



The State of New Hampshire
Department of Environmental Services



Clark B. Freise, Assistant Commissioner

The Town of Exeter, New Hampshire
Attn: Russell Dean, Town Manager
10 Front Street
Exeter, NH 03833

Re: Public Works/Water Treatment Plant
13 Newfields Road, Exeter, NH
PWS #0801010

**ADMINISTRATIVE ORDER
BY CONSENT**

No. 17-004 WD

A. INTRODUCTION

This Administrative Order by Consent is issued by the Department of Environmental Services, Water Division to, and with the consent of, the Town of Exeter, New Hampshire under the authority of RSA 485:58. This Administrative Order by Consent is effective upon signature by the parties.

B. PARTIES

1. The Department of Environmental Services, Water Division (“DES”), is a duly-constituted administrative agency of the State of New Hampshire, having its principal office at 29 Hazen Drive in Concord, New Hampshire.
2. The Town of Exeter, New Hampshire is a duly-constituted municipality of the State of New Hampshire having a mailing address of 10 Front Street, Exeter, NH 03833.

C. STATEMENTS OF FACTS AND LAW

1. RSA 485 authorizes the Department of Environmental Services (“DES”) to regulate public water supplies. The Commissioner of DES adopted NH CODE ADMIN. RULES Env-Dw 100 *et seq.* (the “Drinking Water Rules”) to implement this program, in accordance with RSA 485:3.
2. RSA 485:1-a, I, and Env-Dw 103.11, define “community water system” to mean “a public water system which serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents.”
3. Exeter owns and operates a municipal water system that serves approximately 3,500 service connections used by an estimated population of 11,000 residents of Exeter, New Hampshire (the “Water System”).
4. The Water System is a community water system as defined in RSA 485:1-a, I, and Env-Dw 103.11.

www.des.nh.gov

29 Hazen Drive • PO Box 95 • Concord, NH 03302-0095
(603) 271-3503 • TDD Access: Relay NH 1-800-735-2964

5. According to DES records, Jennifer Perry, P. E. is the Director of Public Works for the Town of Exeter. Ms. Perry is the primary point of contact for the Water System. Paul Roy is the certified operator for the Water System.
6. Exeter draws source water for the Water System from four groundwater wells, the Exeter River, and Dearborn Brook.
7. Env-Dw 103.56 defines “surface water” to mean “water that is open to the atmosphere and subject to surface runoff.”
8. Exeter River and Dearborn Brook are surface waters as defined by Env-Dw 103.56.
9. Env-Dw 716.04 requires any community water system having a surface water source to disinfect the water per requirements set forth in Title 40 of the Code of Federal Regulations (“40 CFR”) sections 141.70 through 141.73 of Subpart H – *Filtration and Disinfection* to ensure that any pathogenic organisms are inactivated.
10. Exeter uses hypochlorination treatment to chemically disinfect the source water and provide bacteriological protection to the consumers.
11. Env-Dw 715.06(a) requires a community water system that adds a chemical disinfectant to its water in any part of the treatment process to comply with the sampling and monitoring requirements set forth in 40 CFR sections 141.132 and 141.133 – Subpart L – *Disinfectant Residuals, Disinfection Byproducts, and Disinfection Byproduct Precursors*.
12. According to 40 CFR 141.132(b)(1), the owner of a community water system using a surface water source and serving at least 10,000 persons is required to collect four samples per quarter for Total Trihalomethanes (“TTHMs”) testing. TTHMs is a potentially-harmful disinfection byproduct (“DBP”) formed when sodium hypochlorite reacts with natural organic and inorganic matter in drinking water.
13. Env-Dw 705.03(c) sets the maximum contaminant level (“MCL”) for TTHMs in drinking water at 0.080 milligram/Liter (“mg/L”).
14. 40 CFR 141.205 includes the following language regarding possible health effects associated with consumption of TTHMs: “Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous system, and may have an increased risk of getting cancer.”
15. Env-Dw 715.10(a) requires an owner of a community water system that uses a primary or residual disinfectant other than ultraviolet light or delivers water that has been treated with a primary or residual disinfectant other than ultraviolet light to comply with the Stage 2 DBP requirements of 40 CFR 141.620 through 141.629 – Subpart V - *Stage 2 Disinfection Byproducts Requirements*.
16. 40 CFR 141.620(c)(4) set a deadline for community water systems serving 10,000-49,999 persons to comply with Stage 2 DBP requirements by October 1, 2013.
17. 40 CFR 141.621(a)(2) requires the owner of a water system to monitor for DBPs on a quarterly frequency should the source water type be a surface water and the population size range

from 10,000-49,999 persons. Such water systems are required to take individual TTHM samples at the locations with the highest TTHM concentrations.

18. According to 40 CFR 141.620(d)(1), for systems required to monitor quarterly, compliance with the TTHM MCLs is determined by calculating the *locational running annual average* (“LRAA”) for TTHM using monitoring results collected under Stage 2 DBP requirements and determining that each LRAA does not exceed the MCL.

19. 40 CFR 141.2 defines LRAA to mean “the average of sample analytical results for samples taken at a particular monitoring location during the previous four calendar quarters.”

20. According to 40 CFR 141.620(c)(7), if a community water system is required to conduct quarterly monitoring, compliance calculations must be made at the end of the fourth calendar quarter that follows the compliance date and at the end of each subsequent quarter (or earlier if the LRAA calculated based on fewer than four quarters of data would cause the MCL to be exceeded regardless of the monitoring results of subsequent quarters).

21. 40 CFR 141.629(a)(1) requires the owner of a water system to report the following information for each monitoring location [to DES] within 10 days of the end of any quarter in which monitoring is required:

- a. Number of samples taken during the last quarter;
- b. Date and results of each sample taken during the last quarter; and,
- c. Arithmetic average of quarterly results for the last four quarters for each monitoring location (LRAA), beginning at the end of the fourth calendar quarter that follows the compliance date and at the end of each subsequent quarter.

22. Env-Dw 801.08 requires the owner of a community water system that violates an MCL specified in Env-Dw 700 to provide public notice of the violation to persons served by the water system within 30 days of learning of the violation, and to submit certification of such public notice to DES within 10 days of providing public notice.

23. The TTHM LRAA for the Water System exceeded the MCL in Q3-2014 and as a result, DES issued an NOV to Exeter on November 25, 2014. In the NOV, DES listed the TTHM LRAAs of 0.082 mg/L, 0.097 mg/L, and 0.094 mg/L at three of the four monitoring locations for the Water System, and noted the public notice requirement associated with the violation.

24. On December 23, 2014, DES sent e-mail correspondence to Jennifer Perry and Paul Roy reminding them that the Water System was out of compliance with state and federal drinking water requirements. In its e-mail, DES offered technical assistance to return the Water System to compliance.

25. Exeter failed to submit proof of public notice to DES for the Q3-2014 TTHM MCL violation and as a result, DES issued an NOV to Exeter on January 7, 2015.

26. On January 9, 2015, DES received proof of public notice for the Q3-2014 TTHM MCL violation.

27. The TTHM LRAA for the Water System exceeded the MCL in Q4-2014 and as a result, DES issued an NOV to Exeter on February 4, 2015. In the NOV, DES listed the TTHM LRAAs of 0.096 mg/L and 0.091 mg/L at two of the four monitoring locations for the Water System, and noted the public notice requirement associated with the violation.
28. On February 4, 2015, DES received proof of public notice for the Q4-2014 TTHM MCL violation.
29. The TTHM LRAA for the Water System exceeded the MCL in Q1-2015. The TTHM LRAA for the Water System also exceeded the MCL in Q2-2015. As a result, DES issued two NOV's to Exeter on June 3, 2015. In the first NOV, DES listed the Q1-2015 TTHM LRAAs of 0.084 mg/L, 0.102 mg/L, and 0.093 mg/L at three of the four monitoring locations for the Water System. In the second NOV, DES listed the Q2-2015 TTHM LRAAs of 0.087 mg/L, 0.082 mg/L, 0.104 mg/L, and 0.096 mg/L at four of the four monitoring locations for the Water System. In each NOV DES noted the public notice requirement associated with the respective violation.
30. On June 30, 2015, DES received proof of public notice for the Q1-2015, and Q2-2015, TTHM MCL violations.
31. On August 3, 2015, DES staff met with representatives of Exeter and its consultant, Weston & Sampson. The purpose of the meeting was to discuss how to resolve the ongoing TTHM MCL violations within the Water System. Verbal proposals included, among others, a better blending of water from the multiple sources, pH adjustment, and chlorine dosage.
32. On August 6, 2015, DES issued LOD No. DWGB 15-024 via certified mail to Exeter. In LOD #DWGB 15-024, DES cited the TTHM LRAAs of Q3-2014 through Q2-2015, quarters inclusive, each of which exceeded the TTHM MCL of 0.080 mg/L. LOD #DWGB 15-024 also served as the formal notice of violation for exceeding the TTHM MCL for Q3-2015. In LOD #DWGB 15-024, DES listed the Q3-2015 TTHM LRAAs of 0.095 mg/L, 0.099 mg/L, and 0.093 mg/L at three of the four monitoring locations for the Water System. DES requested that Exeter provide proof of public notice of the Q3-2015 TTHM MCL violation to DES by September 15, 2015; and, submit a report proposing a solution to the water quality violations in the Water System by October 5, 2015.
33. On August 21, 2015, DES received the United States Postal Service return receipt confirming delivery of LOD #DWGB 15-024 to Exeter. The receipt was signed by Trisha Allen. On August 21, 2015, DES also received proof of public notice for the Q3-2015 TTHM MCL violation.
34. On October 5, 2015, DES received a report prepared for Exeter by Weston & Sampson which included steps to resolve the DBP exceedances of the Water System. In the report, the consultants proposed the following steps:
 - a. Maximize the groundwater sources to provide a majority of the Town of Exeter's water demands; TTHM levels should decrease if less surface water is used;
 - b. Lower the process flow rate through the surface water treatment plant;
 - c. Conduct a series of jar tests with a focus on optimizing potassium permanganate;
 - d. Monitor the settle solids level in the pre-oxidation basin;
 - e. Use the jar testing results to optimize the chemical feed;

- f. Conduct a series of jar tests to determine if adjusting the powder activated carbon dose would improve organic removal;
- g. Eliminate the use of pre-chlorination;
- h. Dechlorinate the recycle water prior to returning it to the headworks of the surface water treatment plant;
- i. Monitor the Skinner Springs (groundwater) source for total organic carbon and consider moving the feed point to the headworks of the surface water treatment plant;
- j. Install a mixing system in the Epping Road Tower storage tank;
- k. Due to cost, in-take aeration within the clearwell should be considered after the chemical feed optimization efforts have been exhausted;
- l. Add chloramines; and,
- m. Maximize/expand water storage tank operational range to encourage mixing thus discouraging stratification and aged water.

35. Also in the report, the consultants proposed the following schedule for system improvements:

- a. Complete jar testing by summer 2016;
- b. Implement any chemical feed modifications by 2016;
- c. Lower the process flow rate by summer 2016;
- d. Assess the need for in-tank clearwell aeration by winter 2016;
- e. If an in-tank clearwell aerator is needed, design the aerator by winter 2017; and,
- f. Install clearwell aerator by fall 2017.

36. On December 2, 2015, DES staff met with representatives of Exeter and Weston & Sampson. The purpose of the meeting was to discuss how to resolve the ongoing TTHM MCL violations. Topics of discussion included, among others, maximizing groundwater withdrawals and lessening surface water withdrawals, jar testing, ultra violet disinfection, and distribution improvements. As a result of the meeting Exeter agreed to submit, by January 29, 2016, a final plan to resolve the DBP MCL violations.

37. On December 28, 2015, DES sent e-mail correspondence to Exeter as a reminder that the final plan to resolve the DBP MCL violations was due to DES by January 29, 2016.

38. On December 28, 2015, DES received a response from an Exeter representative confirming that they were working on the plan. In the e-mail, the representative stated that Exeter purchased an ultraviolet analyzer/spectrophotometer to assist with water quality monitoring for organic matter.

39. The TTHM LRAA for the Water System exceeded the MCL in Q4-2015. The TTHM LRAA for the Water System exceeded the MCL in Q1-2016. As a result, DES issued two NOV's to Exeter on January 27, 2016. In the first NOV, DES listed the Q4-2015 TTHM LRAAs of 0.097 mg/L, 0.118 mg/L, and 0.097 mg/L at three of the four monitoring locations for the Water System. In the second NOV, DES listed the Q1-2016 TTHM LRAAs of 0.098 mg/L, 0.117 mg/L, and 0.098

mg/L at three of the four monitoring locations for the Water System. In each NOV DES noted the public notice requirement associated with the respective violation.

40. On January 29, 2016, DES received a report from Exeter. In its report, Exeter proposed the following tasks and deadlines to resolve the DBP exceedances of the Water system:

Task 1: Take the Surface Water Treatment Plant Off-line for Upgrades (February 2016 – Mid-April 2016);

Task 2: Conduct Surface Water Treatment Plant On-line Piloting (Mid-April 2016 – Mid-October 2016);

Task 3: Assess Results of On-line Piloting (End of October 2016); and,

Task 4: Distribution System TTHM Reduction/Optimization (June 2016).

41. On February 26, 2016, DES received proof of public notice for the Q4-2015, and Q1-2016, TTHM MCL violations.

42. On March 31, 2016, DES approved the actions proposed by Exeter in its report dated January 29, 2016. In its approval, DES clarified that the surface water treatment plant would not be completely off-line, but instead work at a reduced capacity; and, that the on-line pilot testing of the plant would be conducted during the day shift only.

43. On April 20, 2016, DES received a progress report from Exeter to resolve the DBP exceedances in the Water System. In its report, Exeter reported that it had contracted Aquagenics, Inc. to provide services for the investigation and control of TTHM production in its drinking water. Exeter also reported that the surface water treatment plant was working at a reduced capacity while upgrades to the system were accomplished. In the progress report, Exeter further proposed to:

a. Conduct jar testing;

b. Evaluate locations for enhanced chemical mixing;

c. Evaluate changes in TTHM with regard to pH changes;

d. Investigate the cost-effectiveness of aeration within the water storage tanks to reduce TTHMs; and,

e. Investigate the feasibility of using the existing filter backwash waste basins to reduce THMS.

44. The TTHM LRAA for the Water System exceeded the MCL in Q2-2016 and as a result, DES issued an NOV to Exeter on May 3, 2016. In the NOV, DES listed the TTHM LRAAs of 0.100 mg/L, 0.114 mg/L, and 0.095 mg/L at three of the four monitoring locations for the Water System, and noted the public notice requirement associated with the violation.

45. On June 6, 2016, DES received proof of public notice for the Q2-2016 TTHM MCL violation.

46. On July 18, 2016, DES received jar testing results from Exeter. According to the results, it appeared that enhanced coagulation reduced the amount of TTHM produced compared to the existing practices used at the surface water treatment plant.

47. On July 27, 2016, DES staff met with representatives of Exeter and Aquagenics. The purpose of the meeting was to discuss how to resolve the ongoing TTHM MCL violations. Topics of discussion included, among others, aeration, jar testing results, and well production volumes.

48. The TTHM LRAA for the Water System exceeded the MCL in Q3-2016 and as a result, DES issued an NOV to Exeter on July 29, 2016. In the NOV, DES listed the TTHM LRAAs of 0.086 mg/L, 0.081 mg/L, 0.115 mg/L, and 0.082 mg/L at all four monitoring locations for the Water System, and noted the public notice requirement associated with the violation.

49. On August 1, 2016, DES received a report from Aquagenics on behalf of Exeter. In its report, the consultant proposed the following steps to resolve the DBP exceedances within the Water system:

- a. Implement enhanced coagulation chemistry;
- b. Optimize the applied hypochlorite and sodium hydroxide additions;
- c. Discontinue the practice of recycling filter backwash; and,
- d. Increase the potassium permanganate contact time to improve manganese removal.

50. On August 24, 2016, DES sent e-mail correspondence to Jennifer Perry and Paul Roy reminding them that the Water System was out of compliance with state and federal drinking water requirements. In its e-mail, DES offered technical assistance to return the Water System to compliance.

51. On August 25, 2016, DES received proof of public notice for the Q3-2016 TTHM MCL violation.

52. On September 2, 2016, DES received a permit application from Exeter. In its application, Exeter proposed the installation of an active ventilation system within the water storage tank located on Epping Road serving the Water System. The purpose of aerating the tank was to lessen the concentration of DBPs in the water.

53. On September 6, 2016, DES approved the proposed active ventilation system for the storage tank.

54. On September 8, 2016, DES staff called representatives of Exeter. The purpose of the phone call was to discuss how to resolve the ongoing TTHM MCL violations. Topics of discussion included, among others, aeration of the tanks and at the clearwell, and chloramines.

55. The TTHM LRAA for the Water System exceeded the MCL in Q4-2016 and as a result, DES issued an NOV to Exeter on November 7, 2016. In the NOV, DES listed the TTHM LRAAs of 0.089 mg/L, 0.087 mg/L, and 0.093 mg/L at three of the four monitoring locations for the Water System, and noted the public notice requirement associated with the violation.

56. On November 8, 2016, DES staff met with representatives of Exeter and Aquagenics. The purpose of the meeting was to discuss how to resolve the ongoing TTHM MCL violations. Topics of discussion included, among others, increased levels of total organic carbon in the seasonal raw water, pH coagulation, permanganate addition, current improvements, and distribution improvements.

57. On November 30, 2016, DES received proof of public notice for the Q4-2016 TTHM MCL violation.

58. On December 6, 2016, DES staff met with representatives of Exeter, Aquagenics, and Suez/PAX Water Technology – specialists in aeration and mixing. The purpose of the meeting was to discuss how to resolve the ongoing TTHM MCL violations within the Water System. Topics of discussion included, among others, aeration of the distribution system, chloramines, and proposed time frames for construction and compliance. DES approved the report submitted by Aquagenics, on behalf of Exeter, on August 1, 2016, entitled “TTHM Production and Control Investigation.”

59. On December 13, 2016, DES received e-mail correspondence from Exeter. In the e-mail, Exeter informed DES that both surface water treatment plant and the groundwater treatment plant serving the Water System would be shut off each night to encourage a higher turnover rate within the distribution system. Increasing the turnover rate in the distribution system may decrease the TTHM levels in the Water System. DES agreed with the proposal.

60. The TTHM LRAA for the Water System exceeded the MCL in Q1-2017 and as a result, DES issued an NOV to Exeter on January 25, 2017. In the NOV, DES listed the TTHM LRAAs of 0.089 mg/L, 0.087 mg/L, and 0.087 mg/L at three of the four monitoring locations for the Water System, and noted the public notice requirement associated with the violation.

61. On February 13, 2017, DES received proof of public notice for the Q1-2017 TTHM MCL violation.

D. DETERMINATION OF VIOLATIONS

1. The Town of Exeter exceeded the MCL for TTHMs in drinking water established in Env-Dw 705.03(c) during each of the calendar quarters of Q3-2014 through Q1-2017, quarters inclusive.
2. The Town of Exeter violated Env-Dw 801.08 by failing to submit proof of public notice to DES for the Q3-2014 TTHM MCL violation within 40 days of receiving notice of the violation from DES.

E. ORDER

Based on the above findings, DES hereby orders the Town of Exeter, and Exeter agrees, to undertake and complete the following actions in accordance with the time schedules specified:

1. **By April 30, 2017**, Exeter shall perform desktop evaluations of additional treatment alternatives at the surface water treatment plant such as aeration and/or chloramination and submit a report of its findings and recommended follow-up actions to DES.
2. **By May 31, 2017**, Exeter shall implement all improved and enhanced treatment and operational improvements to the Water System, approved by DES through December 13, 2016. Exeter shall also notify DES of all improved and enhanced treatment and operational improvements to the Water System implemented by Exeter, **by May 31, 2017**.
3. **By April 15, 2019**, Exeter shall either be in compliance with the Stage 2 DBP requirements; OR, Exeter shall submit to DES, for consideration and approval, a Phase 2 design basis

memorandum, projections of construction costs, and proposed implementation schedules for a new plan to meet the water quality standards.

4. Exeter shall implement any Phase 2 measures in strict accordance with the schedule approved by DES.

5. **From the date of this Order** until all treatment is operational and the Water System is in compliance with the Stage 2 DBP requirements, Exeter shall timely comply with Env-Dw 801.08 by notifying all persons served by the Water System of any MCL violation within 30 days of learning of the violation; and, by submitting to DES proof of public notice within 10 days of performing such public notice.

6. Exeter shall send **all** correspondence, data, reports, and other submissions made in connection with this Administrative Order by Consent to DES as follows:

Eric Sköglund, Enforcement Specialist
DES Water Division, Drinking Water and Groundwater Bureau
P.O. Box 95
Concord, NH 03302-0095
Fax: (603) 271-3490
e-mail: *Eric.Skoglund@des.nh.gov*

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F. STIPULATED PENALTIES

Exeter agrees to pay a stipulated penalty of \$2,000, for each month or part thereof, that it is not in compliance with one or more deadlines established in this Administrative Order by Consent. If stipulated penalties become due, payment shall be by certified check made payable to "Treasurer, State of New Hampshire" and mailed to DES Legal Unit, P.O. Box 95, Concord, NH 03302-0095, Attn: *Compliance Attorney*, within 15 days of receipt of notice from DES that payment is required.

G. CONSENT AND WAIVER OF APPEAL

1. By execution of this Administrative Order by Consent, Exeter agrees that this Order shall apply to and be binding upon Exeter, its officials, residents, successors, and assigns; and, agrees that this Administrative Order by Consent may be entered and enforced by a court of competent jurisdiction.

2. By execution of this Administrative Order by Consent, Exeter waives any right to appeal this Administrative Order by Consent provided by statute, rule, or common law, including without limitation the right to appeal to the New Hampshire Water Council, and waives any right to object to the entry and enforcement of this Administrative Order by Consent by a court of competent jurisdiction.

3. By execution of this Administrative Order by Consent, Exeter waives any right to a hearing on or appeal, of the administrative fine(s) specified in this Administrative Order by Consent, provided by statute, rule, or common law, and waives any right to object to the fine(s) in any collection action initiated by DES due to non-payment of the fine(s) by Exeter.

4. Failure to secure funding for the required actions, or failure of a consultant to meet deadlines, in and of themselves, shall not be construed as beyond the control of the Town of Exeter.

The Town of Exeter, New Hampshire

~~COPY~~

By: Russell Dean, Town Manager
Duly Authorized

4/3/17

Date

NH Department of Environmental Services

~~COPY~~

Clark B. Freise, Assistant Commissioner

4/14/17

Date

cc: DES Legal Unit

ec: Public Information Officer, DES PIP Office
K. Allen Brooks, Chief, AGO-Environmental Protection Bureau
Eric Sköglund, DES Water Division, Drinking Water and Groundwater Bureau
Jennifer Perry, Director of Public Works, Town of Exeter
Paul Roy, Water System Operator
Exeter Health Officer
USEPA, Region 1