



Luetje Geological Services, LLC  
Ed Luetje, CG  
46 Whittier Street  
Portland, Maine 04103

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February 20, 2009

Attn: Town Manager  
Town of Fryeburg  
16 Lovewell's Pond Road  
Fryeburg, Maine 04037

RE: January 2009 Voluntary Aquifer Monitoring Report

## **INTRODUCTION**

Luetje Geological Services (LGS) of Portland, Maine, an independent hydrogeologic consulting firm, has been contracted by Poland Spring to collect and compile data from the Wards Brook Aquifer. Poland Spring is not required to submit these data but plans to do so voluntarily to the Town of Fryeburg. In addition, an annual report will be compiled at the end of each year summarizing final data and drawing conclusions about the health of the Wards Brook Aquifer. The first annual report (2008 Annual Voluntary Aquifer Monitoring Report) will be submitted during February, 2009.

Data are presented for eleven monitoring wells, four surface water stations, from rain gauges at the Borehole-1 load-out facility and the Fryeburg Eastern Slopes Airport (ICAO Station KIZG, Northeast Regional Climate Center), and withdrawal data from Borehole-1 (PBH-01; dedicated spring water borehole). Locations of all data collection stations are shown in Figure 1 located at the end of this report.

## **GROUNDWATER**

Groundwater levels are measured in eleven monitoring wells at locations shown in Figure 1. These wells provide groundwater level data across and adjacent to the Wards Brook watershed (Figure 1). Table 1 provides a summary of groundwater elevations at these locations as measured on January 19<sup>th</sup>, 2009.

**TABLE 1: GROUNDWATER ELEVATION DATA  
JANUARY 19<sup>TH</sup>, 2009**

<b>Monitoring Well</b>	<b>Reference Elevation (feet NGVD) <sup>1</sup></b>	<b>Groundwater Elevation (feet NGVD) <sup>2</sup></b>
MW-101 <sup>3</sup>	408.12	398.75
MW-103	421.29	412.32
MW-105	404.52	380.85
MW-107	431.67	426.10
MW-108	419.64	411.54
MW-109	420.00	400.19
MW-110	461.73	419.74
MW-113	441.14	421.99
MW-114	404.96	385.83
TW-2 <sup>4</sup>	404.01	406.62
TW-9	409.07	411.72

- Notes:
1. NGVD is the National Geodetic Vertical Datum, formerly mean sea level. The Reference Elevation is the measuring point (usually the top of casing for monitoring wells) elevation in feet NGVD.
  2. The Groundwater Elevation is the elevation of the water table (feet NGVD) at the monitoring well.
  3. MW refers to 'monitoring well'
  4. TW refers to 'test well'

## **SURFACE WATER**

Surface water elevation is measured at four locations in and around the Wards Brook Aquifer watershed as seen in Figure 1. The surface water measuring locations are as follows:

- Saco River Monitoring Point (SRMP-1): surface water elevation is measured at the Route 113 bridge over the Saco River;
- Wards Pond Monitoring Point (WPMP-1): surface water elevation is measured at the Route 113 crossing over Wards Brook;
- Lovewell Pond Staff Gauge (LPSG-1): surface water elevation is measured at the inlet from Wards Pond Brook; and,
- Wards Pond Staff Gauge (WPSG-2): surface water elevation is measured near the center of the watershed in a bog located to the south of Wards Pond.

Table 2 presents the surface water elevation data measured on January 19<sup>th</sup>, 2009.

**TABLE 2: SURFACE WATER ELEVATION DATA  
JANUARY 19<sup>TH</sup>, 2009**

Surface Water Station	Reference Elevation (feet NGVD) <sup>1</sup>	Surface Water Elevation (feet NGVD) <sup>2</sup>
LPSG-1	364.68	363.06
WPMP-1	401.20	Frozen
SRMP-1	418.64	Frozen
WPSG-2	402.01	Frozen

Notes: 1. NGVD is the National Geodetic Vertical Datum, formerly mean sea level. The Reference Elevation is the measuring point (usually the top of the staff gauge for surface water stations) elevation in feet NGVD.  
2. The Surface Water Elevation is the elevation of the water surface (feet NGVD) at the monitoring station.

### PRECIPITATION

Precipitation is recorded on-site adjacent to PBH-1 using an Onset Data Logging Rain Gauge (RG) as shown on Figure 1. The on-site rain gauge has a self-tipping bucket that is activated with every 0.01 inches of precipitation. The gauge is also wrapped with heat tape that melts snowfall and allows measurement of precipitation through the winter months.

Precipitation data are also recorded at the Fryeburg Eastern Slopes Airport (ICAO Station KIZG, Northeast Regional Climate Center) to verify precipitation measurements taken by the on-site rain gauge. The Fryeburg Eastern Slopes Airport is approximately two miles to the south of the on-site rain gauge. Table 3 presents monthly precipitation data for January, 2009.

**TABLE 3: FRYEBURG AREA PRECIPITATION DATA  
JANURAY, 2009**

Station ID	Monthly Precipitation Total (Inches)
On-Site Rain Gauge (RG)	2.70
Fryeburg Eastern Slopes Airport (ICAO Station KIZG)	2.78

### WITHDRAWALS

Spring water volume withdrawn from Borehole-1 totaled 7,170,830 gallons for the month of January, 2009 as measured by flow meters located at the load station facility.

If you have any questions regarding the data included in this report, please do not hesitate to contact me (207) 415-9898.

Sincerely,

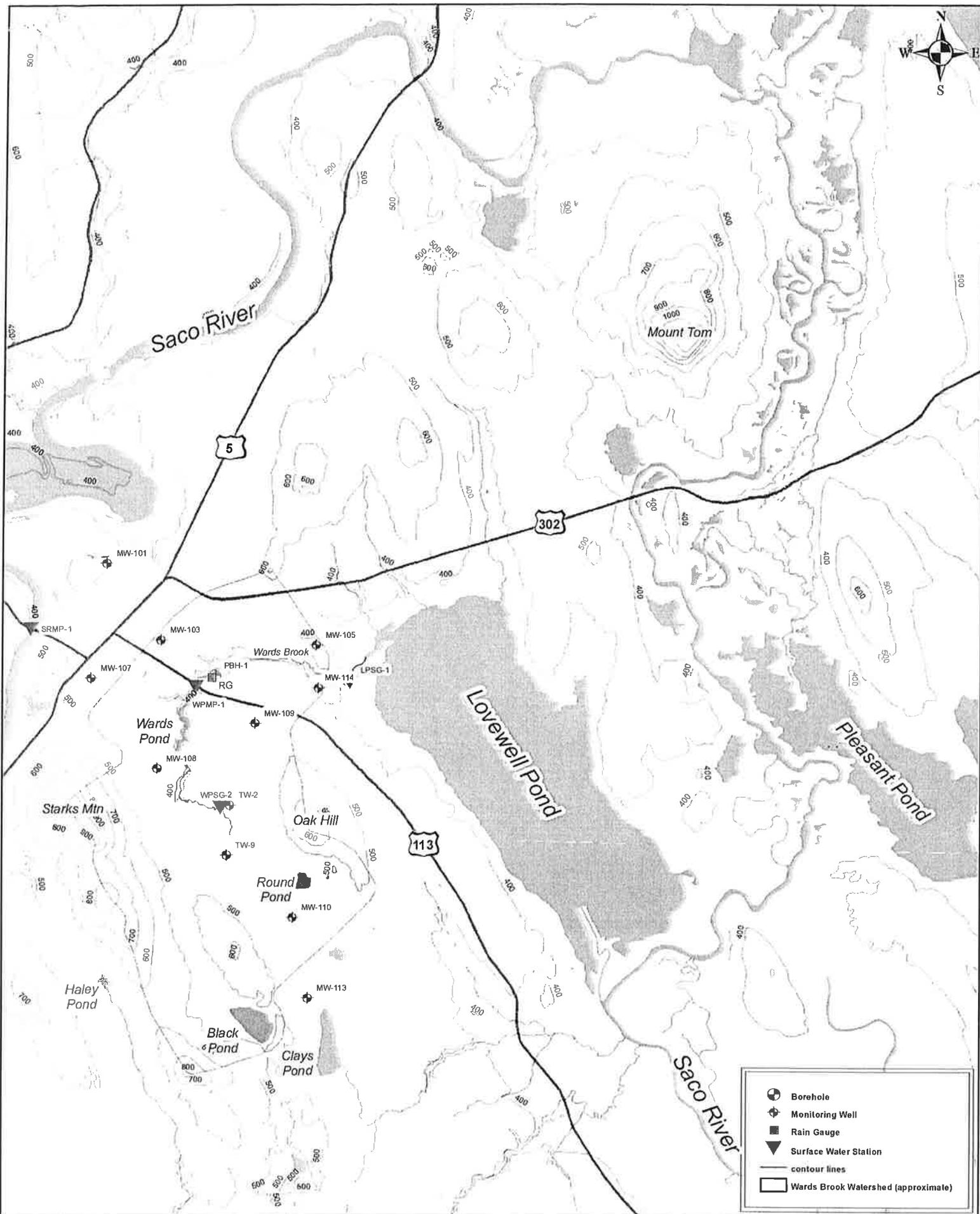
Luetje Geological Services, LLC



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Ed Luetje C.G.

cc: Fryeburg Water Company (Hugh Hastings)  
Fryeburg Water District (Richard Krasker)  
Emery & Garrett Groundwater, Inc. (Peter Garrett)  
Poland Spring (Mark Dubois)



Notes:  
 All general data layers acquired from the Maine Office of GIS.  
 Contours are 20' intervals.



- Borehole
- Monitoring Well
- Rain Gauge
- Surface Water Station
- contour lines
- Wards Brook Watershed (approximate)

FIGURE 1  
 VOLUNTARY AQUIFER MONITORING REPORT  
 LGS REF# 08-011  
 DATE: 1/16/2009



Luetje Geological Services, LLC  
Ed Luetje, CG  
46 Whittier Street  
Portland, Maine 04103

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April 17, 2009

Attn: Town Manager  
Town of Fryeburg  
16 Lovewell's Pond Road  
Fryeburg, Maine 04037

RE: March 2009 Voluntary Aquifer Monitoring Report

## **INTRODUCTION**

Luetje Geological Services (LGS) of Portland, Maine, an independent hydrogeologic consulting firm, has been contracted by Poland Spring to collect and compile data from the Wards Brook Aquifer. Poland Spring is not required to submit these data but plans to do so voluntarily to the Town of Fryeburg.

Data are presented for eleven monitoring wells, four surface water stations, from rain gauges at the Borehole-1 load-out facility and the Fryeburg Eastern Slopes Airport (ICAO Station KIZG, Northeast Regional Climate Center), and withdrawal data from Borehole-1 (PBH-01; dedicated spring water borehole). Locations of all data collection stations are shown in Figure 1 located at the end of this report.

## **GROUNDWATER**

Groundwater levels are measured in eleven monitoring wells at locations shown in Figure 1. These wells provide groundwater level data across and adjacent to the Wards Brook watershed (Figure 1). Table 1 provides a summary of groundwater elevations at these locations as measured on March 17<sup>th</sup>, 2009.

**TABLE 1: GROUNDWATER ELEVATION DATA  
MARCH 17<sup>TH</sup>, 2009**

<b>Monitoring Well</b>	<b>Reference Elevation (feet NGVD) <sup>1</sup></b>	<b>Groundwater Elevation (feet NGVD) <sup>2</sup></b>
MW-101 <sup>3</sup>	408.12	399.25
MW-103	421.29	411.69
MW-105	404.52	380.37
MW-107	431.67	425.27
MW-108	419.64	411.09
MW-109	420.00	399.38
MW-110	461.73	418.56
MW-113	441.14	421.29
MW-114	404.96	385.51
TW-2 <sup>4</sup>	404.01	405.48
TW-9	409.07	410.68

- Notes:
1. NGVD is the National Geodetic Vertical Datum, formerly mean sea level. The Reference Elevation is the measuring point (usually the top of casing for monitoring wells) elevation in feet NGVD.
  2. The Groundwater Elevation is the elevation of the water table (feet NGVD) at the monitoring well.
  3. MW refers to 'monitoring well'
  4. TW refers to 'test well'

## **SURFACE WATER**

Surface water elevation is measured at four locations in and around the Wards Brook Aquifer watershed as seen in Figure 1. The surface water measuring locations are as follows:

- Saco River Monitoring Point (SRMP-1): surface water elevation is measured at the Route 113 bridge over the Saco River;
- Wards Pond Monitoring Point (WPMP-1): surface water elevation is measured at the Route 113 crossing over Wards Brook;
- Lovewell Pond Staff Gauge (LPSG-1): surface water elevation is measured at the inlet from Wards Pond Brook; and,
- Wards Pond Staff Gauge (WPSG-2): surface water elevation is measured near the center of the watershed in a bog located to the south of Wards Pond.

Table 2 presents the surface water elevation data measured on March 17<sup>th</sup>, 2009.

**TABLE 2: SURFACE WATER ELEVATION DATA  
MARCH 17<sup>TH</sup>, 2009**

Surface Water Station	Reference Elevation (feet NGVD) <sup>1</sup>	Surface Water Elevation (feet NGVD) <sup>2</sup>
LPSG-1	364.68	363.04
WPMP-1	401.20	397.17
SRMP-1	418.64	396.74
WPSG-2	402.01	401.38

Notes: 1. NGVD is the National Geodetic Vertical Datum, formerly mean sea level. The Reference Elevation is the measuring point (usually the top of the staff gauge for surface water stations) elevation in feet NGVD.  
2. The Surface Water Elevation is the elevation of the water surface (feet NGVD) at the monitoring station.

## PRECIPITATION

Precipitation is recorded on-site adjacent to PBH-1 using an Onset Data Logging Rain Gauge (RG) as shown on Figure 1. The on-site rain gauge has a self-tipping bucket that is activated with every 0.01 inches of precipitation. The gauge is also wrapped with heat tape that melts snowfall and allows measurement of precipitation through the winter months.

Precipitation data are also recorded at the Fryeburg Eastern Slopes Airport (ICAO Station KIZG, Northeast Regional Climate Center) to verify precipitation measurements taken by the on-site rain gauge. The Fryeburg Eastern Slopes Airport is approximately two miles to the south of the on-site rain gauge. Table 3 presents monthly precipitation data for March, 2009.

**TABLE 3: FRYEBURG AREA PRECIPITATION DATA  
MARCH, 2009**

Station ID	Monthly Precipitation Total (Inches)
On-Site Rain Gauge (RG)	2.69
Fryeburg Eastern Slopes Airport (ICAO Station KIZG)	2.74

## WITHDRAWALS

Spring water volume withdrawn from Borehole-1 totaled 8,252,420 gallons for the month of March, 2009 as measured by flow meters located at the load station facility.

If you have any questions regarding the data included in this report, please do not hesitate to contact me (207) 415-9898.

Sincerely,

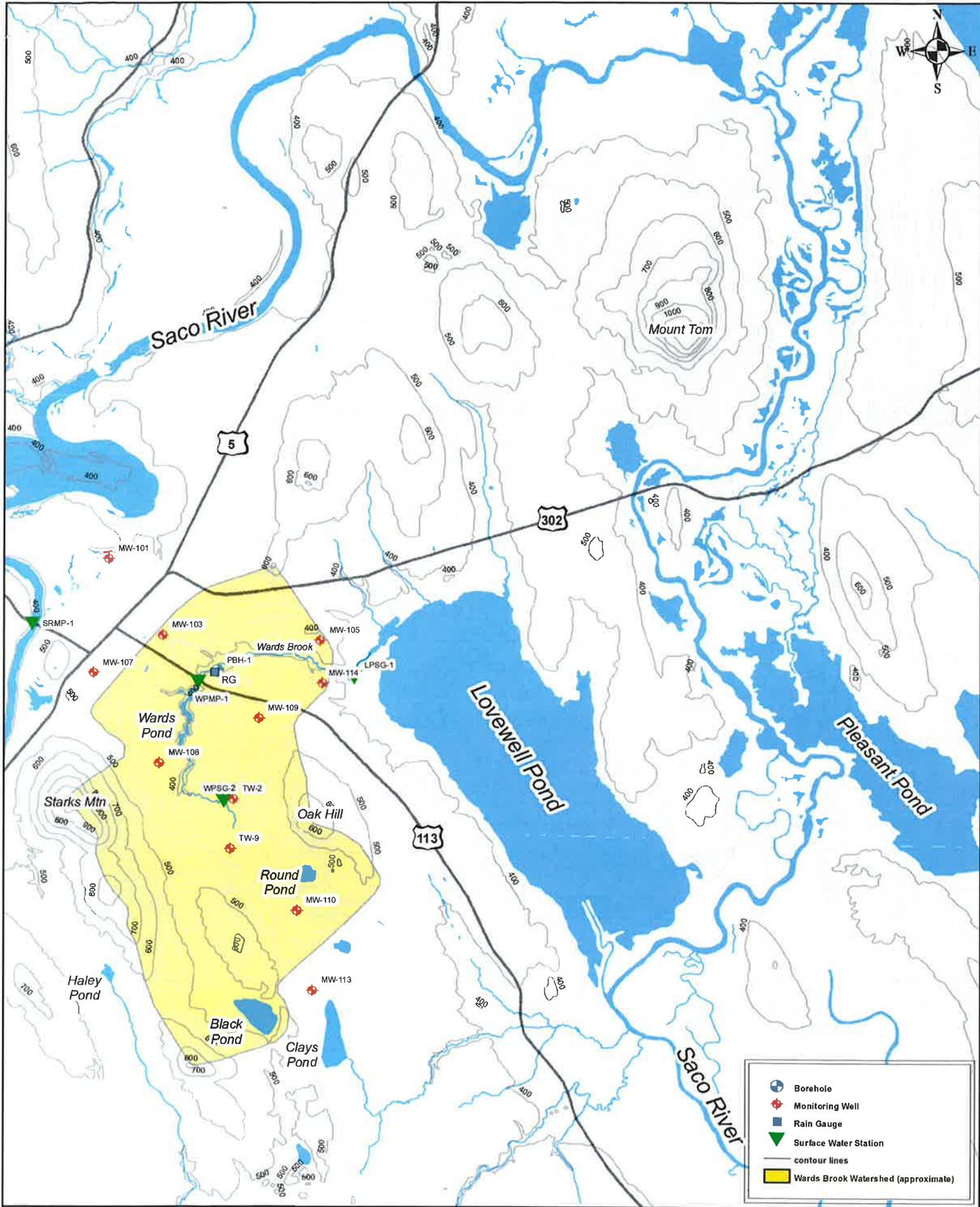
Luetje Geological Services, LLC



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Ed Luetje C.G.

cc: Fryeburg Water Company (Hugh Hastings)  
Fryeburg Water District (Richard Krasker)  
Emery & Garrett Groundwater, Inc. (Peter Garrett)  
Poland Spring (Mark Dubois)



- Borehole
- Monitoring Well
- Rain Gauge
- Surface Water Station
- contour lines
- Wards Brook Watershed (approximate)

Notes:  
 All general data layers acquired from the Maine Office of GIS.  
 Contours are 20' intervals.



FIGURE 1  
 VOLUNTARY AQUIFER MONITORING REPORT  
 LGS REF# 08-011  
 DATE: 1/16/2009



Luetje Geological Services, LLC  
Ed Luetje, CG  
46 Whittier Street  
Portland, Maine 04103

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May 26, 2009

Attn: Town Manager  
Town of Fryeburg  
16 Lovewell's Pond Road  
Fryeburg, Maine 04037

RE: April 2009 Voluntary Aquifer Monitoring Report

## **INTRODUCTION**

Luetje Geological Services (LGS) of Portland, Maine, an independent hydrogeologic consulting firm, has been contracted by Poland Spring to collect and compile data from the Wards Brook Aquifer. Poland Spring is not required to submit these data but is doing so voluntarily to the Town of Fryeburg.

Data are presented for eleven monitoring wells, four surface water stations, from rain gauges at the Borehole-1 load-out facility and the Fryeburg Eastern Slopes Airport (ICAO Station KIZG, Northeast Regional Climate Center), and withdrawal data from Borehole-1 (PBH-01; dedicated spring water borehole). Locations of all data collection stations are shown in Figure 1 located at the end of this report.

## **GROUNDWATER**

Groundwater levels are measured in eleven monitoring wells at locations shown in Figure 1. These wells provide groundwater level data across and adjacent to the Wards Brook watershed (Figure 1). Table 1 provides a summary of groundwater elevations at these locations as measured on April 16<sup>th</sup>, 2009.

**TABLE 1: GROUNDWATER ELEVATION DATA  
APRIL 16<sup>TH</sup>, 2009**

<b>Monitoring Well</b>	<b>Reference Elevation (feet NGVD) <sup>1</sup></b>	<b>Groundwater Elevation (feet NGVD) <sup>2</sup></b>
MW-101 <sup>3</sup>	408.12	400.12
MW-103	421.29	413.58
MW-105	404.52	381.59
MW-107	431.67	427.95
MW-108	419.64	412.23
MW-109	420.00	400.80
MW-110	461.73	420.21
MW-113	441.14	422.50
MW-114	404.96	386.99
TW-2 <sup>4</sup>	404.01	407.18
TW-9	409.07	412.21

- Notes:
1. NGVD is the National Geodetic Vertical Datum, formerly mean sea level. The Reference Elevation is the measuring point (usually the top of casing for monitoring wells) elevation in feet NGVD.
  2. The Groundwater Elevation is the elevation of the water table (feet NGVD) at the monitoring well.
  3. MW refers to 'monitoring well'
  4. TW refers to 'test well'

## **SURFACE WATER**

Surface water elevation is measured at four locations in and around the Wards Brook Aquifer watershed as seen in Figure 1. The surface water measuring locations are as follows:

- Saco River Monitoring Point (SRMP-1): surface water elevation is measured at the Route 113 bridge over the Saco River;
- Wards Pond Monitoring Point (WPMP-1): surface water elevation is measured at the Route 113 crossing over Wards Brook;
- Lovewell Pond Staff Gauge (LPSG-1): surface water elevation is measured at the inlet from Wards Pond Brook; and,
- Wards Pond Staff Gauge (WPSG-2): surface water elevation is measured near the center of the watershed in a bog located to the south of Wards Pond.

Table 2 presents the surface water elevation data measured on April 16<sup>th</sup>, 2009.

**TABLE 2: SURFACE WATER ELEVATION DATA  
APRIL 16<sup>TH</sup>, 2009**

Surface Water Station	Reference Elevation (feet NGVD) <sup>1</sup>	Surface Water Elevation (feet NGVD) <sup>2</sup>
LPSG-1	364.68	364.03
WPMP-1	401.20	397.40
SRMP-1	418.64	397.49
WPSG-2	402.01	401.49

Notes: 1. NGVD is the National Geodetic Vertical Datum, formerly mean sea level. The Reference Elevation is the measuring point (usually the top of the staff gauge for surface water stations) elevation in feet NGVD.  
2. The Surface Water Elevation is the elevation of the water surface (feet NGVD) at the monitoring station.

## PRECIPITATION

Precipitation is recorded on-site adjacent to PBH-1 using an Onset Data Logging Rain Gauge (RG) as shown on Figure 1. The on-site rain gauge has a self-tipping bucket that is activated with every 0.01 inches of precipitation. The gauge is also wrapped with heat tape that melts snowfall and allows measurement of precipitation through the winter months.

Precipitation data are also recorded at the Fryeburg Eastern Slopes Airport (ICAO Station KIZG, Northeast Regional Climate Center) to verify precipitation measurements taken by the on-site rain gauge. The Fryeburg Eastern Slopes Airport is approximately two miles to the south of the on-site rain gauge. Table 3 presents monthly precipitation data for April, 2009.

**TABLE 3: FRYEBURG AREA PRECIPITATION DATA  
APRIL, 2009**

Station ID	Monthly Precipitation Total (Inches)
On-Site Rain Gauge (RG)	3.95
Fryeburg Eastern Slopes Airport (ICAO Station KIZG)	4.20

## WITHDRAWALS

Spring water volume withdrawn from Borehole-1 totaled 5,389,990 gallons for the month of April, 2009 as measured by flow meters located at the load station facility.

If you have any questions regarding the data included in this report, please do not hesitate to contact me (207) 415-9898.

Sincerely,

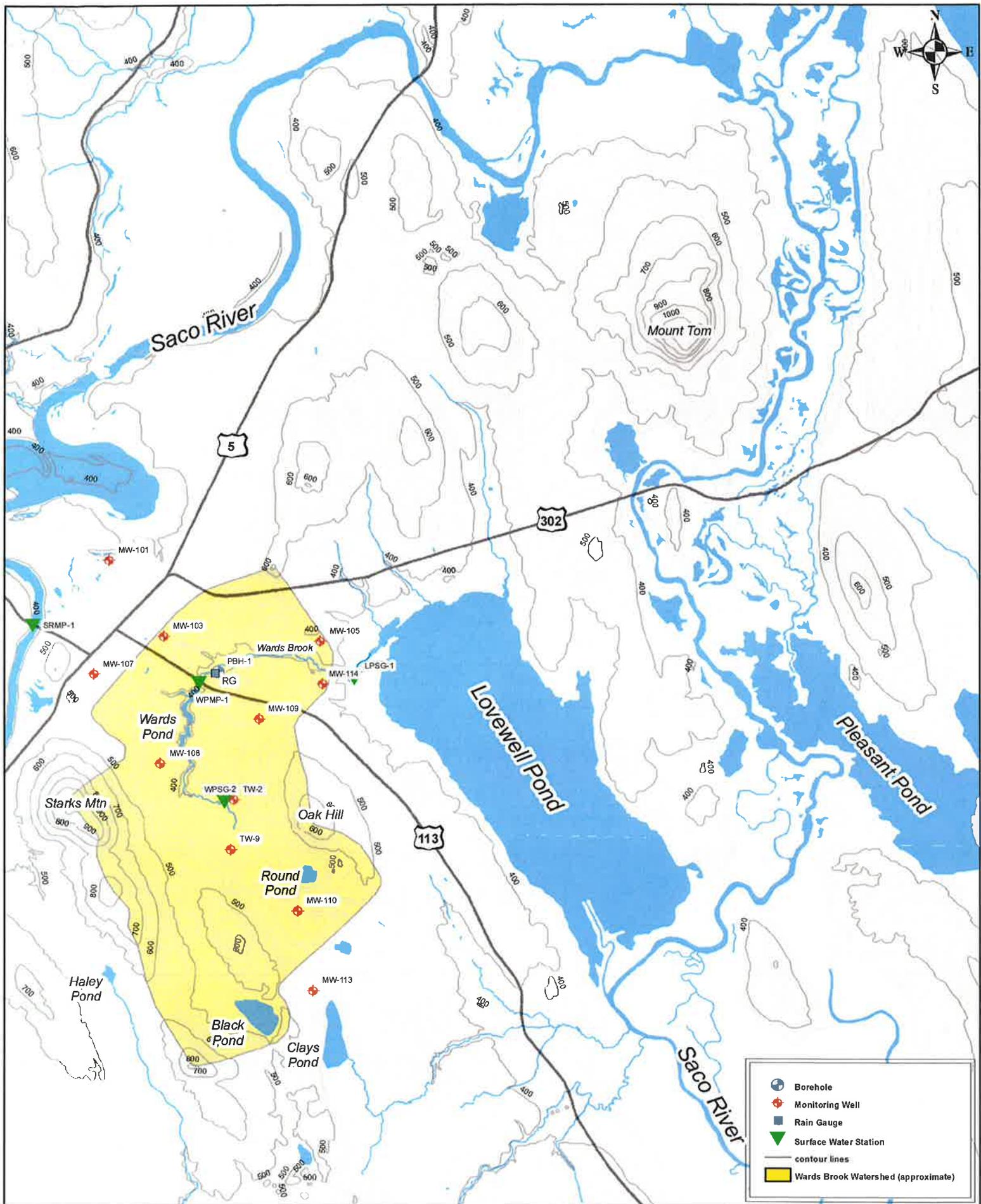
Luetje Geological Services, LLC



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Ed Luetje C.G.

cc: Fryeburg Water Company (Hugh Hastings)  
Fryeburg Water District (Richard Krasker)  
Emery & Garrett Groundwater, Inc. (Peter Garrett)  
Poland Spring (Mark Dubois)



Notes:  
 All general data layers acquired from the Maine Office of GIS.  
 Contours are 20' intervals.

0 0.5 1 2 Miles

FIGURE 1  
 VOLUNTARY AQUIFER MONITORING REPORT  
 LGS REF# 08-011  
 DATE: 1/16/2009



Luetje Geological Services, LLC  
Ed Luetje, CG  
46 Whittier Street  
Portland, Maine 04103

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June 22, 2009

Attn: Town Manager  
Town of Fryeburg  
16 Lovewell's Pond Road  
Fryeburg, Maine 04037

RE: May 2009 Voluntary Aquifer Monitoring Report

## **INTRODUCTION**

Luetje Geological Services (LGS) of Portland, Maine, an independent hydrogeologic consulting firm, has been contracted by Poland Spring to collect and compile data from the Wards Brook Aquifer. Poland Spring is not required to submit these data but is doing so voluntarily to the Town of Fryeburg.

Data are presented for eleven monitoring wells, four surface water stations, from rain gauges at the Borehole-1 load-out facility and the Fryeburg Eastern Slopes Airport (ICAO Station KIZG, Northeast Regional Climate Center), and withdrawal data from Borehole-1 (PBH-01; dedicated spring water borehole). Locations of all data collection stations are shown in Figure 1 located at the end of this report.

## **GROUNDWATER**

Groundwater levels are measured in eleven monitoring wells at locations shown in Figure 1. These wells provide groundwater level data across and adjacent to the Wards Brook watershed (Figure 1). Table 1 provides a summary of groundwater elevations at these locations as measured on May 18<sup>th</sup>, 2009.

Table 2 presents the surface water elevation data measured on May 18<sup>th</sup>, 2009.

**TABLE 2: SURFACE WATER ELEVATION DATA  
MAY 18<sup>TH</sup>, 2009**

Surface Water Station	Reference Elevation (feet NGVD) <sup>1</sup>	Surface Water Elevation (feet NGVD) <sup>2</sup>
LPSG-1	364.68	362.99
WPMP-1	401.20	397.50
SRMP-1	418.64	397.09
WPSG-2	402.01	401.91

Notes: 1. NGVD is the National Geodetic Vertical Datum, formerly mean sea level. The Reference Elevation is the measuring point (usually the top of the staff gauge for surface water stations) elevation in feet NGVD.  
2. The Surface Water Elevation is the elevation of the water surface (feet NGVD) at the monitoring station.

### PRECIPITATION

Precipitation is recorded on-site adjacent to PBH-1 using an Onset Data Logging Rain Gauge (RG) as shown on Figure 1. The on-site rain gauge has a self-tipping bucket that is activated with every 0.01 inches of precipitation. The gauge is also wrapped with heat tape that melts snowfall and allows measurement of precipitation through the winter months.

Precipitation data are also recorded at the Fryeburg Eastern Slopes Airport (ICAO Station KIZG, Northeast Regional Climate Center) to verify precipitation measurements taken by the on-site rain gauge. The Fryeburg Eastern Slopes Airport is approximately two miles to the south of the on-site rain gauge. Table 3 presents monthly precipitation data for May, 2009.

**TABLE 3: FRYEBURG AREA PRECIPITATION DATA  
MAY, 2009**

Station ID	Monthly Precipitation Total (Inches)
On-Site Rain Gauge (RG)	3.94
Fryeburg Eastern Slopes Airport (ICAO Station KIZG)	4.65

### WITHDRAWALS

Spring water volume withdrawn from Borehole-1 totaled 13,389,515 gallons for the month of May, 2009 as measured by flow meters located at the load station facility.

If you have any questions regarding the data included in this report, please do not hesitate to contact me (207) 415-9898.

Sincerely,

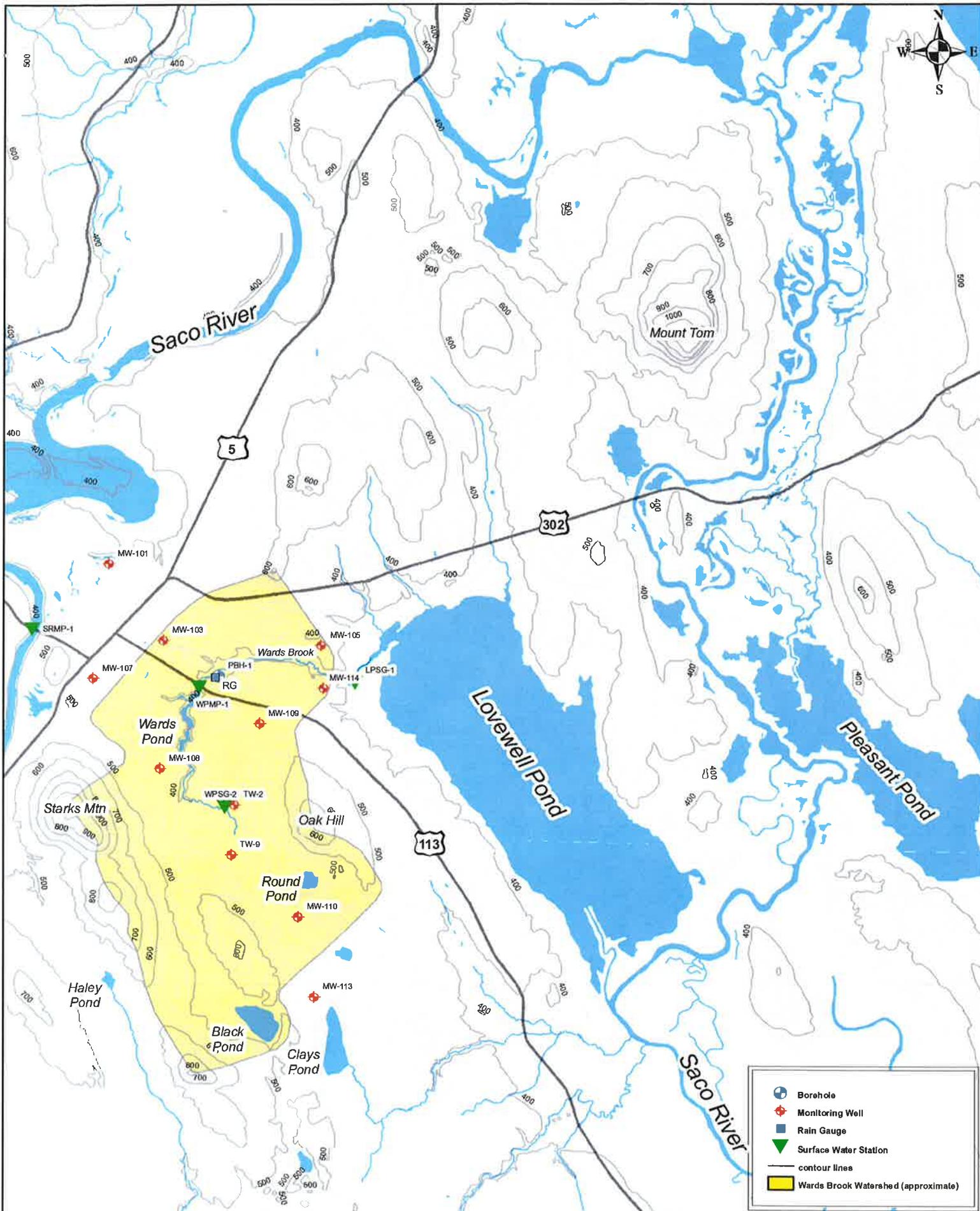
Luetje Geological Services, LLC



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cc: Fryeburg Water Company (Hugh Hastings)  
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Emery & Garrett Groundwater, Inc. (Peter Garrett)  
Poland Spring (Mark Dubois)



Notes:  
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FIGURE 1  
 VOLUNTARY AQUIFER MONITORING REPORT  
 LGS REF# 08-011  
 DATE: 1/16/2009



Luetje Geological Services, LLC  
Ed Luetje, CG  
46 Whittier Street  
Portland, Maine 04103

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July 22, 2009

Attn: Town Manager  
Town of Fryeburg  
16 Lovewell's Pond Road  
Fryeburg, Maine 04037

RE: June 2009 Voluntary Aquifer Monitoring Report

## **INTRODUCTION**

Luetje Geological Services (LGS) of Portland, Maine, an independent hydrogeologic consulting firm, has been contracted by Poland Spring to collect and compile data from the Wards Brook Aquifer. Poland Spring is not required to submit these data but is doing so voluntarily to the Town of Fryeburg.

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## **GROUNDWATER**

Groundwater levels are measured in eleven monitoring wells at locations shown in Figure 1. These wells provide groundwater level data across and adjacent to the Wards Brook watershed (Figure 1). Table 1 provides a summary of groundwater elevations at these locations as measured on June 22<sup>nd</sup>, 2009.

**TABLE 1: GROUNDWATER ELEVATION DATA  
JUNE 22<sup>nd</sup>, 2009**

<b>Monitoring Well</b>	<b>Reference Elevation (feet NGVD) <sup>1</sup></b>	<b>Groundwater Elevation (feet NGVD) <sup>2</sup></b>
MW-101 <sup>3</sup>	408.12	399.85
MW-103	421.29	412.98
MW-105	404.52	380.73
MW-107	431.67	426.74
MW-108	419.64	411.75
MW-109	420.00	400.10
MW-110	461.73	420.61
MW-113	441.14	422.27
MW-114	404.96	385.98
TW-2 <sup>4</sup>	404.01	406.98
TW-9	409.07	412.22

Notes: 1. NGVD is the National Geodetic Vertical Datum, formerly mean sea level. The Reference Elevation is the measuring point (usually the top of casing for monitoring wells) elevation in feet NGVD.  
 2. The Groundwater Elevation is the elevation of the water table (feet NGVD) at the monitoring well.  
 3. MW refers to 'monitoring well'  
 4. TW refers to 'test well'

## **SURFACE WATER**

Surface water elevation is measured at four locations in and around the Wards Brook Aquifer watershed as seen in Figure 1. The surface water measuring locations are as follows:

- Saco River Monitoring Point (SRMP-1): surface water elevation is measured at the Route 113 bridge over the Saco River;
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- Wards Pond Staff Gauge (WPSG-2): surface water elevation is measured near the center of the watershed in a bog located to the south of Wards Pond.

Table 2 presents the surface water elevation data measured on June 22<sup>nd</sup>, 2009.

**TABLE 2: SURFACE WATER ELEVATION DATA  
JUNE 22<sup>nd</sup>, 2009**

Surface Water Station	Reference Elevation (feet NGVD) <sup>1</sup>	Surface Water Elevation (feet NGVD) <sup>2</sup>
LPSG-1	364.68	363.21
WPMP-1	401.20	397.49
SRMP-1	418.64	397.29
WPSG-2	402.01	402.74

Notes: 1. NGVD is the National Geodetic Vertical Datum, formerly mean sea level. The Reference Elevation is the measuring point (usually the top of the staff gauge for surface water stations) elevation in feet NGVD.  
2. The Surface Water Elevation is the elevation of the water surface (feet NGVD) at the monitoring station.

### PRECIPITATION

Precipitation is recorded on-site adjacent to PBH-1 using an Onset Data Logging Rain Gauge (RG) as shown on Figure 1. The on-site rain gauge has a self-tipping bucket that is activated with every 0.01 inches of precipitation. The gauge is also wrapped with heat tape that melts snowfall and allows measurement of precipitation through the winter months.

Precipitation data are also recorded at the Fryeburg Eastern Slopes Airport (ICAO Station KIZG, Northeast Regional Climate Center) to verify precipitation measurements taken by the on-site rain gauge. The Fryeburg Eastern Slopes Airport is approximately two miles to the south of the on-site rain gauge. Table 3 presents monthly precipitation data for June, 2009.

**TABLE 3: FRYEBURG AREA PRECIPITATION DATA  
JUNE, 2009**

Station ID	Monthly Precipitation Total (Inches)
On-Site Rain Gauge (RG)	6.37
Fryeburg Eastern Slopes Airport (ICAO Station KIZG)	6.85

### WITHDRAWALS

Spring water volume withdrawn from Borehole-1 totaled 12,230,555 gallons for the month of June, 2009 as measured by flow meters located at the load station facility.

If you have any questions regarding the data included in this report, please do not hesitate to contact me (207) 415-9898.

Sincerely,

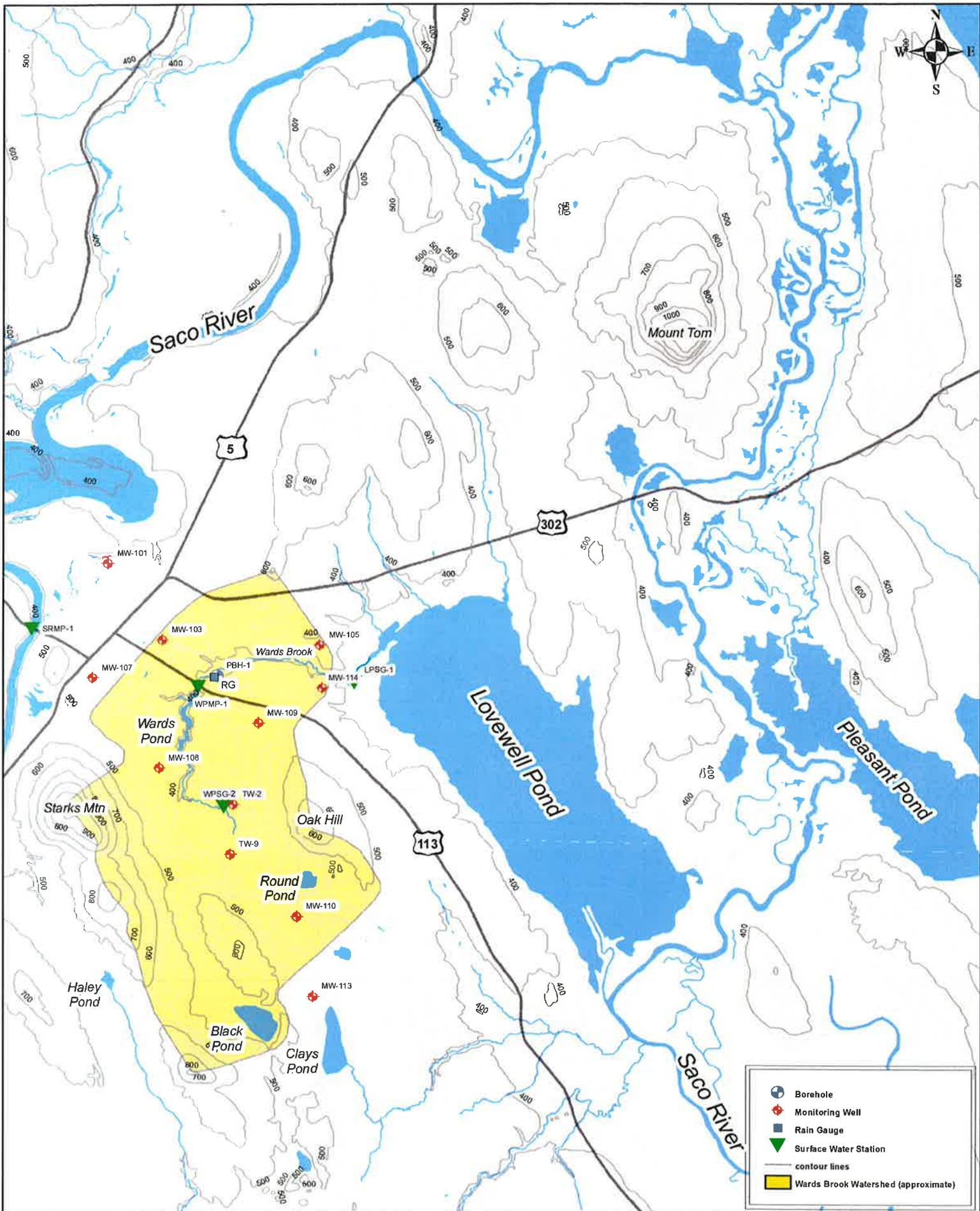
Luetje Geological Services, LLC



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cc: Fryeburg Water Company (Hugh Hastings)  
Fryeburg Water District (Richard Krasker)  
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Poland Spring (Mark Dubois)



Notes:  
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FIGURE 1  
 VOLUNTARY AQUIFER MONITORING REPORT  
 LGS REF# 08-011  
 DATE: 1/16/2009



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Ed Luetje, CG  
46 Whittier Street  
Portland, Maine 04103

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August 24, 2009

Attn: Town Manager  
Town of Fryeburg  
16 Lovewell's Pond Road  
Fryeburg, Maine 04037

RE: July 2009 Voluntary Aquifer Monitoring Report

## **INTRODUCTION**

Luetje Geological Services (LGS) of Portland, Maine, an independent hydrogeologic consulting firm, has been contracted by Poland Spring to collect and compile data from the Wards Brook Aquifer. Poland Spring is not required to submit these data but is doing so voluntarily to the Town of Fryeburg.

Data are presented for eleven monitoring wells, four surface water stations, from rain gauges at the Borehole-1 load-out facility and the Fryeburg Eastern Slopes Airport (ICAO Station KIZG, Northeast Regional Climate Center), and withdrawal data from Borehole-1 (PBH-01; dedicated spring water borehole). Locations of all data collection stations are shown in Figure 1 located at the end of this report.

## **GROUNDWATER**

Groundwater levels are measured in eleven monitoring wells at locations shown in Figure 1. These wells provide groundwater level data across and adjacent to the Wards Brook watershed (Figure 1). Table 1 provides a summary of groundwater elevations at these locations as measured on July 20<sup>th</sup>, 2009.

**TABLE 1: GROUNDWATER ELEVATION DATA  
JULY 20<sup>th</sup>, 2009**

<b>Monitoring Well</b>	<b>Reference Elevation (feet NGVD) <sup>1</sup></b>	<b>Groundwater Elevation (feet NGVD) <sup>2</sup></b>
MW-101 <sup>3</sup>	408.12	399.46
MW-103	421.29	413.34
MW-105	404.52	381.07
MW-107	431.67	426.96
MW-108	419.64	411.83
MW-109	420.00	400.67
MW-110	461.73	420.91
MW-113	441.14	422.60
MW-114	404.96	385.96
TW-2 <sup>4</sup>	404.01	407.02
TW-9	409.07	412.29

Notes: 1. NGVD is the National Geodetic Vertical Datum, formerly mean sea level. The Reference Elevation is the measuring point (usually the top of casing for monitoring wells) elevation in feet NGVD.  
 2. The Groundwater Elevation is the elevation of the water table (feet NGVD) at the monitoring well.  
 3. MW refers to 'monitoring well'  
 4. TW refers to 'test well'

## **SURFACE WATER**

Surface water elevation is measured at four locations in and around the Wards Brook Aquifer watershed as seen in Figure 1. The surface water measuring locations are as follows:

- Saco River Monitoring Point (SRMP-1): surface water elevation is measured at the Route 113 bridge over the Saco River;
- Wards Pond Monitoring Point (WPMP-1): surface water elevation is measured at the Route 113 crossing over Wards Brook;
- Lovewell Pond Staff Gauge (LPSG-1): surface water elevation is measured at the inlet from Wards Pond Brook; and,
- Wards Pond Staff Gauge (WPSG-2): surface water elevation is measured near the center of the watershed in a bog located to the south of Wards Pond.

Table 2 presents the surface water elevation data measured on July 20<sup>th</sup>, 2009.

**TABLE 2: SURFACE WATER ELEVATION DATA  
JULY 20<sup>th</sup>, 2009**

<b>Surface Water Station</b>	<b>Reference Elevation (feet NGVD) <sup>1</sup></b>	<b>Surface Water Elevation (feet NGVD) <sup>2</sup></b>
LPSG-1	364.68	362.91
WPMP-1	401.20	397.34
SRMP-1	418.64	396.36
WPSG-2	402.01	404.21

Notes: 1. NGVD is the National Geodetic Vertical Datum, formerly mean sea level. The Reference Elevation is the measuring point (usually the top of the staff gauge for surface water stations) elevation in feet NGVD.  
2. The Surface Water Elevation is the elevation of the water surface (feet NGVD) at the monitoring station.

### PRECIPITATION

Precipitation is recorded on-site adjacent to PBH-1 using an Onset Data Logging Rain Gauge (RG) as shown on Figure 1. The on-site rain gauge has a self-tipping bucket that is activated with every 0.01 inches of precipitation. The gauge is also wrapped with heat tape that melts snowfall and allows measurement of precipitation through the winter months.

Precipitation data are also recorded at the Fryeburg Eastern Slopes Airport (ICAO Station KIZG, Northeast Regional Climate Center) to verify precipitation measurements taken by the on-site rain gauge. The Fryeburg Eastern Slopes Airport is approximately two miles to the south of the on-site rain gauge. Table 3 presents monthly precipitation data for July, 2009.

**TABLE 3: FRYEBURG AREA PRECIPITATION DATA  
JULY, 2009**

<b>Station ID</b>	<b>Monthly Precipitation Total (Inches)</b>
On-Site Rain Gauge (RG)	8.80
Fryeburg Eastern Slopes Airport (ICAO Station KIZG)	8.73

### WITHDRAWALS

Spring water volume withdrawn from Borehole-1 totaled 7,542,020 gallons for the month of July, 2009 as measured by flow meters located at the load station facility.

If you have any questions regarding the data included in this report, please do not hesitate to contact me (207) 415-9898.

Sincerely,

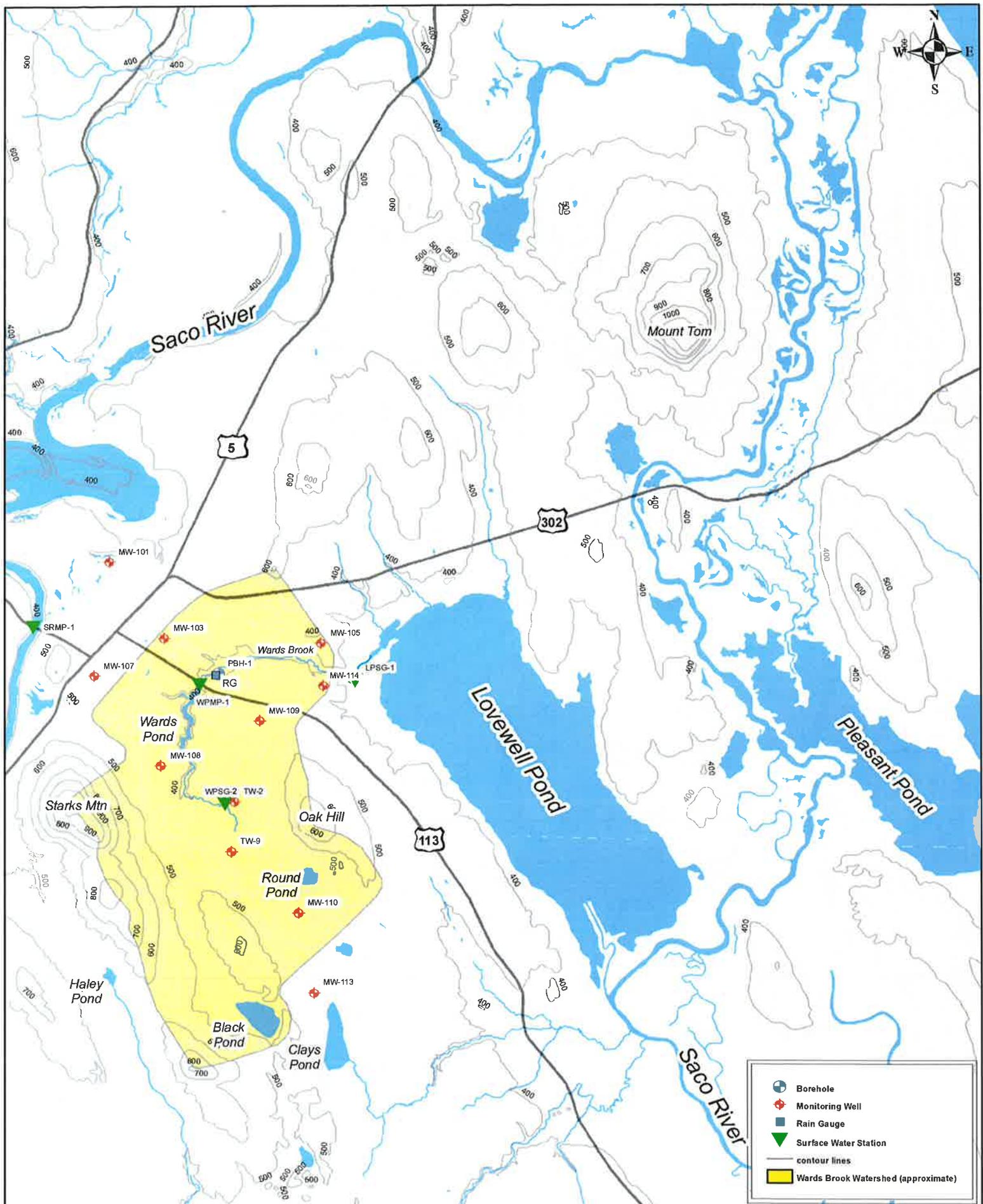
Luetje Geological Services, LLC



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Ed Luetje C.G.

cc: Fryeburg Water Company (Hugh Hastings)  
Fryeburg Water District (Richard Krasker)  
Emery & Garrett Groundwater, Inc. (Peter Garrett)  
Poland Spring (Mark Dubois)



Notes:  
 All general data layers acquired from the Maine Office of GIS.  
 Contours are 20' intervals.

0 0.5 1 2 Miles

FIGURE 1  
 VOLUNTARY AQUIFER MONITORING REPORT  
 LGS REF# 08-011  
 DATE: 1/16/2009



Luetje Geological Services, LLC  
Ed Luetje, CG  
46 Whittier Street  
Portland, Maine 04103

---

September 24, 2009

Attn: Town Manager  
Town of Fryeburg  
16 Lovewell's Pond Road  
Fryeburg, Maine 04037

RE: September 2009 Voluntary Aquifer Monitoring Report

## **INTRODUCTION**

Luetje Geological Services (LGS) of Portland, Maine, an independent hydrogeologic consulting firm, has been contracted by Poland Spring to collect and compile data from the Wards Brook Aquifer. Poland Spring is not required to submit these data but is doing so voluntarily to the Town of Fryeburg.

Data are presented for eleven monitoring wells, four surface water stations, from rain gauges at the Borehole-1 load-out facility and the Fryeburg Eastern Slopes Airport (ICAO Station KIZG, Northeast Regional Climate Center), and withdrawal data from Borehole-1 (PBH-01; dedicated spring water borehole). Locations of all data collection stations are shown in Figure 1 located at the end of this report.

## **GROUNDWATER**

Groundwater levels are measured in eleven monitoring wells at locations shown in Figure 1. These wells provide groundwater level data across and adjacent to the Wards Brook watershed (Figure 1). Table 1 provides a summary of groundwater elevations at these locations as measured on August 24<sup>th</sup>, 2009.

**TABLE 1: GROUNDWATER ELEVATION DATA  
AUGUST 24<sup>th</sup>, 2009**

<b>Monitoring Well</b>	<b>Reference Elevation (feet NGVD) <sup>1</sup></b>	<b>Groundwater Elevation (feet NGVD) <sup>2</sup></b>
MW-101 <sup>3</sup>	408.12	398.76
MW-103	421.29	413.00
MW-105	404.52	380.74
MW-107	431.67	426.43
MW-108	419.64	411.50
MW-109	420.00	400.45
MW-110	461.73	420.83
MW-113	441.14	422.69
MW-114	404.96	385.33
TW-2 <sup>4</sup>	404.01	406.95
TW-9	409.07	412.25

Notes: 1. NGVD is the National Geodetic Vertical Datum, formerly mean sea level. The Reference Elevation is the measuring point (usually the top of casing for monitoring wells) elevation in feet NGVD.  
 2. The Groundwater Elevation is the elevation of the water table (feet NGVD) at the monitoring well.  
 3. MW refers to 'monitoring well'  
 4. TW refers to 'test well'

## **SURFACE WATER**

Surface water elevation is measured at four locations in and around the Wards Brook Aquifer watershed as seen in Figure 1. The surface water measuring locations are as follows:

- Saco River Monitoring Point (SRMP-1): surface water elevation is measured at the Route 113 bridge over the Saco River;
- Wards Pond Monitoring Point (WPMP-1): surface water elevation is measured at the Route 113 crossing over Wards Brook;
- Lovewell Pond Staff Gauge (LPSG-1): surface water elevation is measured at the inlet from Wards Pond Brook; and,
- Wards Pond Staff Gauge (WPSG-2): surface water elevation is measured near the center of the watershed in a bog located to the south of Wards Pond.

Table 2 presents the surface water elevation data measured on August 24<sup>th</sup>, 2009.

**TABLE 2: SURFACE WATER ELEVATION DATA  
AUGUST 24<sup>th</sup>, 2009**

Surface Water Station	Reference Elevation (feet NGVD) <sup>1</sup>	Surface Water Elevation (feet NGVD) <sup>2</sup>
LPSG-1	364.68	363.56
WPMP-1	401.20	397.86
SRMP-1	418.64	396.62
WPSG-2	402.01	402.40

Notes: 1. NGVD is the National Geodetic Vertical Datum, formerly mean sea level. The Reference Elevation is the measuring point (usually the top of the staff gauge for surface water stations) elevation in feet NGVD.  
2. The Surface Water Elevation is the elevation of the water surface (feet NGVD) at the monitoring station.

Surface water levels in Wards Pond upstream of the railroad crossing have been heavily influenced by beaver activity throughout the 2009 summer months. Beginning in the spring, water levels in the upper reaches of Wards Pond above the railroad crossing have risen unnaturally. This can be seen by examining the water elevation data as measured at WPSG-2 from May – August 2009 and observing the beaver activity. This rise resulted from the clogging of surface water flow through the railroad crossing culvert (an old granite block structure) by beaver activity and the unusually wet months of June and July. Sometime during the week of August 17<sup>th</sup> (personal conversation with local resident), the railroad crossing experienced some settling and the water that was backed up into the upper reaches of Wards Pond was released. As a result, the surface water elevation at WPSG-2 dropped by 1.81 feet between the July 20<sup>th</sup> and August 24<sup>th</sup> monitoring events.

On July 20<sup>th</sup>, WPSG-2 was under more than two feet of water. To better record large surface water fluctuations in the upper reaches of Wards Pond, a new staff gauge with a larger graduation (6.66 feet) was installed adjacent to WPSG-2 on August 27<sup>th</sup>, 2009. Labeled WPSG-2A, this staff gauge will replace WPSG-2 at this location starting with the September monitoring event. Luetje Geological Services will continue to monitor this situation during regular monthly monitoring.

## PRECIPITATION

Precipitation is recorded on-site adjacent to PBH-1 using an Onset Data Logging Rain Gauge (RG) as shown on Figure 1. The on-site rain gauge has a self-tipping bucket that is activated with every 0.01 inches of precipitation. The gauge is also wrapped with heat tape that melts snowfall and allows measurement of precipitation through the winter months.

Precipitation data are also recorded at the Fryeburg Eastern Slopes Airport (ICAO Station KIZG, Northeast Regional Climate Center) to verify precipitation measurements taken by the on-site rain gauge. The Fryeburg Eastern Slopes Airport is approximately two miles to the south of the on-site rain gauge. Table 3 presents monthly precipitation data for August, 2009.

**TABLE 3: FRYEBURG AREA PRECIPITATION DATA  
AUGUST, 2009**

<b>Station ID</b>	<b>Monthly Precipitation Total (Inches)</b>
On-Site Rain Gauge (RG)	2.72
Fryeburg Eastern Slopes Airport (ICAO Station KIZG)	4.61

**WITHDRAWALS**

Spring water volume withdrawn from Borehole-1 totaled 11,003,590 gallons for the month of August, 2009 as measured by flow meters located at the load station facility.

If you have any questions regarding the data included in this report, please do not hesitate to contact me (207) 415-9898.

Sincerely,

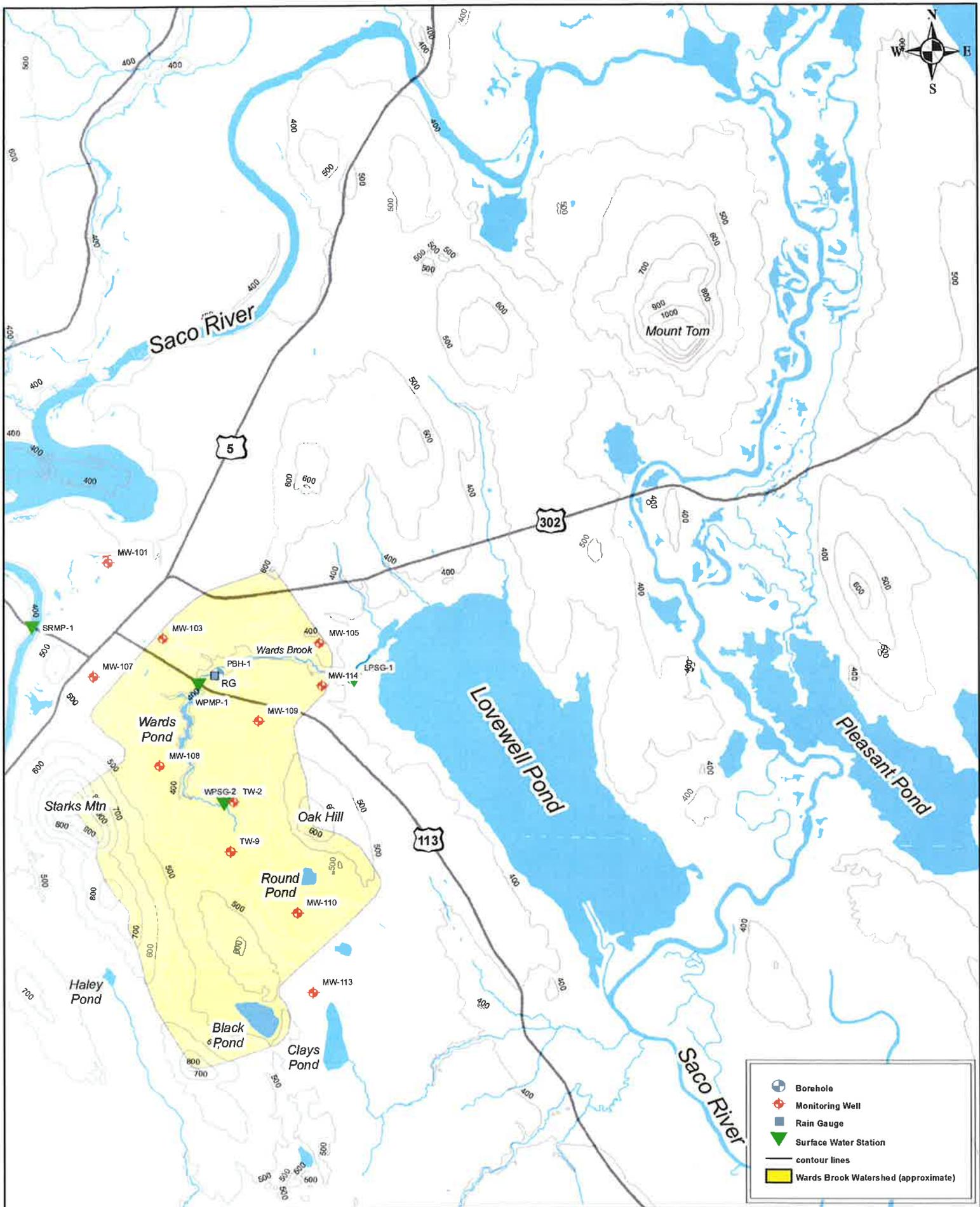
Luetje Geological Services, LLC



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Ed Luetje C.G.

cc: Fryeburg Water Company (Hugh Hastings)  
Fryeburg Water District (Richard Krasker)  
Emery & Garrett Groundwater, Inc. (Peter Garrett)  
Poland Spring (Mark Dubois)



Notes:  
 All general data layers acquired from the Maine Office of GIS.  
 Contours are 20' intervals.



FIGURE 1  
 VOLUNTARY AQUIFER MONITORING REPORT  
 LGS REF# 08-011  
 DATE: 1/16/2009



Luetje Geological Services, LLC  
Ed Luetje, CG  
46 Whittier Street  
Portland, Maine 04103

---

October 24, 2009

Attn: Town Manager  
Town of Fryeburg  
16 Lovewell's Pond Road  
Fryeburg, Maine 04037

RE: September 2009 Voluntary Aquifer Monitoring Report

## **INTRODUCTION**

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## **GROUNDWATER**

Groundwater levels are measured in eleven monitoring wells at locations shown in Figure 1. These wells provide groundwater level data across and adjacent to the Wards Brook watershed (Figure 1). Table 1 provides a summary of groundwater elevations at these locations as measured on September 21<sup>st</sup>, 2009.

**TABLE 1: GROUNDWATER ELEVATION DATA  
SEPTEMBER 21<sup>st</sup>, 2009**

<b>Monitoring Well</b>	<b>Reference Elevation (feet NGVD) <sup>1</sup></b>	<b>Groundwater Elevation (feet NGVD) <sup>2</sup></b>
MW-101 <sup>3</sup>	408.12	397.52
MW-103	421.29	412.11
MW-105	404.52	380.04
MW-107	431.67	424.73
MW-108	419.64	410.63
MW-109	420.00	399.88
MW-110	461.73	420.12
MW-113	441.14	422.23
MW-114	404.96	384.21
TW-2 <sup>4</sup>	404.01	406.24
TW-9	409.07	411.52

- Notes:
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- Lovewell Pond Staff Gauge (LPSG-1): surface water elevation is measured at the inlet from Wards Pond Brook; and,
- Wards Pond Staff Gauge (WPSG-2A): surface water elevation is measured near the center of the watershed in a bog located to the south of Wards Pond.

Table 2 presents the surface water elevation data measured on September 21<sup>st</sup>, 2009.

**TABLE 2: SURFACE WATER ELEVATION DATA  
SEPTEMBER 21<sup>st</sup>, 2009**

<b>Surface Water Station</b>	<b>Reference Elevation (feet NGVD) <sup>1</sup></b>	<b>Surface Water Elevation (feet NGVD) <sup>2</sup></b>
LPSG-1	364.68	362.89
WPMP-1	401.20	397.63
SRMP-1	418.64	395.30
WPSG-2A <sup>3</sup>	405.31 <sup>3</sup>	401.68

Notes: 1. NGVD is the National Geodetic Vertical Datum, formerly mean sea level. The Reference Elevation is the measuring point (usually the top of the staff gauge for surface water stations) elevation in feet NGVD.  
2. The Surface Water Elevation is the elevation of the water surface (feet NGVD) at the monitoring station.  
3. WPSG-2A was installed on August 27<sup>th</sup>, 2009 and will hence forth be the staff gauge monitored and reported at this location (Please refer to August 2009 Voluntary Aquifer Monitoring Report). Note the reference elevation change.

## PRECIPITATION

Precipitation is recorded on-site adjacent to PBH-1 using an Onset Data Logging Rain Gauge (RG) as shown on Figure 1. The on-site rain gauge has a self-tipping bucket that is activated with every 0.01 inches of precipitation. The gauge is also wrapped with heat tape that melts snowfall and allows measurement of precipitation through the winter months.

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**TABLE 3: FRYEBURG AREA PRECIPITATION DATA  
SEPTEMBER, 2009**

<b>Station ID</b>	<b>Monthly Precipitation Total (Inches)</b>
On-Site Rain Gauge (RG)	1.03
Fryeburg Eastern Slopes Airport (ICAO Station KIZG)	1.31

## WITHDRAWALS

Spring water volume withdrawn from Borehole-1 totaled 3,353,675 gallons for the month of September, 2009 as measured by flow meters located at the load station facility.

If you have any questions regarding the data included in this report, please do not hesitate to contact me (207) 415-9898.

Sincerely,

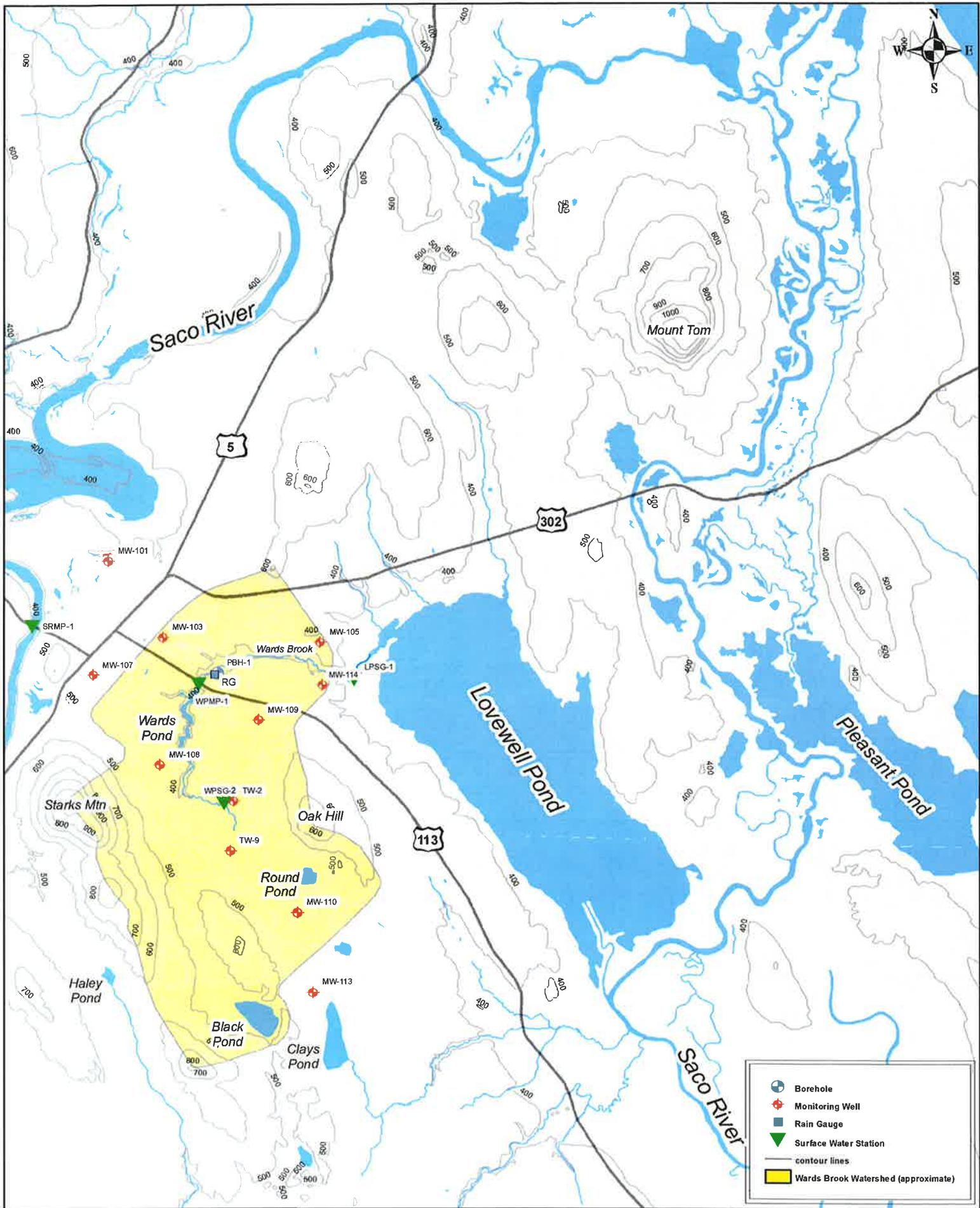
Luetje Geological Services, LLC



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0 0.5 1 2 Miles

FIGURE 1  
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 LGS REF# 08-011  
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