



Massachusetts Department of Environmental Protection
 Bureau of Resource Protection – Drinking Water Program
Water Supply Facility Checklist for Chloramine Formation
Using an Ammonia Compound for Permit Review/Approval

Instructions to Applicant

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 current MassDEP regulations, policies, and guidelines. Completion of this checklist ensures 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>

Chloramines are useful for controlling trihalomethane formation, maintaining a disinfectant residual in water distribution systems, and other related applications. Chloramines tend to remain active for longer periods and at greater distances from the plant than free chlorine. Chloramine concentrations should be maintained higher than free chlorine to avoid nitrifying bacterial activity.

This checklist only covers the ammonia storage, handing, application and use. This checklist does not cover the chlorine gas or chlorine compound storage, handling, application and use which is covered in their separate MassDEP checklists.

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



Ammonia for chloramine formation may be added to water either as:

1. a granular ammonium sulfate (NH₄)₂SO₄ added to make-up water, or
2. a liquid of aqua ammonia, ammonium hydroxide NH₄OH, or
3. an anhydrous ammonia (purified 100% ammonia as a pressurized gas) NH₃

For this particular checklist it is understood when the following words are used that the words “chemical”, “disinfection”, “chlorine”, “feed”, “pump”, “chlorinator”, “ammoniator”, “disinfectant”, and “feeder” shall mean an ammonia compound.

If more than one chemical application or treatment plant is proposed, 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 #	



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A. Facility Information (cont.)

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:

Permanent Temporary Optional Emergency N.A.

Check type of ammonia compound addition to be used:

NH3 100# or 150 # cylinders NH3 Ton cylinders Ammonium Hydroxide

Ammonium Sulfate

Other NH3

Other:

 Name of compound addition

(Note: If other NH3 is checked, this checklist does not cover it. Consult with MassDEP.)

B. Project Checklist

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

2. **Treatment**

Yes No N/A

Chapter 1.2.12 Simultaneous Compliance

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| 1. Has a determination been made of any ammonia simultaneous compliance Issues, such as, increased nitrification, pH and alkalinity changes, dissolved inorganic carbonate level changes, increased lead and copper corrosion, changes in taste and odor noticeable by the consumer, seasonal water temperature changes, reaction with hard water, DBP levels, etc.? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Was above summary of "simultaneous compliance" issues found discussed in the submitted specifications or other documents? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Will all "simultaneous compliance" issues be tracked and reported to MassDEP after installation for at least 12 months using a pre and post 12 month water quality sampling plan? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



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B. Project Checklist (cont'd)

- | | Yes | No | NA |
|---|--------------------------|--------------------------|--------------------------|
| 4. Will a review of the US EPA Simultaneous Compliance Guidance Manual before construction (as it relates to ammonia addition) be preformed? (From Chapter 5.4.3) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Chapter 2.9 Sample Taps

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| 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"/> |
|--|--------------------------|--------------------------|--------------------------|

Chapter 2.15 Operator Certification

- | | | | |
|---|--------------------------|--------------------------|--------------------------|
| 1. With the proposed ammonia treatment process, indicate the water treatment plant classification for this facility pursuant to 310 CMR 22.11B (4)(a):
<input type="checkbox"/> VSS <input type="checkbox"/> I-T <input type="checkbox"/> II-T <input type="checkbox"/> III-T <input type="checkbox"/> 1V-T <input type="checkbox"/> I-D
<input type="checkbox"/> II-D <input type="checkbox"/> III-D <input type="checkbox"/> 1V-D | <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"/> |

Chapter 5.1 Treatment - General Information

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| 1. Was a chloramine 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 ammonia compound plans and specifications in one hard copy and one electronic copy on a compact disk or flash drive in PDF format for MassDEP approval? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Will an ammonia 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 ammoniators (after construction) for the operator? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Will the ammonia 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"/> |

Chapter 5.4.1 Disinfection - General Information

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| 1. Will any disinfection byproduct maximum contaminant levels (MCLs) and maximum residual disinfection levels (MRDLs) not be exceeded under Drinking Water Regulations, 310 CMR 22.00? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Will a minimum disinfectant residual of 0.2 mg/L entering the distribution system be maintained to meet a regulatory minimum? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



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	Yes	No	N/A
3. Will a minimum chloramine residual of 1.0 mg/L be present at the distant points in the distribution system for facilities disinfecting surface water or ground water under the direct influence of surface water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Can ammonia be applied to filtered water and water entering the distribution system for those systems using surface water filters?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Will a minimum free residual of 0.2 mg/L chlorine be maintained for at least ten minutes prior to the addition of ammonia?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Chapter 5.4.2 Chlorination

(Note: ammonia gas room subject to same requirements as chlorine gas room except for certain ventilation requirements.)

1. Is the ammoniator capacity such that a chloramine 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"/>
2. Is automatic changeover (switch-over) equipment (if NH ₃ is used) 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"/>
3. Are visual and audio alarms provided for detection of ammonia gas leaks (if NH ₃ is used) and ammonia overfeed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Are gauges for measuring water pressure and vacuum at the inlet and outlet of each eductor (if NH ₃ is used) provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Are pipes and fittings carrying ammonia and chloramine solution made of materials recommended by the MSDS (material safety data sheets)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Does the water supply to each eductor (if NH ₃ is used) have a separate shut-off valve for facilities disinfecting surface water or ground water under the direct influence of surface water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Is there no master water supply shut-off valve to eductors (if NH ₃ is used) for facilities disinfecting surface water or ground water under the direct influence of surface water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Is the chloramine residual (measured as combined chlorine) and free ammonia test equipment (provided in the lab) recognized in the latest edition of <i>Standard 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"/>
9. If only one chemical discharge line is run from ammoniator to point of injection, is an extra (labeled) corporation stop and injection nozzle or diffuser installed for emergency use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



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- | | Yes | No | N/A |
|--|--------------------------|--------------------------|--------------------------|
| 10. 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"/> |

Chapter 5.4.3 Chloramination

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| 1. After construction, will area hospitals, health clinics, and local board(s) of health be notified annually of the presence of monochloramine in the tap water as approved by MassDEP? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. After construction will pet stores with fish tanks and aquariums be informed of presence of monochloramine in the tap water as approved by MassDEP? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Fill in planned chloramine concentration at plant effluent in mg/l. (Note: concentration should be above 0.2 mg/l to avoid nitrifying bacteria.) | _____ | | <input type="checkbox"/> |
| 4. When using chloramination as a secondary disinfectant, will chlorine be added and thoroughly mixed in the water prior to the addition of ammonia? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Where chlorination is required for protection of the supply, will complete ammonia standby equipment of sufficient capacity be available to replace the largest unit during shutdown? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Will emergency or standby power be available to operate the ammonia system? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Will visual and audio alarms be provided for detection of ammonia gas leaks? (Note: recommend if an ammonia gas leak is detected, the exhaust fan be automatically activated for safety.) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Will alarming and continuous analyzers (EPA Method 334.0, <i>The Determination of Residual Chlorine in Drinking Water Using On-Line Chlorine Analyzer</i>) be available to prevent overfeeding? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Will an optimal corrosion control treatment study be performed prior to introducing chloramines into the distribution system, and will written results be reported to MassDEP? (Study will explore if there is a need to add chemicals to form a protective coating on the interior of the distribution pipes.) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Chapter 5.4.3.2.1 Ammonium Sulfate - (if used)

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| 1. Will a granular ammonium sulfate solution be prepared in a solution tank with make-up water and agitation (mechanical mixer) to dissolve the solid, or will a dry feeder with a weighing scale be used to add the ammonium sulfate to a dissolving tank with agitation? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Will the dissolving/solution tank be fitted with a lid, made of corrosion resistant non-metallic materials and vented outdoors? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



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	Yes	No	N/A
3. Will injection of the ammonia solution take place in the center of treated water flow at a location where there is high velocity movement?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chapter 5.4.3.2.2 Aqua Ammonia (Ammonium Hydroxide) – (if used)			
1. Will aqua ammonia feed pumps and storage be enclosed and separated from other operating areas?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Will a corrosion resistant, closed, unpressurized tank be used for bulk storage?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Will the tank(s) be vented through an inert liquid trap to a high point outside?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Will an incompatible connector or lockout provisions be made to prevent accidental addition of other chemicals to the storage tank?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Will the storage tank be fitted either with cooling/refrigeration and/or with provisions to dilute and mix the contents with water without opening the system? (Those provisions are required to avoid conditions where temperature increases cause the ammonia vapor pressure over the aqua ammonia to exceed atmospheric pressure.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Will an exhaust fan which provides at least 60 complete air changes per hour when the room is occupied be installed to withdraw air from high points in the room and will makeup air be allowed to enter at a low point?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Will the aqua ammonia feed pump, regulators, and lines be fitted with pressure relief vents discharging outside the building away from any air intake and with water purge lines leading back to the headspace of the bulk storage tank?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Will the aqua ammonia be conveyed direct from storage to the treated water stream injector without the use of a carrier water stream unless the carrier stream is softened? (Note: to avoid coagulation in feed piping.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Will the point of delivery to the main water stream be placed in a region of rapid, preferably turbulent, water flow?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Will provisions be made for easy access for removal of calcium scale deposits from the injector? (Note: injector location easily accessible to operator.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Will provision of installing a modestly-sized scrubber capable of handling occasional minor emissions be considered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Will switches for fans and lights be outside of the room, at the entrance, and protected from vandalism?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Will a signal light indicating fan operation be provided at each entrance when the fan can be controlled from more than one point?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



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	Yes	No	NA
14. Is the ammonia 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 ammonia 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"/>

Chapter 5.4.3.2.3 Anhydrous Ammonia Gas – (if used)

1. Are anhydrous ammonia and storage feed systems (including heaters where required) enclosed and separated from other works areas and constructed of corrosion resistant materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Will an exhaust fan be installed to withdraw air from high points in the room and will makeup air be allowed to enter at a low point?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Is a leak detection system fitted in all areas through which ammonia is piped?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Will a provision (in SOP) be made for the periodic removal of scale/lime deposits from injectors and carrier piping, and will carrier water systems be of soft or pre-softened water used to transport ammonia to the finished water stream and to assist in mixing?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Will consideration be given to the provision of installing an emergency gas scrubber capable of absorbing the entire contents of the largest ammonia storage unit whenever there is a risk to the public as a result of potential ammonia leaks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Chapter 6.0.1 Plans & Specifications

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"/>
3. Are descriptions of storage and handling facilities provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Are there specifications for the chemicals to be used provided?	<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 ammonia equipment and piping, including sampling and monitoring equipment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



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	Yes	No	NA
Chapter 6.0.2 Chemical Application			
1. Are chemicals applied at points and by means to assure maximum treatment efficiency?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Are chemicals applied at points and by means to provide maximum safety to consumers?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Are chemicals applied at points and by means to provide maximum safety to operators?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. 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"/>
5. 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"/>
6. 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"/>
7. 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"/>
Chapter 6.0.3 General Equipment Design			
1. Will the ammoniators(s) be able to supply, at all times, the necessary amounts of ammonia at an accurate rate, throughout the range of feed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Are the ammonia-contact materials and surfaces resistant to the aggressiveness of the ammonia solution?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Are ammonia chemicals introduced in such a manner as to minimize potential for corrosion?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Are chemicals (such as ammonia and chlorine) that are incompatible not fed, stored or handled together in same room?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Are all chemicals conducted from the ammoniator to the point of application in separate conduits?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Are ammoniators located as near as practical to the feed point?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Is ammoniator sized in specifications such that ammoniator will not operate at a point no lower than 10% of feed range dial at any time for greater ammoniator accuracy?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Is ammoniator sized in specifications such that ammoniator 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"/>



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	Yes	No	N/A
Chapter 6.1.1 Feeders and Metering Pumps			
1. Does the chemical feed system include a minimum of two ammoniators 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"/>
2. Are spare parts available for all ammoniators to replace parts that are subject to wear and damage, such as belts, anti-siphon valves, gaskets, flexible connections, etc?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chapter 6.1.2 Control of Feeders and Metering Pumps			
1. Are ammoniators 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"/>
2. Are ammoniator feed rates proportioned or automatically flow paced to water flow?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Is a means to measure treated water flow (in gpm and total gallons) provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Are ammoniator(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"/>
5. Will the ammoniator 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"/>
6. Will the controls be configured such that the ammoniator(s) are restarted only at the water treatment facility following an alarm initiated shutdown?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Are scales present to measure the net weight of ammonia fed daily, and accurate to measure 0.5% of the load in pounds?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chapter 6.1.3 Chemical Safety Control Strategy for Critical Chemical Feed Systems			
Note: chloramine is considered a critical chemical in Guidelines.			
1. Is a continuous chloramine monitor with two alarm contacts available to prevent chloramine overfeed or chloramine underfeed conditions?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Is there an emergency chloramine chemical under and over-feed alarm system?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Is there any emergency automatic phone, radio, or cellular dialer alarm to a properly certified operator to report a chloramine under or over-feed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Are controls designed so that if an ammoniator 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
5. Does each ammoniator have a HOA (hand, off, automatic) switch and a timer on hand mode so ammoniator will automatically shut down after no more than one hour or a spring loaded switch?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Will each HOA switch show proper signage on site explaining usage?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If not staffed 24/7/365, will the ammoniator and water flow automatically shut down and notify the operator if a chloramine underfeed or overfeed occurs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Will the ammoniator be linked to a computer SCADA or alarm system via radio or leased phone lines?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. 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"/>
10. Will a chloramine chemical analyzer be provided to monitor the treated water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Is the chloramine chemical analyzer interlocked so if chloramine is out of range, then the water flow or water pumps and ammoniator will automatically shut down and an alarm will be sent to the certified operator?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Is powering of all ammoniators configured to prevent overriding of the safety shut down system?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Will the standard operating procedure (SOP) include procedures to test all chloramine chemical alarms and controls (both high and low) quarterly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Are the ammoniator operational parameters recorded by a chart recorder, electronic data logger or SCADA system?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chapter 6.1.6 Positive Displacement Solution Pumps (if used)			
1. Are positive displacement type solution pumps used to feed all liquid ammonia compounds?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Do all feeders have a pressure relief valve (that is safely tubed or piped back into the daytank, solution tank, carboy shipping container or 1,000 ml calibration chamber) on the discharge line for operator safety?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Is there a clear calibration chamber (in ml) or mass flow meter mounted near all liquid ammonia compound feed pumps to aid the operator in setting the pump rate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chapter 6.1.7 Siphon Control of Feeders and Metering Pumps			
1. Does ammoniator provide discharge at a point of positive pressure or provide vacuum relief, and provide an air gap or anti-siphon device?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. If a peristaltic pump is used, is an anti-siphon or back-pressure valve present on discharge line?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



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B. Project Checklist (cont'd)

- | | Yes | No | NA |
|--|--------------------------|--------------------------|--------------------------|
| 3. Do all liquid ammonia compound chemical feeders provide other suitable means or combinations as necessary to prevent chemical solutions from being siphoned into the water supply, such as, a diaphragm type operated back pressure valve or diaphragm type operated anti-siphon valve located where visible and easily accessible to the operator? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Chapter 6.1.8 Cross-Connection Control

- | | | | |
|---|--------------------------|--------------------------|--------------------------|
| 1. 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 ammoniator? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|---|--------------------------|--------------------------|--------------------------|

Chapter 6.1.9 Location of Chemical Feed Equipment

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| 1. Is the chemical feed equipment located in a separate room to reduce hazards and vapors? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. 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"/> |
| 3. 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"/> |
| 4. Is chemical feed equipment located either above or inside the containment area? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Chapter 6.1.10 In Plant Service Water Supply

- | | | | |
|---|--------------------------|--------------------------|--------------------------|
| 1. Is the in plant service water supply (if used in this permit) ample in quantity and adequate in pressure to insure ammoniator operates properly or is a water booster pump needed? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. 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"/> |
| 3. If a dilution carry water system is used, is a rotameter (calibrated in gallons per minute) used to set the in plant dilution carry water supply rate? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Chapter 6.1.11 Chemical Storage and Process Tanks (if NH₄OH or (NH₄)₂SO₄ is used)

- | | | | |
|---|--------------------------|--------------------------|--------------------------|
| 1. Is space provided for: | | | |
| a. at least 30 days of ammonia 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"/> |
| 2. Are storage tanks and pipelines for liquid chemicals dedicated to the specific chemicals? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Will the chemicals be stored in covered or unopened shipping containers, unless the chemical is transferred into an approved covered storage unit? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



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	Yes	No	NA
4. Do bulk liquid chemical tanks (if used) have:			
a. a means to visually observe liquid level that is calibrated to indicate the liquid volume in the tank?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. a proper vent that is separate from any other chemical vent?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. an overflow with minimum size and capacity equal to the fill pipe?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. a minimum 6-inch high containment curb?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. a label to designate the chemical name contained?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. a threaded and capped ball valved drain that discharges to a containment area or holding tank?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. vent(s) sized at 150% of fill pipe diameter to prevent excess pressures or vacuum?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. a bulk solution tank fill valve station labeled with the chemical name, 4 digit UN number, and formula of the chemical, and provisions for locking when not in use, and provide containment for minor releases during the fill process?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. a cover?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. a high level liquid sensor that activate audible and visual alarms mounted at locations that will alert both the treatment system operator and tank truck delivery driver to prevent overfilling of bulk tank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. a ball shut off valve on inside fill pipe to prevent backflow of chemical when hose is disconnected, and to guard against any unauthorized fill ups?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. a design to minimize accidental splashing, and is overflow brought down to 12-24 inches from floor that discharges over a splash plate, and away from any sensitive equipment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m. outside vent(s) terminating to prevent contamination, such as, in a down turned position, and covered with a 24 mesh corrosion resistant screen?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n. if penetrating a roof, does vent terminate at least 24 inches above the roof to prevent snowmelt from entering bulk tank?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o. an inside building location or above ground location?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



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	Yes	No	NA
5. Do containment areas provide:			
a. a bermed area capable of containing 110% of the volume of the chemicals stored within the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. no floor drains or sump pumps unless the flow is directed to a separate containment area or tank?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. a sump or sloped to a low area to allow pumpage?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. an overflow from chemical storage tanks that discharges to the containment area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. separate containment for chemicals that are not compatible, such as, acids and bases?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. a leak/spill detection alarm device?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. If overflow discharge to the outside of the containment area, can overflows do one of the following?			
a. discharge to a holding tank with a minimum volume equal to 25% of the storage tank, or	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. discharge to a separate covered containment area with a minimum volume equal to 25% of the storage tank, or	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. have an overflow capacity in the storage tank with a minimum volume equal to 25% of the capacity of the tank and a high audio and visual level alarm that will be set at the full level, excluding the overflow volume?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Are two solution tanks of adequate volume provided, if necessary, to assure continuity of supply in servicing a solution tank (if (NH ₄) ₂ SO ₄ is used)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Are all chemical solutions kept covered and are the openings in bulk tanks with access openings curbed and fitted with tight overhanging covers?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Subsurface locations for bulk solution tanks:			
a. do they assure freedom from sources of possible contamination?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. are they located in a double walled containment vault with a spill/leak detection device?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Are overflow pipes:			
a. directed downward into the containment area, with the end screened or otherwise protected?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. located where noticeable?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



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	Yes	No	NA
11. Is each large tank provided with a valved drain, protected against backflow in accordance with Cross Connection Control Regulations and liquid chemical feeders guidance, and located so that chemicals from equipment failure, spillage, or accidental drainage will not enter the water in conduits or treatment or storage basins?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. If a smaller system, does design show an ammonia chemical fed directly from a scale mounted shipping container no larger than 30 gallons?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Is a covered, labeled, and vented day tank provided when bulk storage tank(s) are provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Are the day tank(s) sized to hold no more than a 30 - 60 hour chemical supply at average treated water demand rate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are precise means (scale mounting, ultrasonic level sensing, gauge rods with floats, or visual calibration where ratio of tank height to diameter are meaningful) provided to measure the volume or weight of ammonia fed daily?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Transfer of Chemicals:			
a. Are motor or magnetic-driven transfer pumps to daytank provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1. Is a liquid level limit switch on daytank cover provided to automatically shut off transfer pump when daytank is full?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Is filling of daytank done manually and not automated and filled by a safe means?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Chapter 6.1.12 Feed Lines

1. Are feed lines as short and straight as possible in length of run and:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a. of durable, corrosion resistant material? (Note: consult with ammonia supplier and MSDS for recommended materials.)	<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"/>
2. Does the suction feed line(s) slope upward from the chemical source to the metering pump (if used) without loops to help avoid air-entrapment with a footvalve?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. 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"/>



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	Yes	No	NA
4. Are the ammonia feed lines color-coded white, labeled with chemical name, and show arrows for direction of flow?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Are any outside underground feed lines in secondary containment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. 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"/>
Chapter 6.1.13 Handling			
1. Are carts, elevators, drum skids, drum trucks and other appropriate means provided for lifting ammonia chemical containers or bags to minimize excessive lifting by operators?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Are provisions made for disposing of ammonia drums or barrels by an approved procedure which will minimize exposure?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chapter 6.1.14 Housing			
1. Are floor surfaces smooth, impervious, slip-proof and well drained?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. 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"/>
3. Is adequate ventilation and heating provided that conforms to all local and/or state codes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chapter 6.2.1 Shipping Containers			
1. Will specifications state that chemical shipping containers (or bags) shall be fully labeled to include chemical name, purity, concentration, supplier name and address?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chapter 6.2.2 Specifications			
1. Will specifications state that chemicals shall meet (or latest) ANSI/AWWA Standards for B302-05 Ammonium Sulfate, B305-06 Anhydrous Ammonia, or B306-07 Aqua Ammonia (Liquid Ammonium Hydroxide), and NSF 60 Standards?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chapter 6.2.3 Assay			
1. Are there provisions for assay of ammonia chemicals bulk delivered, such as, a labeled sampling tap on fill line to bulk tank to verify accuracy of chemical specifications?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



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- | | Yes | No | NA |
|--|--------------------------|--------------------------|--------------------------|
| 2. For non-bulk deliveries will recommendation that visual and chemical sampling of chemical during delivery be conducted to verify the correct chemical is being added be included in standard operating procedure (SOP), or for bulk deliveries, will the will the applicant's O & M include delivery and inspection requirements for all bulk chemical deliveries to water treatment facilities, as provided in MassDEP " SOP – Security Guidelines for the Inspection of Bulk Chemical Deliveries "? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Section 6.3 Operator Safety Other Protective Equipment and Systems

- | | | | |
|---|--------------------------|--------------------------|--------------------------|
| 1. Is at least one pair of rubber or neoprene gloves, a dust respirator for toxic dusts (if $(\text{NH}_4)_2\text{SO}_4$ is used), a rubber or neoprene apron or other protective clothing, splash goggles, gas mask (if NH_3 gas is used) and face mask provided for each operator as required by MSDS (material safety data sheets) and OSHA (Occupational Safety and Health Administration) 29 CFR 1910 ? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Is a safety deluge shower and eyewash installed between the location of the hazard and the nearest means of egress? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. If a bulk chemical tank over 1,000 gallons is used, are safety deluge shower and piped eye-washing device approved by ANSI Z358.1-2004? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Does activation of deluge shower or eyewash initiate a visual and audible alarm to remote location? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Is a water-holding tank that will allow water to come to room temperature installed in the water line feeding the safety deluge shower and piped eye washing device? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Will a sufficient amount of spill absorbent be stored on site for any uncontrolled discharges of liquid ammonia compound? (Note: consult with ammonia supplier or MSDS for recommended absorbents.) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Will a standard operating procedure (SOP) for ammonia compound be posted in a protective shop envelope on the wall for the operator, and will the ammonia compound MSDS be available on site? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Will moist litmus paper be available for operator to test for minor NH_3 gas leaks? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Chapter 6.4 Ammonia Gas (if used)

(Note: ammonia gas room subject to same requirements as chlorine gas room except for certain ventilation requirements.)

- | | | | |
|---|--------------------------|--------------------------|--------------------------|
| 1. Is the ammonia gas feed and storage enclosed and separated from other operating areas? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Is the installation as vandal-proof as possible? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



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	Yes	No	NA
3. Is the ammonia 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 ammonia 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"/>
4. Will full and empty cylinders of ammonia 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 chlorine 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"/>
5. Is the ammonia room(s) constructed to provide the following: (Note: ammonia gas (MAW = 17) is lighter than air)			
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. Will the ventilating exhaust fan be located 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. Do louvers for ammonia room intake and exhaust facilitate airtight closure?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Floor drains are discouraged. Where provided, are the floor drains not connected to other internal or external drainage systems? See Guidelines Chapter 5.10 titled: Waste Handling and Disposal .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. 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"/>
f. Do vents from feeders and storage discharge to the outside atmosphere, above grade?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Is ammonia room(s) heated to 60°F and protected from excessive heat?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Is every non-pressurized ammonia gas line protected from temperatures below 60°F and excessive heat?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Will pressurized ammonia feed lines not carry ammonia gas beyond the ammonia room?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. 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"/>



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	Yes	No	NA
Chapter 7.0 Pumping Facilities			
1. Are chloramine 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 ”?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Is a representative labeled sample tap located 100 feet downstream available for daily chloramine testing of the treated water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chapter 12.1 Minimum Components of Emergency Response Plans for Ammonia Compound			
1. Will the applicant’s emergency response plan (ERP) be updated to include the ammonia 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 ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Monitoring and Reporting for Ammonia Compounds			
1. Will the applicant prepare and submit to MassDEP monthly Chemical Addition reports for each ammonia compound 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 a revised Total Coliform Sampling Plan for approval, 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"/>
4. Ground Water Rule (GWR) Disinfection Provisions			
The applicant must demonstrate ability to respond to a Ground Water Rule fecal contamination event in the source water. See: http://www.mass.gov/dep/water/drinking/systems.htm#gwr http://www.mass.gov/dep/water/drinking/gwr.htm			
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 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 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"/>



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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.

--	--

 Signature/Stamp of Professional Engineer

 Signature/Stamp of Second Professional Engineer (if needed)

 Date

 Date

 Printed Name

 Printed Name

 Title

 Title

 Employer

 Employer

 Phone Number

 Email Address

 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