New Hampshire Groundwater Level Monitoring

April, 2021

New Hampshire Geological Survey
29 Hazen Drive, PO Box 95
Concord, New Hampshire 03302-0095

May 5, 2021

GROUNDWATER CONDITIONS SUMMARY

The Northeast Regional Climate Center (NRCC) at Cornell University has yet to release their April precipitation statistics. Another source of precipitation statistics, the National Drought Management current conditions web page indicates that most of the state is at or within 100% of normal precipitation over the last 30 days. Only a small portion of the eastern and seacoast areas of the state are at 50-75% of precipitation for the last 30 days. Figure 1 shows the distribution of percent precipitation, published by NRCC, and water levels in the well network.

Abnormally dry conditions have expanded into eastern New Hampshire since last March. Moderate drought has expanded to the length of Connecticut River Valley and spread to the Merrimack River Valley. Abnormally dry conditions persist in the eastern half of the state. As of April 27th, 57% of the state was abnormally dry, and 43% was in moderate drought (Figure 2).

Groundwater levels peaked in December across much of the state, following rain events and subsequent snowmelt. Since then, groundwater has been in steady decline in the northern and western portions of the state. Most wells are showing levels this month below their monthly averages, for those that are calculated. The only wells with groundwater levels that are within the normal or above-normal ranges are Nashua, New London, Colebrook and Barnstead. Groundwater level trends are mixed in the Merrimack River basin and Seacoast Region. These wells that are showing upward are likely responding to localized continued rain events and snowmelt. In the case of Nashua, the upward trend is a likely result from a high, stabilized groundwater table from adjacent locally dammed reservoirs.

Figures 1 and 2 show the monthly status of groundwater levels for both bedrock and overburden wells in the network. Only wells with a period of record (POR) 10 years or more are placed within statistical categories of low through high (symbols red through blue, respectively). Bedrock wells are installed into bedrock and overburden wells are installed in the unconsolidated materials above bedrock.

The New Hampshire Geological Survey's groundwater monitoring network (Figures 1 and 2) currently includes 11 bedrock and 20 overburden observation wells, all of which are measured monthly by hand. Using the monthly hand readings, monthly averages and percentile statistics were calculated and are summarized in Figures 1 and 2, the following hydrographs*, and in Table 1.

*The hydrographs show the following data over a period of 12 months: (1) monthly groundwater depths in red, (2) the monthly average over the period of record (POR) of the well in black, and (3) color-coded statistical ranges over the POR of the well. Note the POR is listed below each month's column on the chart and reported as the number of measurements for that respective month. This might include multiple readings in the same month and does not include any gaps in data so therefore may not represent a continuous period. A second set of hydrographs are also included and depict a statistical envelope of 15% and 85% values along with the current year monthly reading and median.

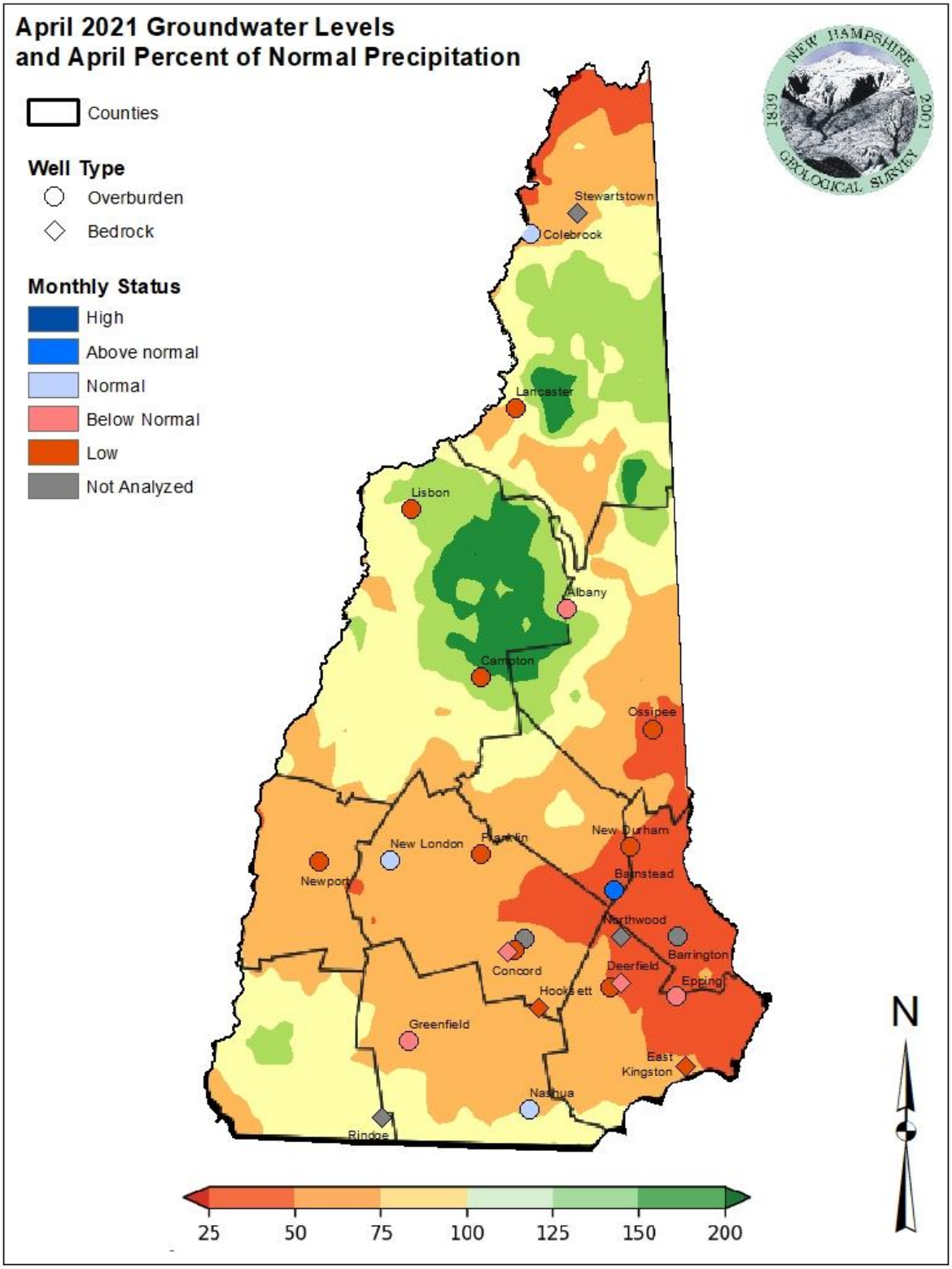


Figure 1. Groundwater Monitoring Network showing groundwater levels relative to statistical envelopes calculated over each well's period of record (POR) and percent normal precipitation map for April, 2021 (Northeast Regional Climate Center).

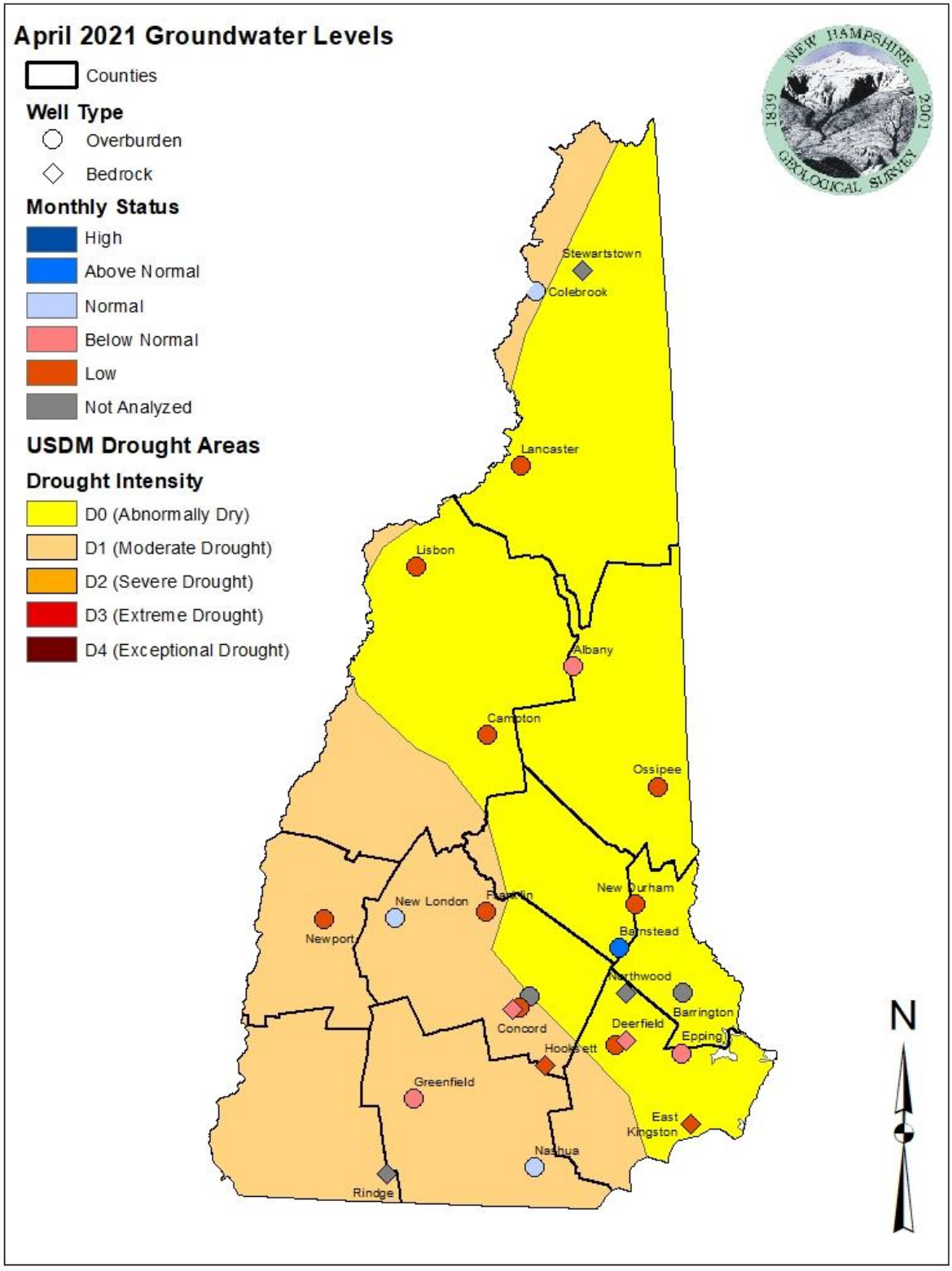
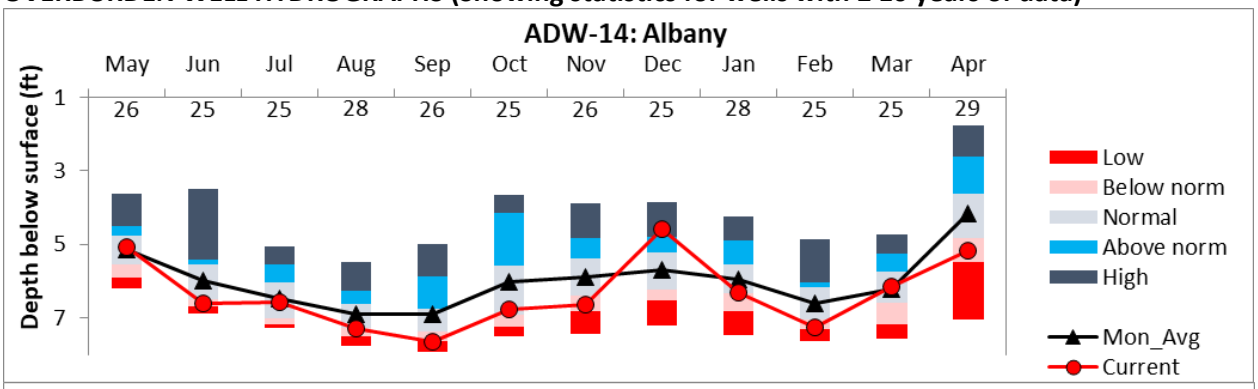


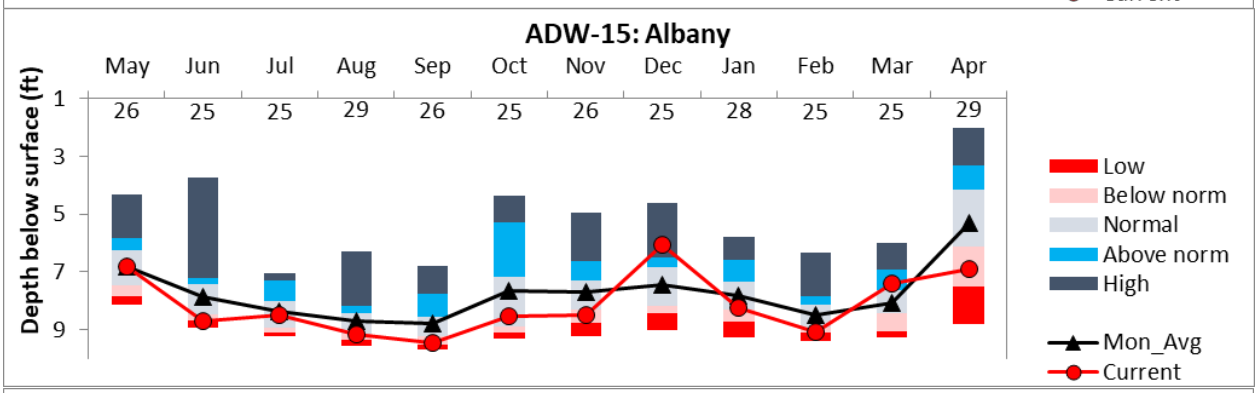
Figure 2. Groundwater Monitoring Network showing groundwater levels relative to statistical envelopes calculated over each well's period of record (POR) and drought areas according to data released by the U.S. Drought Monitor on April 27, 2021.

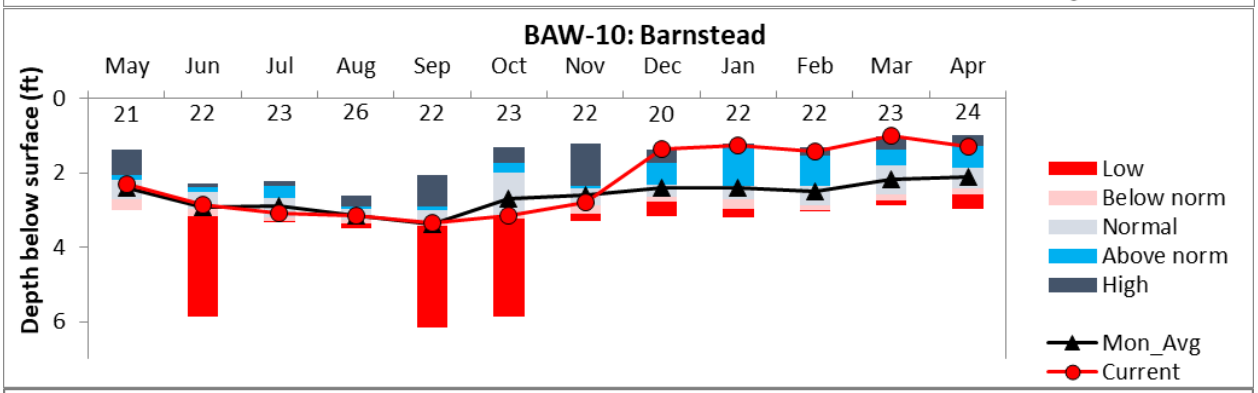
Table 1. Summary of groundwater levels sorted by region (dark blue – high, blue – above normal, light blue – normal, pink – below normal, red – low.

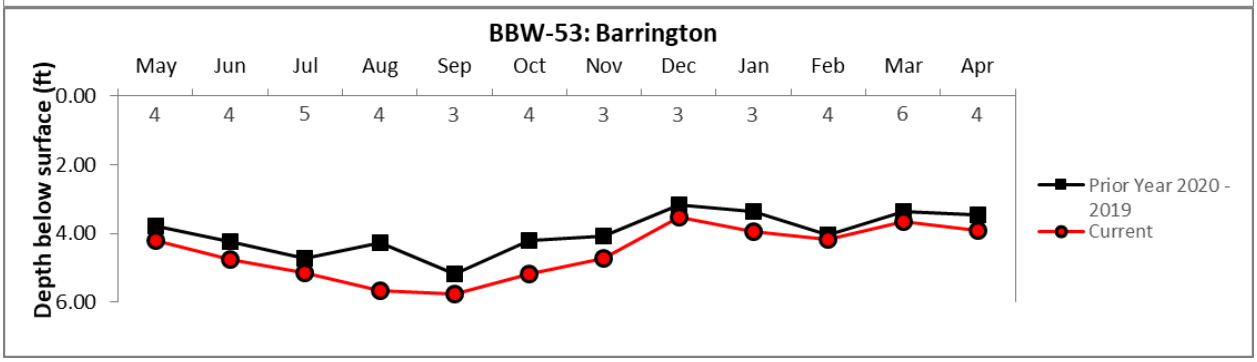
Well	Town	Well type	Screen/ open Interval (ft)	Depth to Water (ft)	Monthly Average (ft)	Current Status	Departure from Avg. (ft)	Change since last month (ft)
ADW-14	Albany	Overburden	77.5-79.5	5.18	4.17	Below norm	-1.01	0.98
ADW-15	Albany	Overburden	16-18	6.9	5.31	Below norm	-1.59	0.5
BAW-10	Barnstead	Overburden	23-25	1.28	2.09	Above norm	0.81	-0.27
BBW-53	Barrington	Overburden	21-23	3.91		Not Analyzed	-	-0.27
CBW-34	Campton	Overburden	21-23	12.18	11.1	Low	-1.08	0.2
CTW-73	Colebrook	Overburden	105-107	7.5	7.06	Normal	-0.44	0.1
CVW-02.1	Concord	Overburden	59.8-61.8	41.79		Not Analyzed	-	-0.47
CVW-04	Concord	Overburden	25-27	17.58	16.22	Low	-1.36	0.28
DDW-46	Deerfield	Overburden	59.8-61.8	39.05	38.05	Low	-1	0.28
EPW-90	Epping	Overburden	39.45-40.7	28.44	26.8	Below norm	-1.64	0.21
FKW-01	Franklin	Overburden	45.5-47.5	14.17	10.86	Low	-3.31	0.68
GSW-75	Greenfield	Overburden	35.8-37.8	63.36	61.01	Below norm	-2.35	0.21
LCW-01	Lancaster	Overburden	28-30	2.28	0.77	Low	-1.51	-0.19
LLW-19	Lisbon	Overburden	49.8-52.3	13.88	12.61	Low	-1.27	-0.24
NAW-218	Nashua	Overburden	66-68	26.8	27.13	Normal	0.33	0.03
NFW-53	New Durham	Overburden	28-30	19.04	18.57	Low	-0.47	-0.29
NLW-01	New London	Overburden	40-42	4.81	4.58	Normal	-0.23	-1.58
NPW-03	Newport	Overburden	40.5-42.5	6.37	4.8	Low	-1.57	-0.36
NPW-06	Newport	Overburden	58-60	6.89	4.85	Low	-2.04	-0.34
OXW-38	Ossipee	Overburden	0-22.55	35.74	34.51	Low	-1.23	0.27
CVWB-01	Concord	Bedrock	470-480	20.06	19.98	Below norm	-0.08	0.15
CVWB-02	Concord	Bedrock	0-315	14.12	13.69	Below norm	-0.43	-0.32
DDWB-01	Deerfield	Bedrock	0-300	17.35	16.35	Below norm	-1	0.33
EAWB-01	East Kingston	Bedrock	463-473	22.36	21.95	Low	-0.41	-0.22
EAWB-02	East Kingston	Bedrock	0-323	21.46	20.61	Low	-0.85	-0.32
HTW-05	Hooksett	Bedrock	0-102.7	48.89	46.12	Low	-2.77	-0.11
NWWB-01	Northwood	Bedrock	0-130	3.14		Not Analyzed	-	-0.11
RGWB-01	Rindge	Bedrock	391-401	14.27		Not Analyzed	-	0.6
RGWB-02	Rindge	Bedrock	0-285	16.98		Not Analyzed	-	0.61
SOWB-01	Stewartstown	Bedrock	443-453	16.75		Not Analyzed	-	9.45
SOWB-02	Stewartstown	Bedrock	0-303	16.8		Not Analyzed	-	1.1

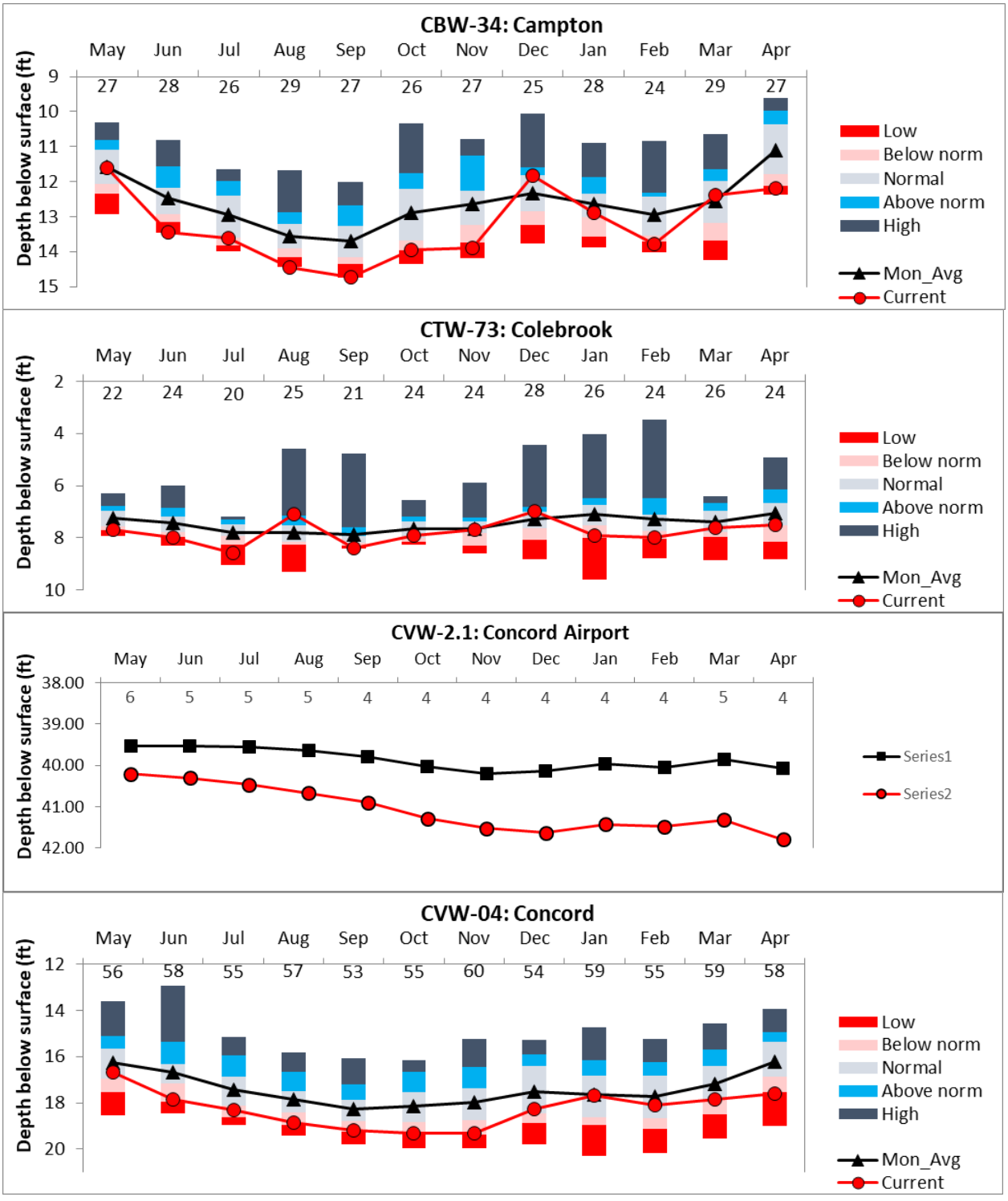
OVERBURDEN WELL HYDROGRAPHS (Showing statistics for wells with ≥ 10 years of data)

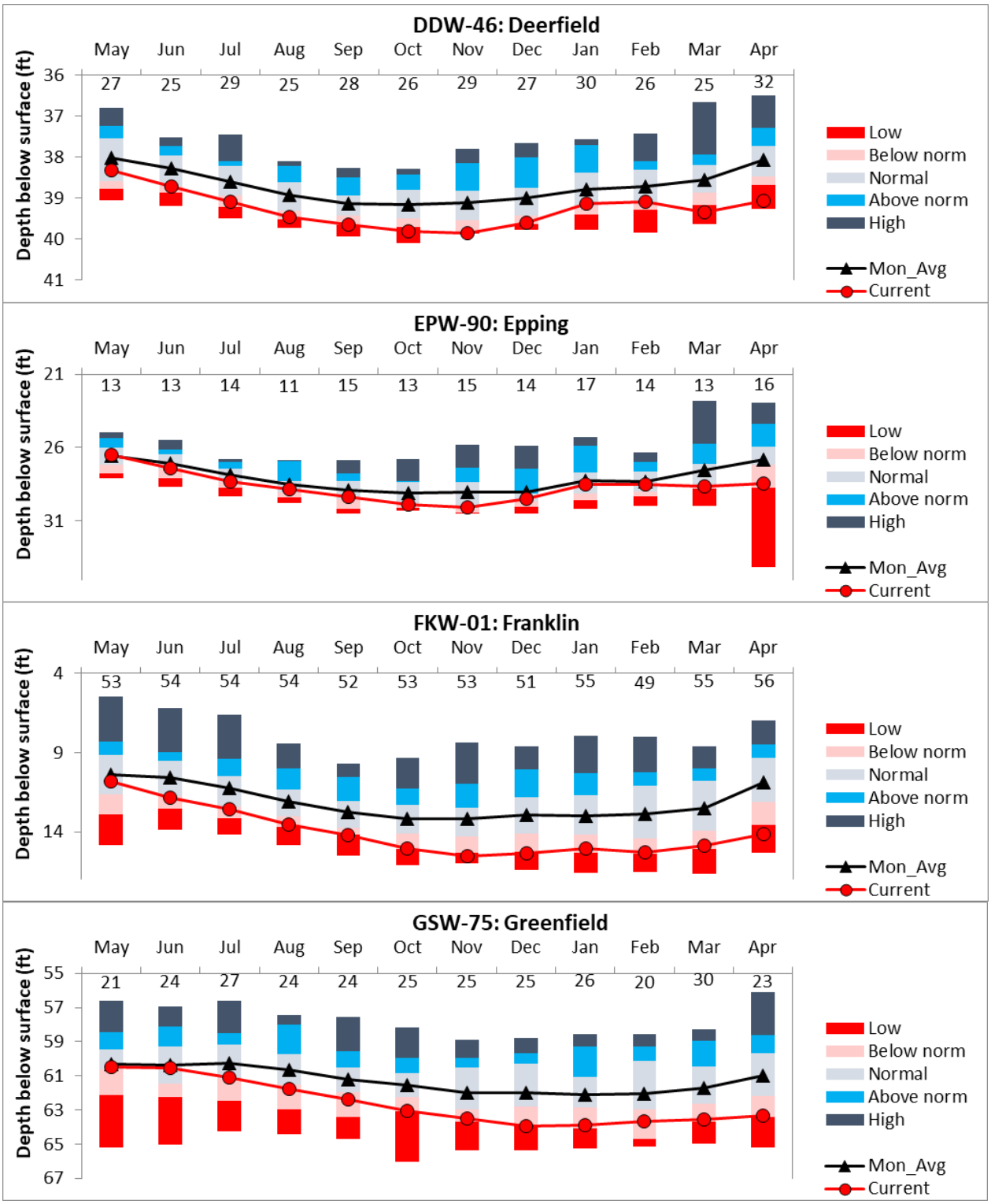


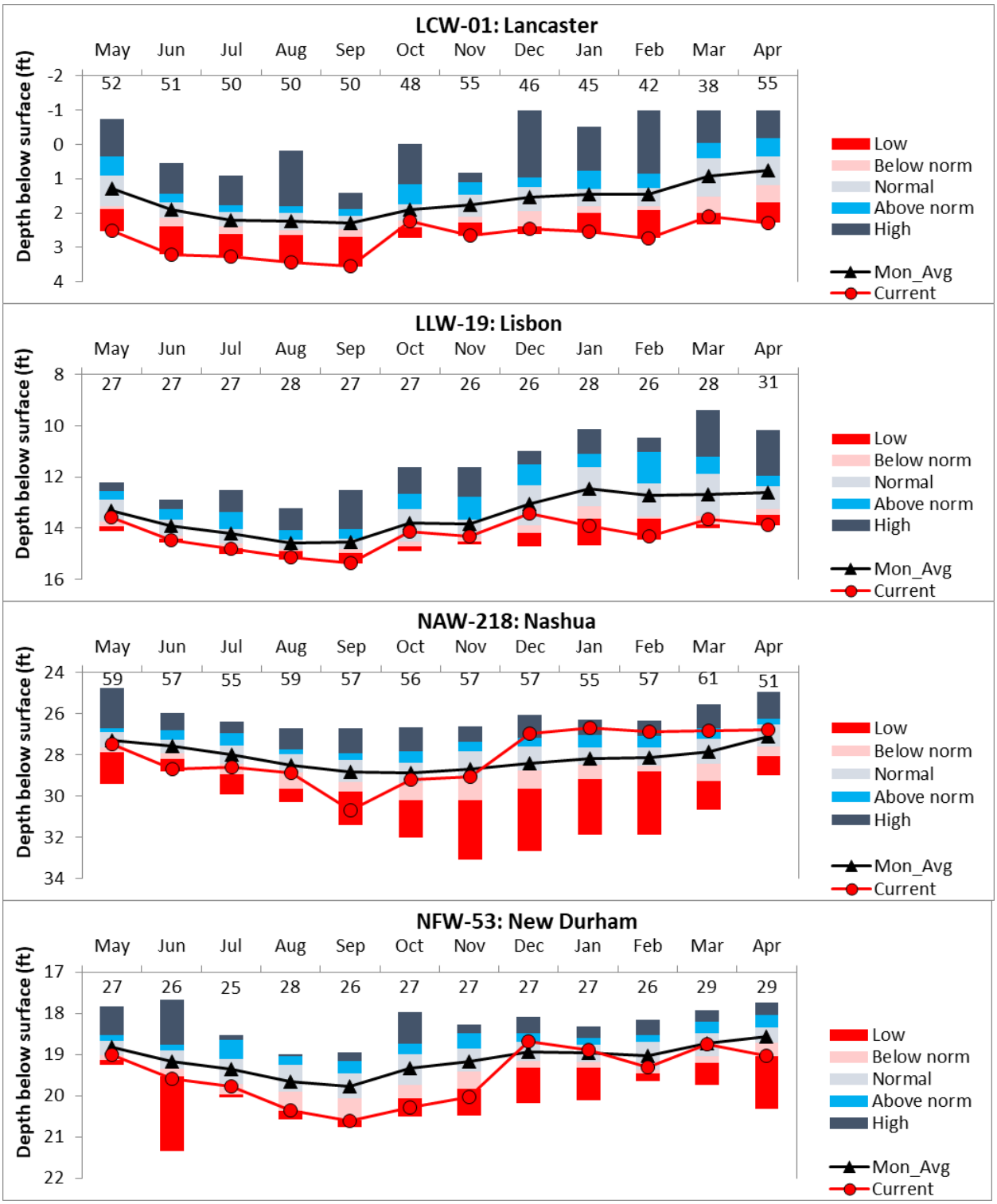


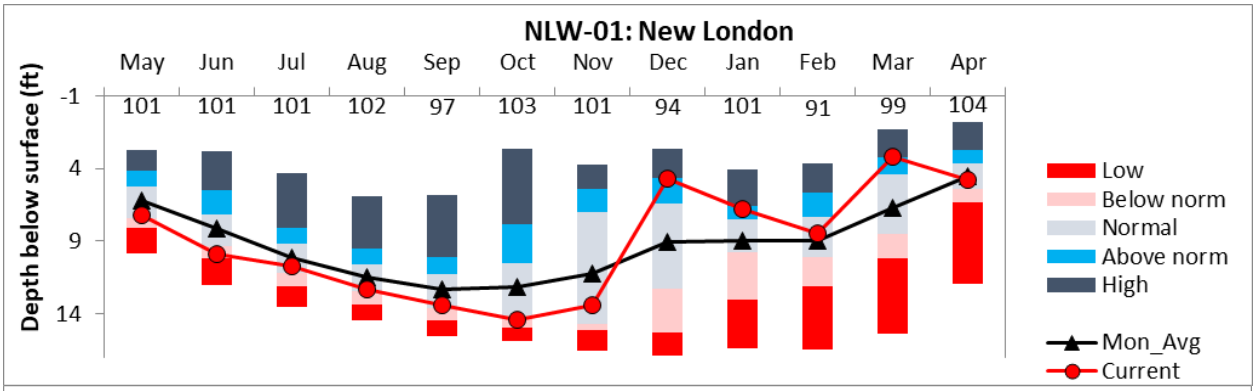


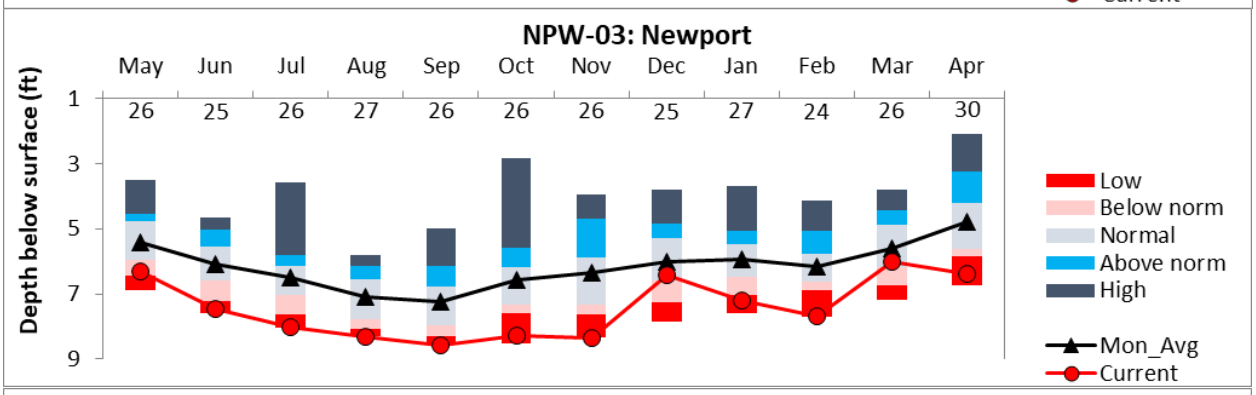


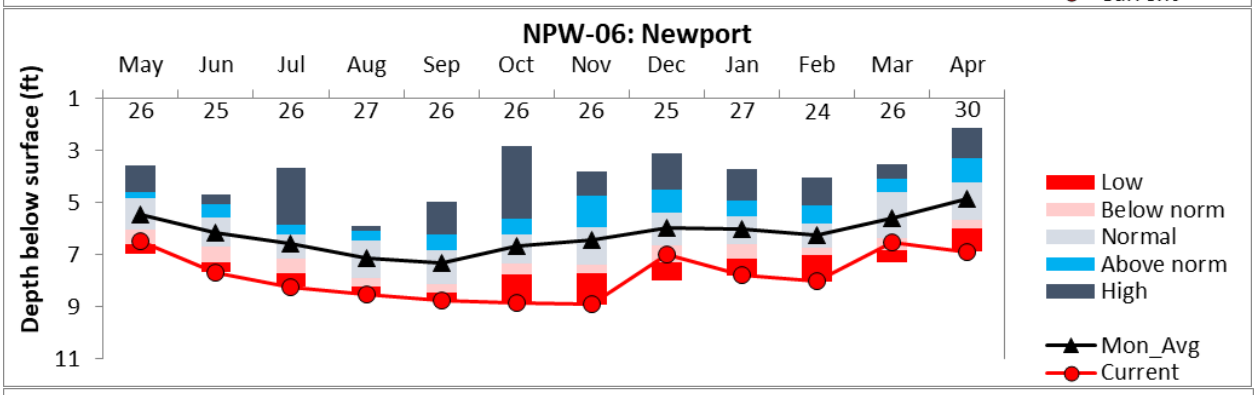

CBW-34: Campton
May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr
27 28 26 29 27 26 27 25 28 24 29 27
Depth below surface (ft)
9 10 11 12 13 14 15
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current
CTW-73: Colebrook
May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr
22 24 20 25 21 24 24 28 26 24 26 24
Depth below surface (ft)
2 4 6 8 10
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current
CVW-2.1: Concord Airport
May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr
6 5 5 5 4 4 4 4 4 4 5 4
Depth below surface (ft)
38.00 39.00 40.00 41.00 42.00
Series1
Series2
CVW-04: Concord
May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr
56 58 55 57 53 55 60 54 59 55 59 58
Depth below surface (ft)
12 14 16 18 20
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current

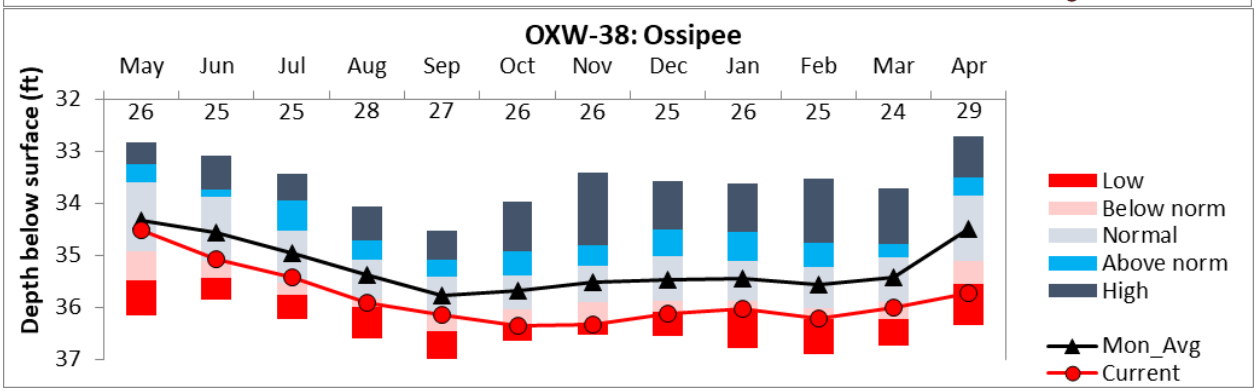

DDW-46: Deerfield
May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr
27 25 29 25 28 26 29 27 30 26 25 32
Depth below surface (ft)
36 37 38 39 40 41
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current
EPW-90: Epping
May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr
13 13 14 11 15 13 15 14 17 14 13 16
Depth below surface (ft)
21 26 31
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current
FKW-01: Franklin
May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr
53 54 54 54 52 53 53 51 55 49 55 56
Depth below surface (ft)
4 9 14
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current
GSW-75: Greenfield
May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr
21 24 27 24 24 25 25 25 26 20 30 23
Depth below surface (ft)
55 57 59 61 63 65 67
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current


LCW-01: Lancaster
Depth below surface (ft)
May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr
-2 -1 0 1 2 3 4
52 51 50 50 50 48 55 46 45 42 38 55
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current
LLW-19: Lisbon
Depth below surface (ft)
May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr
8 10 12 14 16
27 27 27 28 27 27 26 26 28 26 28 31
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current
NAW-218: Nashua
Depth below surface (ft)
May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr
24 26 28 30 32 34
59 57 55 59 57 56 57 57 55 57 61 51
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current
NFW-53: New Durham
Depth below surface (ft)
May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr
17 18 19 20 21 22
27 26 25 28 26 27 27 27 27 26 29 29
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current

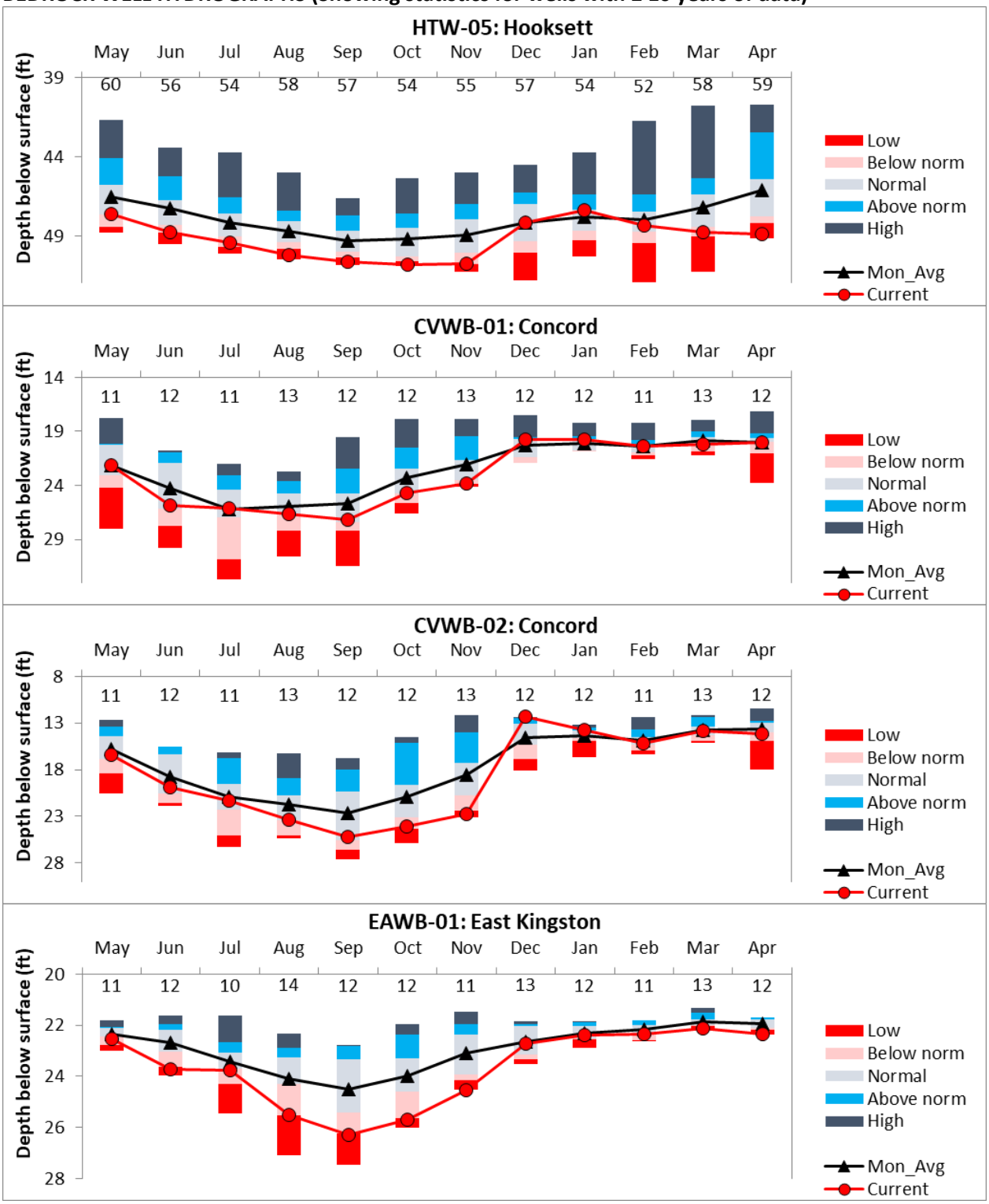

NLW-01: New London
Depth below surface (ft)
May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr
-1
4
9
14
101 101 101 102 97 103 101 94 101 91 99 104
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current

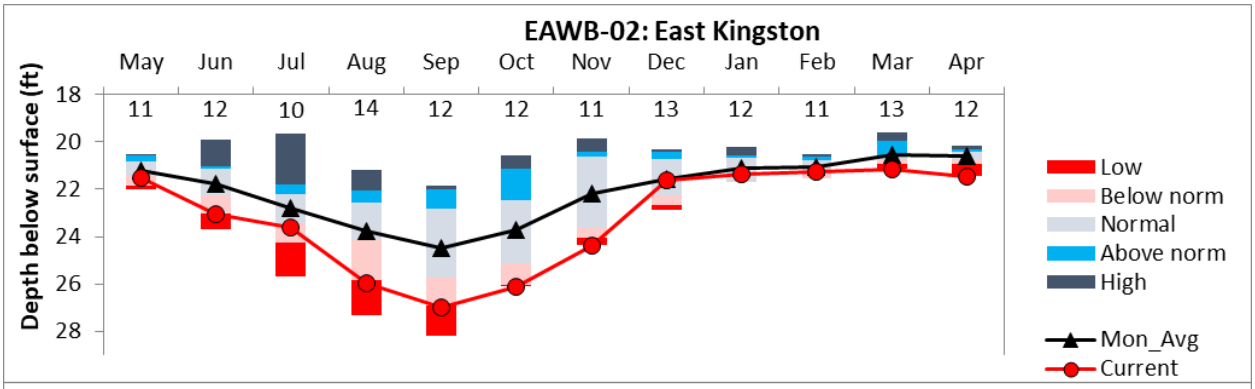

NPW-03: Newport
Depth below surface (ft)
May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr
1
3
5
7
9
26 25 26 27 26 26 26 25 27 24 26 30
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current

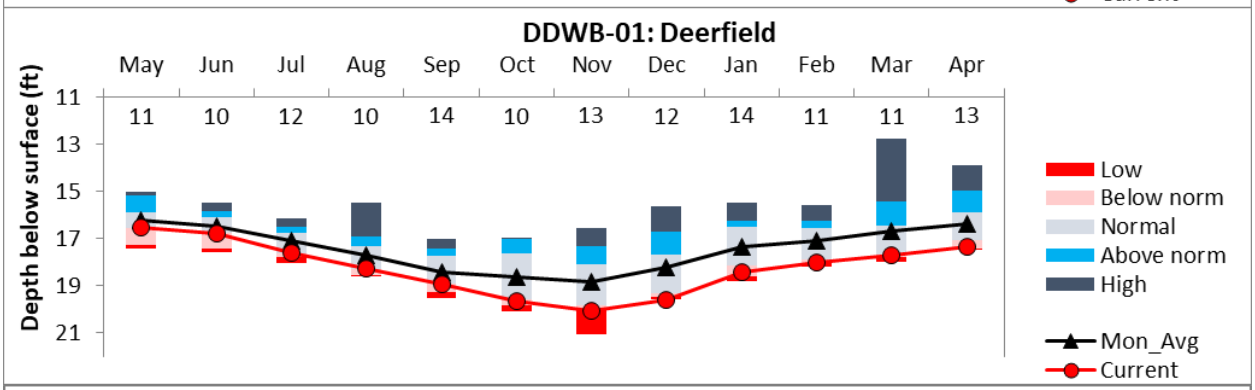

NPW-06: Newport
Depth below surface (ft)
May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr
1
3
5
7
9
11
26 25 26 27 26 26 26 25 27 24 26 30
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current

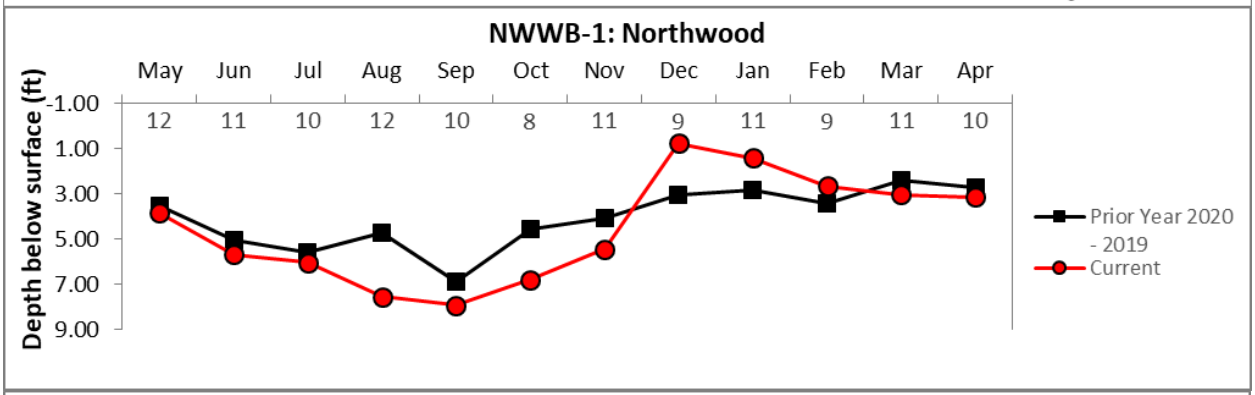

OXW-38: Ossipee
Depth below surface (ft)
May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr
32
33
34
35
36
37
26 25 25 28 27 26 26 25 26 25 24 29
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current

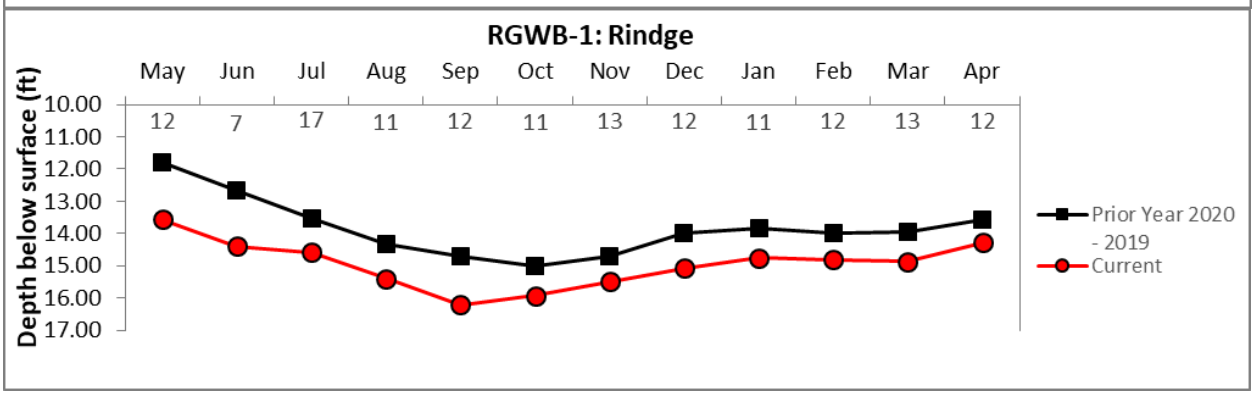
BEDROCK WELL HYDROGRAPHS (Showing statistics for wells with ≥ 10 years of data)

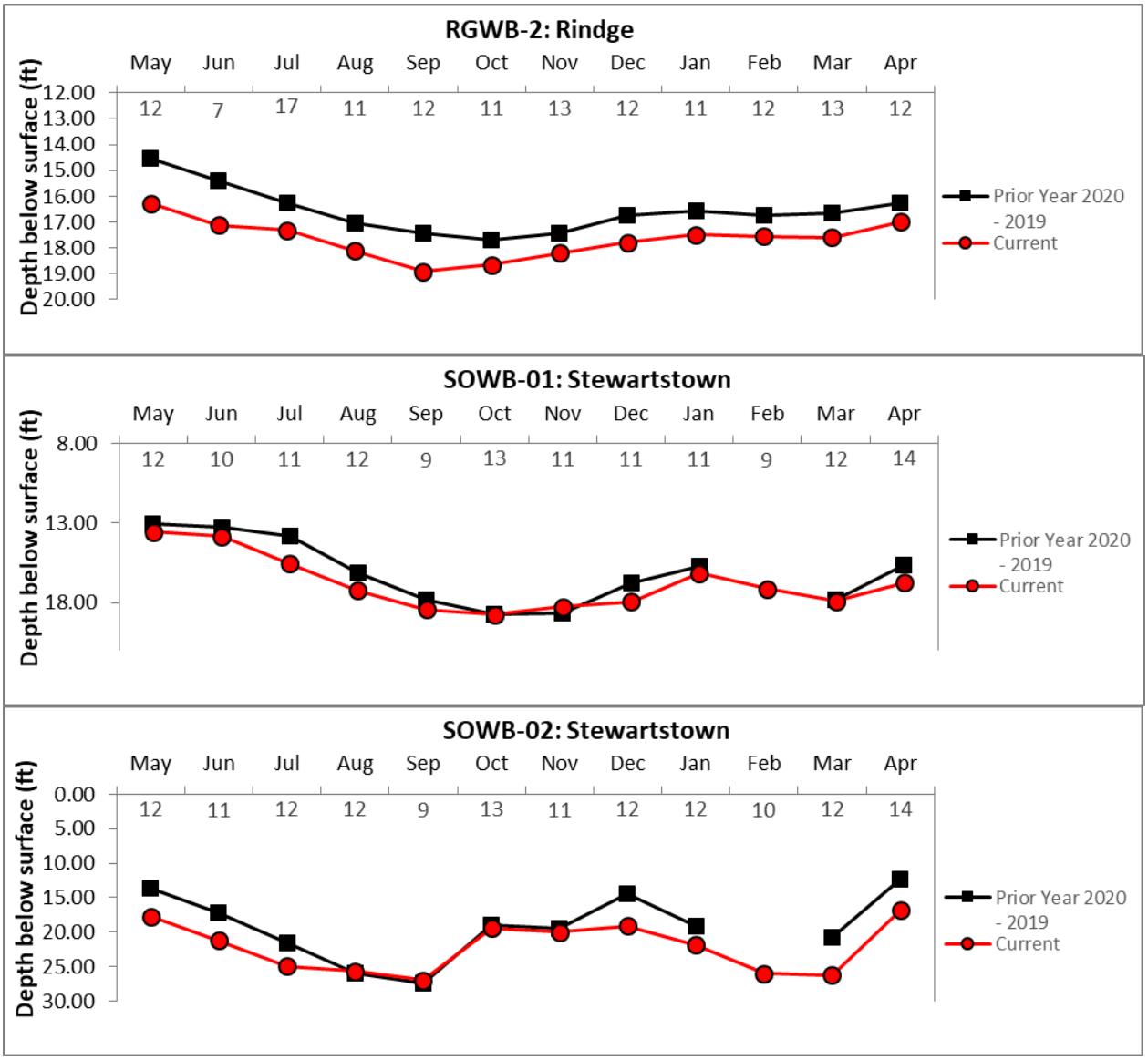


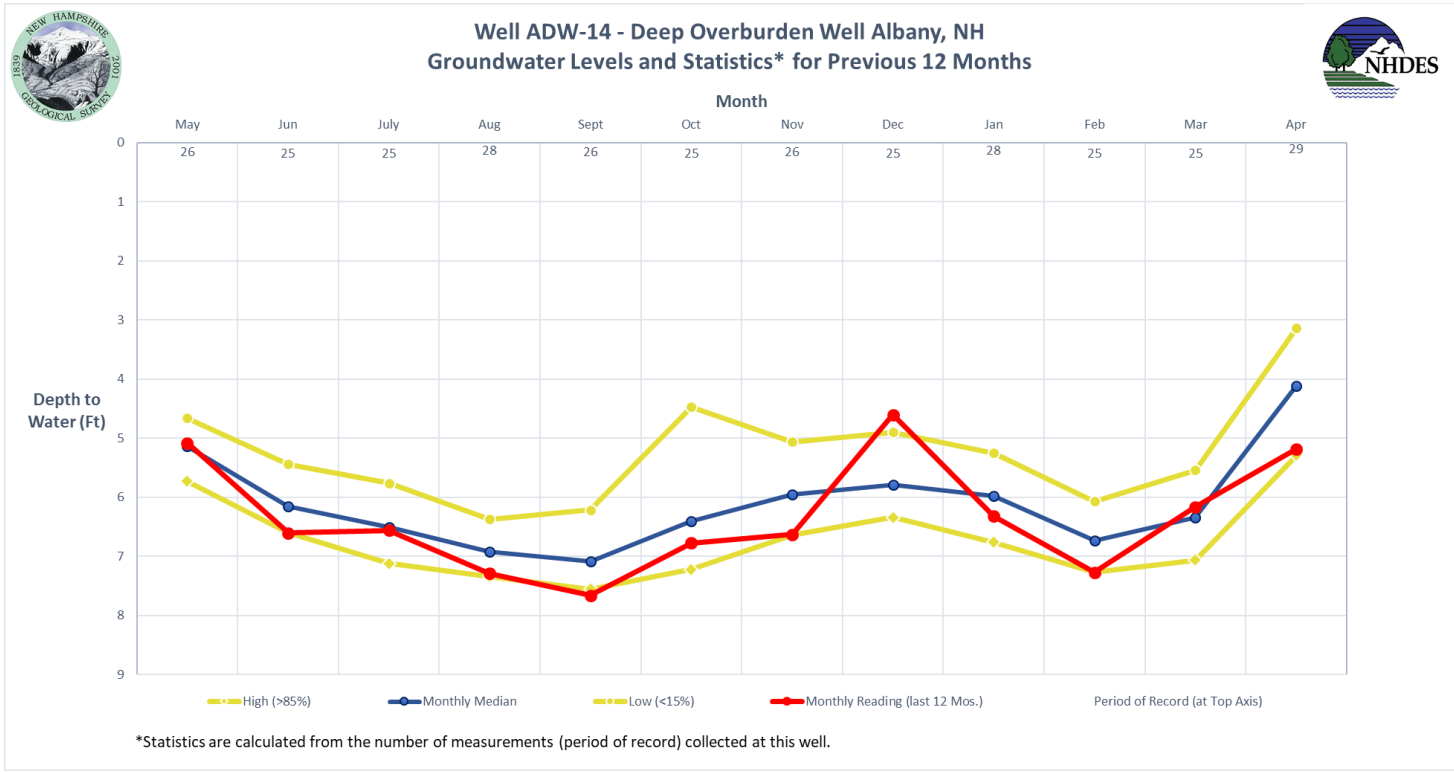

EAWB-02: East Kingston
May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr
Depth below surface (ft)
18 20 22 24 26 28
11 12 10 14 12 12 11 13 12 11 13 12
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current


DDWB-01: Deerfield
May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr
Depth below surface (ft)
11 13 15 17 19 21
11 10 12 10 14 10 13 12 14 11 11 13
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current

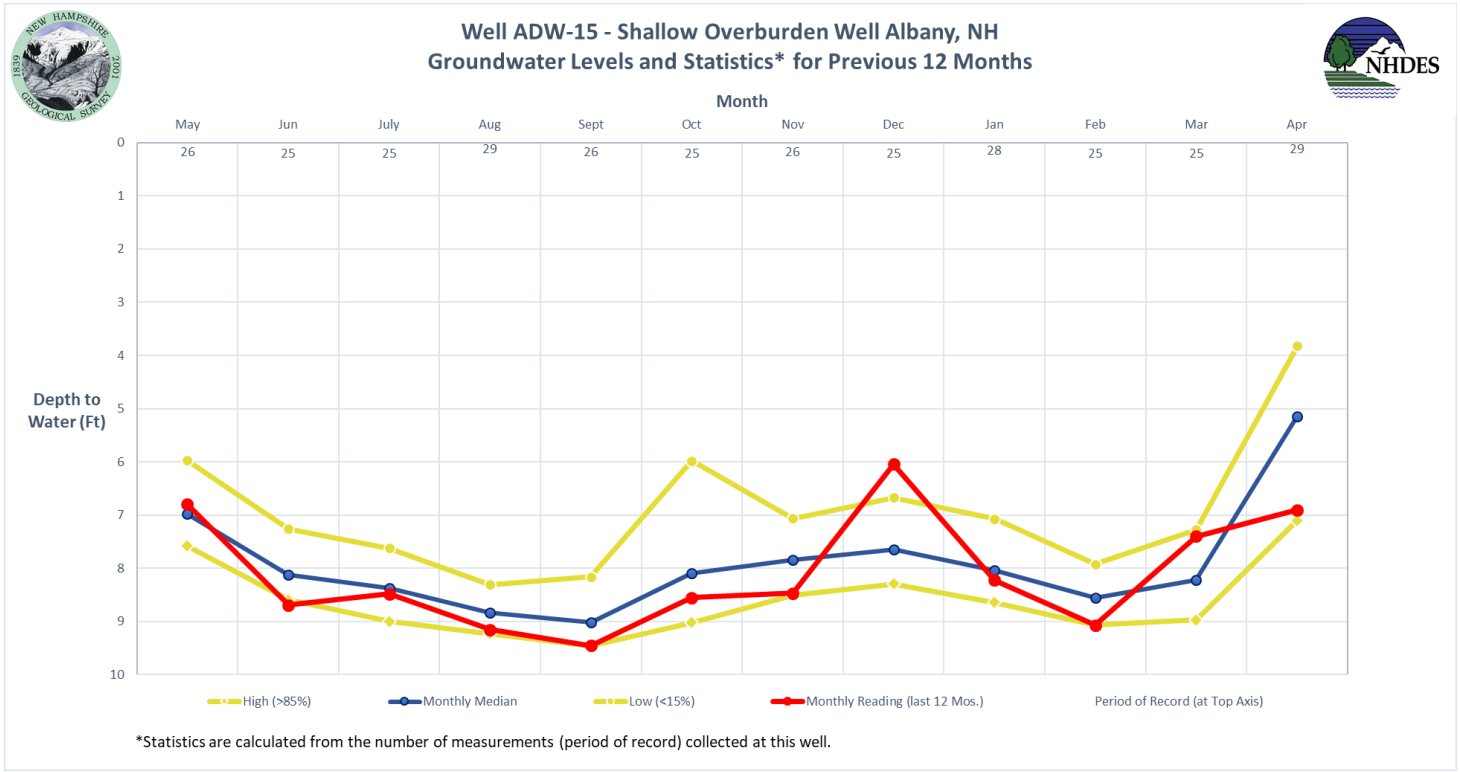

NWWB-1: Northwood
May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr
Depth below surface (ft)
-1.00 1.00 3.00 5.00 7.00 9.00
12 11 10 12 10 8 11 9 11 9 11 10
Prior Year 2020 - 2019
Current


RGWB-1: Rindge
May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr
Depth below surface (ft)
10.00 11.00 12.00 13.00 14.00 15.00 16.00 17.00
12 7 17 11 12 11 13 12 11 12 13 12
Prior Year 2020 - 2019
Current

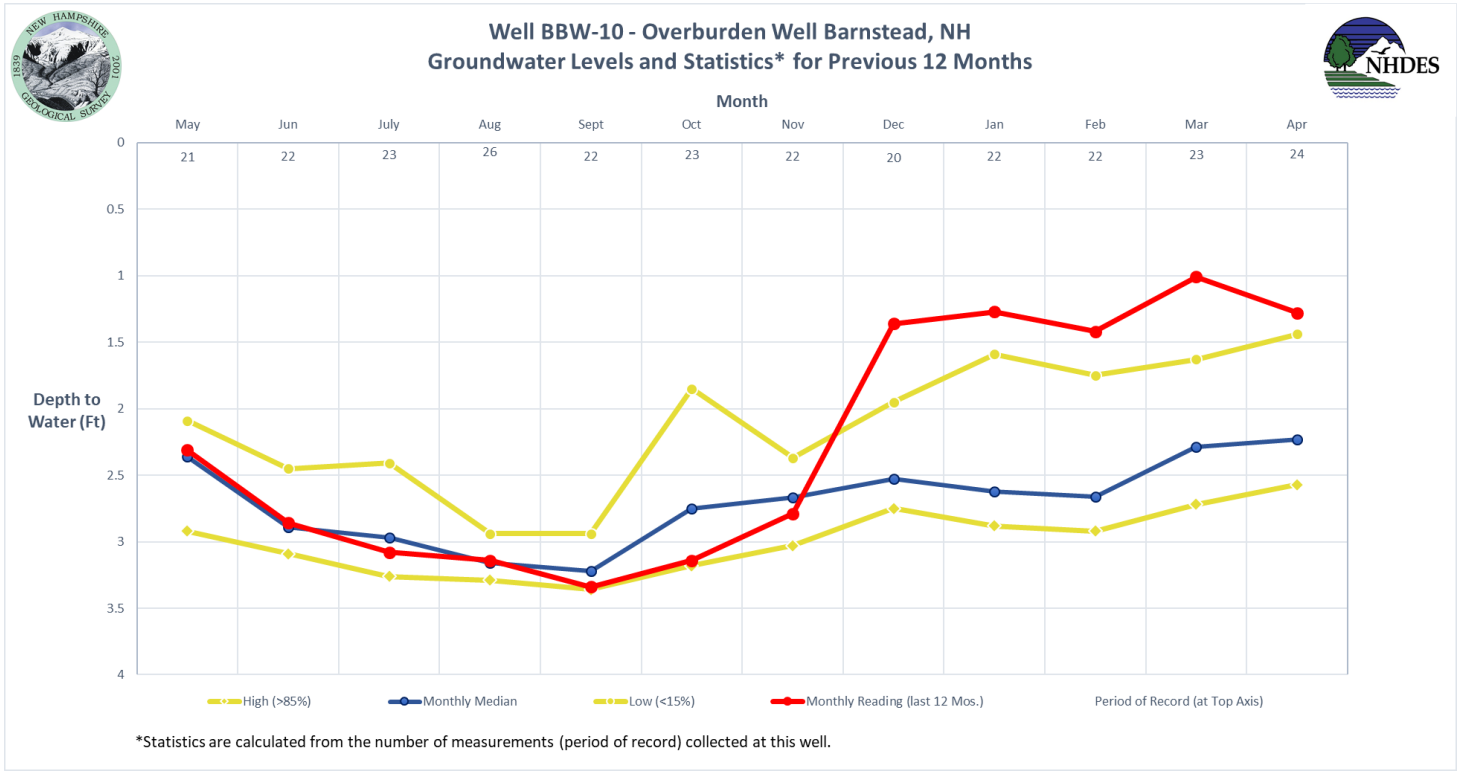

RGWB-2: Rindge
May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr
12 7 17 11 12 11 13 12 11 12 13 12
Depth below surface (ft)
12.00 13.00 14.00 15.00 16.00 17.00 18.00 19.00 20.00
Prior Year 2020 - 2019
Current
SOWB-01: Stewartstown
May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr
12 10 11 12 9 13 11 11 11 9 12 14
Depth below surface (ft)
8.00 13.00 18.00
Prior Year 2020 - 2019
Current
SOWB-02: Stewartstown
May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr
12 11 12 12 9 13 11 12 12 10 12 14
Depth below surface (ft)
0.00 5.00 10.00 15.00 20.00 25.00 30.00
Prior Year 2020 - 2019
Current

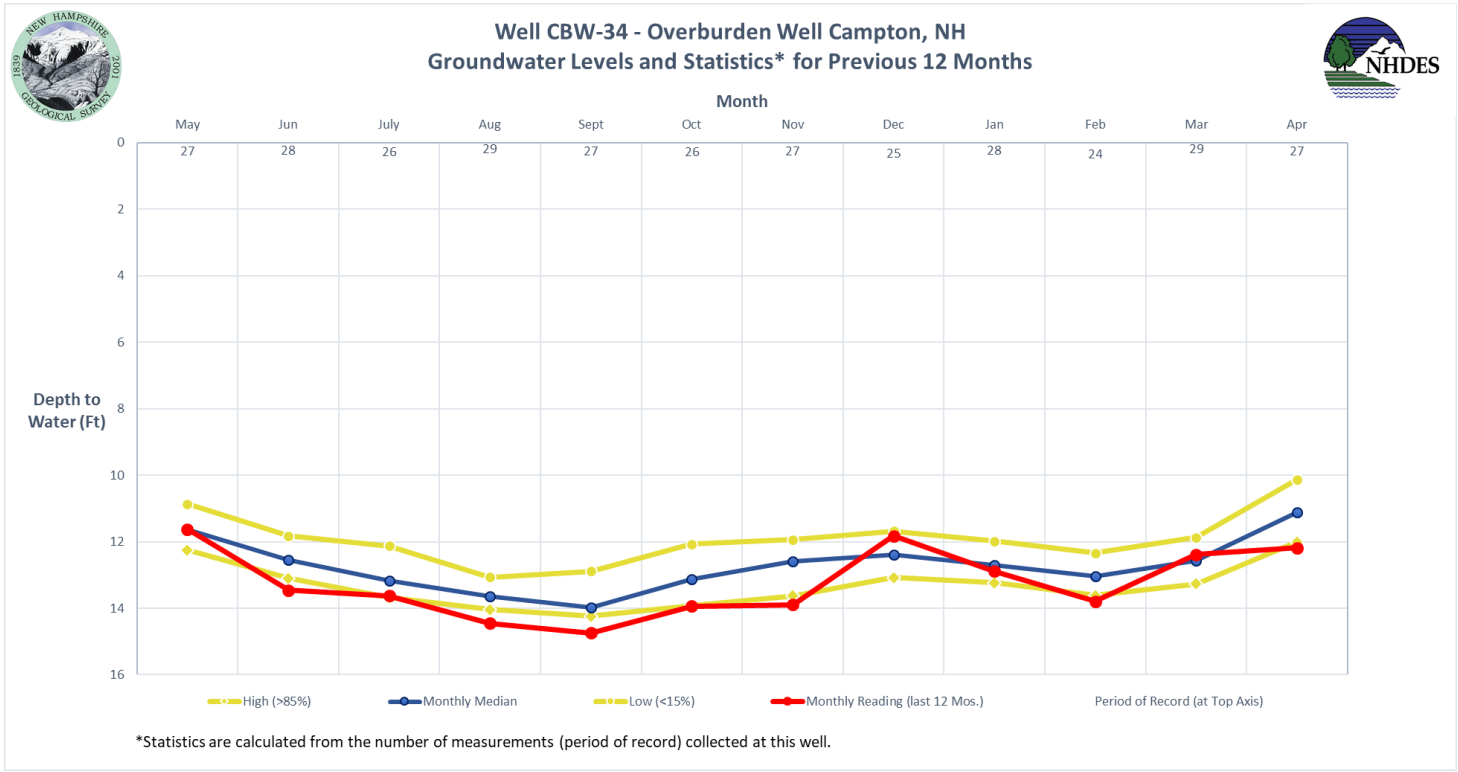


*Statistics are calculated from the number of measurements (period of record) collected at this well.

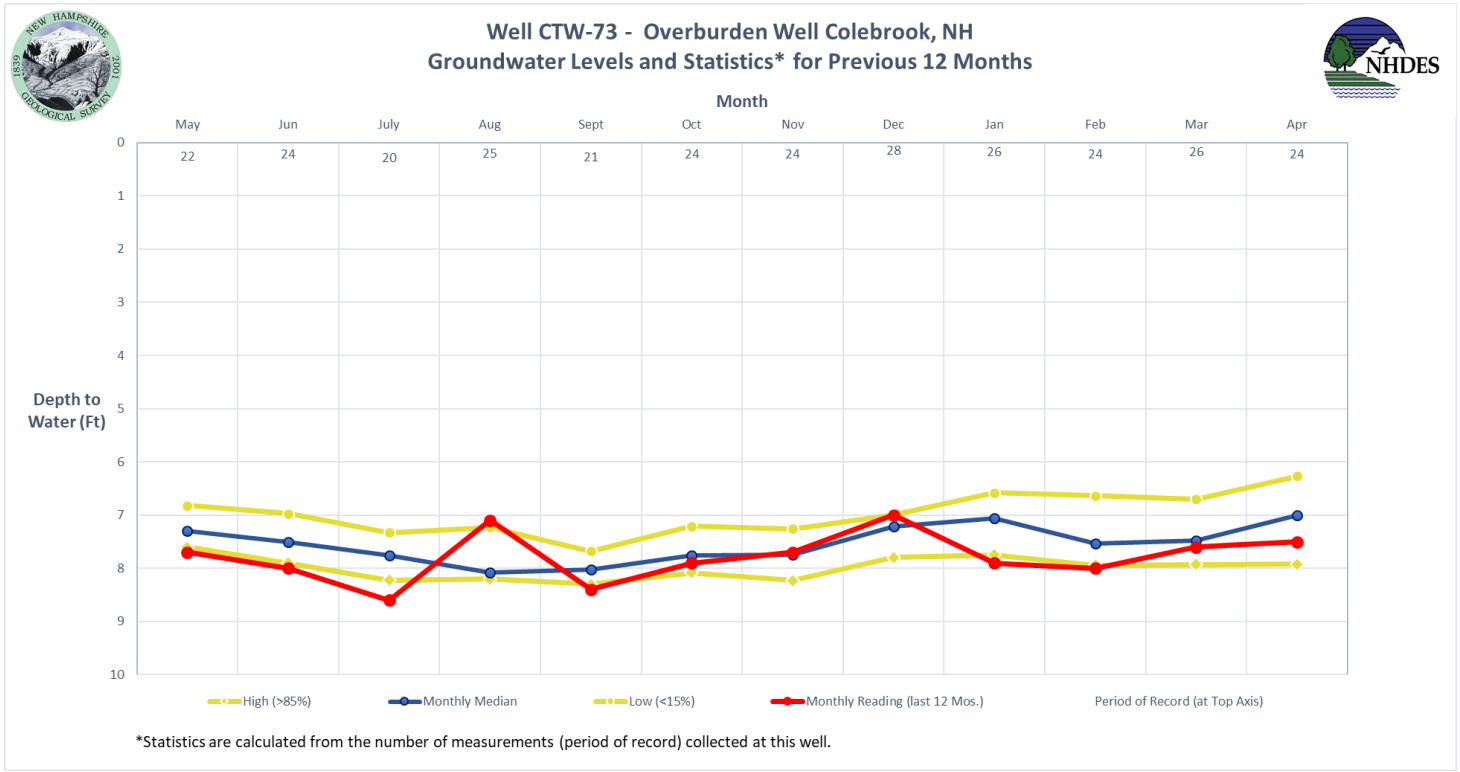


*Statistics are calculated from the number of measurements (period of record) collected at this well.

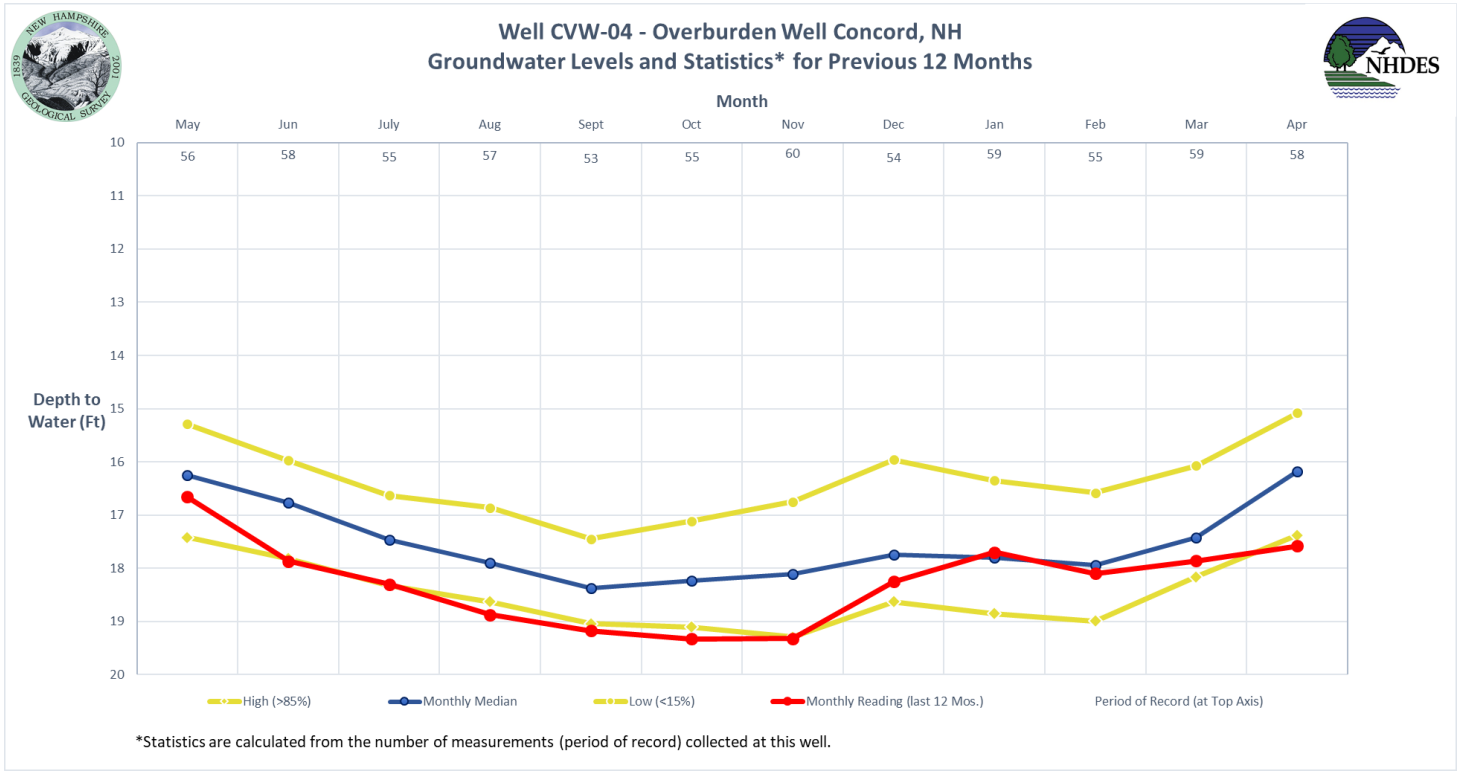

Well BBW-10 - Overburden Well Barnstead, NH
Groundwater Levels and Statistics* for Previous 12 Months
Month
May Jun July Aug Sept Oct Nov Dec Jan Feb Mar Apr
21 22 23 26 22 23 22 20 22 22 23 24
0 0.5 1 1.5 2 2.5 3 3.5 4
Depth to Water (Ft)
High (>85%)
Monthly Median
Low (<15%)
Monthly Reading (last 12 Mos.)
Period of Record (at Top Axis)
*Statistics are calculated from the number of measurements (period of record) collected at this well.

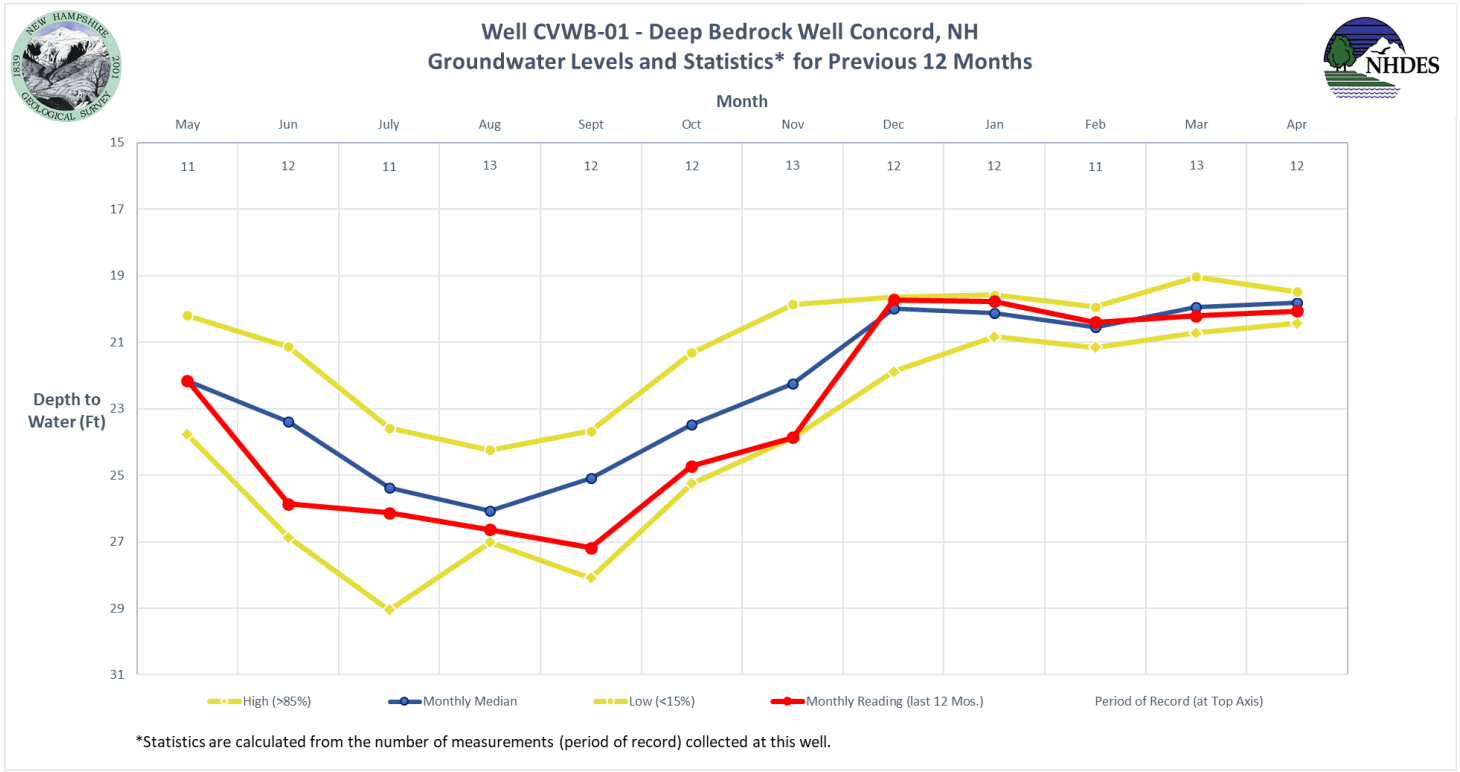


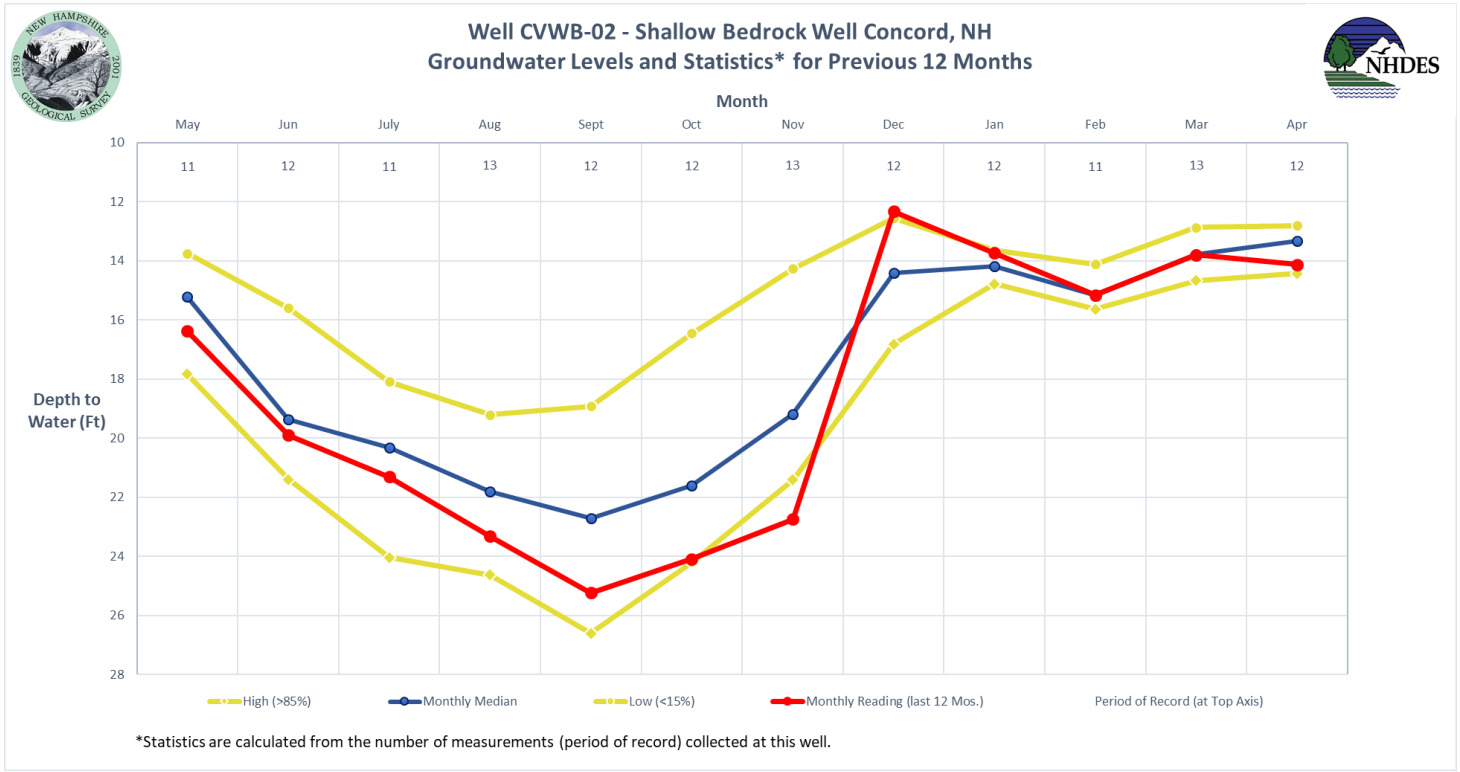
*Statistics are calculated from the number of measurements (period of record) collected at this well.

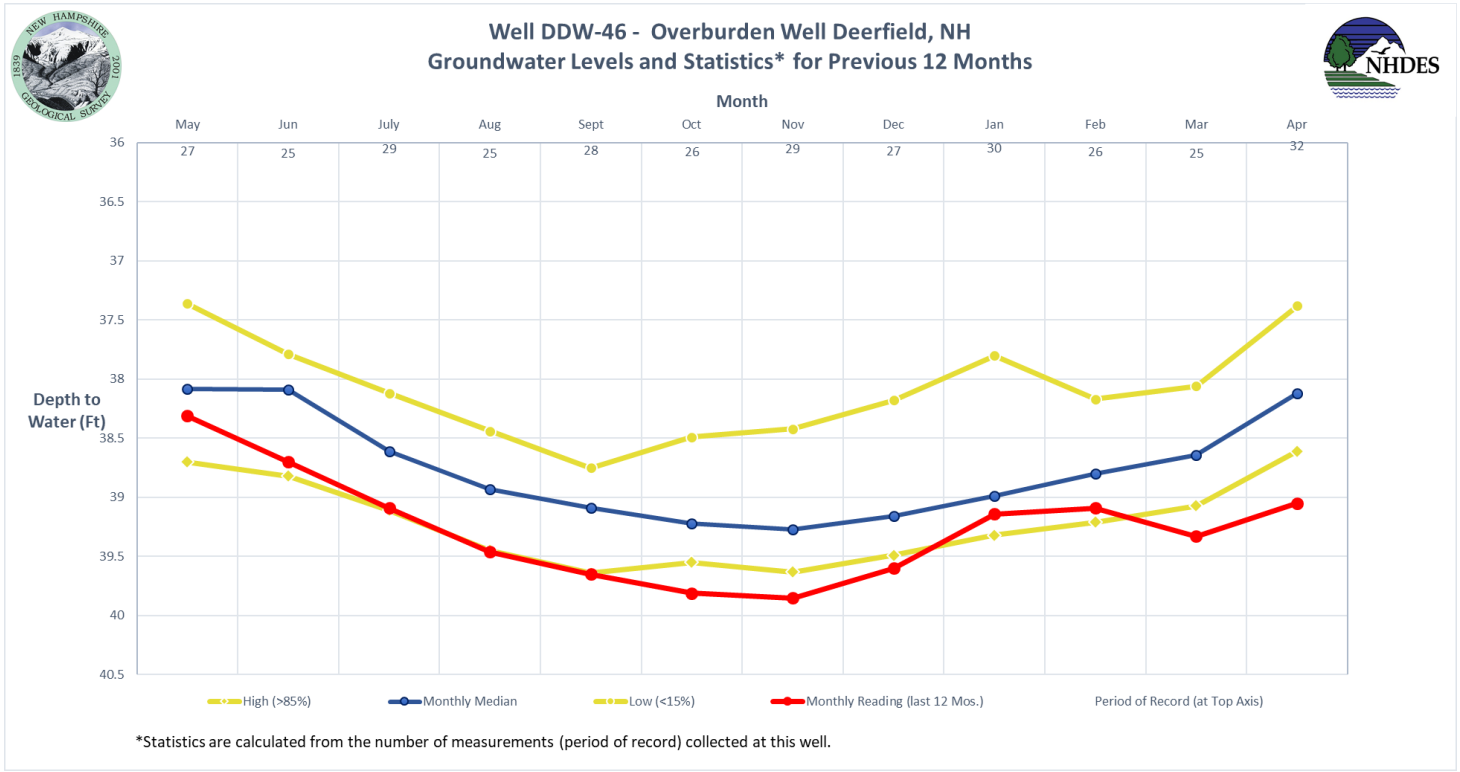


*Statistics are calculated from the number of measurements (period of record) collected at this well.

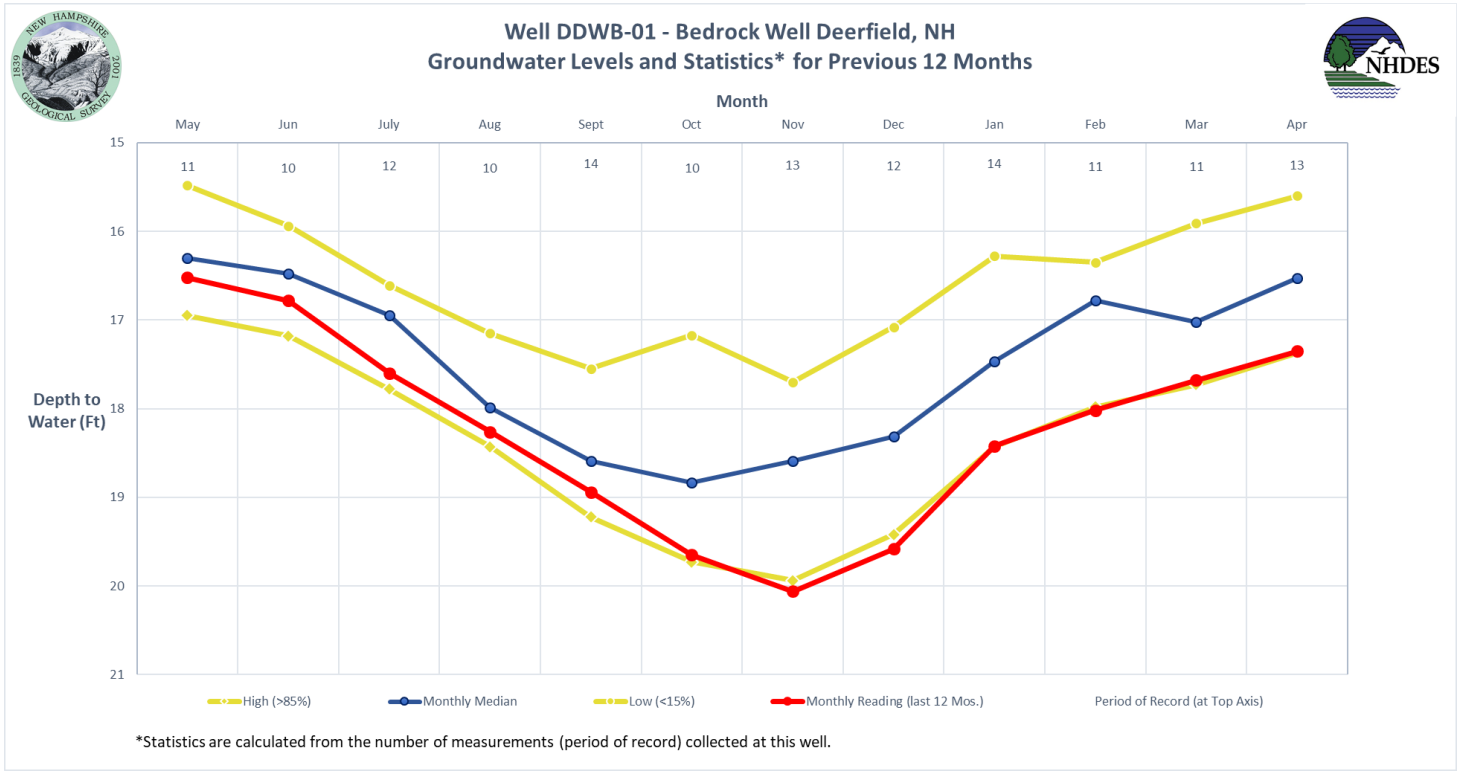

Well CVW-04 - Overburden Well Concord, NH
Groundwater Levels and Statistics* for Previous 12 Months
Month
May Jun July Aug Sept Oct Nov Dec Jan Feb Mar Apr
56 58 55 57 53 55 60 54 59 55 59 58
Depth to Water (Ft)
10 11 12 13 14 15 16 17 18 19 20
High (>85%)
Monthly Median
Low (<15%)
Monthly Reading (last 12 Mos.)
Period of Record (at Top Axis)
*Statistics are calculated from the number of measurements (period of record) collected at this well.

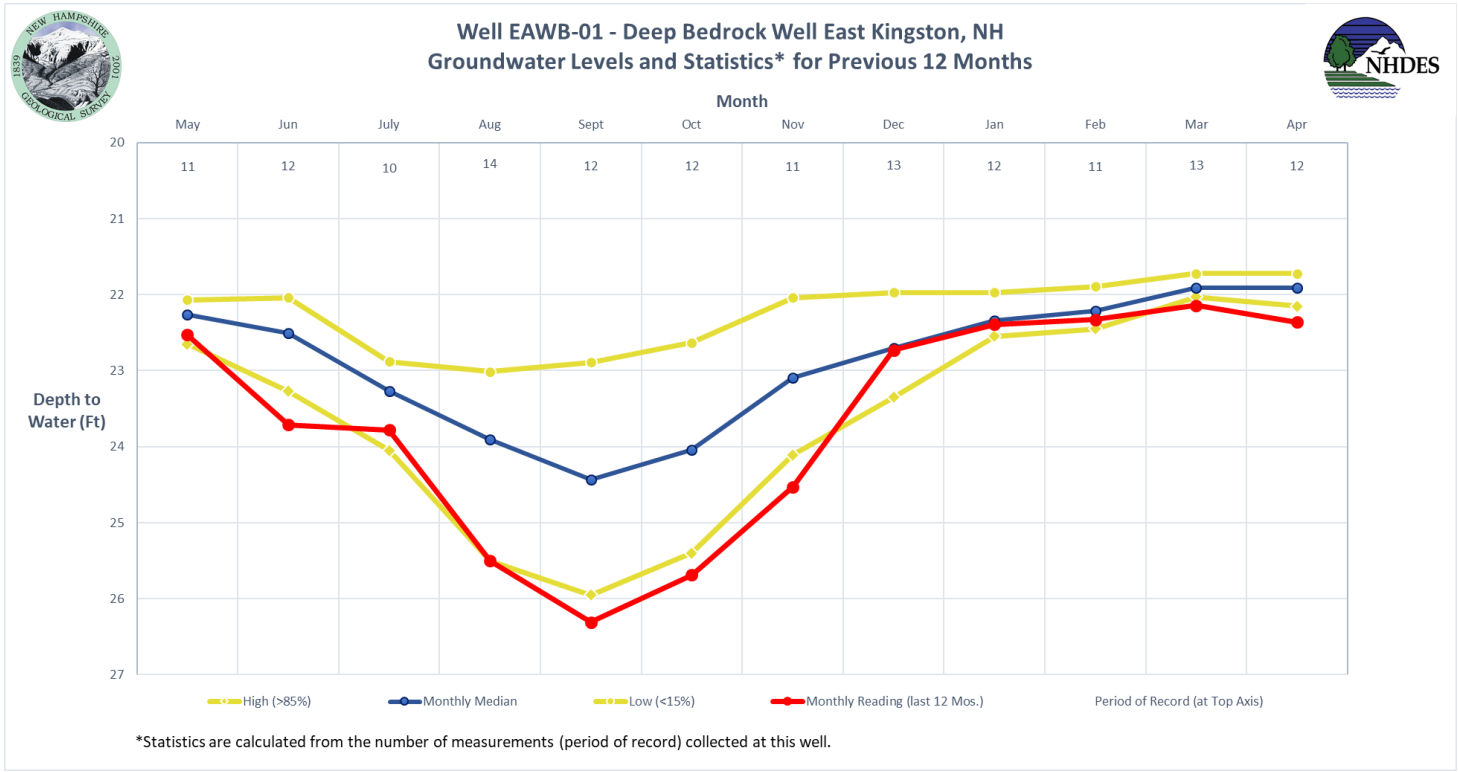

Well CVWB-01 - Deep Bedrock Well Concord, NH
Groundwater Levels and Statistics* for Previous 12 Months
Month
May Jun July Aug Sept Oct Nov Dec Jan Feb Mar Apr
11 12 11 13 12 12 13 12 12 11 13 12
15 17 19 21 23 25 27 29 31
Depth to Water (Ft)
High (>85%)
Monthly Median
Low (<15%)
Monthly Reading (last 12 Mos.)
Period of Record (at Top Axis)
*Statistics are calculated from the number of measurements (period of record) collected at this well.

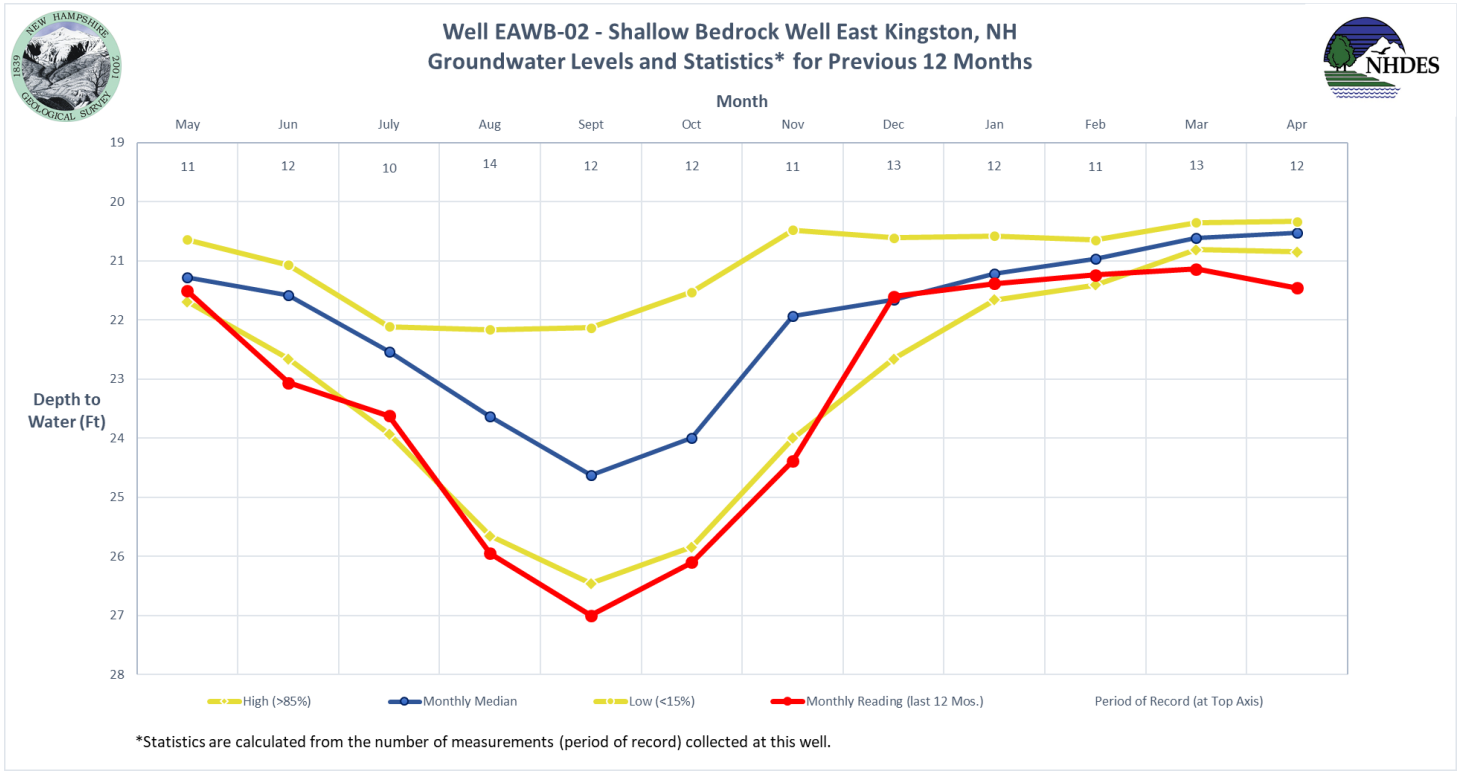

Well CVWB-02 - Shallow Bedrock Well Concord, NH
Groundwater Levels and Statistics* for Previous 12 Months
NHDES
Month
May Jun July Aug Sept Oct Nov Dec Jan Feb Mar Apr
11 12 11 13 12 12 13 12 12 11 13 12
10 12 14 16 18 20 22 24 26 28
Depth to Water (Ft)
High (>85%)
Monthly Median
Low (<15%)
Monthly Reading (last 12 Mos.)
Period of Record (at Top Axis)
*Statistics are calculated from the number of measurements (period of record) collected at this well.

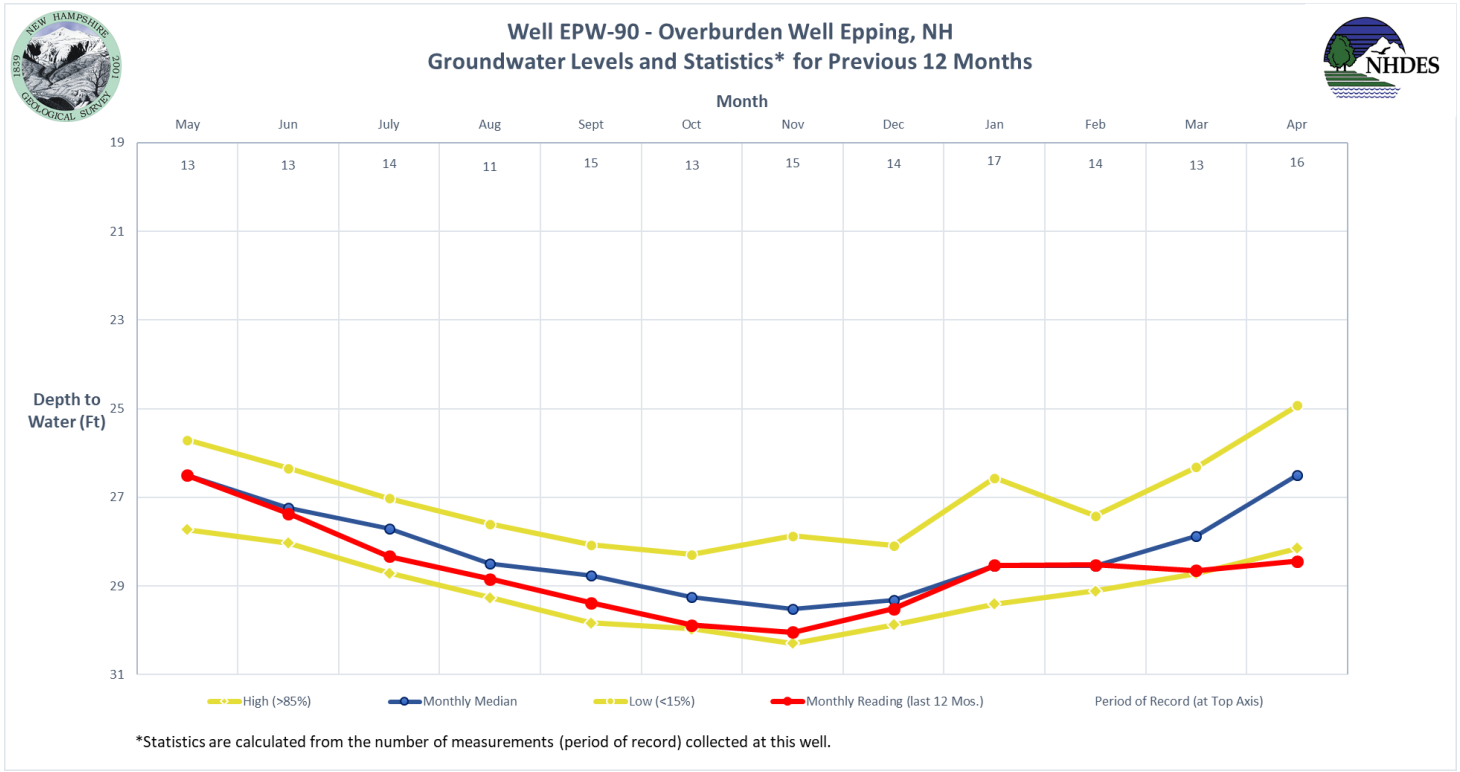


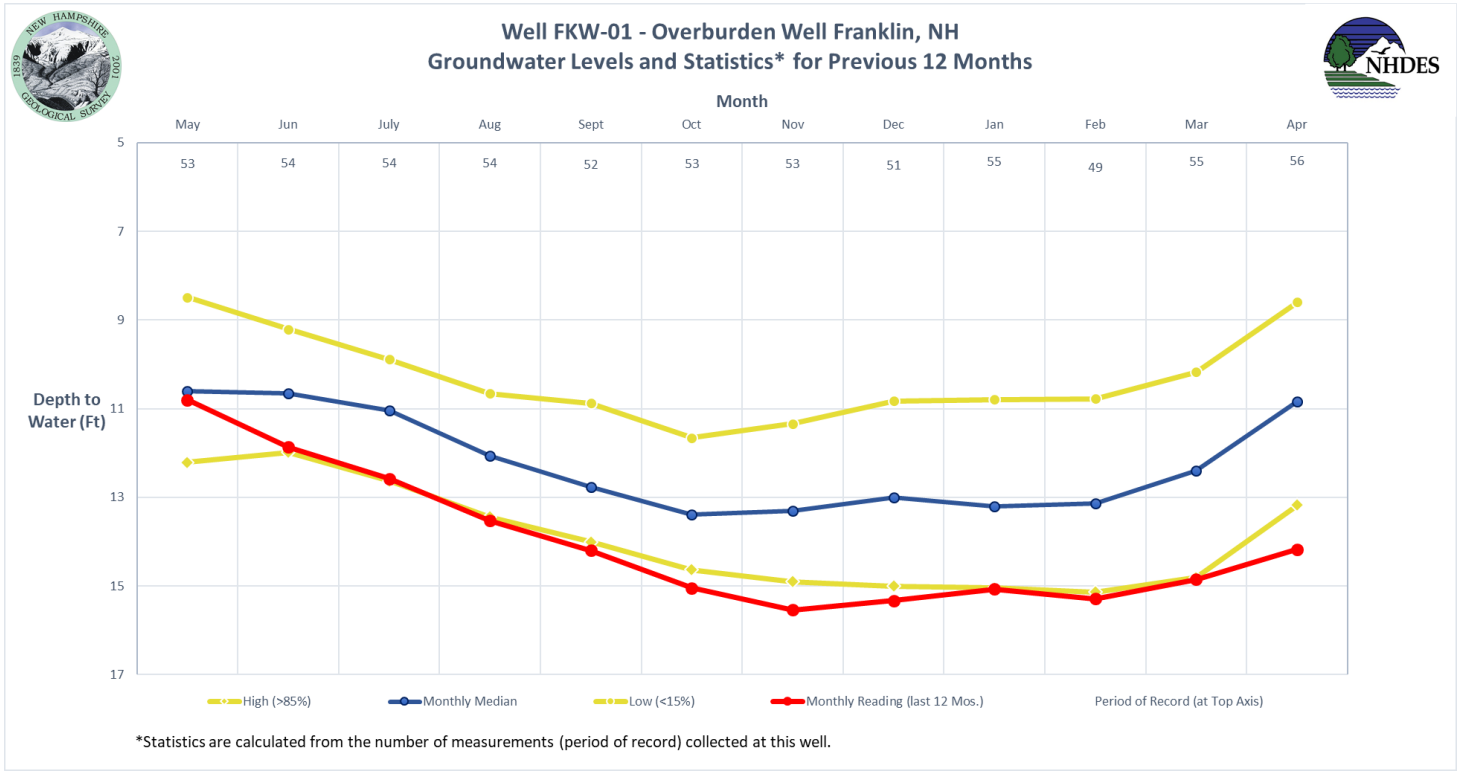
*Statistics are calculated from the number of measurements (period of record) collected at this well.

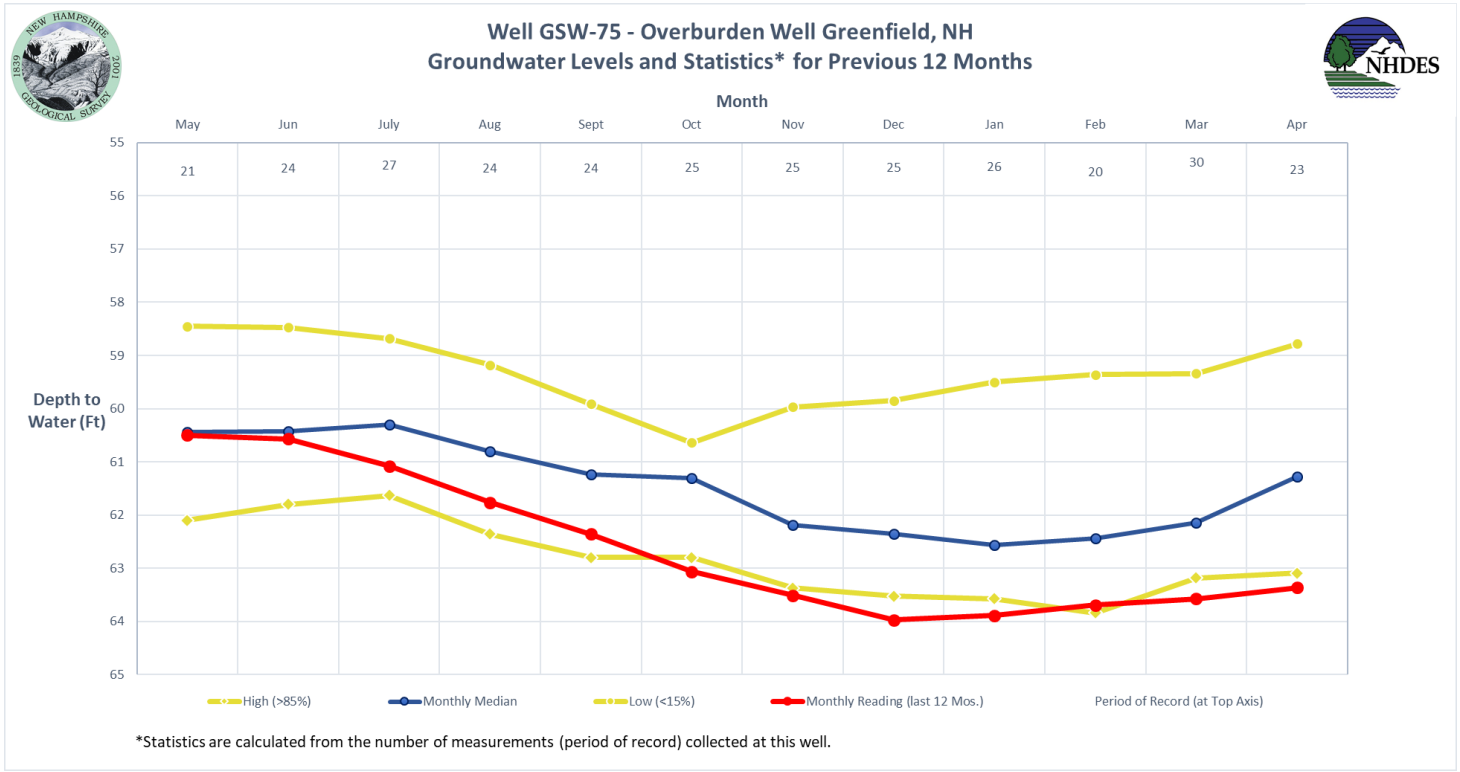

Well DDWB-01 - Bedrock Well Deerfield, NH
Groundwater Levels and Statistics* for Previous 12 Months
Month
May Jun July Aug Sept Oct Nov Dec Jan Feb Mar Apr
11 10 12 10 14 10 13 12 14 11 11 13
15 16 17 18 19 20 21
Depth to Water (Ft)
High (>85%)
Monthly Median
Low (<15%)
Monthly Reading (last 12 Mos.)
Period of Record (at Top Axis)
*Statistics are calculated from the number of measurements (period of record) collected at this well.


Well EAWB-01 - Deep Bedrock Well East Kingston, NH
Groundwater Levels and Statistics* for Previous 12 Months
NHDES
Month
May Jun July Aug Sept Oct Nov Dec Jan Feb Mar Apr
11 12 10 14 12 12 11 13 12 11 13 12
20 21 22 23 24 25 26 27
Depth to Water (Ft)
High (>85%)
Monthly Median
Low (<15%)
Monthly Reading (last 12 Mos.)
Period of Record (at Top Axis)
*Statistics are calculated from the number of measurements (period of record) collected at this well.

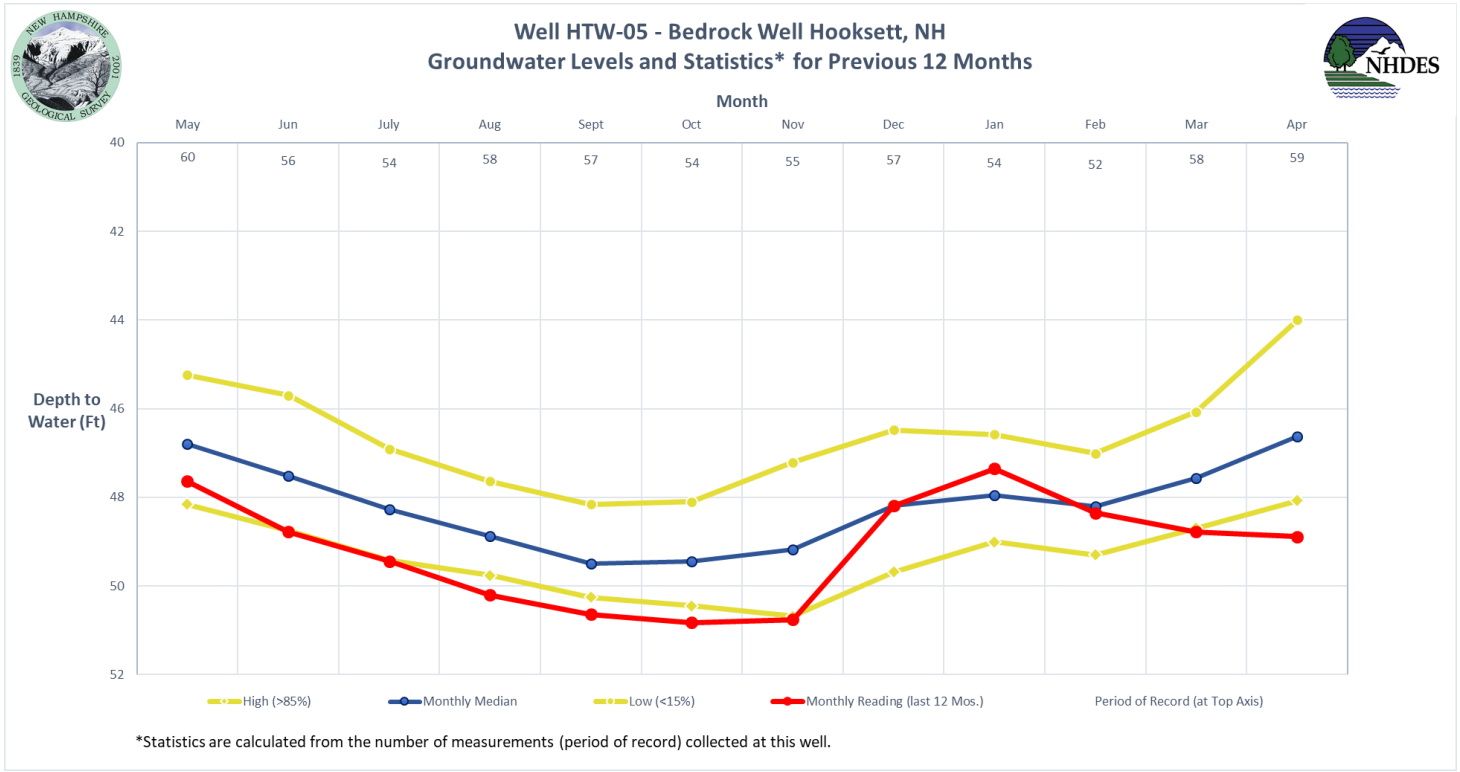

Well EAWB-02 - Shallow Bedrock Well East Kingston, NH
Groundwater Levels and Statistics* for Previous 12 Months
NHDES
Month
May Jun July Aug Sept Oct Nov Dec Jan Feb Mar Apr
11 12 10 14 12 12 11 13 12 11 13 12
19 20 21 22 23 24 25 26 27 28
Depth to Water (Ft)
High (>85%)
Monthly Median
Low (<15%)
Monthly Reading (last 12 Mos.)
Period of Record (at Top Axis)
*Statistics are calculated from the number of measurements (period of record) collected at this well.

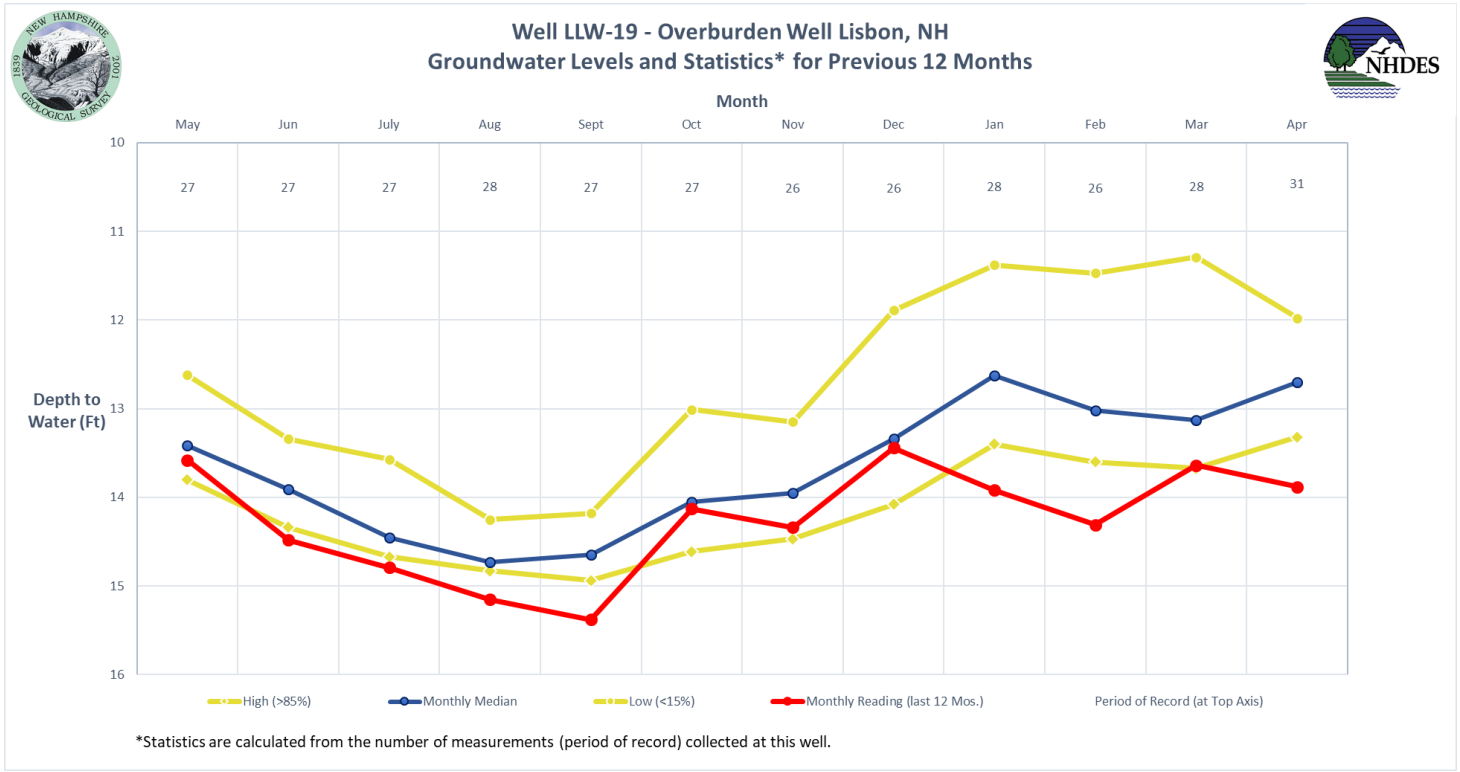

Well EPW-90 - Overburden Well Epping, NH
Groundwater Levels and Statistics* for Previous 12 Months
Month
May Jun July Aug Sept Oct Nov Dec Jan Feb Mar Apr
13 13 14 11 15 13 15 14 17 14 13 16
19 21 23 25 27 29 31
Depth to Water (Ft)
High (>85%)
Monthly Median
Low (<15%)
Monthly Reading (last 12 Mos.)
Period of Record (at Top Axis)
*Statistics are calculated from the number of measurements (period of record) collected at this well.

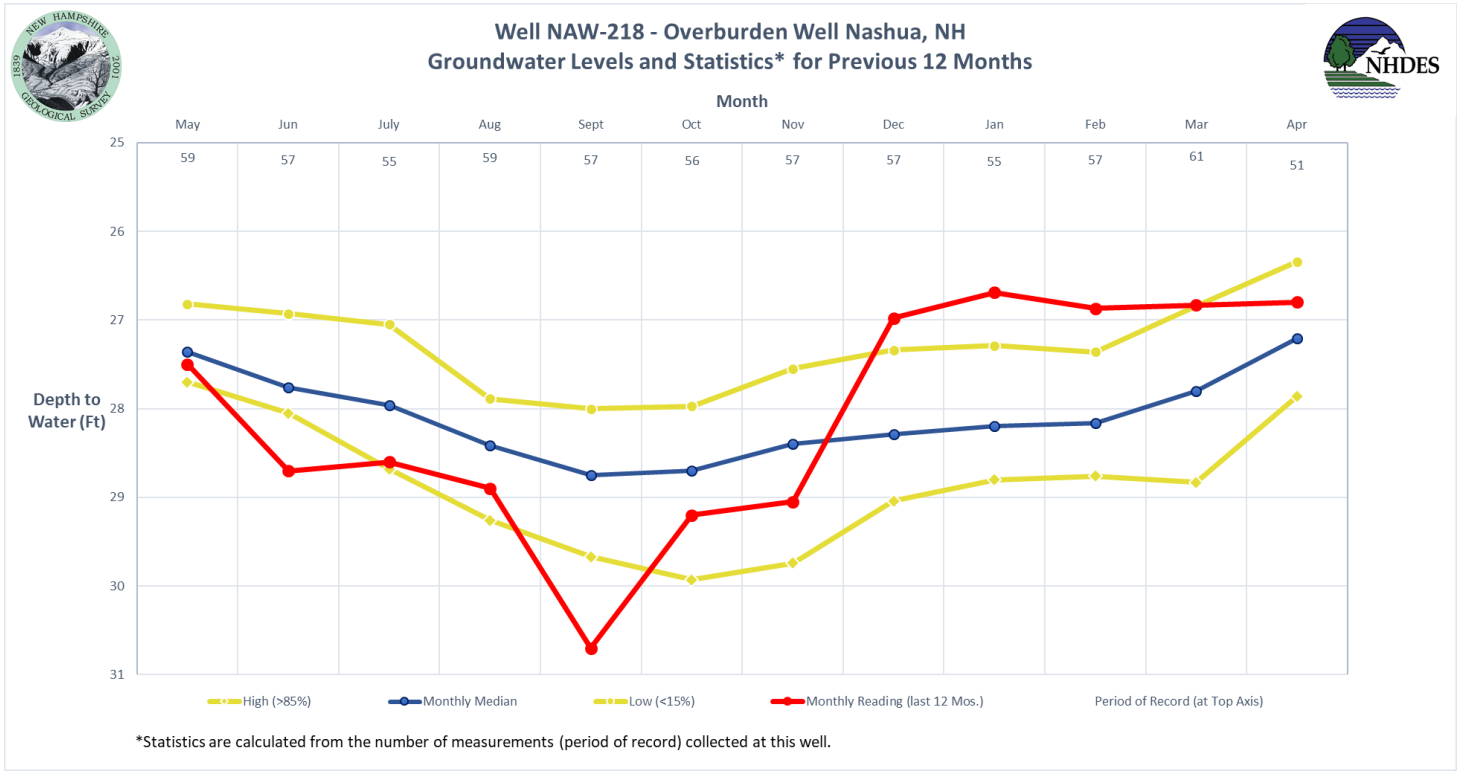

Well FKW-01 - Overburden Well Franklin, NH
Groundwater Levels and Statistics* for Previous 12 Months
NHDES
Month
May Jun July Aug Sept Oct Nov Dec Jan Feb Mar Apr
53 54 54 54 52 53 53 51 55 49 55 56
5 7 9 11 13 15 17
Depth to Water (Ft)
High (>85%)
Monthly Median
Low (<15%)
Monthly Reading (last 12 Mos.)
Period of Record (at Top Axis)
*Statistics are calculated from the number of measurements (period of record) collected at this well.

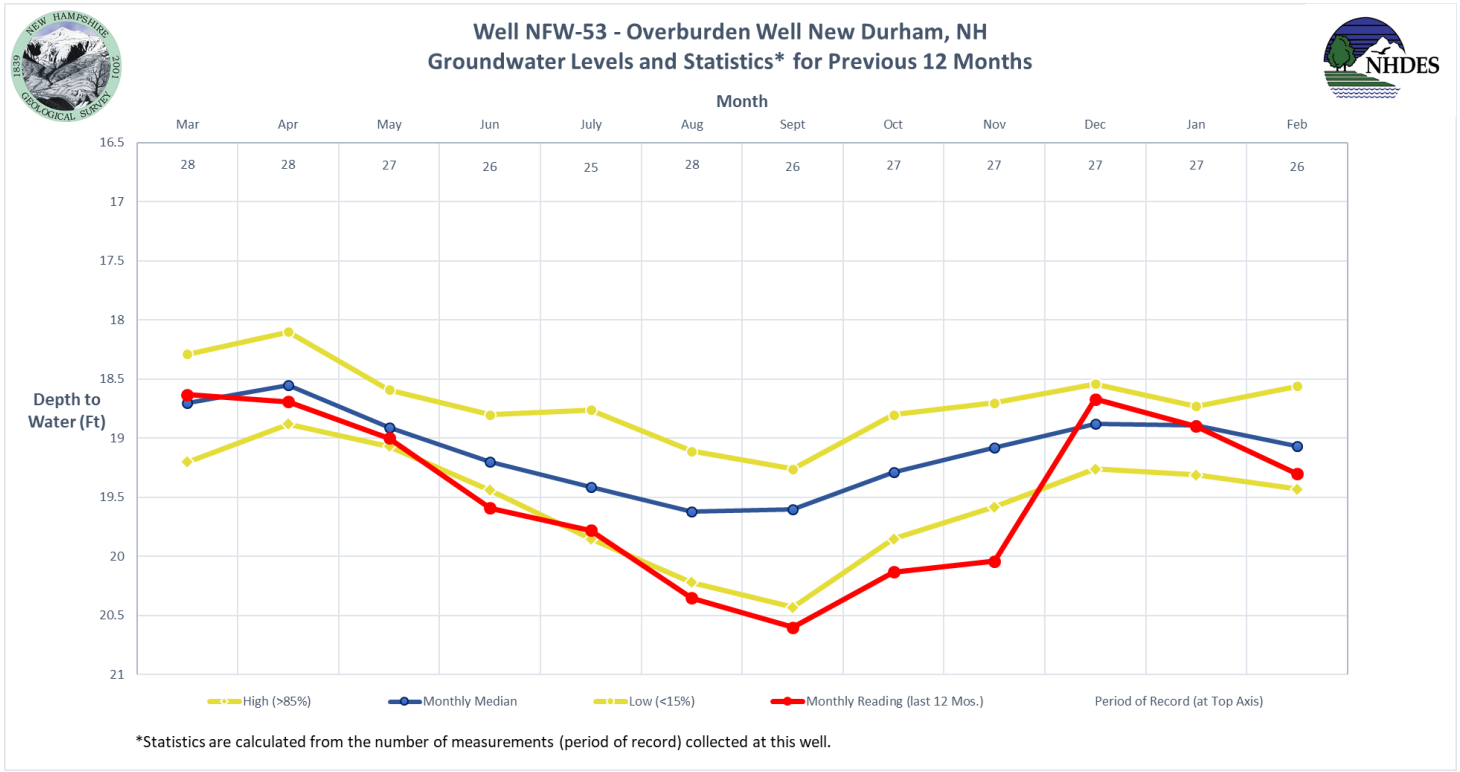


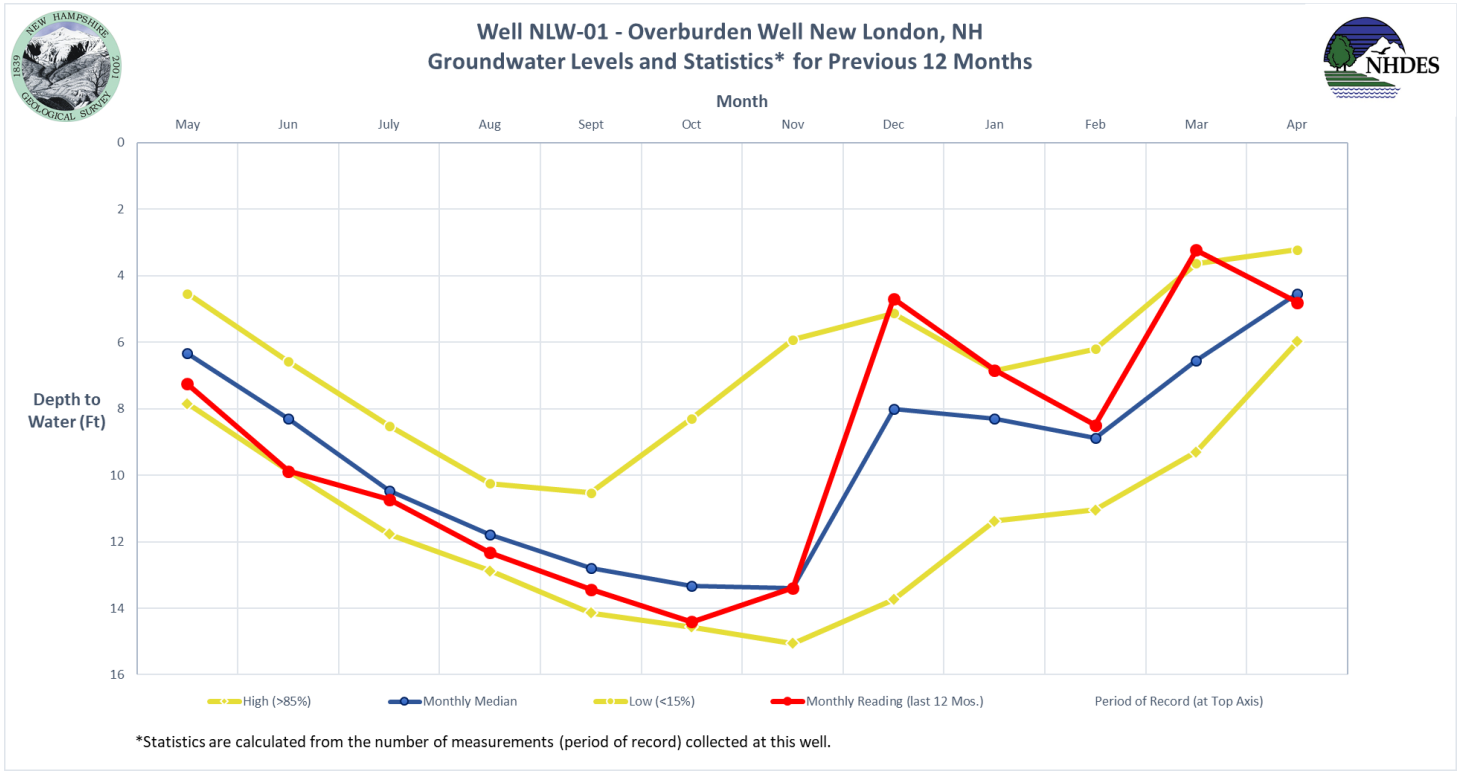
*Statistics are calculated from the number of measurements (period of record) collected at this well.


Well HTW-05 - Bedrock Well Hooksett, NH
Groundwater Levels and Statistics* for Previous 12 Months
Month
May Jun July Aug Sept Oct Nov Dec Jan Feb Mar Apr
60 56 54 58 57 54 55 57 54 52 58 59
Depth to Water (Ft)
40 42 44 46 48 50 52
High (>85%)
Monthly Median
Low (<15%)
Monthly Reading (last 12 Mos.)
Period of Record (at Top Axis)
*Statistics are calculated from the number of measurements (period of record) collected at this well.

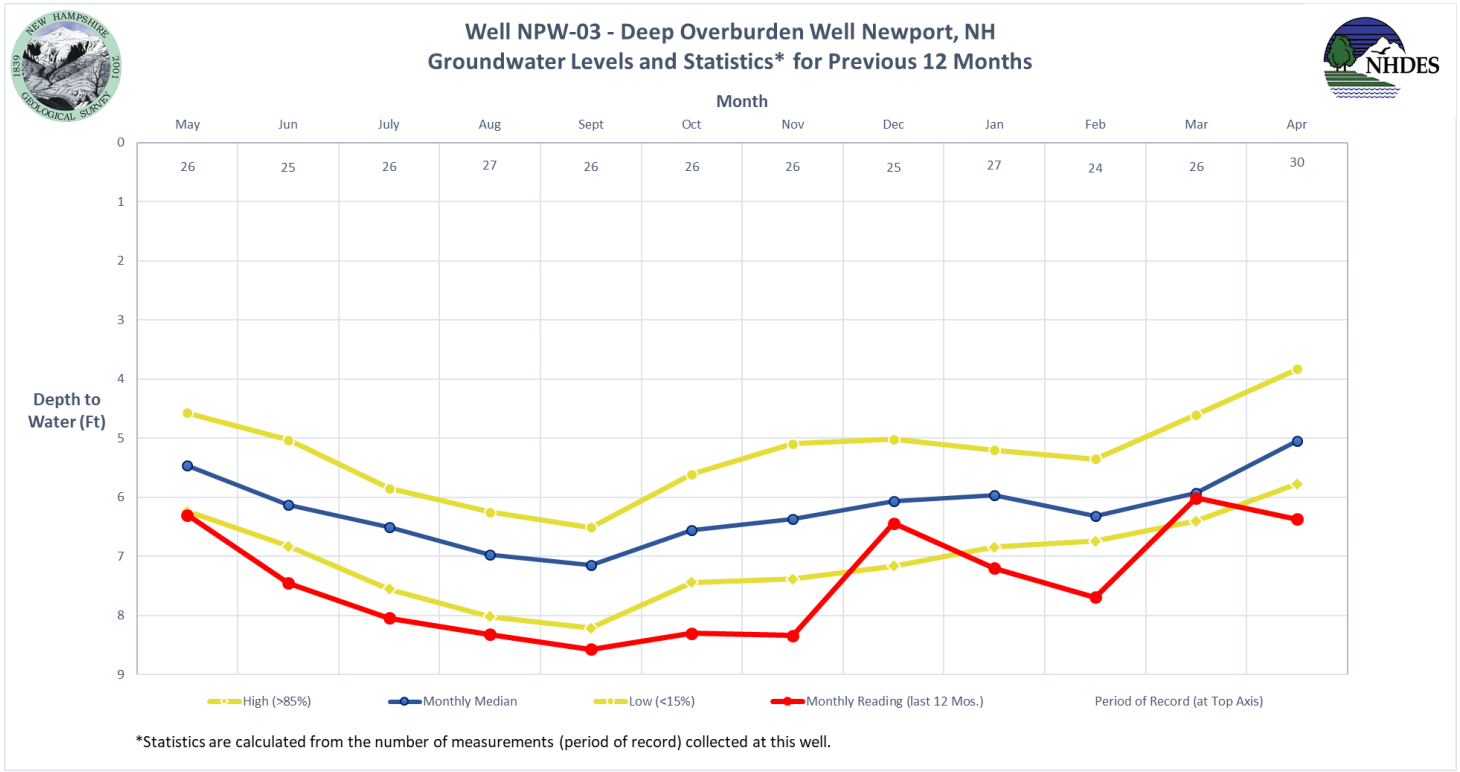

Well LLW-19 - Overburden Well Lisbon, NH
Groundwater Levels and Statistics* for Previous 12 Months
Month
May
Jun
July
Aug
Sept
Oct
Nov
Dec
Jan
Feb
Mar
Apr
27
27
27
28
27
27
26
26
28
26
28
31
10
11
12
13
14
15
16
Depth to Water (Ft)
High (>85%)
Monthly Median
Low (<15%)
Monthly Reading (last 12 Mos.)
Period of Record (at Top Axis)
*Statistics are calculated from the number of measurements (period of record) collected at this well.


Well NAW-218 - Overburden Well Nashua, NH
Groundwater Levels and Statistics* for Previous 12 Months
Month
May Jun July Aug Sept Oct Nov Dec Jan Feb Mar Apr
59 57 55 59 57 56 57 57 55 57 61 51
25 26 27 28 29 30 31
Depth to Water (Ft)
High (>85%)
Monthly Median
Low (<15%)
Monthly Reading (last 12 Mos.)
Period of Record (at Top Axis)
*Statistics are calculated from the number of measurements (period of record) collected at this well.

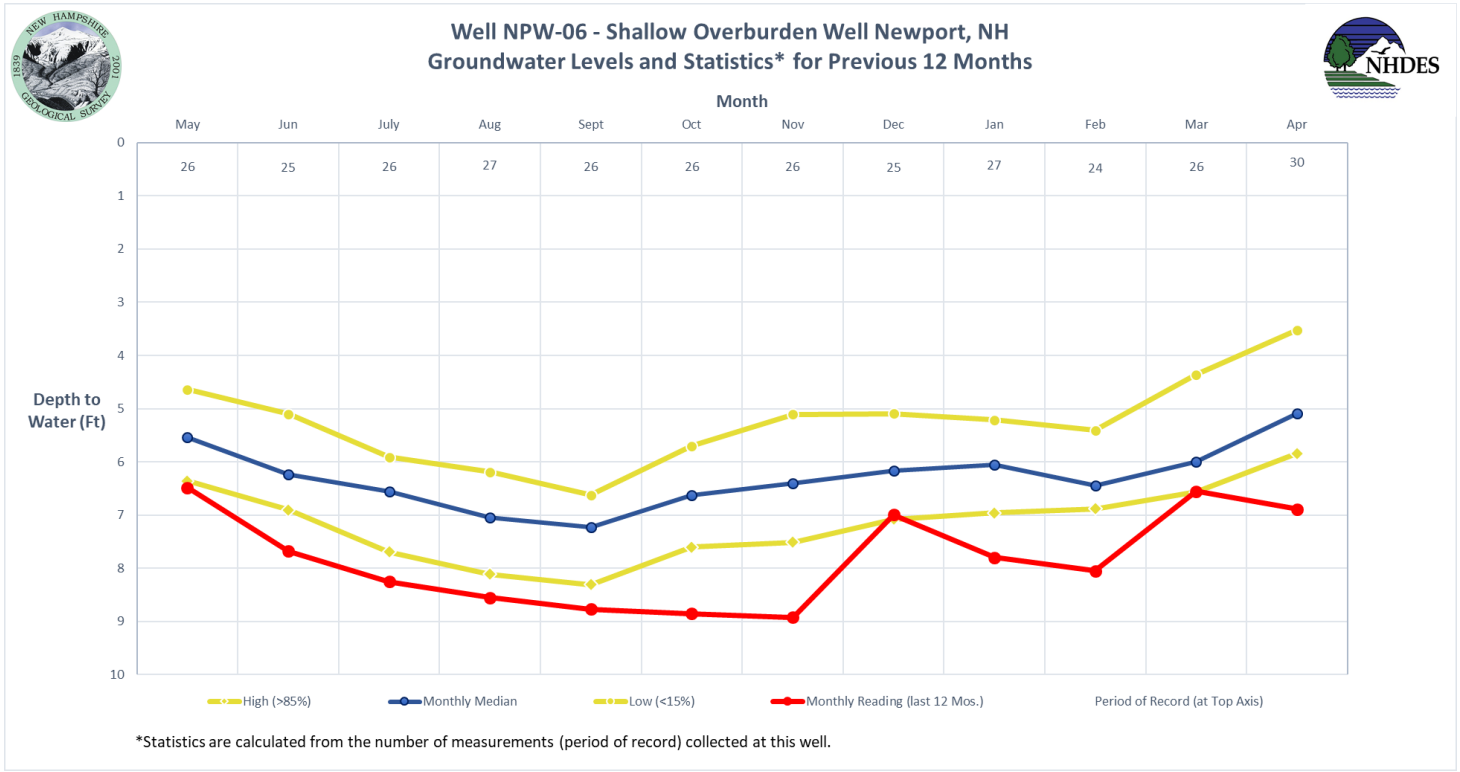

Well NFW-53 - Overburden Well New Durham, NH
Groundwater Levels and Statistics* for Previous 12 Months
Month
Mar
Apr
May
Jun
July
Aug
Sept
Oct
Nov
Dec
Jan
Feb
28
28
27
26
25
28
26
27
27
27
27
26
16.5
17
17.5
18
18.5
19
19.5
20
20.5
21
Depth to Water (Ft)
High (>85%)
Monthly Median
Low (<15%)
Monthly Reading (last 12 Mos.)
Period of Record (at Top Axis)
*Statistics are calculated from the number of measurements (period of record) collected at this well.



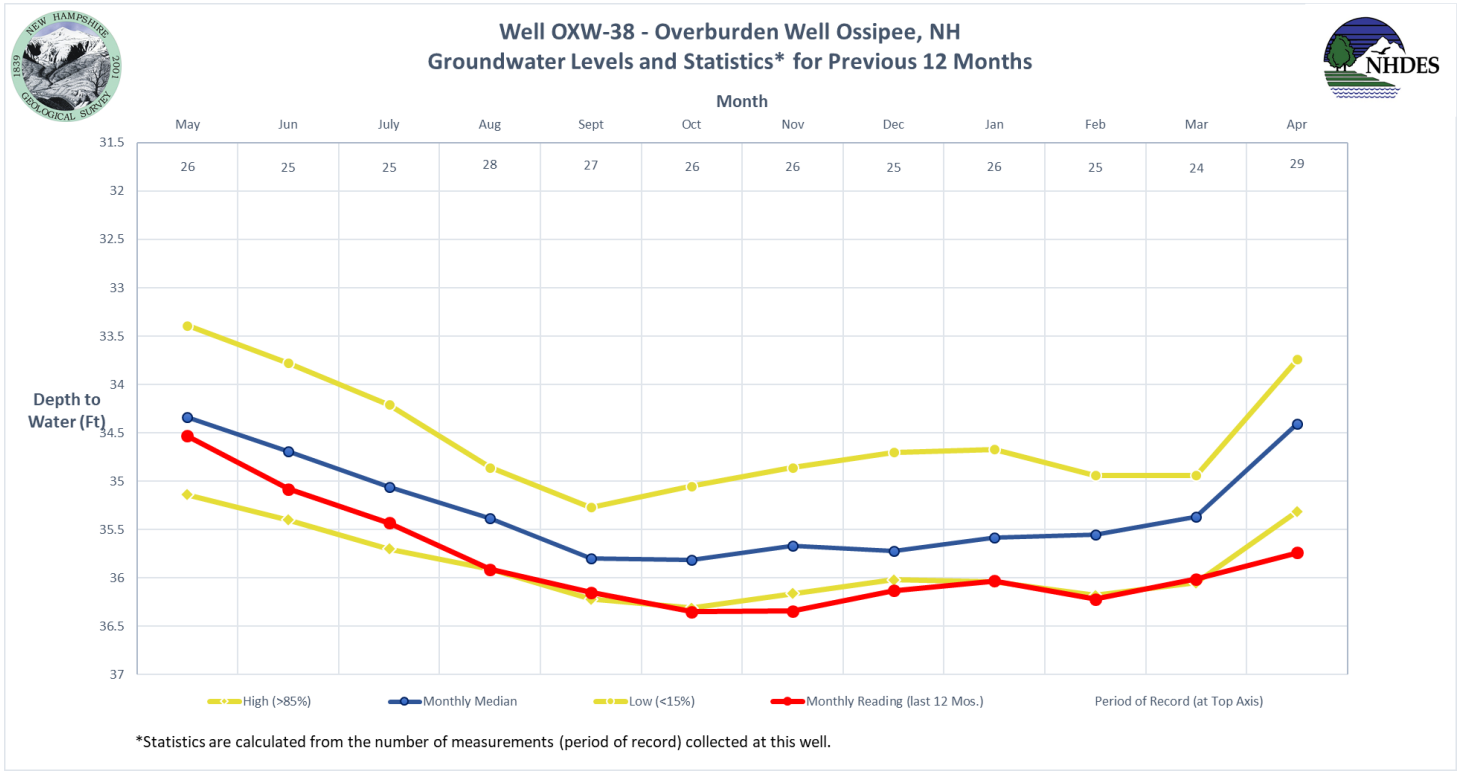
*Statistics are calculated from the number of measurements (period of record) collected at this well.



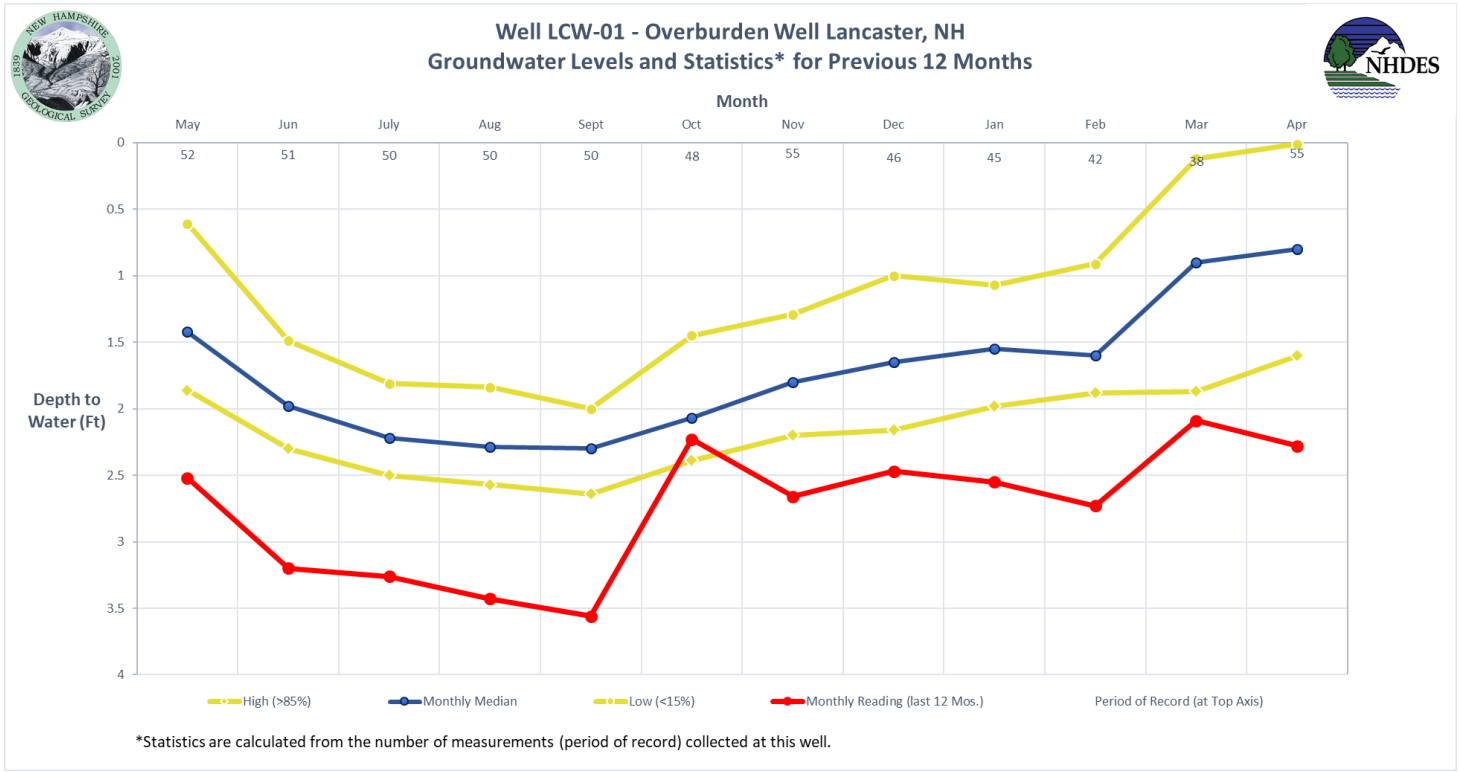
*Statistics are calculated from the number of measurements (period of record) collected at this well.



*Statistics are calculated from the number of measurements (period of record) collected at this well.



*Statistics are calculated from the number of measurements (period of record) collected at this well.



*Statistics are calculated from the number of measurements (period of record) collected at this well.