|  |
| --- |
| ***RADON SCREENING SURVEY***  Placentino Elementary School 235 Woodland Street Holliston, MA  **Placentino Elementary School**  **235 Woodland Street**  **Holliston, MA**  Prepared by:  Massachusetts Department of Public Health  Bureau of Environmental Health  Indoor Air Quality Program  Radon Assessment Unit  April, 2019 |

# Background

|  |  |
| --- | --- |
| Dates of Assessment: | 3/25/2019 through 3/27/2019 |
| Building Name: | Placentino Elementary School |
| Address: | 235 Woodland Street, Holliston, MA |
| Assessment Requested by: | Holliston Public School Dept. |
| Massachusetts Department of Public Health Bureau of Environmental Health (MDPH/BEH) Staff Conducting Assessment: | Lisa A. Hébert, Senior Technical Radon Specialist, Indoor Air Quality (IAQ) Program, Radon Unit |

# Methods

Radon samples were collected for the purpose of this radon survey using the United States Environmental Protection Agency (US EPA) Method #402-R-92-004 Liquid Scintillation (LS). Sampling devices were obtained through AccuStar Labs, a certified radon laboratory. Ninety-four devices were deployed throughout the building for a minimum 48-hour time period. Devices were deployed on 3/25/2019 and collected on 3/27/2019.

# Results

Tests were taken during normal operations at Placentino Elementary School. Of the 94 areas where test devices were deployed, devices from 93 areas were collected and submitted to AccuStar Labs. The lab results from the survey appear in Appendix A.

# Discussion

Radon Unit staff reviewed the lab results from AccuStar Labs and found all quality assurance parameters within acceptable limits. Appendix A shows that radon levels in the building ranged from less than 0.4pCi/L to 5.2pCi/L. One area screened had a radon level above the US EPA action guideline of 4 picocuries per liter of air pCi/L (Storage room on Peppy’s Path). Radon levels were not elevated elsewhere. Please note that one vial could not be submitted due to being disturbed/ tampered. Some areas could not be tested due to factors such as elevated temperatures, lack of access. These areas were:

• Room 1 - (Vial # 4012093)

• Electrical Room on Peppy’s Path

• Room 113 (inner)

Nurse sick bay (small inner room)

• Electrical Room in Boiler Room

• Transformer room near room 11

• Electrical Room near server room

In addition, two rooms had issues with open windows:

Timeout area between rooms 10 and 12. Windows were found open on 3/25/2019. Windows were closed and test was initiated.

Room 216 – Windows were found open on day of collection, 3/27/2019.

Both of these rooms should be retested in the future.

## Radon Gas

According to the National Research Council (NRC, 2009), “low levels of radon are present in all the air we breathe.” Radon is a naturally occurring, radioactive gas that is produced by the natural decay of uranium in the soil. The average outdoor radon level is about 0.4 pCi/L (US EPA, 2009). Once radon is formed, it migrates through various pathways in the soil and can enter a building through cracks, holes, and joints in a building’s foundation (US EPA, 2009). The EPA recommends mitigation for indoor radon levels at or above 4 pCi/L.

According to the US EPA (2009), radon gas “decays into radioactive particles that can get trapped in your lungs when you breathe. As they break down further, these particles release small bursts of energy.” This activity can damage your lung tissue and increase a person’s risk of developing lung cancer (US EPA, 2009). Radon is the leading cause of lung cancer in non-smokers. In 2005, the U.S. Surgeon General issued a health advisory stating that indoor radon is the second leading cause of lung cancer (US EPA, 2013).

# Recommendations

Based on the measurements and observations made during the visit, the following recommendations are made.

It would be prudent to contact ***certified*** radon measurement and mitigation specialists to confirm the results found and to assess any occupied rooms above the room in question and to mitigate any elevated areas. Untested rooms above unoccupied or untested rooms should be assessed as well. The two organizations that certify radon measurement and mitigation specialists are:

National Radon Safety Board (NRSB) [www.nrsb.org](http://www.nrsb.org)

American Association of Radon Scientists and Technologists (AARST) <http://aarst-nrpp.com/wp/>

It would be prudent for your radon measurement specialist to test areas with disturbed/ tampered sampling devices and untested areas during confirmation testing if possible. These areas include:

Room 1

Room 113 (inner)

Nurse sick bay (small inner room)

Timeout area between rooms 10 and 12

Room 216

Electrical Room in Boiler Room

Electrical Room on Peppy’s Path

Electrical Room near server room

Transformer room near room 11

Refer to resource manual and other related IAQ documents located on the MDPH’s website for further building-wide evaluations and advice on maintaining public buildings. These documents are available at: <http://mass.gov/dph/iaq>.

If you have any questions or concerns, please call the Massachusetts Department of Public Health Radon Assessment Unit at (413) 586-7525.

**References**

National Research Council (MRC). 1999. *Risk Assessment of Radon in Drinking Water,* National Academy Press.

United States Environmental Protection Agency (US EPA). 2009. “A Citizen’s Guide to Radon. The Guide To Protecting Yourself and Your Family From Radon”. US Environmental Protection Agency. EPA402/K-09/001. January 2009.

United States Environmental Protection Agency (US EPA). 2013. “Home Buyers and Seller’s Guide to Radon”. US Environmental Protection Agency. EPA402/K-13/002. September 2013.

**Appendix A**

**Radon Survey Results**

NELAC NY 11769

NRPP 103216 AL NRSB ARL0017

Laboratory Report for: Property Tested: Dr. Bradford L. Jackson, Superintendent

EPA Method #402-R-92-004

Liquid Scintillation NRPP Device Code 8088 NRSB Device Code 12193

Holliston Public Schools 370 Hollis Street

Placentino Elementary School 235 Woodland Street

Holliston MA 01746 Holliston MA 01746

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Log Number | Device Number | Result  Test Exposure Duration: Area Tested pCi/L | | | | | |
| 2460860 | 3228337 | 03/25/2019 | 3:40 pm | 03/27/2019 | 4:45 pm | Main Office | 0.7 |
| 2462061 | 3228338 | 03/25/2019 | 3:40 pm | 03/27/2019 | 4:50 pm | Main Office Copy Area | 0.8 |
| 2462062 | 3228339 | 03/25/2019 | 3:45 pm | 03/27/2019 | 4:50 pm | Principal | 0.5 |
| 2462063 | 3228340 | 03/25/2019 | 3:45 pm | 03/27/2019 | 4:50 pm | Assistant Principal | 0.5 |
| 2462064 | 3228341 | 03/25/2019 | 3:45 pm | 03/27/2019 | 4:55 pm | Conference Room | 0.7 |
| 2462065 | 3228342 | 03/25/2019 | 3:50 pm | 03/27/2019 | 4:55 pm | Nurse | 0.7 |
| 2462066 | 3228343 | 03/25/2019 | 3:50 pm | 03/27/2019 | 4:55 pm | Nurse Sick Bay | 0.5 |
| 2462067 | 3228345 | 03/25/2019 | 3:55 pm | 03/27/2019 | 5:00 pm | Counsling Lobby | 0.6 |
| 2462068 | 3228346 | 03/25/2019 | 3:55 pm | 03/27/2019 | 5:00 pm | Mrs. Dalton | 0.5 |
| 2462069 | 3228347 | 03/25/2019 | 4:00 pm | 03/27/2019 | 5:00 pm | Counselor Cohen | 0.6 |
| 2462070 | 3228348 | 03/25/2019 | 4:00 pm | 03/27/2019 | 5:00 pm | Chill Zone | 0.6 |

**Comment:**

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Test Performed By: Lisa Hebert

Distributed by: Massachusetts Dept of Public Health-Radon Program

Date Received: 03/29/2019

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Date Analyzed: 03/30/2019

Date Reported:

04/01/2019

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Shawn Price, Director of Laboratory Operations, AccuStar Labs

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NELAC NY 11769

NRPP 103216 AL NRSB ARL0017

Laboratory Report for: Property Tested: Dr. Bradford L. Jackson, Superintendent

EPA Method #402-R-92-004

Liquid Scintillation NRPP Device Code 8088 NRSB Device Code 12193

Holliston Public Schools 370 Hollis Street

Placentino Elementary School 235 Woodland Street

Holliston MA 01746 Holliston MA 01746

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Log Number | Device Number | Result  Test Exposure Duration: Area Tested pCi/L | | | | | |
| 2462071 | 3228349 | 03/25/2019 | 4:05 pm | 03/27/2019 | 5:05 pm | Conference Special Education | 0.6 |
| 2462072 | 3228350 | 03/25/2019 | 4:05 pm | 03/27/2019 | 5:05 pm | Room 102 | 1.5 |
| 2462073 | 3228351 | 03/25/2019 | 4:10 pm | 03/27/2019 | 5:05 pm | Room 102 Inner Office | 1.9 |
| 2462074 | 3228352 | 03/25/2019 | 4:15 pm | 03/27/2019 | 5:05 pm | Teacher's Lounge | 0.7 |
| 2462075 | 3228353 | 03/25/2019 | 4:15 pm | 03/27/2019 | 5:10 pm | Library Reading Room | 0.4 |
| 2462076 | 3228354 | 03/25/2019 | 4:20 pm | 03/27/2019 | 5:10 pm | Library | 0.5 |
| 2462077 | 3228355 | 03/25/2019 | 3:45 pm | 03/27/2019 | 4:50 pm | QA-1 | 0.7 |
| 2462078 | 3228356 | 03/25/2019 | 3:45 pm | 03/27/2019 | 4:50 pm | QA-2 | 0.5 |
| 2462079 | 3228357 | 03/25/2019 | 4:20 pm | 03/27/2019 | 5:10 pm | QA-3 | < 0.4 |
| 2462080 | 3228358 | 03/25/2019 | 4:25 pm | 03/27/2019 | 5:15 pm | Library Work Room | < 0.4 |
| 2462081 | 3228359 | 03/25/2019 | 4:25 pm | 03/27/2019 | 5:15 pm | Work Room Storage L | 0.5 |

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Laboratory Report for: Property Tested: Dr. Bradford L. Jackson, Superintendent

EPA Method #402-R-92-004

Liquid Scintillation NRPP Device Code 8088 NRSB Device Code 12193

Holliston Public Schools 370 Hollis Street

Placentino Elementary School 235 Woodland Street

Holliston MA 01746 Holliston MA 01746

Log Number

Device Number

Test Exposure Duration:

Area Tested

Result

pCi/L

2462082 3228360

2462083 3228361

2462084 3228362

2462085 3228363

2462086 3228364

2462087 3228365

2462088 3228366

2462089 3228368

2462090 3228369

2462091 3228370

2462092 3228371

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

4:25 pm

4:30 pm

4:30 pm

4:30 pm

4:30 pm

4:35 pm

4:35 pm

4:40 pm

4:40 pm

4:45 pm

4:45 pm

03/27/2019 5:20 pm

03/27/2019 5:25 pm

03/27/2019 5:25 pm

03/27/2019 5:25 pm

03/27/2019 5:25 pm

03/27/2019 5:25 pm

03/27/2019 5:30 pm

03/27/2019 5:30 pm

03/27/2019 5:30 pm

03/27/2019 5:35 pm

03/27/2019 5:35 pm

Work Room Storage R Room 129 Storage Electrical Room

Room 127

Room 128

Room 126

Room 125

Room 2

Time Out Room Room 4

Room 3

0.6

< 0.4

0.4

0.4

0.6

< 0.4

< 0.4

< 0.4

0.4

< 0.4

< 0.4

**Comment:**

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Holliston Public Schools 370 Hollis Street

Placentino Elementary School 235 Woodland Street

Holliston MA 01746 Holliston MA 01746

Log Number

Device Number

Test Exposure Duration:

Area Tested

Result

pCi/L

2462093 3228372

2462094 3228373

2462095 3228374

2462096 3228375

2462097 3228376

2462098 3228377

2462099 3228378

2462100 3228379

2462101 3228380

2462102 3228381

2462103 3228382

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

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4:50 pm

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4:25 pm

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5:00 pm

5:00 pm

5:05 pm

03/27/2019 5:40 pm

03/27/2019 5:40 pm

03/27/2019 5:40 pm

03/27/2019 5:40 pm

03/27/2019 5:15 pm

03/27/2019 5:35 pm

03/27/2019 5:40 pm

03/27/2019 5:45 pm

03/27/2019 5:50 pm

03/27/2019 5:55 pm

03/27/2019 5:55 pm

Room 6

Time Out Room Room 8

Room 5 QA-4 QA-5 QA-6

Time Out Room Room 7

Room 124 Server Room

0.5

0.5

0.6

< 0.4

0.4

< 0.4

< 0.4

< 0.4

0.4

0.4

0.7

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Holliston Public Schools 370 Hollis Street

Placentino Elementary School 235 Woodland Street

Holliston MA 01746 Holliston MA 01746

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Log Number | Device Number | Result  Test Exposure Duration: Area Tested pCi/L | | | | | |
| 2462104 | 3228383 | 03/25/2019 | 5:05 pm | 03/27/2019 | 5:55 pm | Room 123 | 1.2 |
| 2462105 | 3228384 | 03/25/2019 | 5:10 pm | 03/27/2019 | 6:00 pm | Room 10 | 0.6 |
| 2462106 | 3228385 | 03/25/2019 | 5:15 pm | 03/27/2019 | 6:00 pm | Time Out Room | 0.6 |
| 2462107 | 3228386 | 03/25/2019 | 5:15 pm | 03/27/2019 | 6:00 pm | Room 12 | 0.4 |
| 2462108 | 3228387 | 03/25/2019 | 5:15 pm | 03/27/2019 | 6:05 pm | Room 9 | 0.6 |
| 2462109 | 3228388 | 03/25/2019 | 5:20 pm | 03/27/2019 | 6:05 pm | Time Out Room | 1.7 |
| 2462110 | 3228389 | 03/25/2019 | 5:20 pm | 03/27/2019 | 6:05 pm | Room 11 | 0.8 |
| 2462111 | 3228390 | 03/25/2019 | 5:20 pm | 03/27/2019 | 6:05 pm | Storage Across From Room 121 | 0.8 |
| 2462112 | 3228391 | 03/25/2019 | 5:25 pm | 03/27/2019 | 6:10 pm | Room 122 | 0.7 |
| 2462113 | 3228392 | 03/25/2019 | 5:25 pm | 03/27/2019 | 6:10 pm | Room 121 | 0.6 |
| 2462114 | 3228393 | 03/25/2019 | 5:30 pm | 03/27/2019 | 6:10 pm | Room 14 | 0.9 |

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Holliston Public Schools 370 Hollis Street

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Holliston MA 01746 Holliston MA 01746

Log Number

Device Number

Test Exposure Duration:

Area Tested

Result

pCi/L

2462115 3228394

2462116 3228395

2462117 3228396

2462118 3228397

2462119 3228398

2462120 3228399

2462121 3228400

2462122 4012045

2462123 4012046

2462124 4012047

2462125 4012048

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

5:30 pm

5:30 pm

5:00 pm

5:05 pm

5:05 pm

5:35 pm

5:35 pm

5:40 pm

5:45 pm

5:45 pm

5:45 pm

03/27/2019 6:10 pm

03/27/2019 6:10 pm

03/27/2019 5:50 pm

03/27/2019 5:55 pm

03/27/2019 6:15 pm

03/27/2019 6:15 pm

03/27/2019 6:20 pm

03/27/2019 6:20 pm

03/27/2019 6:25 pm

03/27/2019 6:25 pm

03/27/2019 6:25 pm

Time Out Room Room 16

QA-7

QA-8 QA-9

Room 13

Time Out Room Room 15

Room 114

Room 115

Room 116

1.9

0.9

< 0.4

1.3

< 0.4

0.6

0.4

0.8

< 0.4

0.5

0.5

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|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Log Number | Device Number | Result  Test Exposure Duration: Area Tested pCi/L | | | | | |
| 2462126 | 4012049 | 03/25/2019 | 5:50 pm | 03/27/2019 | 6:25 pm | Room 118 | 1.7 |
| 2462127 | 4012050 | 03/25/2019 | 5:50 pm | 03/27/2019 | 6:30 pm | Room 120 | 1.1 |
| 2462128 | 4012051 | 03/25/2019 | 5:55 pm | 03/27/2019 | 6:30 pm | Storage Room Peppy's Path | 5.2 |
| 2462129 | 4012052 | 03/25/2019 | 6:00 pm | 03/27/2019 | 6:35 pm | Room 119 | 0.9 |
| 2462130 | 4012053 | 03/25/2019 | 6:00 pm | 03/27/2019 | 6:35 pm | Room 117 | 1.2 |
| 2462131 | 4012054 | 03/25/2019 | 6:05 pm | 03/27/2019 | 6:35 pm | Custodial | 3.8 |
| 2462132 | 4012055 | 03/25/2019 | 6:10 pm | 03/27/2019 | 6:35 pm | Room 111 | 0.7 |
| 2462133 | 4012056 | 03/25/2019 | 6:10 pm | 03/27/2019 | 6:40 pm | Room 109 | 0.8 |
| 2462134 | 4012058 | 03/25/2019 | 6:15 pm | 03/27/2019 | 6:40 pm | Room 112 | 0.6 |
| 2462135 | 4012059 | 03/25/2019 | 6:15 pm | 03/27/2019 | 6:40 pm | Room 110 | 1.0 |
| 2462136 | 4012060 | 03/25/2019 | 6:20 pm | 03/27/2019 | 6:40 pm | QA-12 | < 0.4 |

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NELAC NY 11769

NRPP 103216 AL NRSB ARL0017

Laboratory Report for: Property Tested: Dr. Bradford L. Jackson, Superintendent

EPA Method #402-R-92-004

Liquid Scintillation NRPP Device Code 8088 NRSB Device Code 12193

Holliston Public Schools 370 Hollis Street

Placentino Elementary School 235 Woodland Street

Holliston MA 01746 Holliston MA 01746

Log Number

Device Number

Test Exposure Duration:

Area Tested

Result

pCi/L

2462137 4012061

2462138 4012062

2462139 4012063

2462140 4012064

2462141 4012065

2462142 4012066

2462143 4012067

2462144 4012068

2462145 4012069

2462146 4012070

2462147 4012071

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

5:55 pm

6:00 pm

6:05 pm

6:20 pm

6:20 pm

6:25 pm

6:25 pm

6:30 pm

6:35 pm

6:35 pm

6:40 pm

03/27/2019 6:30 pm

03/27/2019 6:35 pm

03/27/2019 6:45 pm

03/27/2019 6:50 pm

03/27/2019 6:50 pm

03/27/2019 6:55 pm

03/27/2019 6:55 pm

03/27/2019 6:55 pm

03/27/2019 7:00 pm

03/27/2019 7:00 pm

03/27/2019 7:05 pm

QA-10 QA-11

Room 113

Room 107

Room 105

Room 108

Room 106

Room 104

Room 204

Room 203

Room 215

4.1

0.9

1.0

0.5

0.5

0.7

0.5

< 0.4

< 0.4

< 0.4

0.4

**Comment:**

A copy of this report was emailed to [lisa.hebert@state.ma.us.](mailto:lisa.hebert@state.ma.us)

Test Performed By: Lisa Hebert

Distributed by: Massachusetts Dept of Public Health-Radon Program

Date Received: 03/29/2019

Date Logged:

03/29/2019

Date Analyzed: 03/30/2019

Date Reported:

04/01/2019

**Disclaimer:**

Report Reviewed By: \_ \_\_\_\_ \_\_\_ \_\_\_

Report Approved By: \_\_\_ \_\_\_ \_\_\_ \_\_\_\_ \_\_

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Holliston Public Schools 370 Hollis Street

Placentino Elementary School 235 Woodland Street

Holliston MA 01746 Holliston MA 01746

Log Number

Device Number

Test Exposure Duration:

Area Tested

Result

pCi/L

2462148 4012072

2462149 4012073

2462150 4012074

2462151 4012075

2462152 4012076

2462153 4012077

2462154 4012078

2462155 4012079

2462156 4012080

2462157 4012081

2462158 4012082

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

6:40 pm

6:45 pm

6:50 pm

6:50 pm

6:55 pm

7:00 pm

7:00 pm

7:05 pm

7:05 pm

6:35 pm

6:35 pm

03/27/2019 7:10 pm

03/27/2019 7:15 pm

03/27/2019 7:15 pm

03/27/2019 7:20 pm

03/27/2019 7:45 pm

03/27/2019 7:45 pm

03/27/2019 7:45 pm

03/27/2019 7:45 pm

03/27/2019 7:50 pm

03/27/2019 7:00 pm

03/27/2019 7:00 pm

Room 216

Room 102

Room 102 Storage Music Room

Music Room Storage

Stage R Stage L Cafeteria R Cafeteria L QA-13

QA-14

0.5

< 0.4

1.9

0.4

0.9

0.6

0.6

0.5

< 0.4

< 0.4

< 0.4

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Holliston Public Schools 370 Hollis Street

Placentino Elementary School 235 Woodland Street

Holliston MA 01746 Holliston MA 01746

Log Number

Device Number

Test Exposure Duration:

Area Tested

Result

pCi/L

2462159 4012083

2462160 4012084

2462161 4012085

2462162 4012086

2462163 4012087

2462164 4012088

2462165 4012089

2462166 4012091

2462167 4012092

2462168 4012103

2462169 4012104

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

03/25/2019

7:05 pm

7:10 pm

7:15 pm

7:15 pm

7:20 pm

7:20 pm

7:25 pm

7:25 pm

7:30 pm

7:10 pm

7:20 pm

03/27/2019 7:50 pm

03/27/2019 7:50 pm

03/27/2019 7:55 pm

03/27/2019 7:55 pm

03/27/2019 8:00 pm

03/27/2019 8:00 pm

03/27/2019 7:55 pm

03/27/2019 7:55 pm

03/27/2019 8:00 pm

03/27/2019 7:50 pm

03/27/2019 8:00 pm

QA-15

Receiving Boiler Room

Generator Room Gym Office Gym Storage Gym South Gym North

Prep Area Kitchen QA-16

QA-17

< 0.4

1.0

< 0.4

< 0.4

< 0.4

0.8

0.4

0.4

0.5

0.8

0.4

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Holliston Public Schools 370 Hollis Street

Placentino Elementary School 235 Woodland Street

Holliston MA 01746 Holliston MA 01746

Log Number

Device Number

Test Exposure Duration:

Area Tested

Result

pCi/L

2462170 4012105

03/25/2019

7:30 pm

03/27/2019 8:05 pm

QA-18

< 0.4

**Comment:**

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