PPAA – EH&S Update
January 26, 2016

Barbara A. Boyle, CIH, CSP
Office for Capital Facilities
• Cooling Towers

• Petroleum Bulk Storage Operator Training

• CO in Restaurants & Commercial Buildings

• NYS Mold Regulations
All Library Photos

*The Library: A World History*
(Chicago University Press)

- James W. P. Campbell, author
- Will Price, photographer
The Tripitaka Koreana, Haeinsa Temple, South Korea, 1231

- This is one of the oldest and most remarkable collections in the world.

- The items on the shelves are not books, but wooden printing blocks. There are over 80,000 of them.

- The building was placed high in the mountains and designed so that cool winds help preserve the blocks. Floors absorb moisture, sun is avoided, windows are carefully placed and sized.
- It is the most complete and accurate extant collection of Buddhist treatises, laws, and scriptures.

- Each block is made of birch wood from the southern islands of Korea and was treated to prevent the decay of the wood.
  - soaked in sea water x 3 yrs
  - cut
  - boiled in salt water
  - dried in shade and exposed to winds x 3 yrs
  - carved
  - covered in a poisonous lacquer to keep insects away and was framed with metal to prevent warping.
Mafra, Portugal 1755

- This is one of two libraries in Portugal that house colonies of one inch bats which live behind the bookcases and feed on the insects which might otherwise eat the books.

- IPM vs custodial needs
Cooling Towers
### Registration with DOH

<table>
<thead>
<tr>
<th></th>
<th>Local Tracking Code, Name, Identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>&quot;The term 'cooling tower' means a cooling tower, evaporative condenser, or fluid cooler that is part of a recirculated water system incorporated into a building's cooling, industrial process, refrigeration or energy production system.&quot; It is limited to &quot;wet&quot; units (with basin and ability to generate mists).</td>
</tr>
<tr>
<td></td>
<td>Unit 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>What is it?</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>CT=Cooling Tower; EC=Evaporative Cooler; FC=Fluid Cooler</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Building/Location Information (Street address of the building where the cooling tower is located; name, address, telephone number and email of all owner(s) of the building)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Intended Use of Cooling Tower</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>C=Building Cooling; I=Industrial Process; R=Refrigeration; E=Energy Production</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Name of Manufacturer</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Serial Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Cooling Capacity (tonnage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Basin Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Commissioning Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>How is systemic disinfection maintained?</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>M=Manually; T=Timed Injection; C=Continuous Delivery</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Who is the contractor or employee engaged to inspect and certify the unit?</th>
</tr>
</thead>
<tbody>
<tr>
<td>12a</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Is the contractor/employee who inspects the unit:</th>
</tr>
</thead>
<tbody>
<tr>
<td>12b</td>
<td>PE=NYS Professional Engineer; CH=Certified Industrial Hygienist; CWT=Certified Water Technologist; EC=Environmental Consultant with appropriate training and experience</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>When was the unit last inspected? [date]</th>
</tr>
</thead>
<tbody>
<tr>
<td>12c</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Who is the contractor or employee engage to clean and disinfect the unit?</th>
</tr>
</thead>
<tbody>
<tr>
<td>13a</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Is the contractor/employee who cleans and disinfects a current NYS 7G certified pesticide applicator using DEC registered biocides? Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>13b</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Date of last routine culture sample collection, sample results, and date of any required remedial action.</th>
</tr>
</thead>
<tbody>
<tr>
<td>13c</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Date of any legionella sample collection, sample results, and date of any required remedial action.</th>
</tr>
</thead>
<tbody>
<tr>
<td>13d</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>When was the unit last cleaned and disinfected? [date or O=ongoing]</th>
</tr>
</thead>
<tbody>
<tr>
<td>13e</td>
<td></td>
</tr>
</tbody>
</table>

List of DOH Routine Reporting Triggers

Ten (10) Days:
- significant change in registration
- routine culture sample collection, sample results, and date of any required remedial action;
- legionella sample collection, sample results, and date of any required remedial action;
- cleaning and disinfection
- start and end of any shutdown for more than five days
- certification
- inspection

Thirty (30) days:
- discontinued use
### Required Actions based on 8/17/15 DOH Regulations for Legionella

<table>
<thead>
<tr>
<th>Action Description</th>
<th>Who can do?</th>
<th>Within 30 days (Sept 16) unless it had been done in previous 30 days (since July 18)</th>
<th>Until plan is in place, at least every 90 days</th>
<th>Per requirements of plan</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.3 Registration of “wet” units</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>4.4 Sample Collection and Testing</td>
<td>X</td>
<td>Dip tests: service provider Bacteria/HPC: ELAP lab Legionella: ELITE lab</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>4.4.1 Cleaning and Disinfection, or other corrective actions</td>
<td>X</td>
<td>7G NYS certified pesticide applicator using DEC registered biocides</td>
<td>Immediate action upon receipt of test results, or if there is a shut down for more than 5 days. (Legionella per App 4-A; HPC per industry standards)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.5 Inspections/Certifications</td>
<td>X</td>
<td>PE or CIH; Certified Water Technologist; qualified environmental consultant</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>4.8 Removal or permanent discontinued use</td>
<td>30 days</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.6 Maintenance Plan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

There is no requirement for routine Legionella testing; it must be addressed in the maintenance plan.

Records must be kept for 3 years.

Maintenance plan must be kept on site and available for inspections.

*SUNY OCF, revised 8/31/15*
Reference: Cooling Technology Institute WTB-148

Recommended Targets Routine Treatment of Cooling Water Systems (from CTI WTB-148(08))

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Dipslides</th>
<th>Agar Pour Plate or Petri film</th>
<th>Microscopic Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plank tonic Counts (bulk water)</td>
<td>&lt;10,000 CFU/ml</td>
<td>&lt;10,000 CFU/ml</td>
<td>No higher life forms</td>
</tr>
<tr>
<td>Sessile Counts (surfaces)</td>
<td>&lt;100,000 CFU/cm²</td>
<td>&lt;100,000 CFU/cm²</td>
<td>No higher life forms</td>
</tr>
<tr>
<td>Deposits</td>
<td>NA</td>
<td>NA</td>
<td>No higher life forms</td>
</tr>
</tbody>
</table>
### DOH Appendix 4-A Interpretation of Legionella Culture Results from Cooling Towers

<table>
<thead>
<tr>
<th>Legionella Test Results in CFU/ml</th>
<th>Approach</th>
<th>Prescribed Action</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No detection (&lt; 10 CFU/ml)</strong></td>
<td>Maintain treatment program and Legionella monitoring.</td>
<td>Online disinfection means – Dose the cooling tower water system with either a different biocide or a similar biocide at an increased concentration than currently used.</td>
</tr>
<tr>
<td><strong>For levels at ≥ 10 CFU/ml but &lt; 1000 CFU/ml</strong></td>
<td>Review treatment program. Institute immediate online disinfection to help with control. Retest the water in 3 – 7 days. • Continue to retest at the same time interval until two consecutive readings show acceptable improvement, as determined by a person identified in 10 NYCRR 4.6. Continue with regular maintenance strategy. • If &lt; 100 CFU/ml repeat online disinfection and retest. • If ≥100 CFU/ml but &lt; 1000 CFU/ml further investigate the water treatment program and immediately perform online disinfection. Retest and repeat attempts at control strategy. If ≥ 1000 CFU/ml undertake control strategy as noted below.</td>
<td>Online decontamination means – Dose the recirculation water with a chlorine-based compound equivalent to at least 5 mg/l (ppm) free residual chlorine for at least one hour; pH 7.0 to 7.6.</td>
</tr>
<tr>
<td><strong>For levels ≥ 1000 CFU/ml</strong></td>
<td>Review the treatment program. Institute immediate online decontamination to help with control. Retest the water in 3 – 7 days. • Continue to retest at the same time interval until two consecutive readings show acceptable improvement, as determined by a person identified in 10 NYCRR 4.6. Continue with regular maintenance strategy. • If &lt; 100 CFU/ml repeat online disinfection and retest. • If ≥100 CFU/ml but &lt; 1000 CFU/ml further investigate the water treatment program and immediately perform online disinfection. Retest and repeat attempts at control strategy. If ≥ 1000 CFU/ml carry out system decontamination</td>
<td>System decontamination means – Maintain 5 to 10 mg/l (ppm) free residual chlorine for a minimum of one hour; drain and flush with disinfected water; clean wetted surface; refill and dose to 1 – 5 mg/l (ppm) of free residual chlorine at pH 7.0 – 7.6 and circulate for 30 minutes. Refill, re-establish treatment and retest for verification of treatment.</td>
</tr>
</tbody>
</table>
Documents Considered:

- NYS Department of Health Emergency Regulations
  [www.ashrae.org](http://www.ashrae.org)
  [www.ashrae.org](http://www.ashrae.org)
  [http://www.cti.org](http://www.cti.org)
- OSHA eTools: Legionnaires Disease.
- Centers for Disease Control and Prevention, Guidelines for Environmental Infection Control in Health-Care Facilities; Recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC); U.S. Department of Health and Human Services Centers for Disease Control and Prevention (CDC) Atlanta, GA 30333 (2003); page 225.

### 4.4 Culture sample collection and testing; cleaning and disinfection.

(a) All owners of cooling towers shall collect samples and obtain culture testing:

- within 30 days of the effective date of this Part, unless such culture testing has been obtained within 30 days prior to the effective date of this Part, and shall take immediate actions in response to such testing, including interpreting Legionella culture results, if any, as specified in Appendix 4-A.

- In accordance with the maintenance program and plan, and shall take immediate actions in response to such testing as specified in the plan, including interpreting Legionella culture results, if any, as specified in Appendix 4-A; provided that if a maintenance program and plan has not yet been obtained in accordance with section 4.6 of this Part, bacteriological culture samples and analysis (dip slides or heterotrophic plate counts) to assess microbiological activity shall be obtained, at intervals not exceeding 90 days while the tower is in use, and any immediate action in response to such testing shall be taken, including interpreting Legionella culture results, if any, as specified in Appendix 4-A.

### ASHRAE 188

#### 7.2.4 Water Treatment (microbiological activity, scale, and corrosion)

Maintenance program must include:

- Specify all equipment and chemicals used for the purpose of treating the open recirculating loop;
- Minimum required schedule for inspection, maintenance and monitoring, and a corrective actions plan;
- Identify the minimum requirements for documenting system water treatment.

### ASHRAE Guidelines 12-2000

#### Goals of Water Treatment:

- Minimize microbial growth (including use of biocides)
- Minimize scale and corrosion (including use of inhibitors)
- Minimize sediment/deposition of solids on heat transfer surfaces (including use of surfactants and mechanical methods such as filtration and separation)

#### Cooling Technology Institute WTB-148 (08)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Dipslides</th>
<th>Agar Plate or Petrof Film</th>
<th>Microscopic Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planktonic Counts</td>
<td>&lt;10,000 CFU/ml</td>
<td>&lt;10,000 CFU/ml</td>
<td>No higher life forms</td>
</tr>
<tr>
<td>(bulk water)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sediment Counts</td>
<td>&lt;100,000 CFU/cm²</td>
<td>&lt;100,000 CFU/cm²</td>
<td>No higher life forms</td>
</tr>
<tr>
<td>(surfaces)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deposits</td>
<td>NA</td>
<td>NA</td>
<td>No higher life forms</td>
</tr>
</tbody>
</table>
# Cooling Tower Maintenance Program and Plan Template

**October 5, 2015**

DRAFT DOCUMENT to assist campuses in complying with NYS Cooling Tower regulations, October 1, 2015, prepared by SUNY Office for Capital Facilities.

<table>
<thead>
<tr>
<th>Campus Identification:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Registration Identification with Passwords:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Person (Title or Name) responsible for maintenance and reporting the DOH as required:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Person/Entity who conducts formal inspections:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Person/Entity who treats the cooling towers:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

## Notes on Template

This program is intended to meet the requirements of the August 2015 NYS DOH Emergency Regulations for Legionella control in cooling towers. These regulations can be found in Appendix B.

Campuses must review this template and insert campus-specific information.

All items listed in this plan are subject to modification to reflect changes in procedures, service providers, product, circumstances, etc. All items are subject to modification based on the professional judgment of campus and service provider personnel.

This program is not sufficient for hospitals or residential healthcare facilities.

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1
Cooling Tower Maintenance Program and Plan Template

October 5, 2015

Table of Contents

General

Plan Review and Availability
Plan Authority and References
Records Retention

Routine Inspection, Cleaning and Treatment

Biological Testing and Action Plans

HPC Activity
Legionella Activity
Emergency Legionella Sample Collection - Triggers and Actions

Emergency Disinfection and Decontamination Plan

Start Up and Shut Down Plan

Discontinued Use

Annual Certification

List of DOH Routine Reporting Triggers

Appendices

A. Plan History Log
B. NYS Department of Health Regulations
C. List of Registered Cooling Towers and Their Detailed Information
D. Contract with Inspection/Treatment Entity
E. Maintenance and Service Logs By Tower including lab results
F. Safety Data Sheets for Chemicals Used in the Maintenance of the Cooling Towers
G. DOH Notification Log
FIGURE 1: Elements of a Water Management Program

PROGRAM TEAM – Identify persons responsible for Program development and implementation.

DESCRIBE WATER SYSTEMS/FLOW DIAGRAMS – Describe the potable and non-potable water systems within the building and on the building site and develop water system schematics.

ANALYSIS OF BUILDING WATER SYSTEMS – Evaluate where hazardous conditions may occur in the water systems and determine where control measures can be applied.

CONTROL MEASURES – Determine locations where control measures must be applied and maintained in order to stay within established control limits.

MONITORING – Establish procedures for monitoring whether control measures are operating within established limits and if not, take corrective actions.

CORRECTIVE ACTIONS/CONFIRMATION – Establish procedures to confirm that:
- The Program is being implemented as designed. (verification)
- The Program effectively controls the hazardous conditions throughout the building water systems (validation)

DOCUMENTATION – Establish documentation and communication procedures for all activities of the Program.
ASHRAE 188 Triggers-Things and People

**THINGS**
- Cooling towers
- Whirlpool or spa
- Ornamental fountains, misters, humidifiers, etc

**PEOPLE/USE**
- Multiple housing with centralized water heaters
- >10 stories
- Healthcare >24 hrs
- Medical care x 2
- Elderly housing
The Biblioteca Malatestiana in Cesena, Italy, Medieval library near Rimini 1452

- Hand copied books.
- Chained to desk.
- Patrons moved to the desk of the book.
- Construction is brick behind painted plaster for fire resistance.
The Biblioteca Marciana in Venice, Italy, completed 1564

- Books secured to desk by chain.
- Grimani Sculpture Collection in vestibule.
Underneath the library, a huge crypt was designed as mortuary chapel for the abbots. Thus the dead were remembered below, with the library housing the thoughts of the dead above.
Petroleum Bulk Storage
New Regulations:

- consolidates state and 1988 federal regulations for USTs
- PBS, CBS, used oil
- reflects 2005 federal Energy Policy Act
- incorporates changes in 2008 state law
- clarifies existing regulations

Out with the old....
In with the new...

New

6 NYCRR
Part 613

Minor revisions to 370/372

WWW.CRAFTSMANSPACE.COM
613.1 General
613.2 UST both fed and state
613.3 UST State Only
   (Onsite heating oil)
613.4 Above ground tanks
613.5 Delivery Prohibitions
613.6 Release/Corrective Actions
Tanks

Underground Storage Tanks

Fed and State

613.2 Includes Operator Training

State Only
(heating oil used onsite, <1100 gal motor vehicle at farm or residence, nuclear)

613.3

Aboveground Tanks

613.4
Petroleum Bulk Storage Operator Training

October 11, 2016: Facilities must identify their Class A and B Operators

Formal Class A, B, or C training is NOT required if you only have:

- aboveground tanks
- tanks holding heating fuel for onsite consumption
613-2 UST Systems Subject to Both Subtitle I and Title 10

2.1 UST Systems: design, construction, installation
2.2 General operating requirements
2.3 Leak detection
2.4 Reporting, investigation and confirmation
2.5 Operator training
2.6 Out-of-service UST and closure
**SUMMARY OF PBS RECORDKEEPING REQUIREMENTS**

**UST SYSTEMS REGULATED BY DEC/EP A**

The following is a list of recordkeeping requirements for underground storage tank systems (USTs) regulated by both DEC and EPA. It is unlikely that any one facility will need to maintain every type of record listed—maintain only those records required for your tank system(s). It is recommended that you—as the facility owner/operator—print this file and highlight the documents/records required for what you have at your facility.

Note that this document does not replace the regulations themselves. This is meant to be a tool to help you prepare for compliance inspections and as an aid for general recordkeeping compliance.

**For TANKS:**

<table>
<thead>
<tr>
<th>40 CFR Part/6 NYCCR</th>
<th>Type of Documentation</th>
<th>When Required</th>
<th>How Long to Keep Records</th>
<th>What Conditions Require This?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>GENERAL RECORDS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>612.2</td>
<td>Facility Registration Certificate</td>
<td>Initial Registration; Every 5 Years Thereafter; When Ownership is Transferred</td>
<td>Must Be Current at All Times</td>
<td>You MUST always have this record.</td>
</tr>
<tr>
<td>614.7(d)</td>
<td>New Tank Installation Plans</td>
<td>When Tank is Installed</td>
<td>Life of Facility</td>
<td>You MUST have these UNLESS your tank was installed prior to 12/27/1986</td>
</tr>
<tr>
<td>280.72</td>
<td>Permanent Tank Closure Site Assessment</td>
<td>At Tank Closure</td>
<td>3 Years After Tank Closure</td>
<td>Only WHEN you permanently close your tank</td>
</tr>
<tr>
<td></td>
<td>INSPECTIONS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>280.21(b)</td>
<td>Interior Lining Inspection</td>
<td>Within First 10 Years; Every 5 Years Thereafter</td>
<td>Life of UST</td>
<td>Only IF you have a steel tank WITH an internal lining</td>
</tr>
<tr>
<td></td>
<td>REPAIRS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>280.33(f)</td>
<td>Records of Repairs</td>
<td>At Time of Repair</td>
<td>Life of UST</td>
<td>Only WHEN your tank is permanently repaired</td>
</tr>
<tr>
<td>280.33(d)</td>
<td>Tightness Test for Repaired Tanks</td>
<td>Within 30 Days After Repair</td>
<td>5 Years</td>
<td></td>
</tr>
<tr>
<td>280.33(e)</td>
<td>Cathodic Protection Test for Repaired Tanks</td>
<td>Within 6 Months After Repair</td>
<td>1 Year</td>
<td>Only IF you have a steel tank AND it is permanently repaired</td>
</tr>
<tr>
<td>614.6(a)</td>
<td>Steel Tank Reconditioning Manufacturer Guarantee</td>
<td>At Time of Reconditioning</td>
<td>Life of UST</td>
<td>Only IF you have a steel tank AND it is reconditioned</td>
</tr>
<tr>
<td></td>
<td>CATHODIC PROTECTION</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>280.31(b) 613.5(b)(2)</td>
<td>Cathodic Protection Test -- Sacrificial Anodes</td>
<td>Within First 6 Months; Every Year Thereafter</td>
<td>1 Year</td>
<td>Only IF you have a steel tank WITH a sacrificial anode CP system</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>
Operator Training Guide
Figure 3.2: Typical tank top layout

Figure 3.10: Common service station UST layout
Figure 3.3: Tank top layout and elevation
Figure: 13.7 Fill port tag

Figure 3.11: Typical tank top sump (refer to bullet list in text for numbered items)
Check inside your tank top sump to determine which type of piping system you have.

Figure 10.3: Pressurized pumping system

Figure 10.4: Suction pump system
The right-hand photo in Figure 3.15 shows a dispenser that is part of a pressurized system. This dispenser does not house a suction pump because the dispenser is served by a submersible pump located inside the tank.

Figure 3.15: Suction system dispenser (left) and pressurized system dispenser (right).

Figure 7.4: Ball Float Valve
<table>
<thead>
<tr>
<th>Product</th>
<th>Color/symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-grade unleaded gasoline</td>
<td>Red circle w/white cross</td>
</tr>
<tr>
<td>Mid-grade unleaded gasoline</td>
<td>Blue circle w/white cross</td>
</tr>
<tr>
<td>Low-grade unleaded gasoline</td>
<td>White circle w/black cross</td>
</tr>
<tr>
<td>Vapor recovery</td>
<td>Orange circle</td>
</tr>
<tr>
<td>Diesel</td>
<td>Yellow hexagon</td>
</tr>
<tr>
<td>#1 fuel oil</td>
<td>Purple hexagon w/yellow bar</td>
</tr>
<tr>
<td>#2 fuel oil</td>
<td>Green hexagon</td>
</tr>
<tr>
<td>Kerosene</td>
<td>Brown hexagon</td>
</tr>
<tr>
<td>Used oil / waste oil</td>
<td>Purple square</td>
</tr>
<tr>
<td>#4 fuel oil</td>
<td>Green hexagon w/ black or white ‘4’</td>
</tr>
<tr>
<td>#6 fuel oil</td>
<td>Green hexagon w/ black or white ‘6’</td>
</tr>
<tr>
<td>Ultra low sulfur diesel</td>
<td>Yellow hexagon w/ black ‘U’</td>
</tr>
<tr>
<td>Ultra low sulfur kerosene</td>
<td>Brown hexagon w/ black ‘U’</td>
</tr>
<tr>
<td>Alcohol-blended fuels</td>
<td>Bronze “home plate” symbol w/ black lettering, e.g., ‘E85’</td>
</tr>
<tr>
<td>Biodiesel</td>
<td>Bronze hexagon w/ yellow outer band &amp; black or white lettering, e.g., ‘B20’</td>
</tr>
<tr>
<td>Monitoring well</td>
<td>Black equilateral triangle on white background</td>
</tr>
</tbody>
</table>
14.3 Reporting Spills and Releases

Any product found where it shouldn’t be is considered a spill. This includes, but is not limited to:

- product in the tank top sump, dispenser sump or transition sump;
- accidental overfills during deliveries; and
- spills by consumers filling their tanks.

You must report spills to DEC within 2 HOURS of discovery.

THE DEC SPILL HOTLINE NUMBER IS 1-800-457-7362

(518-457-7362 outside New York State)

A spill MUST be reported unless ALL of the following are true:

- the spill is less than 5 gallons in total volume, and
- is contained and under control, and
- has not reached and will not reach the State’s waters (including groundwater), or any land, and
- is cleaned up within two hours after discovery.

Some examples:

- If a quart of fuel is spilled into the spill bucket during a delivery, but none is spilled outside the spill bucket and all the fuel is cleaned up immediately, then the spill is not reportable.

- If five gallons or more are spilled into the spill bucket, OR if any of the fuel is spilled to soil, OR if it takes longer than two hours to clean up all the fuel, then the spill MUST be reported.

- If you are excavating during the removal/replacement of a tank, or for any other reason, and find petroleum staining in the soils or sheens on the groundwater, this MUST be reported.

You must report releases of petroleum outside of the tank system such as free product or vapors in soil, basements, utility lines, sewers or nearby surface water within 2 hours after discovery.
### 10-DAY INVENTORY RECONCILIATION WORKSHEET FOR METERED USTs

**Facility Name:** Big Apple Oil  
**Address:** 100 59th Street  
New York, NY  
**PBS Number:** 5R5S55S  
**Tank ID No:** 5000  
**Product Stored:** Gasoline

**Inventory record for period from 02 / 01 / 2014 to 02 / 10 / 2014**

<table>
<thead>
<tr>
<th>DAY</th>
<th>START STICK</th>
<th>GALLONS DELIVERED</th>
<th>GALLONS PUMPED</th>
<th>BOOK INVENTORY</th>
<th>END STICK</th>
<th>DAILY OVER (+) or SHORT (-)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>INVENTORY</td>
<td>(GALLONS)</td>
<td>(GALLONS)</td>
<td>(GALLONS)</td>
<td>INVENTORY</td>
<td>(END - BOOK) [INCHES]</td>
</tr>
<tr>
<td>1</td>
<td>02/01</td>
<td>1428 (+)</td>
<td>(-)</td>
<td>156 (-)</td>
<td>1272</td>
<td>31-5/8&quot; 1265 7 1/4&quot;</td>
</tr>
<tr>
<td>2</td>
<td>02/02</td>
<td>1202 (+)</td>
<td>(-)</td>
<td>75 (+)</td>
<td>1190</td>
<td>30-3/8&quot; 1197 7 1/4&quot;</td>
</tr>
<tr>
<td>3</td>
<td>02/03</td>
<td>1197 (+)</td>
<td>1000 (-)</td>
<td>102 (+)</td>
<td>2085</td>
<td>47&quot; 2094 -1 1/4&quot;</td>
</tr>
<tr>
<td>4</td>
<td>02/04</td>
<td>2094 (+)</td>
<td>(-)</td>
<td>130 (+)</td>
<td>1962</td>
<td>44-1/2&quot; 1965 3 1/4&quot;</td>
</tr>
<tr>
<td>5</td>
<td>02/05</td>
<td>1965 (+)</td>
<td>(-)</td>
<td>56 (+)</td>
<td>1909</td>
<td>43-1/2&quot; 1912 3 1/4&quot;</td>
</tr>
<tr>
<td>6</td>
<td>02/06</td>
<td>1912 (+)</td>
<td>(-)</td>
<td>63 (+)</td>
<td>1829</td>
<td>41-7/8&quot; 1523 -4 1/4&quot;</td>
</tr>
<tr>
<td>7</td>
<td>02/07</td>
<td>1825 (+)</td>
<td>(-)</td>
<td>42 (+)</td>
<td>1783</td>
<td>41-1/8&quot; 1785 2 1/4&quot;</td>
</tr>
<tr>
<td>8</td>
<td>02/08</td>
<td>1785 (+)</td>
<td>(-)</td>
<td>73 (+)</td>
<td>1712</td>
<td>39-3/4&quot; 1711 -1 1/4&quot;</td>
</tr>
<tr>
<td>9</td>
<td>02/09</td>
<td>1711 (+)</td>
<td>(-)</td>
<td>123 (+)</td>
<td>1588</td>
<td>37-5/8&quot; 1595 8 1/4&quot;</td>
</tr>
<tr>
<td>10</td>
<td>02/10</td>
<td>1595 (+)</td>
<td>1000 (-)</td>
<td>256 (-)</td>
<td>2337</td>
<td>51-7/8&quot; 2332 -5 1/4&quot;</td>
</tr>
</tbody>
</table>

**Diagram**

- TOTAL GALLONS DELIVERED: 2000
- TOTAL GALLONS PUMPED: 935
- TOTAL TANK VOLUME: 290
- TOTAL GALLONS OVER / SHORT:
- (DROP GGN)

**Calculation**

\[
\text{TOTAL} = 2810 \times 0.0075 = 21.025
\]

**Comparison**

- ALLOWABLE VARIANCE: 11

**Explanation**

- If the TOTAL GALLONS OVER/SHORT is LARGER than the ALLOWABLE VARIANCE? (circle one) NO
- If there is an INCREASE/FLUCTUATION/RECURREENCE of water in the bottom of the tank? (circle one) NO

*If you answered YES above, if the TOTAL GALLONS OVER/SHORT is LARGER than the ALLOWABLE VARIANCE, or if there was an INCREASE/FLUCTUATION/RECURREENCE of water in the bottom of the tank — in accordance with 6 NYCRR Part 613.4(a), the operator MUST initiate an investigation into possible causes. IF WITHIN 48 HOURS the cause CANNOT be explained by inaccurate recordkeeping, temperature variations, or other factors not related to leakage, the operator MUST notify the owner and the New York State Department of Environmental Conservation (SPILL HOTLINE: 1-800-457-7362). The tank MUST be taken temporarily out-of-service in accordance with Part 613.9(a) UNTIL such time that inspections and/or tightness tests are performed, the cause is determined and necessary repairs or replacements are made.

**EXPLANATION OF EXCEDENCE OF ALLOWABLE VARIANCE**

- Cause determined to be: 

- Describe required action taken (i.e., inspection/repairs/tests, etc.) on / / (date): 

---

**Figure 8.11:** Sample 10-day inventory reconciliation worksheet
October 11, 2016:

Facilities must identify their Class A and B Operators
Class A ~ Corporate

Class A Operators have primary responsibility for operation and maintenance of the UST system. These operators typically manage resources and personnel to maintain compliance. Class A Operators must understand how tank systems work and know the related regulatory requirements with respect to:

- spill and overfill prevention;
- leak detection;
- corrosion protection;
- emergency response;
- compatibility;
- financial responsibility;
- registration;
- out-of-service/temporary closure and permanent closure;
- recordkeeping;
- environmental and regulatory consequences of releases; and
- knowledge and training requirements for Class B and Class C Operators.
Class B ~ Regional/Facility Manager

Class B Operators have daily responsibility for onsite operation and maintenance of UST systems. They must understand how tank systems work and know the related regulatory requirements with respect to:

- Operation and maintenance;
- Spill and overfill prevention;
- Leak detection and related reporting;
- Corrosion protection and related testing;
- Emergency response;
- Compatibility;
- Recordkeeping;
- Environmental and regulatory consequences of releases; and
- Training requirements for Class C Operators.
Class C ~~ Shift Person

- first line of response to emergencies
- not required to pass an exam
- must train *and document* training on facility response and procedures
  - product spills and releases;
  - tank monitoring system alarms;
  - fire; and
  - other situations that pose an immediate danger to the public or to the environment.
DEC Operator Testing

A → 65 questions, 2 hrs
B → 50 questions, 2 hrs
A/B → 80 questions, 2 ½ hrs

- Open book exams -- TANKIQ
- Online (anytime) or by paper (scheduled)
Wiblingen Abbey's library, Germany, 1744

- Rococo at its best.
- Secret #1 - marble columns are actually wood.
- Biggest secret — the statues are connected and hinged to permit access to the stairs.
Carbon Monoxide
Expanded Carbon Monoxide Alarm and Detection Time Line

Effective Date: June 27, 2015

Transition Period: June 27, 2016

- It will not be construed as a violation if the owner provides to the AHJ a statement certifying that they are making a good faith effort to move into compliance.
General rule

- In commercial buildings, carbon monoxide detection shall be provided in every detection zone that
  - Contains any carbon monoxide source
  - Is served by a CO-HVAC system
  - Is attached to a garage and/or any other motor-vehicle-related occupancy.

- Exceptions.
Detection Zone

- The term “detection zone” means a story of a commercial building.

However:

- A story with more than one CO-producing HVAC systems may be more than one detection area.

- Each classroom (pre K-12) is a separate detection zone.

- Garages are separate zones.
Detection

Detection zones <10,000 ft$^2$ $\rightarrow$ central location

Detection zones $\geq$10,000 ft$^2$ $\rightarrow$

central location and additional locations within such detection zone as may not exceed 100 ft travel distance

CO-HVAC

each outlet is treated as sources unless you place detector in first room or area served by the main duct with automatic transmission to an approved location.
Detection Equipment Choice

Carbon monoxide alarms - UL 2034

Power source is primary power from the building wiring, permanent with backup battery.

Carbon monoxide alarms powered solely by a 10-year battery shall be permitted in existing commercial buildings and commercial buildings without commercial electric power.

Combination carbon monoxide and smoke alarm is not allowed.

New buildings – interconnect and sign for unoccupied locations.

Carbon monoxide detection system – NFPA 720
Admont Library, Austria, 18c

- The collection was rebound in white leather to match the walls.
- There are no desks to work at because these library rooms were never intended for study. The books were taken back to the monks' warm cells to be read. This room was always just for housing and showing off the collection and not for study.
NYS Mold Regulations

- Signed by the governor
- Effective January 1, 2016

- Regulations have still not been proposed. Regulations may not be proposed. Some aspects are quite unclear.

- Training and certifications are ongoing. Some reported issue in quality.

- Different approaches to mold remediation.
Project

- mold remediation, mold assessment, or mold abatement

- greater than 10 ft\(^2\)

- does not include routine cleaning or construction, maintenance, repair or demolition undertaken for purposes other than mold remediation or abatement
Exceptions to Training/Licensing

- Residential property owner on own property

- Non-residential property owner (or employee) on owned apartment ≤4 dwelling units

- Owner/managing agent, or FT employee, of commercial property or residential > 4 units, if owner is not in the mold business

- Federal, state, or local governmental unit or public authority and employees thereof on property owned, managed or remediated by such governmental unit or authority.
Currently, there are three available mold-related training courses offered by New York State Department of Labor approved training providers. Training requirements are dictated by the activities you intend to perform.

- **Own/Operate a Sole Proprietorship Mold Assessment Company**
  - or-
  - Perform Mold Assessment
  - or-
  - Write Mold Remediation Plans

- **Own/Operate a Sole Proprietorship Mold Remediation Company**
  - or-
  - Write/Approve Mold Remediation Work Plans

- Perform any type of Mold Abatement Work in any capacity other than a Sole Proprietorship
  - Supervise Mold Abatement Workers
  - Only Perform Mold Abatement Work

**Mold Assessor Training Course** (4 Day Course)

**Mold Remediation Contractor Course** (3 Day Course)

**Mold Abatement Worker Course** (2 Day Course)

Two year renewal period
• No person shall own an interest in both the licensee who performs mold assessment services and the licensee who performs mold remediation services on the same property.

• Design professionals licensed pursuant to title 8 of the education law do not need the mold-licensing, if they are acting in the scope of their practice.
  • Engineers
  • Architects
Mold Assessor ➔ Remediation Plan

(a) rooms or areas
(b) estimated quantities of materials to be cleaned or removed
(c) methods to be used for each type, including use of biocides
(d) PPE to be supplied by licensed remediators for use by licensed abaters
(e) proposed clearance procedures
(f) notification of occupants
(g) estimate of cost and an estimated time frame
(h) when possible, the underlying sources of moisture
Mold Remediator →
Mold Remediation Work Plan

- provides specific instructions and/or standard operating procedures for how a mold remediation project will be performed
  - Site preparation
  - PPE
  - Signage
  - Removal of containment only after clearance
  - Biocides
Post-remediation assessment and clearance

- For a remediated project to achieve clearance, a mold assessment licensee shall conduct a post-remediation assessment. The post-remediation assessment shall determine whether:
  - (a) the work area is free from all visible mold; a
  - (b) completed in compliance with remediation plan and remediation work plan
- Underlying cause remediated
- Written passed clearance/written final status if not successful
State Agencies

• It *may* mean that you need to have the licensed assessor draw up remediation plan, before you can hire a mold remediator.

• It *may* mean that any time you have a hazardous materials assessment, it may have to include mold.
The library is sunk in a podium and the reader descends through grand halls to reach the reading rooms below, which are arranged around a central garden containing full-size pine trees. Here sitting at your desk, you see a woodland outside, magically transported into the center of Paris.
- Virtually everything - the columns, the capitals, the balconies, the railings and the ceiling-- are made of iron.

- Hot air heating was supplied through grills in the floor.

- The use of iron also meant that the library could be built over a concert hall, the weight of the books supported on iron beams over the space below.
THE DRAIN IS JUST FOR RAIN

MS4 Permits
MS4

- Do you have more than a single building?
- Are you wholly or partially in a Designated Urbanized Area?
- Do you have a daytime population of more than 1000?

May need an MS4 permit
SUNY campuses that may be in UA but don’t have MS4 permit, (per initial **draft** DEC search):

<table>
<thead>
<tr>
<th>Downstate</th>
<th>Adirondack</th>
<th>Onondaga</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empire State</td>
<td>Dutchess</td>
<td>Orange</td>
</tr>
<tr>
<td>Farmingdale</td>
<td>Erie</td>
<td>Schenectady</td>
</tr>
<tr>
<td>New Paltz</td>
<td>FIT</td>
<td>Suffolk</td>
</tr>
<tr>
<td>Old Westbury</td>
<td>FLCC</td>
<td>Westchester</td>
</tr>
<tr>
<td>Optometry</td>
<td>Jefferson</td>
<td></td>
</tr>
<tr>
<td>Stony Brook</td>
<td>MVCC</td>
<td></td>
</tr>
<tr>
<td>Upstate</td>
<td>Monroe</td>
<td></td>
</tr>
<tr>
<td>ESF</td>
<td>Nassau</td>
<td></td>
</tr>
</tbody>
</table>

These may be in a combined sewer, eligible for waiver, etc.
Municipal Separate Storm Sewer System (MS4) means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

- Owned or operated by a State, city, town, etc that discharges into surface waters even if it is through another MS4

- Designed or used for collecting or conveying storm water

- Which is not a combined sewer; and

- Which is not part of a Publicly Owned Treatment Works (POTW)
Overview of the Minimum Control Measures (MCM)

The permit requires development of a Stormwater Management Program (SWMP) that includes the six required program components, or the six minimum control measures (MCMs).

1. Public Education and Outreach
2. Public Participation/Involvement
3. Illicit Discharge Detection and Elimination
4. Construction Site Runoff Control
5. Post-construction Runoff Control
6. Pollution Prevention/Good Housekeeping
Solar/PV and Fire Response
PV Panels

- They should always be considered electrically hot –
  - day or night
  - under foam or tarp
  - often difficult to isolate
- May cause access or structural complications to roof under fire conditions
- Generally better not to damage.
- May present DC hazard not picked up by a typical hot stick
- May start up and re-ignite, or damaged panels can spark
Pre-Plan

- Pre-plan with responders
- Consider designation of an emergency contact for the panels
- Consider methods to isolate the panels
CONCLUSION

WORK WITH YOUR FIRE DEPARTMENTS

A GOOD RELATIONSHIP WILL HELP BOTH THE PV INDUSTRY AND FIREFIGHTERS
Philips Exeter Academy's Library in Exeter, New Hampshire (U.S.) 20c

- Ceiling of the central hall of this high school library.