



Connecticut Department of Public Health – Test Results from Plainville Water Quality Sampling in April 2017

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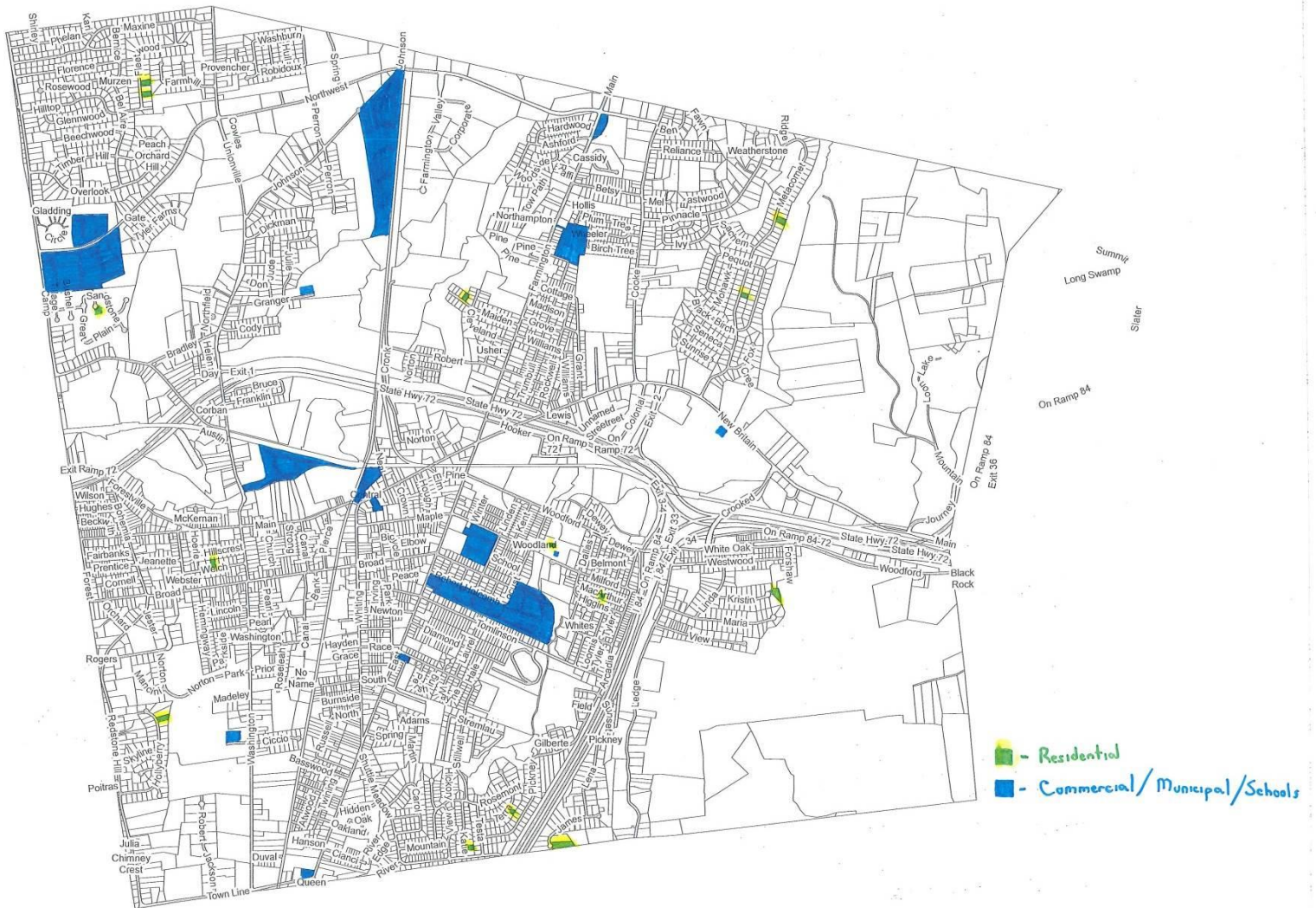
CT DPH Drinking Water Section

- Regulate over 2,500 public water systems in CT with over 4,000 sources of water supply
- Responsible for implementing and enforcing federal Safe Drinking Water Act and State Public Health Laws to ensure safe and adequate drinking water in CT
- 2.9 million CT residents served by public water systems

Plainville Sampling

- In response to the town receiving over 100 water quality complaints, the DPH offered to conduct town-wide sampling in conjunction with the Plainville-Southington Regional Health District (PSRHD)
- A town-wide sampling plan was developed in cooperation between the town, CT DPH, and PSRHD
- Representative sampling throughout town including residential, commercial, and municipal locations

Plainville Sampling



WATER SAMPLING LOCATIONS

Plainville Sampling

- Mix of locations that submitted formal water quality complaints and locations that did not submit complaints
- A total of 32 locations were sampled
- On April 6th PSRHD sampled 18 commercial and municipal locations
- On April 12th CT DPH and Town of Plainville sampled 14 residential locations
- Valley Water conducted their own sampling on these two dates as well

Plainville Sampling

- Samples were collected in accordance with the *New England States' Drinking Water Sample Collection and Preservation Guidance Manual* to ensure that they were properly collected
- Residential samples were collected primarily from outdoor spigots and for all samples water was run for at least 4 minutes before sample collection
- Want to sample water that is from the distribution system that is being supplied to the customers and not water that is inside the building
- All 32 samples were delivered to the State Laboratory in Rocky Hill and analyzed for sanitary chemicals and sulfates

Example of Typical Sampling



Sanitary Chemicals

- Sanitary chemicals are a broad suite of parameters that indicate the general potability and aesthetic quality of drinking water and thus are commonly sampled for during investigations of water quality complaints
- Include color, odor, turbidity, pH, ammonia, nitrate, nitrite, alkalinity, hardness, chloride, sodium, iron, and manganese
- Sanitary chemicals cover the types of complaints that the town received and thus offer a good representation of the general water quality throughout the distribution system

Sulfate and Chlorine Residuals

- In addition to sanitary chemicals water samples were also analyzed for sulfate which can cause a bitter taste in drinking water
- At each sampling location free chlorine residual was measured to see how much of the disinfectant was present throughout the distribution system
- Non-detectable chlorine residuals in water systems that chlorinate can be an indication of stagnant water which can lead to taste and odor complaints

Test Results

PLAINVILLE WATER TEST RESULTS 4/6/17 (Collected by Local Health Department)

ADDRESS	Chloride (250 mg/l) ¹	Nitrite (1 mg/l) ²	Nitrate (10 mg/l) ²	Sulfate (250 mg/l) ²	Calcium Hardness (mg/l)	Total Hardness (> 180 mg/l = Very Hard) ³	Calcium (mg/l)	Iron (0.3 mg/l) ²	Magnesium (mg/l)	Manganese (0.05 mg/l) ²	Sodium (28 mg/l) ⁴	Alkalinity (mg/l)	pH (6.4 - 10) ⁵	Color (15) ⁵	Turbidity (5 NTU) ⁵	Ammonia (mg/l)	Odor (-2) ⁵	Free Chlorine Residual (mg/l)
465 East St	101	<0.20	2.0	16	188	228	75	<0.040	9.7	<0.040	33	139	8.2	<2	<0.20	<0.05	0	0.30
465 East St	96.9	-0.23	1.7	15.5		228		<0.010		<0.010	33.7	135	7.9	1	<0.10	<0.50	1-Chlorine	0.30
436 Farmington Ave	96	<0.20	2.3	11	180	206	72	<0.040	6.3	<0.040	32	122	8.1	<2	<0.20	<0.05	0	0.40
436 Farmington Ave	94.9	-0.23	2.0	11.2		206		<0.010		<0.010	32.3	115	8.1	1	<0.10	<0.50	1-Chlorine	0.40
270 New Britain Ave	95	<0.20	2.2	13	183	214	73	<0.040	7.6	<0.040	31	128	8.2	<2	<0.20	<0.05	0	0.40
270 New Britain Ave	91.3	-0.23	1.7	13.2		207		<0.010		<0.010	31.7	120	8.0	1	<0.10	<0.50	1-Chlorine	0.40
200 East St	125	<0.20	1.3	28	211	289	85	<0.040	19.0	<0.040	41	185	8.0	<2	<0.20	<0.05	0	ND
200 East St	122	-0.23	1.3	28.2		292		<0.010		<0.010	42	185	7.6	1	<0.10	<0.50	0-None	0.00
197 S. Washington St	105	<0.20	1.9	17	196	239	79	<0.040	10.0	<0.040	34	147	8.1	<2	<0.20	<0.05	0	0.20
197 S. Washington St	103	-0.23	1.9	17.2		231		<0.010		<0.010	35.1	144	7.9	1	<0.10	<0.50	1-Chlorine	0.20
150 Northwest Dr	98	<0.20	2.3	11	181	207	73	<0.040	6.3	<0.040	31	124	8.2	<2	<0.20	<0.05	0	0.40
150 Northwest Dr	94.7	-0.23	1.9	11.1		206		<0.010		<0.010	32.6	120	8.2	1	<0.10	<0.50	1-Chlorine	0.40
145 Northwest Dr	86	<0.20	2.3	11	169	193	68	<0.040	6.0	<0.040	29	117	8.2	<2	<0.20	<0.05	0	0.40
145 Northwest Dr	83.5	-0.23	1.9	11.3		186		<0.010		<0.010	29.1	114	8.2	1	<0.10	<0.50	1-Chlorine	0.40
131 Milford St Ext	127	<0.20	1.3	28	212	291	85	<0.040	19.0	<0.040	41	186	7.9	<2	<0.20	<0.05	0	ND
131 Milford St Ext	126	-0.23	1.1	27.7		299		<0.010		<0.010	42	180	7.5	-1	<0.10	<0.50	1-Chlorine	0.00
77 West Main St	118	<0.20	1.5	24	213	280	85	<0.040	16.0	<0.040	39	171	7.9	<2	<0.20	<0.05	0	ND
77 West Main St	118	-0.23	1.4	24.4		283		<0.010		<0.010	41.2	168	7.7	1	<0.10	<0.50	0-None	0.00
69 Linden St	126	<0.20	1.3	28	222	303	89	<0.040	19.0	<0.040	42	186	7.9	<2	<0.20	<0.05	0	ND
69 Linden St	123	-0.23	1.1	27.5		303		<0.010		<0.010	41.8	168	7.5	1	<0.10	<0.50	0-None	0.00
62 Johnson Ave	83	<0.20	2.2	12	166	190	66	<0.040	5.8	<0.040	28	116	8.2	<2	<0.20	<0.05	0	0.60
62 Johnson Ave	78.8	-0.23	2.2	11.5		184		<0.010		<0.010	28.5	106	8.2	1	<0.10	<0.50	1-Chlorine	0.60
58 N. Washington St	90	<0.20	2.3	11	175	200	70	<0.040	6.0	<0.040	30	119	8.2	<2	<0.20	<0.05	0	N/A
58 N. Washington St	82.6	-0.23	1.9	11.5		184		<0.010		<0.010	29	116	8.1	1	<0.10	<0.50	1-Chlorine	0.40
56 East Main St	117	<0.20	1.6	23	199	262	79	<0.040	15.0	<0.040	38	168	8.0	<2	<0.20	<0.05	0	ND
56 East Main St	113	-0.23	1.6	23.2		271		<0.010		<0.010	39.1	151	7.7	1	<0.10	<0.50	0-None	0.00
47 Robert Holcomb Way	125	<0.20	1.3	28	218	298	87	<0.040	19.0	<0.040	41	186	8.0	<2	<0.20	<0.05	0	ND
47 Robert Holcomb Way	123	-0.23	1.1	27.6		300		<0.010		<0.010	42.1	174	7.5	1	<0.10	<0.50	0-None	0.00
23 Granger Lane	87	<0.20	2.3	11	170	195	68	<0.040	6.0	<0.040	29	117	8.2	<2	<0.20	<0.05	0	0.60
23 Granger Lane	83.3	-0.23	2.2	11.5		188		0.028		<0.010	29.8	105	8.1	1	0.12	<0.50	1-Chlorine	0.60
19 Neal Court	118	<0.20	1.5	24	206	273	83	<0.040	16.0	<0.040	39	170	7.9	<2	<0.20	<0.05	0	ND
19 Neal Court	115	-0.23	1.6	24.1		276		<0.010		<0.010	40.9	157	7.6	1	<0.10	<0.50	0-None	0.00
15 Cleveland Memorial Dr	101	<0.20	2.3	11	187	213	75	<0.040	6.3	<0.040	33	125	8.2	<2	<0.20	<0.05	0	0.40
15 Cleveland Memorial Dr	96.7	-0.23	2.0	11.1		208		<0.010		<0.010	33.3	116	8.1	1	<0.10	<0.50	1-Chlorine	0.40
1 Central Square	101	<0.20	2.0	16	180	222	72	<0.040	10.0	<0.040	33	134	7.9	<2	<0.20	<0.05	0	0.50
1 Central Square	96.4	-0.23	2.1	15.9		217		<0.010		<0.010	33.8	124	7.7	1	<0.10	<0.50	1-Chlorine	0.50

Red Text = DPH/PSRHD Samples
 Blue Text = Valley Water Samples

1. Maximum Contaminant Level - Enforceable
2. Secondary Maximum Contaminant Level - Non-Enforceable
3. Total Hardness is the combination of calcium and magnesium hardness and can be calculated using the following formula: Total Hardness = (2.5 X Calcium) + (4.1 X Magnesium)
 Total Hardness 0 - 60 = soft water, 61 - 120 = moderately hard water, 121 - 180 = hard water, greater than 180 = very hard water, these are non-regulatory standards
4. Notification Level. Point of entry results above this notification level require the public water system to provide annual notification in their 2016 Consumer Confidence Report
5. State Standards

Test Results

PLAINVILLE WATER TEST RESULTS 4/12/17 (Collected by State Department of Public Health - Drinking Water Section)

ADDRESS	Chloride (250 mg/l) ¹	Nitrite (1 mg/l) ²	Nitrate (10 mg/l) ¹	Sulfate (250 mg/l) ²	Calcium Hardness (mg/l)	Total Hardness (> 180 mg/l = Very Hard) ³	Calcium (mg/l)	Iron (0.3 mg/l) ²	Magnesium (mg/l)	Manganese (0.05 mg/l) ²	Sodium (28 mg/l) ⁴	Alkalinity (mg/l)	pH (6.4 - 10) ⁵	Color (15) ⁵	Turbidity (5 NTU) ⁵	Ammonia (mg/l)	Odor (-2) ⁵	Free Chlorine Residual (mg/l)
51 Welch St	95	<0.20	2.4	12	177	205	71	<0.040	6.7	<0.040	33	119	8.1	<2	<0.20	<0.05	0	0.70
51 Welch St	87.7	<0.23	1.9	11.3	197	197		<0.010		<0.010	31.7	105	7.3	1	<0.10	<0.50	1-Chlorine	0.70
135 Hollyberry Lane	91	<0.20	2.3	12	180	209	72	<0.040	7.0	<0.040	33	123	8.2	<2	<0.20	<0.05	0	0.40
135 Hollyberry Lane	87.3	<0.23	1.9	11.5	201	201		<0.010		<0.010	31.4	108	8.1	1	<0.10	<0.50	1-Chlorine	0.40
4 Katie Lane	132	<0.20	1.3	29	225	311	90	<0.040	21.0	<0.040	45	187	7.9	<2	<0.20	<0.05	0	0.16
4 Katie Lane	123	<0.23	1.2	27.7	302	302		<0.010		<0.010	43.8	182	7.9	1	<0.10	<0.50	1-Chlorine	0.16
14 Terra Road	131	<0.20	1.3	29	228	315	91	<0.040	21.0	<0.040	46	186	7.9	<2	<0.20	<0.05	0	0.14
14 Terra Road	123	<0.23	1.2	27.6	305	305		<0.010		<0.010	44.1	168	7.5	1	<0.10	<0.50	0-None	0.14
2 James Place	130	<0.20	1.3	29	227	314	91	<0.040	21.0	<0.040	46	188	7.9	<2	<0.20	<0.05	0	0.02
2 James Place	120	<0.23	1.2	27.6	300	300		<0.010		<0.010	43.2	176	7.5	1	<0.10	<0.50	0-None	0.02
44 McArthur Road	134	<0.20	1.4	29	233	322	93	<0.040	22.0	<0.040	46	186	7.9	<2	<0.20	<0.05	0	0.26
44 McArthur Road	124	<0.23	1.2	27.6	302	302		0.012		0.012	43.5	169	7.5	1	<0.10	<0.50	1-Chlorine	0.26
131 Milford St	135	<0.20	1.4	29	225	312	90	<0.040	21.0	<0.040	46	187	7.9	<2	<0.20	<0.05	0	0.30
131 Milford St	126	<0.23	1.3	27.8	307	307		<0.010		<0.010	43.7	174	7.5	1	<0.10	<0.50	1-Chlorine	0.30
45 Kristen Lane	124	<0.20	1.3	29	217	301	87	<0.040	20.0	<0.040	44	186	7.9	<2	<0.20	<0.05	0	ND
45 Kristen Lane	118	<0.23	1.2	27.6	297	297		<0.010		<0.010	43	181	7.5	1	<0.10	<0.50	0-None	0.00
48 Metacomet Rd	96	<0.20	2.4	12	180	207	72	<0.040	6.7	<0.040	33	121	8.2	<2	<0.20	<0.05	0	0.51
48 Metacomet Rd	89.9	<0.23	2.3	11.2	201	201		<0.010		<0.010	32	116	8.1	1	<0.10	<0.50	1-Chlorine	0.51
78 Metacomet Rd	94	<0.20	2.4	12	280	207	72	<0.040	6.6	<0.040	32	121	8.2	<2	<0.20	<0.05	0	0.37
78 Metacomet Rd	87.7	<0.23	2.3	11.1	201	201		<0.010		<0.010	31.3	83.6	8.2	1	<0.10	<0.50	1-Chlorine	0.37
25 Maiden Lane	88	<0.20	2.3	12	172	200	69	<0.040	6.7	<0.040	31	117	8.2	<2	<0.20	<0.05	0	0.51
25 Maiden Lane	81.6	<0.23	2.2	11.5	193	193		<0.010		<0.010	30	110	8.1	1	<0.10	<0.50	1-Chlorine	0.51
29 Fleetwood Dr	98	<0.20	2.4	12	190	218	76	<0.040	6.8	<0.040	34	123	8.2	<2	<0.20	<0.05	0	0.42
29 Fleetwood Dr	91.8	<0.23	2.3	11.2	204	204		<0.010		<0.010	32.4	115	8.2	1	<0.10	<0.50	1-Chlorine	0.42
33 Fleetwood Dr	104	<0.20	2.4	12	197	226	79	<0.040	6.9	<0.040	36	128	8.2	<2	<0.20	<0.05	0	0.42
33 Fleetwood Dr	97.6	<0.23	2.3	11.1	215	215		<0.010		<0.010	34.8	118	8.2	1	<0.10	<0.50	1-Chlorine	0.42
7 Sawmill Lane	96	<0.20	2.4	12	182	210	73	<0.040	6.7	<0.040	33	122	8.2	<2	<0.20	<0.05	0	0.50
7 Sawmill Lane	90	<0.23	2.3	11.2	201	201		<0.010		<0.010	32.1	116	8.2	1	<0.10	<0.50	1-Chlorine	0.50

Red Text = DPH/PSRH Samples
Blue Text = Valley Water Samples

1. Maximum Contaminant Level - Enforceable
2. Secondary Maximum Contaminant Level - Non-Enforceable
3. Total Hardness is the combination of calcium and magnesium hardness and can be calculated using the following formula: Total Hardness = (2.5 X Calcium) + (4.1 X Magnesium)
Total Hardness 0 - 60 = soft water, 61 - 120 = moderately hard water, 121 - 180 = hard water, greater than 180 = very hard water, these are non-regulatory standards
4. Notification Level: Point of entry results above this notification level require the public water system to provide annual notification to its customers. Valley Water provided annual notification in their 2016 Consumer Confidence Report
5. State Standards

Test Results

- Please refer to handout that shows the test results from the water quality sampling
- Maximum Contaminant Level (MCL) – health based federal and/or state standards which are enforceable
- Secondary Maximum Contaminant Level (SMCL) – non-enforceable secondary standards related to the aesthetic quality of drinking water
- State standards for physical parameters – pH, color, turbidity, and odor
- All 32 sample results were below established MCLs, SMCLs, and State standards for physical parameters

Sodium

- All 32 samples were at or slightly above the current notification level for sodium of 28 mg/l
- When water entering the distribution system from the sources of supply is above 28 mg/l, water systems are required to notify their customers annually
- Valley Water complied with this requirement in their 2016 Consumer Confidence Report

Free Chlorine Residuals

- 8 of the 32 sampling locations did not have a detectable free chlorine residual
- Another location had a barely detectable free chlorine residual
- The two residential locations that had a barely detectable and a non-detectable free chlorine residual were located at dead ends
- The remaining free chlorine residuals that were detected appear to be typical of what would be found in a water system such as Valley Water
- No regulatory requirements for Valley Water to have a chlorine residual in their distribution system

Hardness

- Hardness in drinking water is primarily attributed to naturally occurring calcium and magnesium minerals
- 0 – 60 mg/l hardness is considered soft water
- 61 – 120 mg/l hardness is considered moderately hard water
- 121 – 180 mg/l hardness is considered hard water
- Greater than 180 mg/l hardness is considered very hard water
- All 32 sample results were above 180 for hardness with the lowest result at 190 and the highest result at 322
- The water that was sampled during this event can be classified as very hard

Hardness

- Aesthetic effects of very hard water can include scale formation inside pipes and fixtures
- May explain white particulate matter found inside faucet aerators
- Hot water increases scale formation of hard water
- Can affect appliances such as dishwashers, laundry machines, and coffee makers causing premature wearing out of appliances
- White residue inside appliances and on surfaces such as shower walls, dishes, glassware
- Difficult to develop soap lather and properly clean clothes
- May cause metallic taste and/or odor

Health Effects

- Health based guidance level for sodium is 100 ppm
- World Health Organization : hard water has no known negative health effects
- Hard water may protect against heart disease
- Calcium/magnesium are main minerals that cause hardness
- Both are essential minerals in our diet
- Too little calcium and magnesium can be a problem
- Highest levels found in these samples add a very small amount to what we get in our normal diet