



Fryeburg Water Company

24 Portland Street, Suite #1

Fryeburg, ME 04037

1-800-287-1643

June 18, 2019

Ms. Katie Haley
Code Enforcement Officer
Town of Fryeburg
16 Lovewell Pond Road
Fryeburg, ME 04037

Re: Ward's Pond Aquifer Monitoring Plan

Dear Ms. Haley:

Enclosed please find monitoring data for the First quarter of 2019. The enclosed data has been collected by Aric Odone, Lead Field Service Representative of Maine Water Company. Maine Water Company has been retained by the Fryeburg Water Company to assist with the operation and management of the Fryeburg public water system.

BACKGROUND

An aquifer monitoring plan (hereafter referred to as the "Ward's Pond Aquifer Monitoring Plan") was created as a condition of approval by the Fryeburg Planning Board as part of its Notice of Decision for Land Use Authorization in April 2003.

WARDS POND AQUIFER MONITORING PLAN

This monitoring plan has been prepared at the request of the Fryeburg Planning Board as a means of documenting the long term trend in water elevation within the Aquifer surrounding the production well on Porter Road in the Town of Fryeburg, Maine.

MONITORING LOCATIONS

Six locations established to measure groundwater levels include four monitoring wells (MW-1, 2, 3, 4) and two surface monitoring locations (SG-1, 2) as shown on the attached map. Three monitoring locations (MW-2, MW-3 and MW-4) monitor groundwater elevation within the aquifer associated with production well #3, located off Porter Road. MW-2 monitors groundwater elevation down gradient of Well #3 and MW-3 and MW-4 monitor up gradient water elevation. MW-1 monitors groundwater elevation associated with Wells #1 and #2, located off Portland Street. Because MW-1 is located in the immediate vicinity of the existing production wells, this well will be monitored at a time when each of the existing wells has not been operating for a minimum of one hour.

2019 GROUNDWATER ELEVATION DATA IN FEET

		1st Quarter		2nd Quarter		3rd Quarter		4th Quarter	
	Reference Elevation	Depth to Water	Elevation of Water	Depth to Water	Elevation of Water	Depth to Water	Elevation of Water	Depth to Water	Elevation of Water
	11/1/2015 & 5/11/2016	3-18-19							
MW 1	393.47	3.9	389.57						
MW 2	419.50	18.65	400.85						
MW 3	407.07	1.7	405.37						
MW 4	410.06	1.1	408.96						

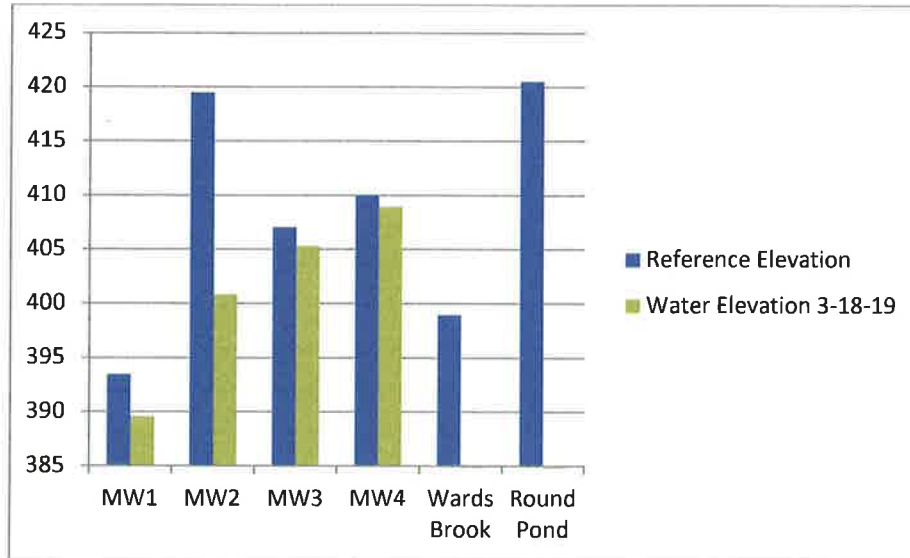
The elevation of water reported each quarter for the individual monitoring wells is based on the depth of water measured at each well subtracted from the November 2015 survey reference elevation. The Reference Elevation is the measuring point elevation in feet NAVD (North American Vertical Datum (1988)). Bliss Associates surveyed and provided new reference elevations for the monitoring wells in November 2015.

Two monitoring locations (SG-1 and SG-2) monitor surface water elevations of Round Pond and the headwaters of Wards Pond. There are staff gauges at each location and direct readings of surface water elevation are collected. The staff gauges were surveyed for reference elevations on May 11, 2016. Maine Water Company is planning to resurvey the reference elevations in 2018.

2019 SURFACE WATER ELEVATION DATA

Surface Water Elevation	May 11, 2016 Reference Elevation	3/18/19 Depth to Water	Depth to Water	Depth to Water	Depth to Water
Wards Brook	398.97	Frozen			
Round Pond	420.52	Frozen			

GROUNDWATER AND SURFACE WATER ELEVATIONS



MONITORING PROCEDURES

Each monitoring location is visited quarterly. At each monitoring well location an electronic water level meter is lowered into the well. The depth to water from the top of the well casing is recorded. This depth is subtracted from a USGS vertical elevation derived from the survey to determine the elevation of the water table. At each staff gauge location the water level is read directly from the staff gauge and the water elevation is calculated from the known elevation of the top of each staff gauge.

REPORTING

Data from the four monitoring wells and the surface monitoring locations are reported on a quarterly basis. At the end of each water year a monitoring report is submitted to the planning board, in care of the Code Enforcement Officer, for review. The report documents the condition of each monitoring location, a narrative describing the monitoring results including an interpretation of the results, and time series graphs of the water elevation associated with each monitoring location. The data is presented such that the planning board can interpret the results without outside input.

In addition to the data from the six monitoring locations, we have included water withdrawal data from the three wells. Well #1 is the dedicated well for bulk water withdrawal and Wells #2 and #3 supply the Town's distribution system.

2019 WATER WITHDRAWAL DATA IN GALLONS

2019	PMS	Pump #2	Pump #3	Total
January	6,754,630	3,516,160	3,249,470	13,520,260
February	5,134,630	2,376,880	3,509,340	11,020,850
March	10,678,815	3,474,740	3,003,860	17,157,415
April				-
May				-
June				-
July				-
August				-
September				-
October				-
November				-
December				-
Totals	22,568,075	9,367,780	9,762,670	41,698,525

The comprehensive Emery & Garrett Groundwater Inc. study undertaken on behalf of the Town of Fryeburg in 2005 concludes that above the amount of water withdrawn by the Fryeburg Water Company to serve its residential and other commercial customers, the Ward's Brook aquifer can reasonably sustain discretionary withdrawals of 220 million gallons per year.

Based on our observation and review of additional monitoring reports submitted by Luetje Geological Services, LLC, we have not observed any adverse impact to the Ward's Brook Aquifer.

Please contact our office with any questions at (800) 287-1643.

Respectfully submitted,



Lead Field Service Representative



Fryeburg Water Company

24 Portland Street, Suite #1

Fryeburg, ME 04037

1-800-287-1643

June 18, 2019

Ms. Katie Haley
Code Enforcement Officer
Town of Fryeburg
16 Lovewell Pond Road
Fryeburg, ME 04037

Re: Ward's Pond Aquifer Monitoring Plan

Dear Ms. Haley:

Enclosed please find monitoring data for the Second quarter of 2019. The enclosed data has been collected by Aric Odone, Lead Field Service Representative of Maine Water Company. Maine Water Company has been retained by the Fryeburg Water Company to assist with the operation and management of the Fryeburg public water system.

BACKGROUND

An aquifer monitoring plan (hereafter referred to as the "Ward's Pond Aquifer Monitoring Plan") was created as a condition of approval by the Fryeburg Planning Board as part of its Notice of Decision for Land Use Authorization in April 2003.

WARDS POND AQUIFER MONITORING PLAN

This monitoring plan has been prepared at the request of the Fryeburg Planning Board as a means of documenting the long term trend in water elevation within the Aquifer surrounding the production well on Porter Road in the Town of Fryeburg, Maine.

MONITORING LOCATIONS

Six locations established to measure groundwater levels include four monitoring wells (MW-1, 2, 3, 4) and two surface monitoring locations (SG-1, 2) as shown on the attached map. Three monitoring locations (MW-2, MW-3 and MW-4) monitor groundwater elevation within the aquifer associated with production well #3, located off Porter Road. MW-2 monitors groundwater elevation down gradient of Well #3 and MW-3 and MW-4 monitor up gradient water elevation. MW-1 monitors groundwater elevation associated with Wells #1 and #2, located off Portland Street. Because MW-1 is located in the immediate vicinity of the existing production wells, this well will be monitored at a time when each of the existing wells has not been operating for a minimum of one hour.

2019 GROUNDWATER ELEVATION DATA IN FEET

		1st Quarter		2nd Quarter		3rd Quarter		4th Quarter	
	Reference Elevation	Depth to Water	Elevation of Water	Depth to Water	Elevation of Water	Depth to Water	Elevation of Water	Depth to Water	Elevation of Water
	11-1-2015 & 5/11/2016	3-18-19	3-18-19	5-16-19	5-16-19				
MW 1	393.47	3.9	389.57	3.2	390.27				
MW 2	419.50	18.65	400.85	14.5	405				
MW 3	407.07	1.7	405.37	2.8	404.27				
MW 4	410.06	1.1	408.96	2.15	407.91				

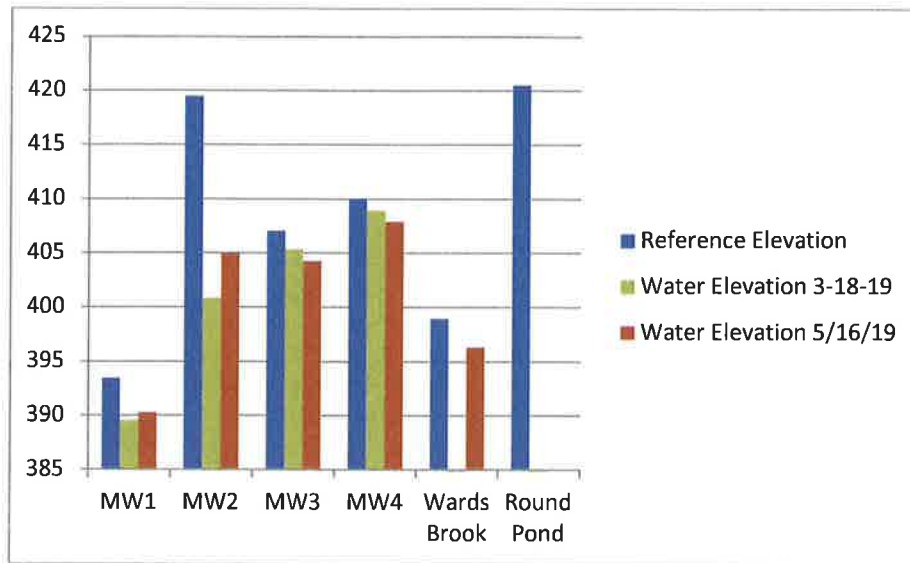
The elevation of water reported each quarter for the individual monitoring wells is based on the depth of water measured at each well subtracted from the November 2015 survey reference elevation. The Reference Elevation is the measuring point elevation in feet NAVD (North American Vertical Datum (1988)). Bliss Associates surveyed and provided new reference elevations for the monitoring wells in November 2015.

Two monitoring locations (SG-1 and SG-2) monitor surface water elevations of Round Pond and the headwaters of Wards Pond. There are staff gauges at each location and direct readings of surface water elevation are collected. The staff gauges were surveyed for reference elevations on May 11, 2016. Maine Water Company is planning to resurvey the reference elevations in 2018.

2019 SURFACE WATER ELEVATION DATA

Surface Water Elevation	May 11, 2016 Reference Elevation	3/18/19 Depth to Water	5/16/19 Depth to Water	Depth to Water	Depth to Water
Wards Brook	398.97	Frozen	396.3		
Round Pond	420.52	Frozen			

GROUNDWATER AND SURFACE WATER ELEVATIONS



MONITORING PROCEDURES

Each monitoring location is visited quarterly. At each monitoring well location an electronic water level meter is lowered into the well. The depth to water from the top of the well casing is recorded. This depth is subtracted from a USGS vertical elevation derived from the survey to determine the elevation of the water table. At each staff gauge location the water level is read directly from the staff gauge and the water elevation is calculated from the known elevation of the top of each staff gauge.

REPORTING

Data from the four monitoring wells and the surface monitoring locations are reported on a quarterly basis. At the end of each water year a monitoring report is submitted to the planning board, in care of the Code Enforcement Officer, for review. The report documents the condition of each monitoring location, a narrative describing the monitoring results including an interpretation of the results, and time series graphs of the water elevation associated with each monitoring location. The data is presented such that the planning board can interpret the results without outside input.

In addition to the data from the six monitoring locations, we have included water withdrawal data from the three wells. Well #1 is the dedicated well for bulk water withdrawal and Wells #2 and #3 supply the Town's distribution system.

2019 WATER WITHDRAWAL DATA IN GALLONS

2019	PMS	Pump #2	Pump #3	Total
January 31	6,754,630	3,516,160	3,249,470	13,520,260
February 28	5,134,630	2,376,880	3,509,340	11,020,850
March 31	10,678,815	3,474,740	3,003,860	17,157,415
April 30	7,003,730	2,524,250	4,254,960	13,782,940
May 31	10,855,570	3,099,240	2,995,720	16,950,530
June 30	13,666,440	4,781,000	5,048,000.00	23,495,440
July				-
August				-
September				-
October				-
November				-
December				-
Totals	54,093,815	19,772,270	22,061,350	95,927,435

The comprehensive Emery & Garrett Groundwater Inc. study undertaken on behalf of the Town of Fryeburg in 2005 and updated in 2018 concludes that above the amount of water withdrawn by the Fryeburg Water Company to serve its residential and other commercial customers, the Ward's Brook aquifer can reasonably sustain discretionary withdrawals of 220 million gallons per year.

Based on our observation and review of additional monitoring reports submitted by Luetje Geological Services, LLC, we have not observed any adverse impact to the Ward's Brook Aquifer.

Please contact our office with any questions at (800) 287-1643.

Respectfully submitted,



Lead Field Service Representative



Fryeburg Water Company

24 Portland Street, Suite #1

Fryeburg, ME 04037

1-800-287-1643

October 1, 2019

Ms. Katie Haley
Code Enforcement Officer
Town of Fryeburg
16 Lovewell Pond Road
Fryeburg, ME 04037

Re: Ward's Pond Aquifer Monitoring Plan

Dear Ms. Haley:

Enclosed please find monitoring data for the third quarter of 2019. The enclosed data has been collected by Aric Odone, Lead Field Service Representative of Maine Water Company. Maine Water Company has been retained by the Fryeburg Water Company to assist with the operation and management of the Fryeburg public water system.

BACKGROUND

An aquifer monitoring plan (hereafter referred to as the "Ward's Pond Aquifer Monitoring Plan") was created as a condition of approval by the Fryeburg Planning Board as part of its Notice of Decision for Land Use Authorization in April 2003.

WARDS POND AQUIFER MONITORING PLAN

This monitoring plan has been prepared at the request of the Fryeburg Planning Board as a means of documenting the long term trend in water elevation within the Aquifer surrounding the production well on Porter Road in the Town of Fryeburg, Maine.

MONITORING LOCATIONS

Six locations established to measure groundwater levels include four monitoring wells (MW-1, 2, 3, 4) and two surface monitoring locations (SG-1, 2) as shown on the attached map. Three monitoring locations (MW-2, MW-3 and MW-4) monitor groundwater elevation within the aquifer associated with production well #3, located off Porter Road. MW-2 monitors groundwater elevation down gradient of Well #3 and MW-3 and MW-4 monitor up gradient water elevation. MW-1 monitors groundwater elevation associated with Wells #1 and #2, located off Portland Street. Because MW-1 is located in the immediate vicinity of the existing production wells, this well will be monitored at a time when each of the existing wells has not been operating for a minimum of one hour.

2019 GROUNDWATER ELEVATION DATA IN FEET

		1st Quarter		2nd Quarter		3rd Quarter		4th Quarter	
	Reference Elevation	Depth to Water	Elevation of Water	Depth to Water	Elevation of Water	Depth to Water	Elevation of Water	Depth to Water	Elevation of Water
	11-1-2015 & 5/11/2016	3-18-19	3-18-19	5-16-19	5-16-19	10-30-19	10-30-19		
MW 1	393.47	3.9	389.57	3.2	390.27	3.7	389.77		
MW 2	419.50	18.65	400.85	14.5	405	18.1	401.40		
MW 3	407.07	1.7	405.37	2.8	404.27	1.75	405.32		
MW 4	410.06	1.1	408.96	2.15	407.91	0.25	409.81		

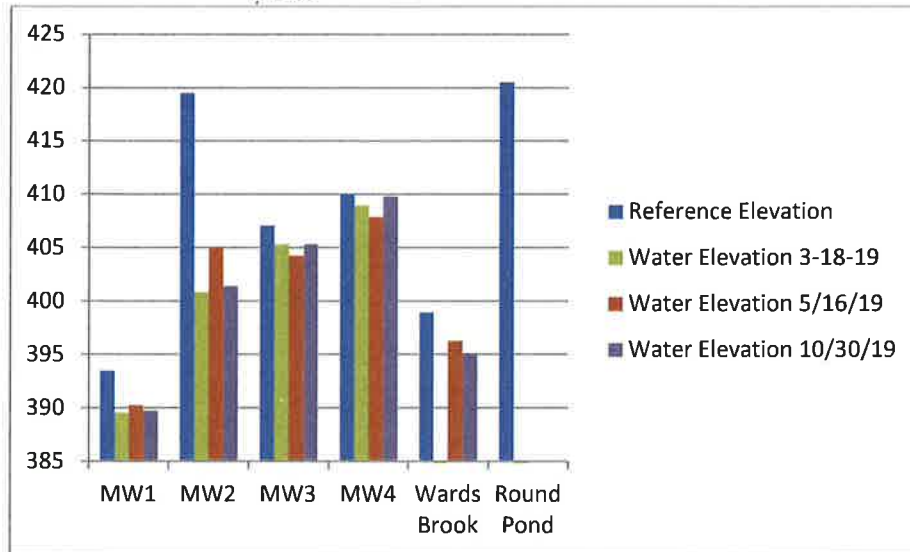
The elevation of water reported each quarter for the individual monitoring wells is based on the depth of water measured at each well subtracted from the November 2015 survey reference elevation. The Reference Elevation is the measuring point elevation in feet NAVD (North American Vertical Datum (1988)). Bliss Associates surveyed and provided new reference elevations for the monitoring wells in November 2015.

Two monitoring locations (SG-1 and SG-2) monitor surface water elevations of Round Pond and the headwaters of Wards Pond. There are staff gauges at each location and direct readings of surface water elevation are collected. The staff gauges were surveyed for reference elevations on May 11, 2016. Maine Water Company is planning to resurvey the reference elevations in 2018.

2019 SURFACE WATER ELEVATION DATA

Surface Water Elevation	May 11, 2016 Reference Elevation	3/18/19 Depth to Water	5/16/19 Depth to Water	10/30/19 Depth to Water	Depth to Water
Wards Brook	398.97	Frozen	396.3	395.17	
Round Pond	420.52	Frozen			

GROUNDWATER AND SURFACE WATER ELEVATIONS



MONITORING PROCEDURES

Each monitoring location is visited quarterly. At each monitoring well location an electronic water level meter is lowered into the well. The depth to water from the top of the well casing is recorded. This depth is subtracted from a USGS vertical elevation derived from the survey to determine the elevation of the water table. At each staff gauge location the water level is read directly from the staff gauge and the water elevation is calculated from the known elevation of the top of each staff gauge.

REPORTING

Data from the four monitoring wells and the surface monitoring locations are reported on a quarterly basis. At the end of each water year a monitoring report is submitted to the planning board, in care of the Code Enforcement Officer, for review. The report documents the condition of each monitoring location, a narrative describing the monitoring results including an interpretation of the results, and time series graphs of the water elevation associated with each monitoring location. The data is presented such that the planning board can interpret the results without outside input.

In addition to the data from the six monitoring locations, we have included water withdrawal data from the three wells. Well #1 is the dedicated well for bulk water withdrawal and Wells #2 and #3 supply the Town's distribution system.

2019 WATER WITHDRAWAL DATA IN GALLONS

2019	PMS	Pump #2	Pump #3	Total
January	6,754,630	3,516,160	3,249,470	13,520,260
February	5,134,630	2,376,880	3,509,340	11,020,850
March	10,678,815	3,474,740	3,003,860	17,157,415
April	7,003,730	2,524,250	4,254,960	13,782,940
May	10,855,570	3,099,240	2,995,720	16,950,530
June	13,666,440	4,781,000	5,048,000.00	23,495,440
July	15,599,850	6,332,000	6,686,000	28,617,850
August	15,637,670	6,055,000	5,492,000	27,184,670
September	11,444,795	5,082,000	5,958,000	22,484,795
October				-
November				-
December				-
Totals	96,776,130	37,241,270	40,197,350	174,214,750

The comprehensive Emery & Garrett Groundwater Inc. study undertaken on behalf of the Town of Fryeburg in 2005 and updated in 2018 concludes that above the amount of water withdrawn by the Fryeburg Water Company to serve its residential and other commercial customers, the Ward's Brook aquifer can reasonably sustain discretionary withdrawals of 220 million gallons per year.

Based on our observation and review of additional monitoring reports submitted by Luetje Geological Services, LLC, we have not observed any adverse impact to the Ward's Brook Aquifer.

Please contact our office with any questions at (800) 287-1643.

Respectfully submitted,



Lead Field Service Representative



Fryeburg Water Company
24 Portland Street, Suite #1
Fryeburg, ME 04037
1-800-287-1643

January 1, 2020

MR. John Wiesemann
Code Enforcement Officer
Town of Fryeburg
16 Lovewell Pond Road
Fryeburg, ME 04037

Re: Ward's Pond Aquifer Monitoring Plan

Dear Mr. Wiesemann:

Enclosed please find monitoring data for the Fourth quarter of 2019. The enclosed data has been collected by Aric Odone, Lead Field Service Representative of Maine Water Company. Maine Water Company has been retained by the Fryeburg Water Company to assist with the operation and management of the Fryeburg public water system.

BACKGROUND

An aquifer monitoring plan (hereafter referred to as the "Ward's Pond Aquifer Monitoring Plan") was created as a condition of approval by the Fryeburg Planning Board as part of its Notice of Decision for Land Use Authorization in April 2003.

WARDS POND AQUIFER MONITORING PLAN

This monitoring plan has been prepared at the request of the Fryeburg Planning Board as a means of documenting the long term trend in water elevation within the Aquifer surrounding the production well on Porter Road in the Town of Fryeburg, Maine.

MONITORING LOCATIONS

Six locations established to measure groundwater levels include four monitoring wells (MW-1, 2, 3, 4) and two surface monitoring locations (SG-1, 2) as shown on the attached map. Three monitoring locations (MW-2, MW-3 and MW-4) monitor groundwater elevation within the aquifer associated with production well #3, located off Porter Road. MW-2 monitors groundwater elevation down gradient of Well #3 and MW-3 and MW-4 monitor up gradient water elevation. MW-1 monitors groundwater elevation associated with Wells #1 and #2, located off Portland Street. Because MW-1 is located in the immediate vicinity of the existing production wells, this well will be monitored at a time when each of the existing wells has not been operating for a minimum of one hour.

2019 GROUNDWATER ELEVATION DATA IN FEET

		1st Quarter		2nd Quarter		3rd Quarter		4th Quarter	
	Reference Elevation	Depth to Water	Elevation of Water	Depth to Water	Elevation of Water	Depth to Water	Elevation of Water	Depth to Water	Elevation of Water
	11-1-2015 & 5/11/2016	3-18-19	3-18-19	5-16-19	5-16-19	10-30-19	10-30-19	12-28-19	12-28-19
MW 1	393.47	3.9	389.57	3.2	390.27	3.7	389.77	3.8	389.67
MW 2	419.50	18.65	400.85	14.5	405	18.1	401.40	18.05	401.45
MW 3	407.07	1.7	405.37	2.8	404.27	1.75	405.32	Frozen	Frozen
MW 4	410.06	1.1	408.96	2.15	407.91	0.25	409.81	.1	409.96

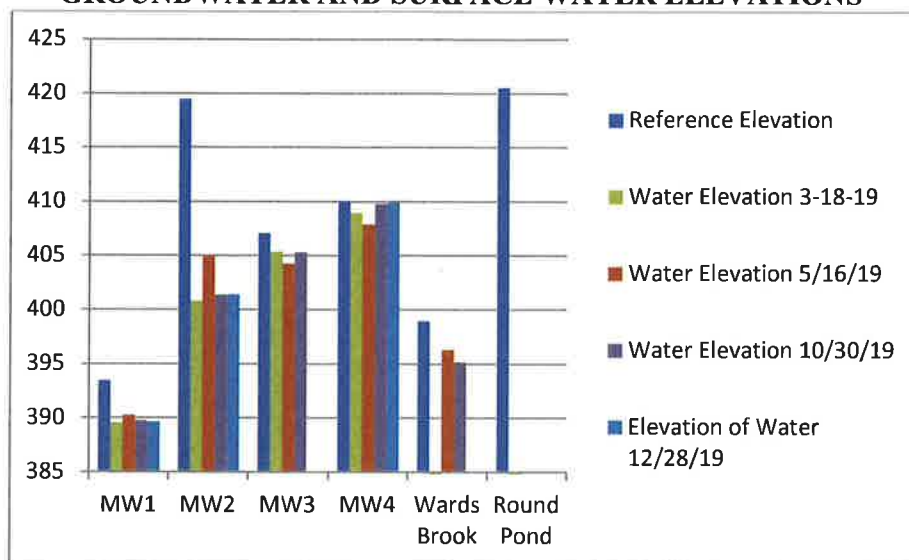
The elevation of water reported each quarter for the individual monitoring wells is based on the depth of water measured at each well subtracted from the November 2015 survey reference elevation. The Reference Elevation is the measuring point elevation in feet NAVD (North American Vertical Datum (1988)). Bliss Associates surveyed and provided new reference elevations for the monitoring wells in November 2015.

Two monitoring locations (SG-1 and SG-2) monitor surface water elevations of Round Pond and the headwaters of Wards Pond. There are staff gauges at each location and direct readings of surface water elevation are collected. The staff gauges were surveyed for reference elevations on May 11, 2016. Maine Water Company is planning to resurvey the reference elevations in 2018.

2019 SURFACE WATER ELEVATION DATA

Surface Water Elevation	May 11, 2016 Reference Elevation	3/18/19 Depth to Water	5/16/19 Depth to Water	10/30/19 Depth to Water	12/28/19 Depth to Water
Wards Brook	398.97	Frozen	396.3	395.17	Frozen
Round Pond	420.52	Frozen			Frozen

GROUNDWATER AND SURFACE WATER ELEVATIONS



MONITORING PROCEDURES

Each monitoring location is visited quarterly. At each monitoring well location an electronic water level meter is lowered into the well. The depth to water from the top of the well casing is recorded. This depth is subtracted from a USGS vertical elevation derived from the survey to determine the elevation of the water table. At each staff gauge location the water level is read directly from the staff gauge and the water elevation is calculated from the known elevation of the top of each staff gauge.

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2019 WATER WITHDRAWAL DATA IN GALLONS

2019	PMS	Pump #2	Pump #3	Total
January	6,754,630	3,516,160	3,249,470	13,520,260
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March	10,678,815	3,474,740	3,003,860	17,157,415
April	7,003,730	2,524,250	4,254,960	13,782,940
May	10,855,570	3,099,240	2,995,720	16,950,530
June	13,666,440	4,781,000	5,048,000.00	23,495,440
July	15,599,850	6,332,000	6,686,000	28,617,850
August	15,637,670	6,055,000	5,493,000	27,185,670
September	11,444,795	5,082,000	5,959,000	22,485,795
October	5,891,350	3,597,900	3,978,800	13,468,050
November	5,770,640	2,103,000	2,318,800	10,192,440
December	12,371,050	2,033,900	2,146,200	16,551,150
Totals	120,809,170	44,976,070	48,643,150	214,428,390

The comprehensive Emery & Garrett Groundwater Inc. study undertaken on behalf of the Town of Fryeburg in 2005 and updated in 2018 concludes that above the amount of water withdrawn by the Fryeburg Water Company to serve its residential and other commercial customers, the Ward's Brook aquifer can reasonably sustain discretionary withdrawals of 220 million gallons per year.

Based on our observation and review of additional monitoring reports submitted by Luetje Geological Services, LLC, we have not observed any adverse impact to the Ward's Brook Aquifer.

Please contact our office with any questions at (800) 287-1643.

Respectfully submitted,



Lead Field Service Representative