



Massachusetts Department of Environmental Protection  
Bureau of Resource Protection – Drinking Water Program  
**Water Supply Facility Checklist for Chlorination Using Cl<sub>2</sub>  
Gas for Permit Review/Approval**

## Instructions to Applicant

**Important:**  
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



The purpose of this Drinking Water Program (DWP) Facility Checklist is to assist the public water systems to prepare drinking water program permit applications that comply with all MassDEP regulations, policies, and guidelines. Completion of this checklist will ensure that the applicant has considered all minimum permitting aspects identified by the MassDEP Drinking Water Program. MassDEP may require additional information as regulations, standards, or procedures are implemented or revised.

A Massachusetts registered professional engineer must complete the appropriate section(s) of the checklist for the permit requested (including any brief explanations), sign the certification statement, and submit this checklist, brief explanations (where noted), and certification with the permit application (BRP WS 23A, BRP WS 23B, BRP WS 23C, BRP WS 24, BRP WS 25, BRP WS 29, BRP WS 34 or other BRP WS permit application). The DWP staff will use these documents to expedite the review/approval of the permit application.

MassDEP Guidelines & Policies for Public Water Systems:

<http://www.mass.gov/dep/water/laws/policies.htm#dwguid>

MassDEP Drinking Water Regulations 310 CMR 22.00:

<http://www.mass.gov/dep/service/regulations/310cmr22.pdf>

For this particular checklist it is understood when the following words are used that the words "chemical", "disinfection", "chlorine", "feed", "pump", "chlorinator", and "feeder" shall mean Chlorine Gas (Cl<sub>2</sub>).

**If more than one chemical application, well, or treatment plant will be used, a separate checklist will be required.**

N/A means "not applicable."

## A. Facility Information

PWS Name

City/Town

PWS ID #

Source(s) Code #

Treatment Facility

Permit Application #

Check form submitted:

☐ BRP WS 34

☐ BRP WS 29

☐ BRP WS 25

☐ BRP WS 24

☐ BRP WS 23C

☐ BRP WS 23B

☐ BRP WS 23A

☐ other BRP WS

MassDEP Transmittal #

This treatment is considered (check all that apply):

☐ permanent

☐ temporary

☐ optional

☐ Emergency

☐ N.A.

Check type of chlorine gas addition to be used: ☐ 100# or 150 # cylinders ☐ Ton cylinders



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## B. Project Checklist

1. **Project description**, including any waiver sought from MassDEP requirements:
- 
- 

### 2. Treatment

Answer the following questions regarding treatment. Please note that the questions and sections correspond with the standards contained in the Massachusetts Department of Environmental Protection Drinking Water Program's latest editions of Guidelines and Policies for Public Water Systems.

Chapter 5.1. Treatment – General Information	Yes	No	N/A
1. <b>Pilot facility studies:</b> Was a pilot study or in-plant demonstration, including the engineer's design recommendations, submitted to and approved by MassDEP prior to preparing plans and specifications?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Will the engineer submit a copy of these proposed chlorine gas plans and specifications in one hard copy and one electronic copy on a compact disk in PDF format for DEP approval?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Will an operation and maintenance manual be prepared in accordance with DWP Policy 93-02 after construction?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Will a calibration curve be provided for all chlorinators (after construction) for the operator?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Has a contact time (CT) tracer study been conducted?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Will the chlorine treatment system be overseen by a certified operator who has been properly trained in the operation and maintenance of each piece of equipment, and will records of such training, signed by both the trainer and the operator, be maintained?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Chapter 5.4. Disinfection</b>			
7. Will any disinfection byproduct maximum contaminant level (MCL)(s) and maximum residual level (MDRL)(s) not be exceeded under the Drinking Water Regulations, 310 CMR 22.00?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Is automatic changeover equipment to switch from one cylinder or bank of cylinders to another cylinder or bank of cylinders provided to ensure that unchlorinated water is not allowed into the distribution system?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Are visual and audio alarms must be provided for detection of chlorine gas leaks or overfeed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Are gauges for measuring water pressure and vacuum at the inlet and outlet of each eductor provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Are the pipes carrying elemental liquid or dry gaseous chlorine under pressure Schedule 80 seamless steel tubing or other non-PVC materials, as recommended by the Chlorine Institute?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



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**B. Project Checklist** (cont'd)

	Yes	No	N/A
12. Are pipes and fittings carrying chlorine solution made of rubber, PVC, polyethylene or other materials recommended by the Chlorine Institute?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are pipes, products, and fittings carrying chlorine solution made of non-nylon materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Does the water supply to each eductor have a separate shut-off valve?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Is there no master water supply shut-off valve to eductors?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Is the chlorine residual test equipment provided recognized in the latest edition of <i>Standards Methods for the Examination of Water and Wastewater</i> , and is equipment capable of measuring residuals to the nearest 0.1 milligrams per liter, and does equipment use an instrument employing the DPD colorimetric method with a digital readout, and does equipment have a self-contained light source?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Can chlorine be applied to raw water, settled water, filtered water, and water entering the distribution system for those systems using surface water filters?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. If only one chemical discharge line is run from chlorinator to point of injection, is an extra (labeled) corporation cock and injection nozzle installed for emergency use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. For permanent and temporary use, is the chemical equipment designed to ensure that no unchlorinated water is allowed into the distribution system?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Is chemical system emergency or standby power available?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Is the chlorinator capacity such that a free chlorine residual of at least 2 mg/l can be attained in the water after contact time of at least 30 minutes when maximum flow rates coincide with anticipated maximum chlorine demands?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**3. Chemical Application**

Answer the following questions regarding chemical application. Please note that the questions and chapters correspond with the standards contained in the Massachusetts Department of Environmental Protection Drinking Water Program Guidelines and Policies for Public Water Systems.

Chapter 6.0 Chemical Application	Yes	No	N/A
<b>Plans &amp; Specifications</b>			
1. Are descriptions of feed equipment, including maximum, average, and non-zero minimum feed ranges (expressed in daily/monthly use and gallons/volume/weight per hour), provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Are the locations of feeders, piping layout, and points of application shown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



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**B. Project Checklist** (cont'd)

	Yes	No	N/A
3. Are descriptions of storage and handling facilities provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Are specifications provided for the chemicals to be used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Are there operating and control procedures, including proposed application rates?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Are descriptions of testing equipment and procedures provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Do the plans include a chemical schematic of all chlorine equipment and piping including sampling and monitoring equipment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Are chemicals applied at points and by means to assure maximum treatment efficiency?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Are chemicals applied at points and by means to provide maximum safety to consumers?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Are chemicals applied at points and by means to provide maximum safety to operators?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Are chemicals applied at points and by means to assure satisfactory mixing of the chemicals with the water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Are chemicals applied at points and by means to provide maximum flexibility of operation through various points of application?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are chemicals applied at points and by means to prevent backflow, prevent back-siphonage, prevent bypassing of treatment units, and eliminate multiple points of feed through common manifolds?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Is completed chemical injection point into a pipeline that uses an injection nozzle with corporation stop, ball check (to prevent backflow), and safety chain/cable, or uses a diffuser pipe into a basin?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**General Equipment Design**

15. Will the chlorinator(s) be able to supply, at all times, the necessary amounts of chlorine at an accurate rate, throughout the range of feed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Can a minimum free chlorine residual of 0.2 mg/L after a 10-minute contact time be maintained in the water entering the distribution system?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Are the chlorine-contact materials and surfaces resistant to the aggressiveness of the chlorine solution?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Are chlorine chemicals introduced in such a manner as to minimize potential for corrosion?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Are chemicals that are incompatible not fed, stored or handled together?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Are all chemicals conducted from the chlorinator to the point of application in separate conduits?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Are chlorinators located as near as practical to the feed point?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Is chlorinator sized in specifications such that pump will not operate at a point no lower than 10% of feed range dial at any time for greater chlorinator accuracy?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



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**B. Project Checklist** (cont'd)

	Yes	No	N/A
23. Is chlorinator sized in specifications such that chlorinator will not deliver more than 2,000 % of the optimal chemical dosage in mg/l to help prevent potential overfeeds?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Section 6.1 Facility Design**

**Feeders and Metering Pumps**

24. Does the chemical feed system include a minimum of two chlorinators, of which the standby unit or a combination of units is of sufficient capacity to replace the largest unit during shutdown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Is a separate feeder system used for each chemical applied?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Are spare parts available for all chlorinators to replace parts that are subject to wear and damage, such as gaskets, flexible connections, etc.?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Control of Feeders and Metering Pumps**

27. Are chlorinators manually or automatically controlled in setting dosage, with automatic controls designed so as to allow override by manual controls?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Are chlorinator feed rates proportioned or automatically flow paced to water flow?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. Is a means to measure treated water flow (in gpm and total gallons) provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. Are chlorinator(s) synchronized to start and stop (electrically interlocked with appropriate upstream water pump motor or thermal type flow switch) with the flow of water being treated as the primary electrical interlock?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. Will the chlorinator interlock system be hard wired with pilot light "on or energized" indicator to help prevent overfeeds?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. Will the controls be configured such that the chlorinator(s) are restarted only at the water treatment facility following an alarm initiated shutdown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. Are scales present to measure the net weight of chlorine fed daily, and accurate to measure 0.5% of the load in pounds?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Liquid Chemical Feeders - Siphon Control**

34. Does chlorinator provide discharge at a point of positive pressure?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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**Cross-Connection Control**

35. Is cross connection control in this permit provided in accordance with regulations of the MassDEP Drinking Water Regulations (310 CMR 22.22), and any filtered water feed points and un-filtered water feed points are not cross connected via the chlorinator?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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**B. Project Checklist** (cont'd)

	Yes	No	N/A
<b>Location of Chemical Feed Equipment</b>			
36. Is the chemical feed equipment located in a separate room to reduce hazards and vapors?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37. Is the chemical feed equipment conveniently located near points of application to minimize length of feed lines?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38. Is the chemical feed equipment readily accessible with adequate space provided for servicing, repair, and observation of operation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>In Plant Service Supply</b>			
39. Is the in plant service water supply (if used in this permit) ample in quantity and adequate in pressure to insure chlorinator operates properly or is a water booster pump needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40. Is the in plant service water supply (if used in this permit) properly protected against backflow and back-siphonage?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Chemical Storage and Process Tanks</b>			
41. Is space provided for:			
a. at least 30 days of chlorine supply to meet average treated demand?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. convenient and efficient handling of chemicals?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Feed Lines</b>			
42. Are feed lines as short and straight as possible in length of run and:			
a. of durable, corrosion-resistant material?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. easily accessible?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. protected against freezing?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. readily cleanable?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. properly protected and secured?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43. Are the feed lines designed consistent with scale-forming or solids depositing properties of the water, chemical, solution or mixture conveyed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
44. Are the feed lines color-coded yellow, labeled with chemical name, and show arrows for direction of flow?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
45. Are any outside underground feed lines in secondary containment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
46. Are any outside underground secondary containment of feed lines sloped to a location where any leaks are visually noticeable?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



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**B. Project Checklist** (cont'd)

	Yes	No	N/A
<b>Handling</b>			
47. Are hand truck(s) with safety chain for cylinders, or lifting beam(s) with hoist/monorail for containers or other appropriate means provided for chlorine handling by operators?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Housing</b>			
48. Are floor surfaces smooth, impervious, slip-proof and well drained?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
49. Do vents from feeders, storage facilities and equipment exhaust discharge to the outside atmosphere above grade and remote from air intakes, doors, windows, and parked vehicles?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Chapter 6.2 Chemicals</b>			
<b>Shipping Containers</b>			
50. Do specs state that chlorine cylinders shall be fully labeled to include chemical name, purity, concentration, supplier name, and address?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Specifications</b>			
51. Do specs state that chemicals shall meet (latest issue) ANSI / AWWA B301-04 (AWWA Standard for Liquid Chlorine) and NSF 60 specifications as referenced in standard operating procedure (SOP)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Section 6.3 Operator Safety</b>			
52. Are a pair of rubber gloves, an apron or other protective clothing, splash goggles, and facemask provided for each operator per Material Safety Data Sheets (MSDS) and OSHA 29CFR1910?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
53. Will a standard operating procedure (SOP) for chlorine gas be posted in a protective shop envelope on the wall for the operator, and will the chlorine gas MSDS be available on site?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
54. Does respiratory protection equipment:			
a. meet the requirements of the NIOSH (National Institute for Occupational Safety and Health) available where chlorine gas is handled and stored at a convenient location but not inside any room where chlorine is used or stored?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. use compressed air?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. have at least a 30-minute capacity?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. have compatibility with or is exactly the same as units used by the fire department responsible for the plant?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



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**B. Project Checklist** (cont'd)

	Yes	No	N/A
55. Will a small bottle of ammonium hydroxide, 56 percent ammonia solution, be available outside the chlorine room for chlorine leak detection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
56. If 100-150 pound cylinders are used, is a leak repair kit (type A for 100 and 150 pound cylinders) approved by the Chlorine Institute provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
57. If ton containers are used, is a leak repair kit (type B for one ton cylinders) approved by the Chlorine Institute provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
58. Will a sufficient amount of chlorine gas water solution spill absorbent be stored on-site for emergency use and uncontrolled discharge?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Chapter 6.4 Chlorine Gas</b>			
59. Is the chlorine gas feed and storage enclosed and separated from other operating areas?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
60. is the installation as vandal-proof as possible?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
61. Is the chlorine room:			
a. Provided with a shatter resistant inspection window installed in an interior wall?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Constructed in such a manner that all openings between the chlorine room and the remainder of the plant are sealed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Provided with doors with panic type hardware assuring ready means of exit and opening only to the building exterior?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
62. Will full and empty cylinders of chlorine gas be:			
a. Isolated from operating areas?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Restrained in position to prevent upset?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Stored in locked and secured rooms separate from ammonia and acid storage?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Stored in locked and secured areas not in direct sunlight or exposed to excessive heat?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
63. Is chlorine room(s) constructed to provide the following:			
a. Does each room have a ventilating fan with a capacity which provides at least 60 complete air changes per hour when the room is occupied?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Does the ventilating fan take suction near the floor as far as practical from the door and air inlet, with the point of discharge so located as not to contaminate air inlets to any rooms or structures?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Are air inlets through corrosion resistant louvers near the ceiling?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Do louvers for chlorine room intake and exhaust facilitate airtight closure?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>





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**B. Project Checklist** (cont'd)

	Yes	No	N/A
e. Floor drains are discouraged. Where provided, are the floor drains not connected to other internal or external drainage systems? See <a href="#">Guidelines Chapter 5.10</a> titled: Waste Handling and Disposal.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Are switches for fans and lights outside of the room, at the entrance, and protected from vandalism and is a signal light indicating fan operation provided at each entrance when the fan can be controlled from more than one point?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Do vents from feeders and storage discharge to the outside atmosphere, above grade?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
64. Are chlorinator rooms heated to 60 degrees F and protected from excessive heat?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
65. Is every non-pressurized chlorine gas line protected from temperatures below 60 degrees F and excessive heat?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
66. Will pressurized chlorine feed lines not carry chlorine gas beyond the chlorinator room?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
67. Will cylinders or ton containers be located and used out of sunlight and in a cool area (covered in SOP)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**4. Chapter 7.0 Pumping Facilities**

Answer the following questions regarding pumping facilities. Please note that the questions and chapters correspond with the standards contained in the Massachusetts Department of Environmental Protection Drinking Water Program's Guidelines and Policies for Public Water Systems.

- |   |                          |                          |                          |
|---|--------------------------|--------------------------|--------------------------|
| 1. Are analyzer discharges in compliance with DEP fact sheet "Registration of Discharges to the Ground From Pump Houses and Other Public Water System Facilities Including Discharges from In-line Analyzers"?<br><a href="http://www.mass.gov/dep/water/drinking/phdisreg.htm">http://www.mass.gov/dep/water/drinking/phdisreg.htm</a> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Is a representative labeled sample tap located 100 feet downstream available for daily chlorine testing of the treated water?  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**5. Other Chapter 1, 2 & 12 questions and Chapter 6.1.3 Chemical Safety Control Strategy for Critical Chemical Control Systems questions**

- |  |                          |                          |                          |
|--|--------------------------|--------------------------|--------------------------|
| 1. Is a representative labeled raw water sample tap available that is a smooth-nosed type without exterior or interior threads, and without aerators or screens present, and is not of the petcock type? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Is a continuous free chlorine monitor with two alarm contacts available to prevent chlorine overfeed or chlorine underfeed conditions?  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Is there an emergency under and over-feed alarm system?   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Is there any emergency automatic phone, radio or cellular dialer alarm to a properly certified operator to report a chemical under or over-feed?  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Are controls designed so that if a chlorinator is in the manual mode, the operator is notified locally by a visual and/or audible alarm and/or remotely by an autodialer?                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



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	Yes	No	N/A
6. Does each chlorinator have a HOA (hand, off, automatic) switch, and a timer on hand mode so chlorinator will automatically shut down after no more than one hour or a spring loaded switch?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Will each HOA switch show proper signage on site explaining usage?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. If not staffed 24/7/365, will the chlorinator and water flow automatically shut down and notify the operator if a chlorine underfeed or overfeed occurs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Will the chlorine feed system be linked to a computer SCADA or alarm system via radio or leased phone lines?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Do the plans and specifications include a description of the "Chemical Safety Control Strategy for Critical Chemical Feed Systems" as described in Chapter 6.1.3?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Is a free chlorine analyzer provided to monitor the treated water, or was a chlorine analyzer waiver granted by MassDEP in writing?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Is the chlorine analyzer interlocked so if chlorine is out of range, then the water flow or water pumps and chlorinator will automatically shut down and an alarm will be sent to the certified operator?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Is powering of all chlorinator(s) configured to prevent overriding of the safety shut down system?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Will the SOP include procedures to test all chlorine alarms and controls (both high and low) quarterly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are the chemical feed system operational parameters recorded by a chart recorder, electronic data logger, or SCADA system?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Will the applicant's emergency response plan (ERP) be updated to include the chlorine gas component?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Will the applicant's ERP be updated to include the chlorine gas chemical addition emergency procedures and notification pursuant to 310 CMR 22.04(13) and MassDEP Guidelines and Policies for Public Water Supplies, Chapter 12 – Emergency Response Planning Requirements Guidance, including Appendix O – Handbook for Water Supply Emergencies? <a href="http://www.mass.gov/dep/water/laws/policies.htm#dwguid">http://www.mass.gov/dep/water/laws/policies.htm#dwguid</a> <a href="http://www.mass.gov/dep/water/drinking/systems.htm#emerresp">http://www.mass.gov/dep/water/drinking/systems.htm#emerresp</a>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Will all "simultaneous compliance" issues be tracked and reported to MassDEP after installation for at least 12 months to insure that lower pH's from chlorine gas addition may alter the overall water chemistry? Refer to Chapter 1.9 for more information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



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**B. Project Checklist** (cont'd)

	Yes	No	N/A
<b>6.0 Certified Operator Staffing &amp; Treatment Plant Classification</b>			
1. With the proposed chemical addition, and including any additional treatment processes, indicate the water treatment plant classification for this facility pursuant to 310 CMR 22.11B(4)(a): <input type="checkbox"/> VSS <input type="checkbox"/> 1-D <input type="checkbox"/> 2-D <input type="checkbox"/> 3-D <input type="checkbox"/> 4-D <input type="checkbox"/> I-T <input type="checkbox"/> II-T <input type="checkbox"/> III-T or <input type="checkbox"/> 1V-T	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Does the applicant's proposed staffing plan comply with the Certified Operator provisions of 310 CMR 22.11B? Submittal of plan is required.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7.0 Monitoring and Reporting</b>			
1. Will the applicant prepare and submit to MassDEP monthly Chemical Addition reports for each chemical added pursuant to 310 CMR 22.15(4) requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. If raw water is currently not sampled for total coliform each monitoring period, will the applicant prepare and submit to MassDEP for approval a revised Total Coliform Sampling Plan that includes sampling of the raw water as required by 310 CMR 22.05(1)(a)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>8.0 Ground Water Rule (GWR) Disinfection Provisions</b>			
<i>The applicant must demonstrate ability to respond to a Ground Water Rule fecal contamination event in the source water.</i>			
1. If used as a primary or secondary disinfectant, is a "Ground Water Rule Log Credit Determination" form (GWR Form A) and associated schematic for each disinfected point of entry included in the application?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the applicant previously completed the Groundwater Rule Immediate & Long-Term Response to Fecal Contamination Form (GWR Form B – Response form)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. If the source is subject to either GWR compliance monitoring requirements or Surface Water or Ground Water Under the Influence of Surface Water (GWUI) requirements, are applicable monitoring, reporting, and recordkeeping requirements included in the SOP?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Is a GWR Form B-Response form included with the application?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the treatment system able to provide 4-log disinfection for the inactivation of viruses prior to the first customer?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. If the treatment system is designed to provide 4-log disinfection, but this level of treatment is not currently required, does the applicant intend to conduct GWR compliance monitoring and reporting to avoid source water GWR triggered monitoring requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If 4-log disinfection is required, what is the minimal dosing level of free chlorine to be maintained at the point of application? (Fill in number below)			<input type="checkbox"/>

Minimal dosing level (mg/L)



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**B. Project Checklist** (cont'd)

	Yes	No	N/A
8.a. Are there satisfactory alarms installed to indicate failures in continuous monitoring?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.b. Fill in the appropriate low and high chlorine alarm set points:			
_____	_____		
Low alarm set point in mg/l	High alarm set point in mg/l		

**9. Detailed Explanation**

Please attach a brief explanation for any question answered “No” and “N/A” in the checklist. The brief explanation should explain why the applicant/applicant’s engineer does not feel this item is necessary to maintain the integrity of the design and/or operation of the facility.

Detailed explanation of the following question(s) is attached:

Section #	Page #	Question #
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
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**C. Certification**

**A. Applicant's Engineer**

I hereby certify, as a Professional Engineer registered in Massachusetts, that the Drinking Water Facilities Checklist is a true and accurate representation on the information contained in my plans and specifications submitted with this permit application.

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\_\_\_\_\_  
Signature/Stamp of Professional Engineer

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Employer

\_\_\_\_\_  
Phone Number

\_\_\_\_\_  
Email Address

\_\_\_\_\_  
Signature/Stamp of Second Professional Engineer (if needed)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Employer

\_\_\_\_\_  
Phone Number

\_\_\_\_\_  
Email Address

**B. Applicant**

This checklist and attached permit application are submitted on behalf of water representative:

\_\_\_\_\_  
City/Town

\_\_\_\_\_  
Address

\_\_\_\_\_  
PWS Name

\_\_\_\_\_  
PWS ID #

\_\_\_\_\_  
Phone Number

\_\_\_\_\_  
Applicant Name/Title

\_\_\_\_\_  
Email Address

\_\_\_\_\_  
Applicant Signature

\_\_\_\_\_  
Date