

# CWD Laboratory

## State Certification Process



# CWD Water Quality Laboratory

- Provides lab services, both chemical and biological, to the entire CWD staff including:

- Water Treatment Plant
- Distribution System Division
- Watershed Management Division

while maintaining compliance with State Drinking Water Regulations.

- approximately 50,000 samples processed annually



# CWD Water Quality Laboratory (continued)

## Laboratory Facility

Facility Details	Description	Status
Lab Space (sq/ft)	3360 sq/ft	No Change
Bench Space (sq/ft) - Chemistry	598 sq/ft	No Change
Bench Space (sq/ft) - Microbiology	217 sq/ft	No Change
Control of temperature and humidity	Building HVAC, Wall units for Organics, Metals and Micro Labs	No Change
Electrical services	All labs contain multiple 120 volt outlets, Some Instrumentation on 240 volt. Critical equipment (Refrigerators and incubators, etc.) on backup emergency generator.	No Change
Sinks	14 Full size sinks 20 Small sinks	Updated

# Personnel

- 1 Lab Director = CWD refers to this as the Lab Manager
- 2 Lab Supervisors = CWD refers to as the Water Quality Supervisor
- Lab Analysts
  - 1 CWD Laboratory and Administrative Assistant
  - 2 Northeastern Co-ops (6 months)

Title	First Name	Last Name
Laboratory Director	Krystyna	Mcinally
Laboratory Supervisor	Richard	Lagerholm
Laboratory Supervisor	Katherine	Orciuch
Laboratory Analyst	Tara	Jones-Knight
Laboratory Analyst	Priscillia	Kat
Laboratory Analyst	Sean	Clarke

# What does STATE CERTIFIED mean?

- It means we have:

Education/Training

Experience

Proper equipment

Proper standard methods

Quality Assurance Program Plan/Standard Operating Procedures

# laboratory provides: Watershed Protection

- Assess quality of water coming to the Plant and help identify possible sources of contamination
- Provide support in emergency situations
  - Assist with sampling materials and instructions
  - Assist with fast sample processing

# laboratory provides: Water Treatment Plant

- Regulatory water quality monitoring data necessary to maintain compliance with the Drinking Water Regulations of Massachusetts.
- Process control checks of automated water quality monitors in the plant.
- Process control data for optimization of the water treatment processes.
- Analysis of distribution system monitoring samples.
- Evaluate efficiency of the treatment process
- Make sure the water leaving the Plant is safe to drink
- Provide required data for State Reports



# laboratory provides: Distribution

- Monitor distribution system water quality
- Check water quality at customer taps
- Respond to customer complaints
- Provide laboratory service for distribution system construction work
- Report required information to the State
- Specialized drinking water analysis for homeowners, contractors and businesses in Cambridge.



# State Certification

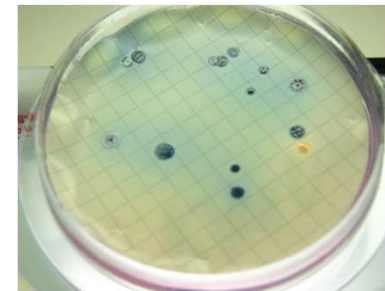
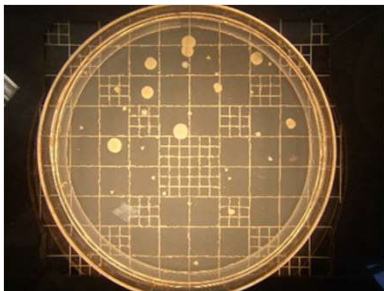
- 310 CMR 42.00 establishes a program for Department certification of laboratories to conduct analytical measurements for purposes of determining
  - Chemical
  - Radiochemical
  - Microbiologicalparameters in environmental samples.

# Certification Matrices, Disciplines and Categories

- 42.05: Certification Matrices, Disciplines and Categories
- Qualified applicants may be certified in one or more of the following matrices, disciplines and categories:
  - Potable Water. Certification in this matrix applies to analyses of drinking water supplies for purposes of, but not limited to, determining compliance with 310 CMR 22.00: Drinking Water Regulations. Certification in this matrix may be obtained in any or all of the following disciplines and categories:
    - (a) Microbiology. CWD
    - (b) Chemistry. CWD
    - (c) Radiochemistry N/A samples sent to contract lab

# Potable Water Microbiology

- Certification in this discipline may be obtained in any or all of the following categories:
  1. **Total Coliform (WTD) MF-SM9222B & ENZ. SUB. SM9223**
  2. **Escherichia coli (WTD) ENZ. SUB. SM9223 & NA-MUG-SM9222G**
  3. **Heterotrophic Plate Count SM9215B**
  4. Total Coliform in Source Water
  5. **Fecal Coliform in Source Water MF-SM9222D**
  6. Escherichia coli in Source Water
  7. Enterococci in Source Water



# Chemistry

- Certification in this discipline may be obtained in any or all of the following categories:

## Metals

Antimony  
Arsenic  
Barium  
Beryllium  
Cadmium  
Chromium

Copper  
Lead  
Mercury  
Nickel  
Selenium  
Manganese

Thallium  
Aluminum  
Zinc  
Iron  
Silver

Nitrate-N  
Nitrite-N  
Fluoride  
Sulfate  
Cyanide  
Turbidity

Residual Free Chlorine  
Calcium  
Total Alkalinity  
Total Dissolved Solids  
pH  
Trihalomethanes

VOCs(including vinyl chloride)

# Chemistry (continued)

## **NOT CERTIFIED**

Polychlorinated biphenyls

Herbicide

Pesticides

Carbamates

Benzo-a-pyrene

Adipates/Phthalates

1,2-Dibromo-3-chloropropane (DBCP) and 1,2-Dibromoethane (EDB)

Asbestos

Diquat

Sodium

Endothall

Glyphosate

Haloacetic Acids

Bromate

Chlorite

Perchlorate

1,4-Dioxane

\*Per- and Polyfluoroalkyl substances (PFAS)

# Radiochemistry

- Certification in this discipline may be obtained in any or all of the following categories:
  - ~~1. Gross Alpha;~~
  - ~~2. Gross Beta;~~
  - ~~3. Strontium-89;~~
  - ~~4. Strontium-90;~~
  - ~~5. Radium-226;~~
  - ~~6. Radium-228;~~
  - ~~7. Tritium;~~
  - ~~8. Uranium;~~
  - ~~9. Iodine-131;~~
  - ~~10. Cesium-134;~~
  - ~~11. Cesium-137;~~
  - ~~12. Cobalt-60;~~
  - ~~13. Ruthenium-106.~~

**CWD is not certified for Radiochemistry**

# Laboratory Certification Ratings

- MassDEP classifies labs by matrix, discipline, and category according to the following rating scheme:
  - (1) **Certified** - the laboratory meets the Department's minimum requirements for certification and is deemed capable of producing Valid Data;
  - (2) **Provisionally certified** - the Department deems the laboratory capable of producing Valid Data despite minor deficiencies;
  - (3) **Not certified** - the laboratory fails to meet the Department's minimum requirements for certification and is deemed incapable of consistently producing Valid Data.

*The Commonwealth of Massachusetts*



***Department of Environmental Protection***  
***Division of Environmental Laboratory Sciences***  
***Senator William X. Wall Experiment Station***

*certifies*

**M-MA149**                      **CAMBRIDGE WATER DEPARTMENT LABORATORY**  
**250 FRESH POND PKWY**  
**CAMBRIDGE, MA 02138-0000**

*Laboratory Director:*    **KRYSTYNA MCINALLY**

*for the analysis of*    **NON POTABLE WATER (CHEMISTRY)**  
**POTABLE WATER (MICROBIOLOGY)**  
**POTABLE WATER (CHEMISTRY)**

*pursuant to 310 CMR 42.00*

*This certificate supersedes all previous Massachusetts certificates issued to this laboratory. The laboratory is regulated by and shall be responsible for being in compliance with Massachusetts regulations at 310 CMR 42.00.*

*This certificate is valid only when accompanied by the latest dated Certified Parameter List as issued by the Massachusetts D.E.P. Contact the Division of Environmental Laboratory Sciences to verify the current certification status of the laboratory.*

*Certification is no guarantee of the validity of the data. This certification is subject to unannounced laboratory inspections.*

A handwritten signature in black ink, appearing to read "Oscar E. Jacobs".

*Director, Division of Environmental Laboratory Sciences*

*Issued:*    **01 JUL 2023**

*Expires:*    **30 JUN 2024**



COMMONWEALTH OF MASSACHUSETTS  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Certified Parameter List as of: 01 JUL 2023

M-MA149 CAMBRIDGE WATER DEPARTMENT LABORATORY  
CAMBRIDGE MA

NON POTABLE WATER (CHEMISTRY) Effective Date 01 JUL 2015 Expiration Date 30 JUN 2024

Analytes

ALUMINUM  
MANGANESE  
CHLORIDE  
TOTAL ORGANIC CARBON  
NON-FILTERABLE RESIDUE

Methods

EPA 200.8  
EPA 200.8  
SM 4110B  
SM 5310C  
SM 2540D

POTABLE WATER (CHEMISTRY) Effective Date 01 JUL 2023 Expiration Date 30 JUN 2024

Analytes

ALUMINUM  
ANTIMONY  
ARSENIC  
BARIUM  
BERYLLIUM  
CADMIUM  
CHROMIUM  
COPPER  
LEAD  
MANGANESE  
MERCURY  
NICKEL  
SELENIUM  
THALLIUM  
ZINC  
NITRATE-N  
NITRITE-N  
FLUORIDE  
CHLORIDE  
SULFATE  
TURBIDITY  
TURBIDITY  
CHLORINE, RESIDUAL FREE  
ALKALINITY, TOTAL  
TOTAL DISSOLVED SOLIDS  
PH  
TRICHLOROMETHANES  
VOLATILE ORGANIC COMPOUNDS

Methods

EPA 200.8  
EPA 200.8  
EPA 200.8  
EPA 200.8  
EPA 200.8  
EPA 200.8  
EPA 200.8  
EPA 200.8  
EPA 200.8  
EPA 200.8  
EPA 200.8  
EPA 200.8  
EPA 200.8  
EPA 200.8  
EPA 200.8  
SM 4110B  
SM 4110B  
SM 4500-F-C  
SM 4110B  
SM 4110B  
SM 2130B  
HACH 10258  
HACH 8021  
SM 2320B  
SM 2540C  
SM 4500-H-B  
EPA 524.2  
EPA 524.2

COMMONWEALTH OF MASSACHUSETTS  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Certified Parameter List as of: 24 APR 2023

M-MA149 CAMBRIDGE WATER DEPARTMENT LABORATORY  
CAMBRIDGE MA

POTABLE WATER (MICROBIOLOGY) Effective Date 01 JUL 2015 Expiration Date 30 JUN 2024

Analytes

HETEROTROPHIC PLATE COUNT  
TOTAL COLIFORM  
TOTAL COLIFORM  
FECAL COLIFORM  
E. COLI  
E. COLI

WATER TREATMENT AND DISTRIBUTION (P/A)  
WATER TREATMENT AND DISTRIBUTION (P/A)  
SOURCE WATER (ENUMERATION)  
WATER TREATMENT AND DISTRIBUTION (P/A)  
WATER TREATMENT AND DISTRIBUTION (P/A)

Methods

SM9215B  
MF-SM9222B  
ENZ. SUB. SM9223  
MF-SM9222D  
ENZ. SUB. SM9223  
NA-MUG-SM9222G

# Criteria for Certification

## **Proficiency Testing**

- Satisfactory performance in the proficiency-testing program is accomplished when the analytes in a category are correctly identified and acceptably quantified.
- Criteria for acceptability shall be set by the Department for each analyte in each discipline and category.
- Continued unsatisfactory performance in the analysis of an analyte within a category may result in revocation of certification for that analyte.

# Criteria for Certification (continued)

## Inspections

-DEP may conduct an inspection of each laboratory to determine whether or not the laboratory meets the Department's standards for performing analyses in the matrices, disciplines, and categories for which certification is sought or is obtained.

-The following factors are considered in determining whether to certify or continue certification of a laboratory:

1. Education and experience of laboratory personnel
2. Adequacy of laboratory facilities and equipment
3. Adherence to Department-approved methodology and quality assurance/quality control procedures
4. Adherence to Department-approved methods of handling and reporting data
5. Adequacy of safety equipment and training
6. Any other factors the Department deems relevant to the determination of the ability of a laboratory to operate in a professional manner.

# Criteria for Certification (continued)

## Inspection Deficiencies

If the Department issues a report of deficiencies found during an inspection of a laboratory, the laboratory shall have **90 days** from the date of issuance of the report to take the necessary corrective actions specified in the report and submit documentation of such corrective action to the Department.



# Maintaining Certification Status

- To maintain certification status, a laboratory shall satisfactorily analyze samples from a proficiency testing program administered or approved by the Department and pass inspections conducted or approved by the Department.
- Must continue to meet the Department's minimum standards for certification set forth in 310 CMR 42.00 to maintain certification status.
- Shall not misrepresent its certification status on any document. On reports of sample analysis, the laboratory must clearly distinguish among analyses for which it is certified, analyses for which it is provisionally certified, and analyses for which it is not certified.
- The laboratory's certification status indicated on a report of sample analysis must be accurate as of the date of the analysis.
- Materials on which the laboratory's certification status appears, the laboratory, to the extent possible, must correct its certification status appearing on such documents within 30 calendar days of its receipt of a notice of revocation of certification or within 30 calendar days of its voluntary withdrawal from certification.

# Online Searchable Laboratory Certification Listing

**MassDEP** Massachusetts Department of Environmental Protection

## Online Searchable Laboratory Certification Listing

Status: **YOU HAVE NOT CLICKED THE SEARCH BUTTON YET!**

**For guidance using MassDEP-certified laboratories for private drinking water testing go to:** <https://www.mass.gov/service-details/private-drinking-water-testing-and-the-use-of-massdep-certified-laboratories>

**Private Well Guidelines are available at:** <https://www.mass.gov/media/1514836>

**Enter Search Criteria:**

Certified Lab Name:

Certified Lab Id#:

State:

Region:  [Find Your Region](#)

Analyte:   
1,2-DIBROMO-3-CHLOROPROPANE  
1,2-DIBROMOETHANE  
1,4-DIOXANE  
2,4,5-TP

**This information is updated daily.**

However, changes to certification status may occur at anytime as laboratories gain or lose certification for one or more analytes /

<https://eeaonline.eea.state.ma.us/DEP/Labcert/Labcert.aspx>

# MassDEP online lab database

<u>Map</u>	<u>Mass Lab ID</u>	<u>Lab Name</u>	<u>Address</u>	<u>Phone</u>	<u>Director</u>	
Map	M-MA149	CAMBRIDGE WATER DEPARTMENT LABORATORY	250 FRESH POND PKWY, CAMBRIDGE, MA 02138-0000	(617) 349-4780	KRYSTYNA MCINALLY	
	<u>Potable/Non-potable</u>	<u>Rule Code</u>	<u>Analyte</u>	<u>Method</u>	<u>Status</u>	<u>Revocation Effective Date</u>
	Potable		ALKALINITY, TOTAL	SM 2320B	C	
	Non Potable		ALUMINUM	EPA 200.8	C	
	Potable		ALUMINUM	EPA 200.8	C	
	Potable		ANTIMONY	EPA 200.8	C	
	Potable		ARSENIC	EPA 200.8	C	
	Potable		BARIUM	EPA 200.8	C	
	Potable		BERYLLIUM	EPA 200.8	C	
	Potable		CADMIUM	EPA 200.8	C	
	Non Potable		CHLORIDE	SM 4110B	C	
	Potable		CHLORIDE	SM 4110B	C	
	Potable		CHLORINE, RESIDUAL FREE	HACH 8021	C	
	Potable		CHROMIUM	EPA 200.8	C	
	Potable		COPPER	EPA 200.8	C	
	Potable	WTD	E. COLI	ENZ. SUB. SM9223	C	
	Potable	WTD	E. COLI	NA-MUG-SM9222G	C	
	Potable	SRWS	FECAL COLIFORM	MF-SM9222D	C	
	Potable		FLUORIDE	SM 4500-F-C	C	
	Potable		HETEROTROPHIC PLATE COUNT	SM9215B	C	

# MassDEP online lab database

Potable		LEAD	EPA 200.8	C
Non Potable		MANGANESE	EPA 200.8	C
Potable		MANGANESE	EPA 200.8	C
Potable		MERCURY	EPA 200.8	C
Potable		NICKEL	EPA 200.8	C
Potable		NITRATE-N	SM 4110B	C
Potable		NITRITE-N	SM 4110B	C
Non Potable		NON-FILTERABLE RESIDUE	SM 2540D	C
Potable		PH	SM 4500-H-B	C
Potable		SELENIUM	EPA 200.8	C
Potable		SULFATE	SM 4110B	C
Potable		THALLIUM	EPA 200.8	C
Potable	WTD	TOTAL COLIFORM	ENZ. SUB. SM9223	C
Potable	WTD	TOTAL COLIFORM	MF-SM9222B	C
Potable		TOTAL DISSOLVED SOLIDS	SM 2540C	C
Non Potable		TOTAL ORGANIC CARBON	SM 5310C	C
Potable		TRIHALOMETHANES	EPA 524.2	C
Potable		TURBIDITY	HACH 10258	C
Potable		TURBIDITY	SM 2130B	C
Potable		VOLATILE ORGANIC COMPOUNDS	EPA 524.2	C
Potable		ZINC	EPA 200.8	C



**QUESTIONS???**