. During the Water Works' late December 2008 through early January 2009 plant interruption, coagulant was not fed to the system. This led to distribution of inadequately filtered water throughout the system. The authority for this violation was subrule 567 IAC 43.5(1)"a"(1). By ceasing the addition of coagulant chemicals, the Water Works no longer met the definition of a conventional treatment plant since it was not providing treatment that would remove such cysts. The facility was in violation of the Department's rules

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concerning surface water treatment and interim enhanced surface water treatment.

- Failure to achieve 99 percent removal of *Cryptosporidium* in December 2008. During the Water Works' late December 2008 plant interruption, coagulant was not fed to the system. This led to the distribution of inadequately filtered water throughout the system. This was a violation of subrule 567 IAC 43.9(1)"a"(1), which requires installation and proper operation of water treatment processes that reliably achieve at least 99 percent (2-log) removal of *Cryptosporidium*.
- Monthly CFE exceedances for December 2008 and January 2009. The Notice found violations of subrule 567 IAC 43.9(3)"a"(1), which pertains to monthly CFE readings. According to the Water Work's December 2008 and January 2009 Monthly Operation Reports (MORs), the Water Work's monthly CFE readings exceeded 0.3 NTU in at least 95 percent of the tests taken for December 2008 and January 2009. Under the subrule at least 95 percent of tests taken during a one month period must be less than or equal to 0.3 NTU.
- Failure to notify the Department within 24 hours of exceeding 1 NTU in the CFE. The interim enhanced surface water treatment rule contains provisions for notifying the Department. Subrule 567 IAC 43.9(5)"c"(1) requires consulting with the Department as soon as practical but no later than 24 hours after the exceedance is known. The filtered water turbidity exceeded 1 NTU in a reading taken at 4:00 AM on Sunday December 28, 2008. Department staff learned that 1 NTU had been exceeded during a site visit at approximately 12:00 PM on December 29, 2008.
- Failure to arrange for a Comprehensive Performance Evaluation (CPE) after an individual filter trigger event. The interim enhanced surface water treatment rules contain provisions for individual filter monitoring. Subrule 567 IAC 43.9(5)"b"(4) provides: "For any individual filter that has a measured turbidity level of greater than 2.0 NTU in two consecutive measurements taken 15 minutes apart at any time in each month of two consecutive months, the system must report the filter number, the turbidity measurement, and the date(s) on which the exceedance occurred. In addition, the system must arrange for a comprehensive performance evaluation to be conducted by the Department or a third party approved by the Department no later than 30 days following the exceedance and have the evaluation completed and submitted to the department no later than 90 days following the exceedance." The Department was not provided this information within 30 days of the exceedance and the Water Works did not arrange for a CPE to be conducted as required.

21. On Thursday April 2, 2009 the Water Works plant supervisor sent a rough draft of the Water Works Consumer Confidence Report (CCR) to the Department's Water Supply

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Operations Section. An environmental specialist contacted the plant supervisor and let him know that the CCR did not cover the December 2008 violations and that the CCR needed to include these violations and what had been done to correct the deficiencies. The plant supervisor contacted the specialist and stated that he did not believe that the Notice of Violation letter was valid and that the Water Works had responded in a timely manner. The specialist stated that the NOV letter had been issued by FO 4 and that any retraction would have to be done by FO 4. She additionally indicated to the plant supervisor that until FO 4 retracted the violations, they would need to be reported in the CCR.

On April 3, 2009 FO 4 was contacted by the Water Works general manager concerning the CCR and February 27, 2009 FO 4 NOV letter issued to the Water Works. The general manager's main concern appeared to be over the letter's inclusion as a violation the failure to notify the Department within 24 hours of the exceedance of 1 NTU at 4:00 AM on Sunday December 28, 2008. The FO 4 environmental specialist senior explained the basis of the violation and stated that the NOV was valid and would not be retracted.

22. The Department scheduled a CPE for April 13 through April 16, 2009. The Department's CPE team included three Department engineers and two environmental specialist seniors from Field Office No. 6 (FO 6) and FO 4. At the conclusion of the CPE a written report dated April 17, 2009 was issued. The report stated that the focus of the CPE was to identify factors that may be limiting the ability of the staff and the plant to meet regulatory limits. The report listed three performance limiting factors that appeared to have a major effect.

One factor considered to have a major effect was a focus on cost savings and future plans to renovate the plant. Because of this focus necessary equipment was not available and maintenance had been deferred. The report found that plans for the plant upgrade had taken longer than expected and maintenance on items critical to the proper operation of the plant, such as flow meters and filter controls, had been deferred. The report noted that the lack of SCADA and real time data for the operators was not allowing for proper process control and could be leading to deteriorating water quality. The granulated activated carbon (GAC) on the filters had not been replaced in over five years, when its capacity for organic removal was likely exhausted within approximately one year. This could be contributing to the formation of trihalomethanes in the contact tanks and distribution systems and could be affecting the systems purchasing water from the Water Works.

The report also found that the Water Works administration has not communicated a clear policy to meet specific turbidity goals for public health protection. The report noted that "[t]o minimize the consumer's potential for exposure to pathogenic organisms in their drinking water, all unit processes must be performing at a high level on a continuous basis. Accordingly, administrators should develop goals for high quality water and should emphasize to the operating staff the importance of achieving these goals. Relative

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to particle removal, a multiple barrier approach, including performance goals for settled water and individual filter water turbidity should be developed ”

A third area having a major effect on a long term repetitive basis concerned plant operation and process control. The report found that jar test results did not represent or replicate treatment plant performance. Such tests additionally were not considered a useful tool for responding to changing water conditions because the testing results did not translate to the conditions at the treatment plant. It was also noted that pulsator performance was controlled by visual observations rather than process control testing. The report indicated that the coagulant feed rate changes were not confirmed by feed rate measurements or calibration curves in a timely manner. It was noted that due to a lack of operable flow meters and calibration curves for the chemical feed pumps, operators are not able to make precise chemical dose changes for variations in source water conditions.

The report covered the major performance limiting factors discussed in this paragraph of the order. Other performance limiting factors that would have a moderate or minor effect were discussed in the report. The report indicated that the Department would develop an enforceable schedule to formalize and document the corrective actions the Water Works needs to take to correct deficiencies. Section V. of this order includes the corrective actions that the Water Works has agreed to take concerning its water treatment plant

23. Plans and specifications to upgrade the water works facility were received by the Department on August 14, 2009. A construction permit was issued by the Department on October 1, 2009. The notice to proceed was signed on November 5, 2009.

IV. CONCLUSIONS OF LAW

1. Iowa Code section 455B.172 makes this Department the agency of the state to conduct the public water supply program. Iowa Code section 455B.171 defines a public water supply system as a system for the provision of piped water for human consumption, if the system has at least fifteen service connections or regularly serves at least twenty-five individuals. Iowa Code sections 455B.173(3), (5), and (6) authorize the Environmental Protection Commission (Commission) to promulgate rules relating to the operation of public water supply systems and to adopt drinking water standards to assure compliance with federal standards adopted pursuant to the federal Safe Drinking Water Act and to adopt rules relating to monitoring, record keeping, and reporting requirements for any public water supply. The Commission has adopted such rules at 567 IAC chapters 40- 43.

2. Department rule 567 IAC 40.2(455B), further defines public water supply by defining “community water system” as a public water supply which has at least 15 service connections used by year-round residents or regularly serves at least 25 year-

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round residents, consistent with federal regulations. A "noncommunity water system" is any other public water supply. This facility is a community water system (CWS).

3. Department subrule 567 IAC 43.10(4)"a"(3) provides as follows. "The turbidity of the combined filter effluent must never exceed 1 NTU at any time during the month." The Water Works exceeded this CFE standard on Sunday December 27, 2008. The Department issued the Water Works a Tier 1 NOV letter on December 29, 2008 due to exceeding this CFE turbidity limit.

4. Department subrule 567 IAC 43.5(1)"a" provides in part. "Each public water system with a surface water source or a groundwater source under the direct influence of surface water must provide treatment of that source water which complies with these treatment technique requirements." This system's failure to provide adequate treatment in December 2008 and January 2009 was in violation of subrule 567 IAC 43.5(1)"a". This subrule also provides as follows. "The treatment technique requirements consist of installing and properly operating water treatment processes which reliably achieve: (1) At least 99.9 percent (3-log) removal or inactivation of *Giardia lamblia* cysts between a point where the raw water is not subject to recontamination by surface water runoff and a point downstream before or at the first customer." By ceasing the addition of coagulant chemicals, the Water Works no longer met the definition of a conventional treatment plant and was in violation of the Department's rules for surface water treatment and interim enhanced surface water treatment.

5. Department subrule 567 IAC 43.9(1)"a" provides in part as follows. "The treatment technique requirements consist of installing and properly operating water treatment processes which reliably achieve: (1) At least 99 percent (2-log) removal of *Cryptosporidium* between a point where the raw water is not subject to recontamination by surface water runoff and a point downstream before or at the first customer for filtered systems." The Water Works failed to do this and was in violation of this subrule.

6. Department subrule 567 IAC 43.9(3)"a"(1) provides as follows. "Turbidity requirements in 95 percent of samples. For systems using conventional filtration or direct filtration, the turbidity level of representative samples of a system's filtered water must be less than or equal to 0.3 NTU in at least 95 percent of the measurements taken each month, measured as specified in 43.5(4)"a"(1) and 43.5(4)"b"(1)." According to the Water Work's MORs for December 2008 and January 2009, monthly CFE readings exceeded these parameters.

7. Department subrule 567 IAC 43.9(5)"c"(1) provides as follows. "If at any time the turbidity exceeds 1 NTU in representative samples of filtered water in a system using conventional filtration treatment or direct filtration, the system must consult with the department as soon as practical but no later than 24 hours after the exceedance is known, in accordance with the public notification requirements under 567--subparagraph 42.1(3)"b"(3)."

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The filtered water turbidity exceeded 1 NTU in a reading taken at 4:00 AM on Sunday December 28, 2008. The Department was not notified of the exceedance within 24 hours as required by the subrule. Department staff did not learn that the Water Works had exceeded 1 NTU until approximately 12:00 PM on December 29, 2008 during a site visit. The February 27, 2009 NOV issued to the Water Works informed the Water Works of its failure to notify the Department within 24 hours of exceeding 1 NTU in the CFE, in violation of the subrule.

8. Subrule 567 IAC 43.9(5)“b”(4) provides as follows. "For any individual filter that has a measured turbidity level of greater than 2.0 NTU in two consecutive measurements taken 15 minutes apart at any time in each month of two consecutive months, the system must report the filter number, the turbidity measurement, and the date(s) on which the exceedance occurred. In addition, the system must arrange for a comprehensive performance evaluation to be conducted by the department or a third party approved by the department no later than 30 days following the exceedance and have the evaluation completed and submitted to the department no later than 90 days following the exceedance."

The February 27, 2009 NOV issued to the Water Works informed the Water Works of its failure to arrange for a CPE after an individual filter trigger event. The Water Works did not provide the Department information concerning the individual filter trigger event within 30 days of the exceedance as required. Additionally, the Water Works did not arrange for a CPE to be conducted within the required 30 day time period following the trigger event as required.

V. ORDER

THEREFORE, the Department hereby orders the Water Works to comply with the following in order to abate and redress violations of Department rules and the facility's public water supply operation permit:

TO BE COMPLETED IMMEDIATELY:

1. Report disruptions of coagulant and filter aids to FO 4 within 24 hours if filter banks (Filters #1-5 and #6-12) exceed 0.5 NTU.
2. Immediately notify FO 4 when ammonia is turned off for any reason and when it is turned back on. Immediately notify consecutive systems of these changes.
3. Immediately monitor pulsator turbidity every two hours and record the reading, or as an alternative, install a continuous monitor with an alarm.
4. Continue to complete and submit Optimization Assessment Software (OAS) software to FO 4 or the Central Office for the previous month by the 10th of the following month.
5. Ensure that a Water Treatment Grade 2 or higher operator is on duty at all times.

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TO BE COMPLETED WITHIN 30 DAYS OF RECEIPT OF THE ORDER:

6. Within 30 days of receipt of this order, submit an as-built construction permit application for ferric chloride and aluminum chlorohydrate (ACH) that were installed in January of 2009. This application must be submitted by a licensed Professional Engineer.
7. Within 30 days of receipt of this order, calibrate all testing equipment, including turbidimeters, analyzers, and pH meters, and chemical feed pumps according to the manufacturer's recommendations. Provide written proof of calibration of all testing equipment to FO 4 within 30 days of completion of the calibration work.
8. Within 30 days of receipt of this order develop and submit to the Department an Emergency Response Plan that includes written procedures listing contact persons and steps to take in situations such as a boil water advisory. This plan shall also include steps to take for emergency water conservation in case of water shortage emergencies as well as plans for public notification delivery.

TO BE COMPLETED WITHIN 90 DAYS OF RECEIPT OF THIS ORDER:

9. Within 90 days of receipt of this order, calibrate or replace flow meters that are known to be in error or nonfunctional.
10. Within 90 days of receipt of this order, adopt formal turbidity goals for settled water turbidity, individual filter turbidity, combined filter effluent turbidity, and contact time (CT).
11. Within 90 days of receipt of this order, submit a schedule for continued calibration and maintenance for all testing equipment, including turbidimeters, analyzers, and pH meters, as well as standard operating procedures (SOPs) for calibration.
12. Within 90 days of receipt of this order, provide written SOPs for mixing chemicals, adjusting feed rates, preparing stock solutions, and collecting and running samples.

TO BE COMPLETED WITHIN 6 MONTHS OF RECEIPT OF THIS ORDER:

13. Within six months (180 days of receipt of this order) complete three sessions of viability training (technical, managerial, and financial) for all board members with training provided by the Department through its contractor, the Iowa Association of Municipal Utilities (IAMU).
14. Within six months (180 days of receipt of this order) install a remote readout with trending capability of filter bank turbidities or individual filter turbidimeters in the control room.

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ADDITIONAL REQUIREMENTS:

15. Two operators must attend and participate in all sessions of the next scheduled series of Performance Based Training (PBT) and complete all assignments. The Department will contact the supply when this training is available.
16. If in the future, disinfection by-products of SIRWA or any of SIRWA's consecutive systems do not meet Department standards and exceed the Maximum Contaminant Levels (MCLs) in Department subrule 567 IAC 41 6(1)"b", the Water Works shall replace the GAC in each filter within 90 days of notification of the Department. Under this subrule the MCLs for disinfection by-products are 0.060 mg/L for Haloacetic Acids and 0.080 for Total Trihalomethanes (TTHM).
17. Complete the improvements to the Water Works treatment plant provided in the plans and specifications for the treatment plant upgrade. The project is required to be substantially completed by July 28, 2011 and to be finally completed (with payment made) by October 26, 2011.
18. Pay an administrative penalty of \$10,000.00. Payment is due within 60 days of receipt of the order.

VI. PENALTY

Iowa Code section 455B.191 authorizes the assessment of civil penalties of up to \$5,000.00 per day of violation for the violations involved in this matter. Iowa Code section 455B.109 authorizes the Commission to establish by rule a schedule of civil penalties up to \$10,000.00 that may be assessed administratively. The Commission has adopted this schedule with procedures and criteria for assessment of penalties in 567 IAC chapter 10. Pursuant to this chapter, the Department has determined that the most effective and efficient means of addressing the above-cited violations is the issuance of an order with an administrative penalty.

a. Economic Benefit. There have been cost savings to the facility by deferring necessary ongoing maintenance for several years. The Water Work's lack of a SCADA (remote monitoring) system contributed to the Water Work's inability to monitor changes in the water quality, and thereby delayed its response time to such changes. The total economic benefit for deferred maintenance and repair may have had a cost of greater than \$25,000.00. The Department assumes that this facility will complete the necessary water treatment plant improvements indicated in the plans and specifications submitted to the Department. The total economic benefit assessed by this order is set at \$4,000.00.

b. Gravity of the Violation. One of the factors the Department considers in determining the gravity of a violation is the amount of penalty authorized by the Iowa Code for the type of violation. As indicated above, the Iowa Code authorizes substantial

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civil penalties. Despite the high penalties authorized, the Department has decided to handle the violations administratively at this time, as the most equitable and efficient means of resolving the matter.

The impact of this situation was widespread. While the Water Works was providing untreated water, it threatened the public health of more than 35,000 people across eight southern Iowa counties for almost two weeks. It had a large impact on industries that were unable to operate. Restaurants were essentially shut down during this time period. Schools struggled to make last minute arrangements for school lunch programs and provide drinking water to students. Hospitals and daycare centers were also affected. Due the lack of advance public notification, many of these entities and persons were left with little time to prepare. There were shortages of bottled water because grocery stores were not notified until late Monday afternoon or early evening, well over 48 hours after the FO 4 specialist was first contacted about the system's inability to produce additional water.

This lack of compliance also consumed a great deal of Department staff time and resources. This is demonstrated by multiple visits to the Creston Water Works treatment plant, several hours of providing technical assistance, the great deal of time spent responding to complaints and questions from the public, the amount of staff resources required to complete the CPE, and many undocumented hours of internal discussions related to this incident. Because of the importance of the drinking water program, the Department assesses \$3,000.00 for this factor, due to multiple violations.

c. Culpability. The Water Works showed a demonstrated a high degree of negligence pertaining to the late December 2008 through early January 2009 incident at the treatment plant. The Water Works resisted measures of water conservation and public notification necessary to protect public health. Rather, the Water Works persisted in downplaying the public health significance of this incident. The Department was required to issue public notification for the boil water advisory when it became apparent that the Water Works had no intention of conducting such public notification of its own volition.

Aside from the negligence shown in the late December 2008 through early January 2009 event, the Water Works has not properly maintained and upgraded the water treatment plant. For several years, the construction of a new water treatment plant has been discussed. Due to such discussions ongoing required maintenance has been delayed or ignored altogether. The lack of a well maintained plant played a key factor in the late December 2008 through early January 2009 upset event at the plant. This order assesses the amount of \$3,000.00, due to multiple violations, for this factor.

VII. APPEAL RIGHTS

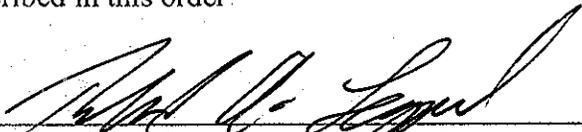
Pursuant to Iowa Code section 455B.175, and subrule 561 IAC 7.4(1), as adopted by reference by 567 IAC chapter 7, a written notice of appeal to the Commission may be

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filed within 30 days of receipt of this order. The notice of appeal should be filed with the Director of the Department, and must identify the specific portion or portions of this order being appealed and include a short and plain statement of the reasons for appeal. A contested case hearing will then be commenced pursuant to Iowa Code chapter 17A and 561 IAC chapter 7.

VIII. NONCOMPLIANCE

Failure to comply with this order may result in the imposition of further administrative penalties or referral to the Attorney General to obtain injunctive relief and civil penalties pursuant to Iowa Code section 455B.191. Compliance with Section V. of this order constitutes full satisfaction of all requirements pertaining to the specific violations described in this order.



RICHARD A. LEOPOLD, DIRECTOR
IOWA DEPARTMENT OF NATURAL RESOURCES

Dated this 8 day of
March, 2010

Board of Trustees, City of Creston Water Works, Water Supply Facility No. 8816089, Keith Wilken, Jerry Jordison and Dan Stipe- Field Office No. 4, Terisa Thomas and Shelli Grapp- Water Supply Operations Section, Jennifer Bunton, P.E.- Water Supply Engineering Section, Diana Hansen- Legal Services, U.S.E.P.A. Region VII, II.B.2.d.