New Hampshire Groundwater Level Monitoring

March, 2021

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

April 12, 2021

GROUNDWATER CONDITIONS SUMMARY

The Northeast Regional Climate Center (NRCC) at Cornell University has released their March precipitation statistics and indicate that New Hampshire has received 48% of normal precipitation. Figure 1 shows the distribution of percent precipitation, published by NRCC, and water levels in the well network.

Abnormally dry conditions have expanded and intensified since last February. Moderate drought persists in the Connecticut River Valley and abnormally dry conditions persist in the southern Merrimack basin and Seacoast Region. During the month of March, abnormally dry conditions expanded to include southwest New Hampshire. As of March 30th, 57% of the state was abnormally dry, and 15% 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. Groundwater level trends are mixed in the Merrimack River basin and Seacoast Region. Wells that are showing upward trends (New London, Barnstead, Nashua and Albany) are likely responding to localized continued run-off 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.

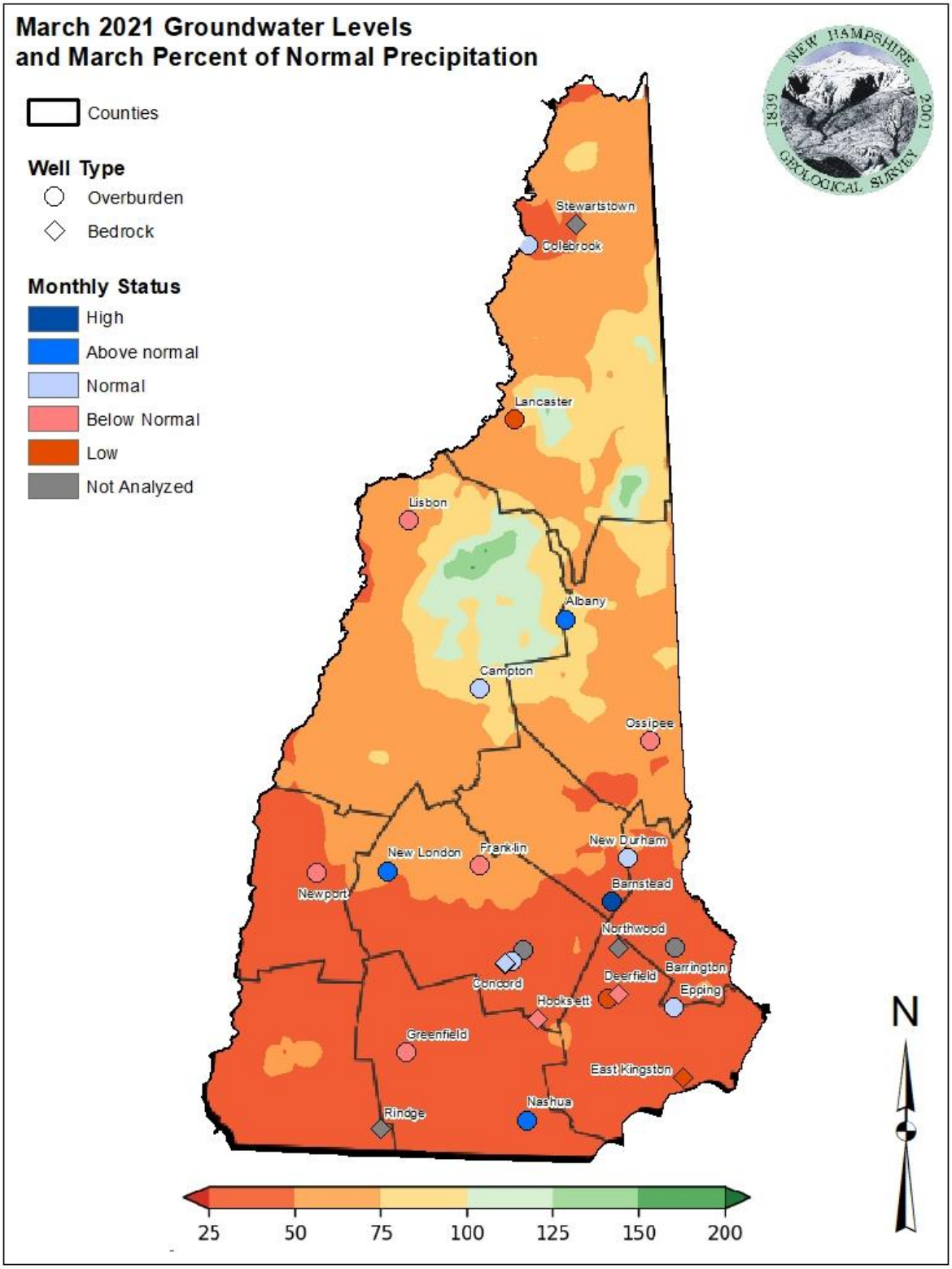


Figure 1. Groundwater Monitoring Network showing groundwater levels relative to statistical envelopes calculated over each well's period of record (POR) and percent normal precipitation map for March, 2021 (Northeast Regional Climate Center).

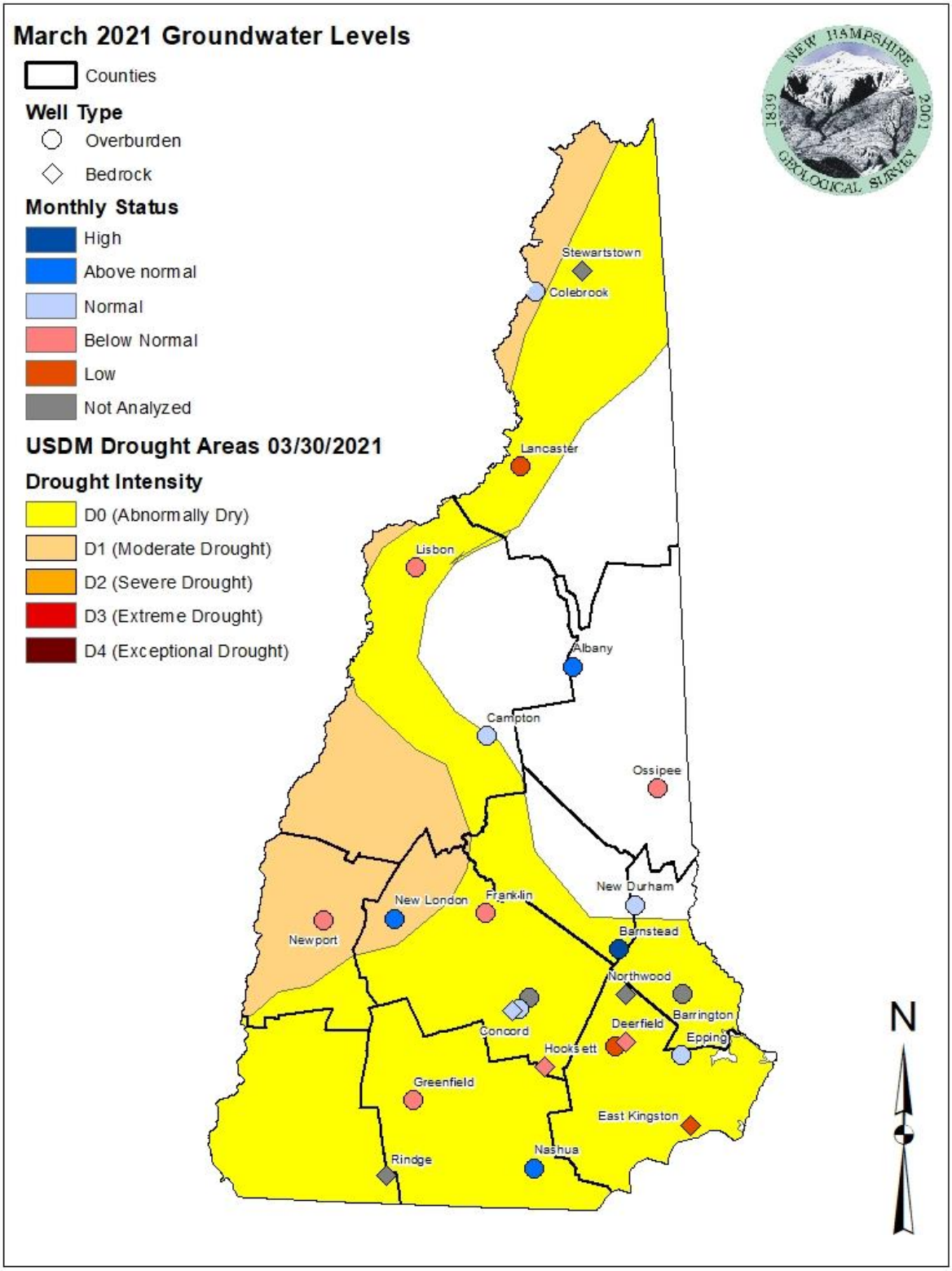
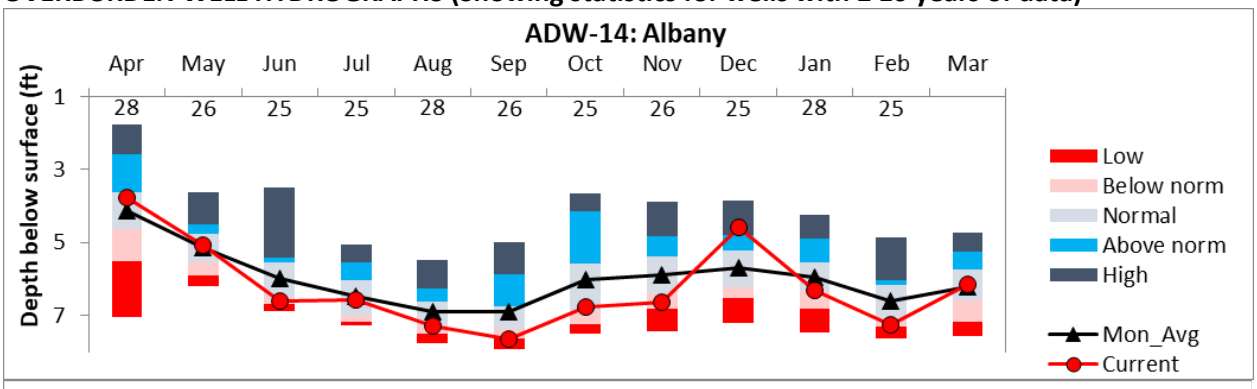


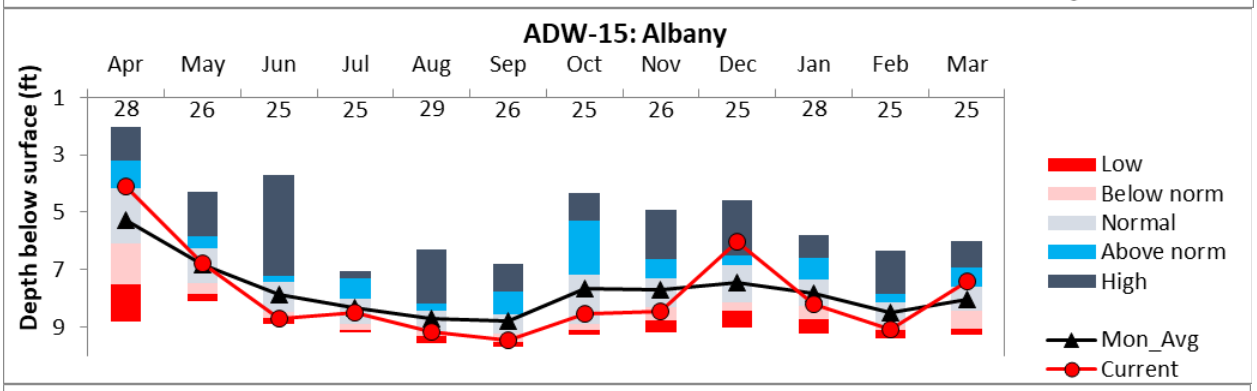
Figure 2. Groundwater Monitoring Network showing groundwater levels relative to statistical envelopes calculated over each well's period of record (POR) and drought areas according to data released by the U.S. Drought Monitor on March 30, 2021.

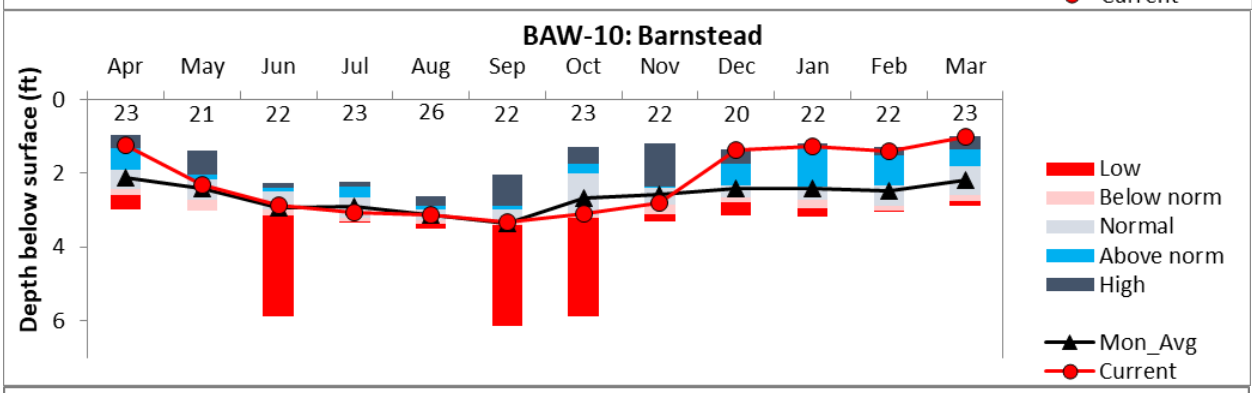
Table 1. Summary of groundwater levels sorted by region (dark blue – high, blue – above normal, light blue – normal, pink – below normal, red – low.

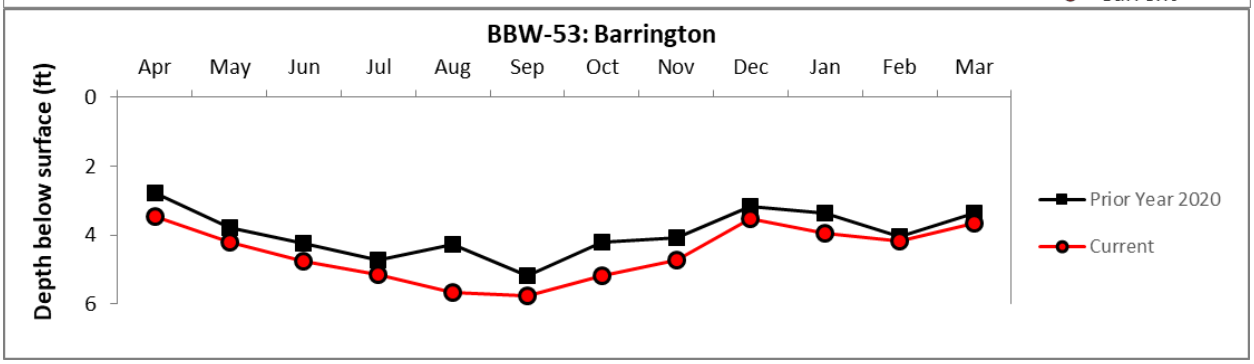
Well	Town	Well type	Screen/ open Interval (ft)	Depth to Water (ft)	Monthly Average (ft)	Current Status	Departure from Avg. (ft)	Change since last month (ft)
ADW-14	Albany	Overburden	77.5-79.5	6.16	6.22	Normal	0.06	1.11
ADW-15	Albany	Overburden	16-18	7.4	8.05	Above norm	0.65	1.67
BAW-10	Barnstead	Overburden	23-25	1.01	2.17	High	1.16	0.41
BBW-53	Barrington	Overburden	21-23	4.17	-	Not Analyzed	-	0
CBW-34	Campton	Overburden	21-23	12.38	12.56	Normal	0.18	1.41
CTW-73	Colebrook	Overburden	105-107	7.6	7.41	Normal	-0.19	0.4
CVW-02.1	Concord	Overburden	59.8-61.8	41.32	-	Not Analyzed	-	0.16
CVW-04	Concord	Overburden	25-27	17.86	17.18	Normal	-0.68	0.24
DDW-46	Deerfield	Overburden	59.8-61.8	39.33	38.55	Low	-0.78	-0.24
EPW-90	Epping	Overburden	39.45-40.7	28.65	27.52	Normal	-1.13	-0.13
FKW-01	Franklin	Overburden	45.5-47.5	14.85	12.49	Below norm	-2.36	0.44
GSW-75	Greenfield	Overburden	35.8-37.8	63.57	61.71	Below norm	-1.86	0.12
LCW-01	Lancaster	Overburden	28-30	2.09	0.92	Low	-1.17	0.64
LLW-19	Lisbon	Overburden	49.8-52.3	13.64	12.69	Below norm	-0.95	0.67
NAW-218	Nashua	Overburden	66-68	26.83	27.87	Above norm	1.04	0.04
NFW-53	New Durham	Overburden	28-30	18.75	18.73	Normal	-0.02	0.55
NLW-01	New London	Overburden	40-42	3.23	6.71	Above norm	3.48	5.27
NPW-03	Newport	Overburden	40.5-42.5	6.01	5.61	Normal	-0.4	1.68
NPW-06	Newport	Overburden	58-60	6.55	5.59	Below norm	-0.96	3.5
OXW-38	Ossipee	Overburden	0-22.55	36.01	35.42	Below norm	-0.59	0.21
CVWB-01	Concord	Bedrock	470-480	20.21	19.86	Normal	-0.35	0.19
CVWB-02	Concord	Bedrock	0-315	13.8	13.73	Normal	-0.07	1.36
DDWB-01	Deerfield	Bedrock	0-300	17.68	16.66	Below norm	-1.02	0.34
EAWB-01	East Kingston	Bedrock	463-473	22.14	21.86	Low	-0.28	0.19
EAWB-02	East Kingston	Bedrock	0-323	21.14	20.56	Low	-0.58	0.1
HTW-05	Hooksett	Bedrock	0-102.7	48.78	47.21	Below norm	-1.57	-0.43
NWWB-01	Northwood	Bedrock	0-130	3.03	-	Not Analyzed	-	-0.38
RGWB-01	Rindge	Bedrock	391-401	14.87	-	Not Analyzed	-	-0.06
RGWB-02	Rindge	Bedrock	0-285	17.59	-	Not Analyzed	-	-0.05
SOWB-01	Stewartstown	Bedrock	443-453	26.2	-	Not Analyzed	-	-0.2
SOWB-02	Stewartstown	Bedrock	0-303	17.9	-	Not Analyzed	-	-0.75

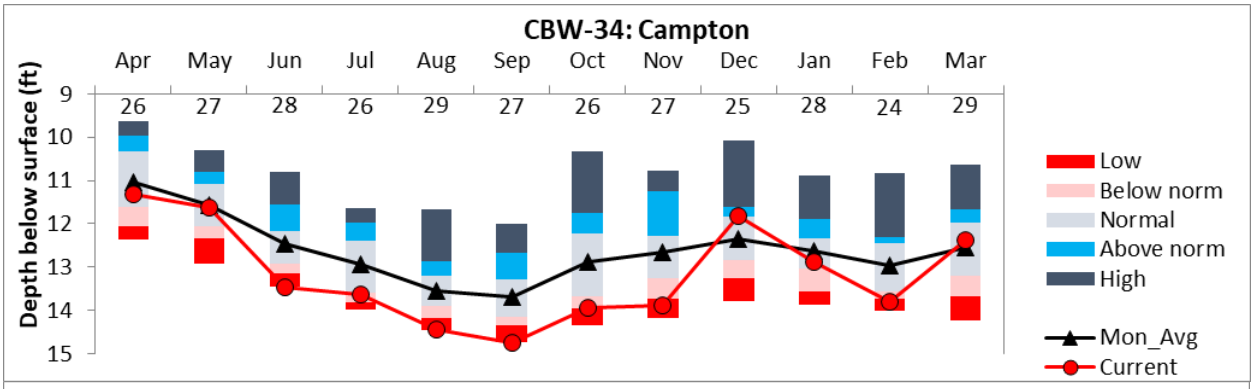
OVERBURDEN WELL HYDROGRAPHS (Showing statistics for wells with ≥ 10 years of data)

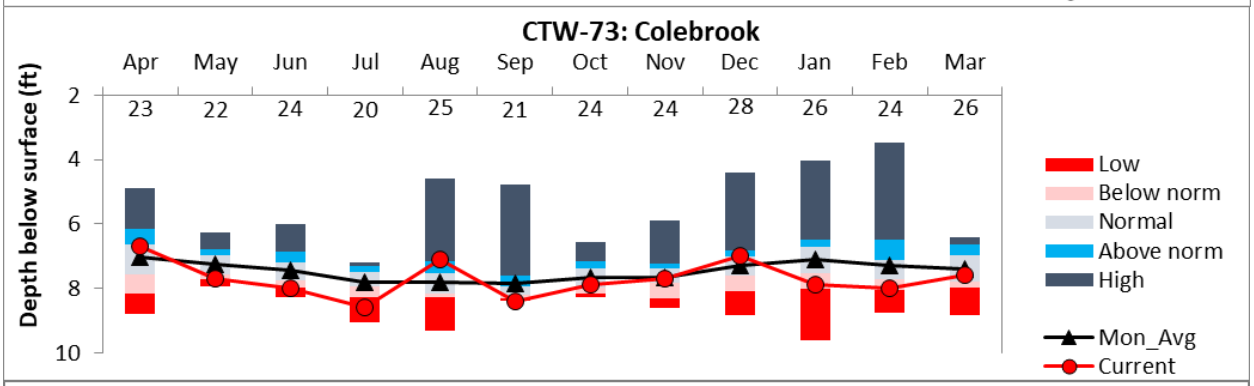


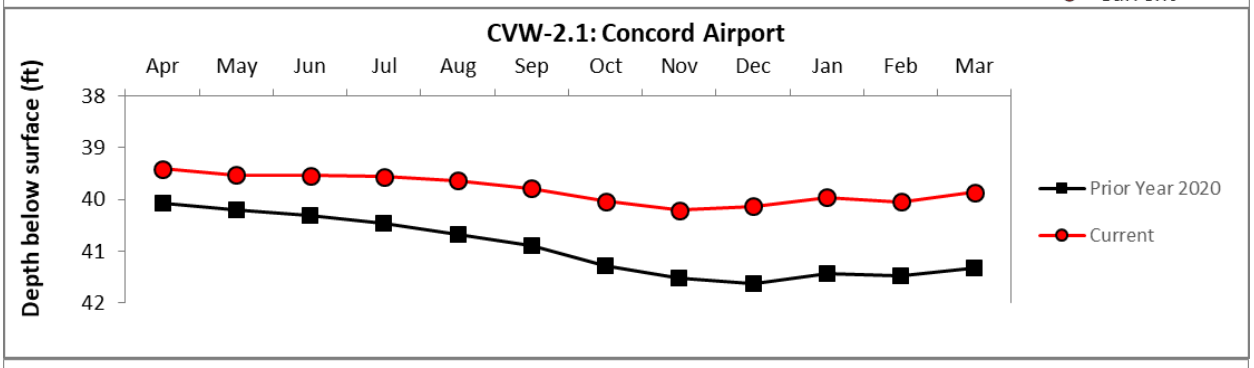


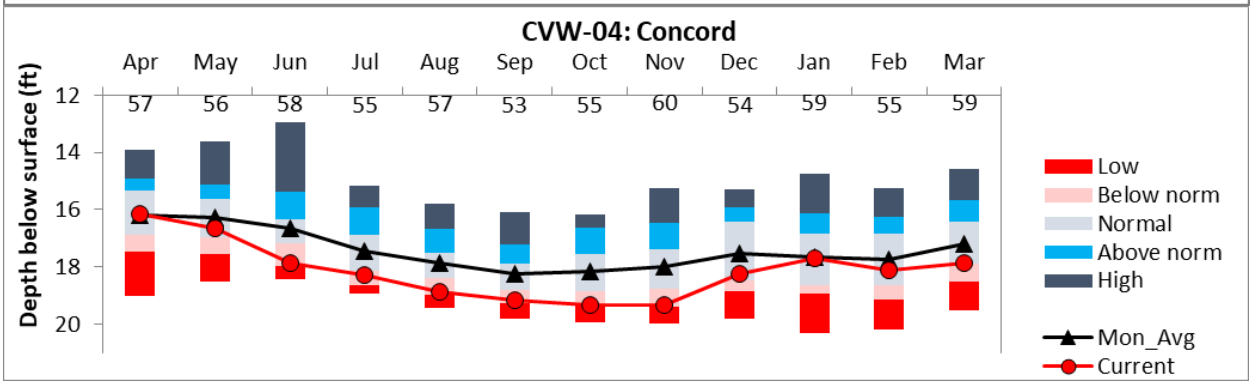


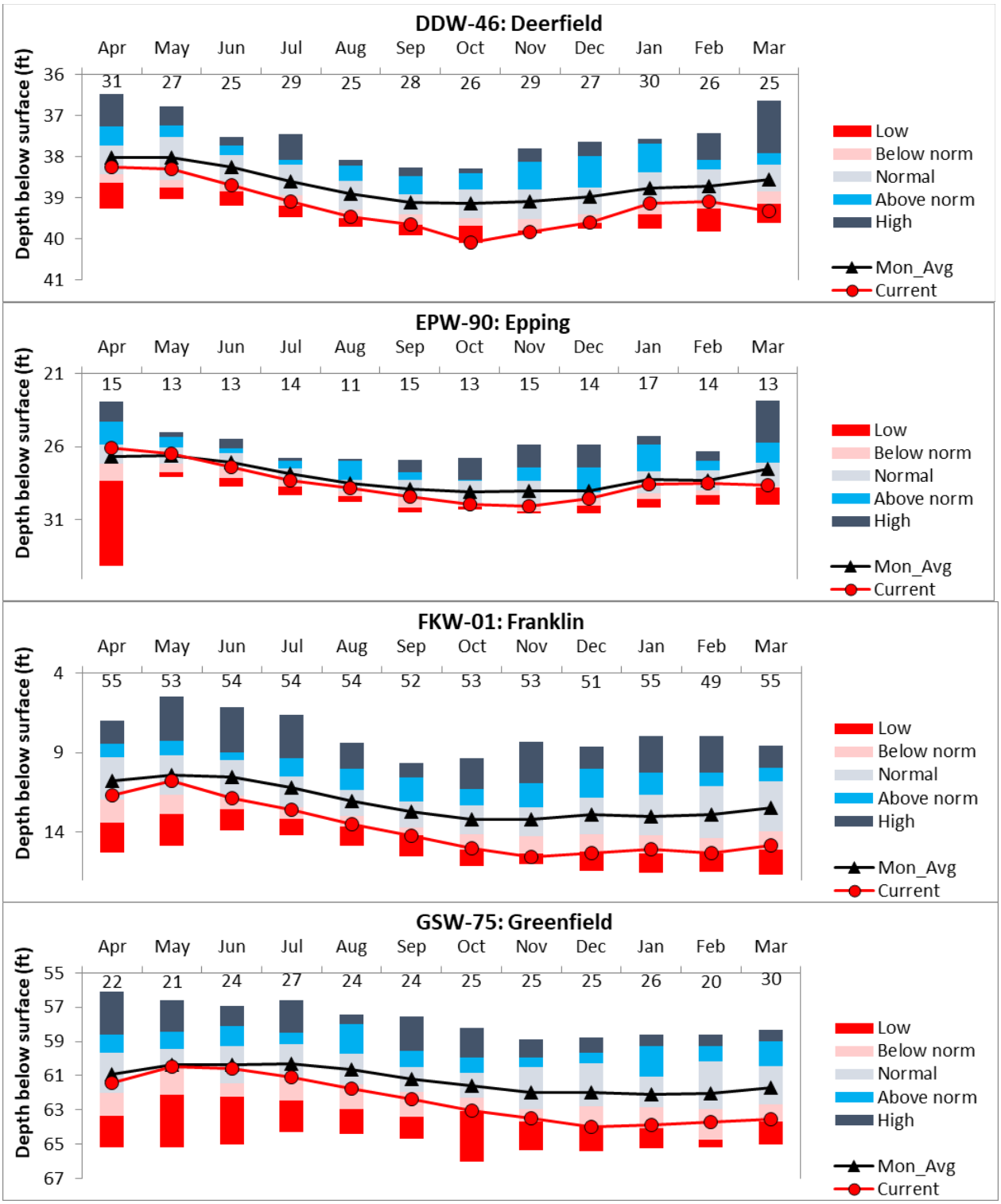


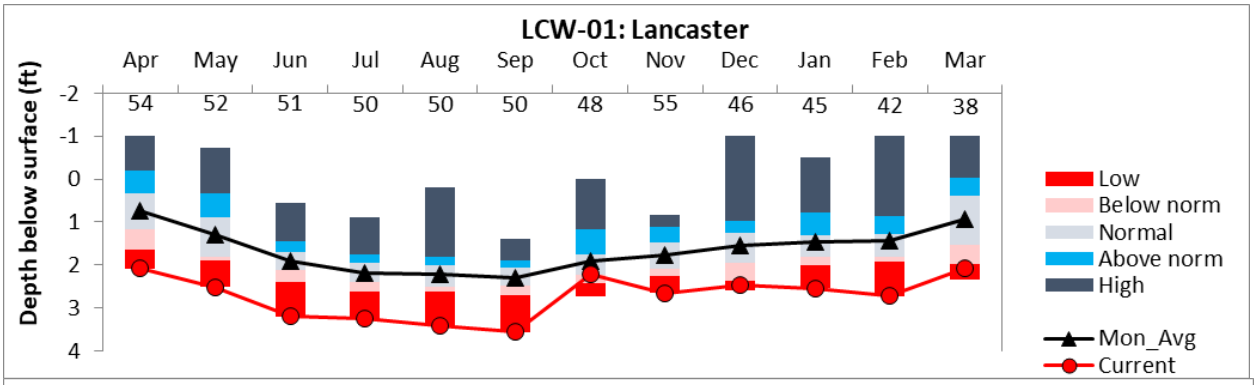

CBW-34: Campton
Depth below surface (ft)
Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar
26 27 28 26 29 27 26 27 25 28 24 29
9 10 11 12 13 14 15
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current

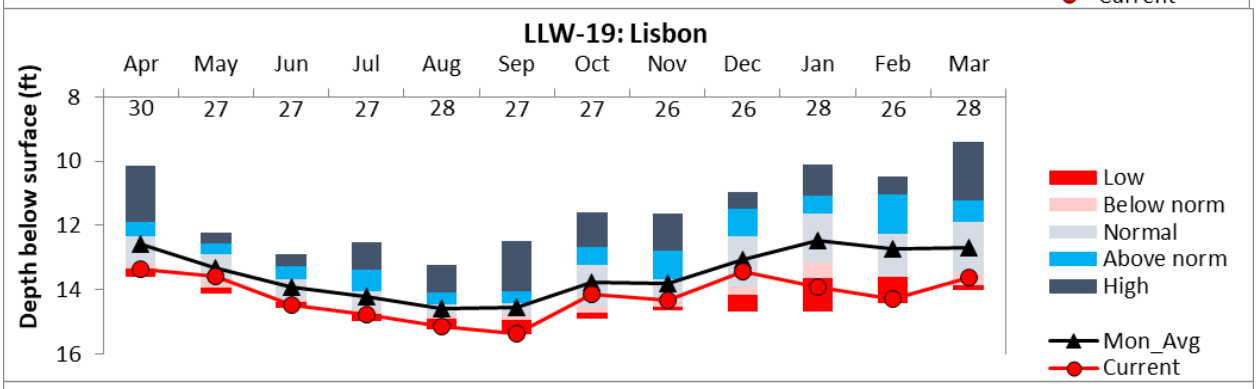

CTW-73: Colebrook
Depth below surface (ft)
Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar
23 22 24 20 25 21 24 24 28 26 24 26
2 4 6 8 10
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current

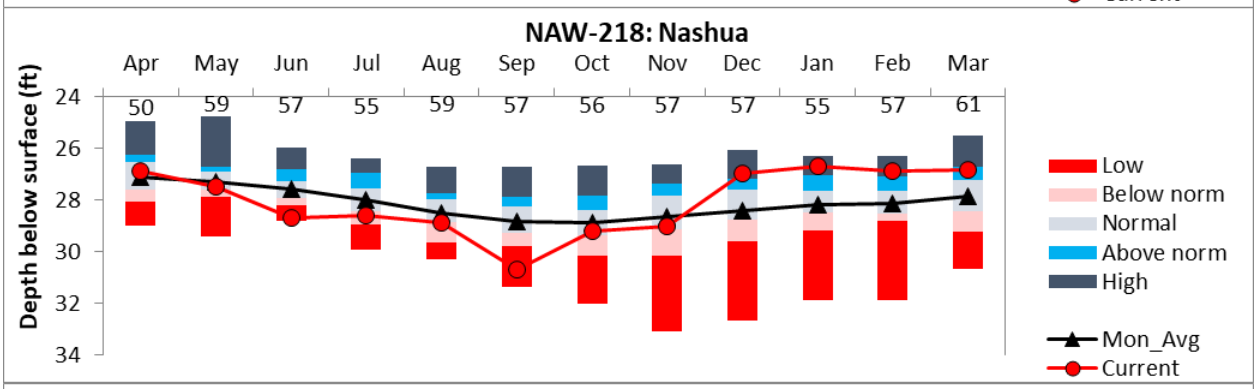

CVW-2.1: Concord Airport
Depth below surface (ft)
Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar
38 39 40 41 42
Prior Year 2020
Current

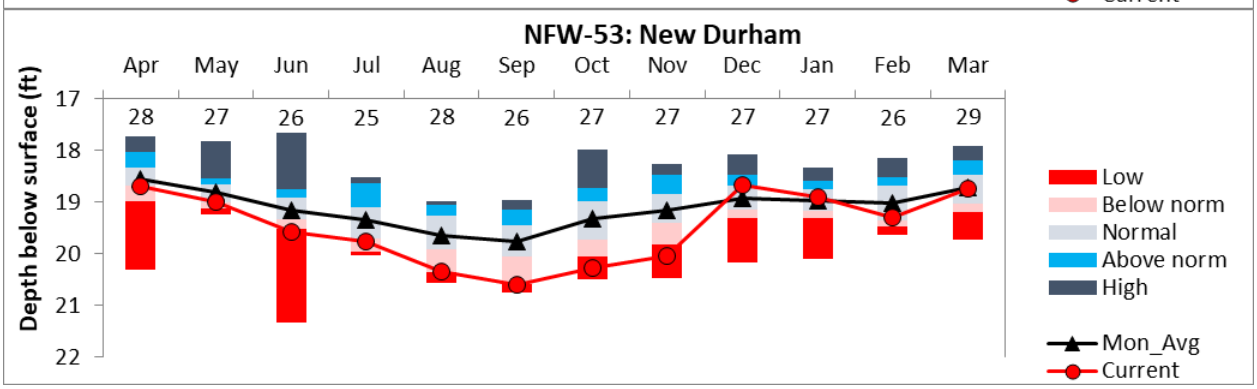

CVW-04: Concord
Depth below surface (ft)
Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar
57 56 58 55 57 53 55 60 54 59 55 59
12 14 16 18 20
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current

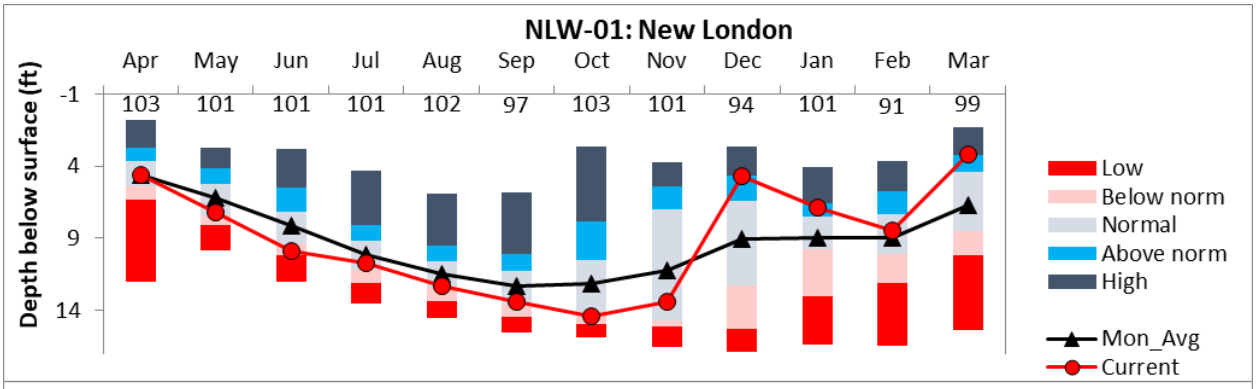

DDW-46: Deerfield
Depth below surface (ft)
Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar
36 37 38 39 40 41
31 27 25 29 25 28 26 29 27 30 26 25
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current
EPW-90: Epping
Depth below surface (ft)
Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar
21 26 31
15 13 13 14 11 15 13 15 14 17 14 13
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current
FKW-01: Franklin
Depth below surface (ft)
Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar
4 9 14
55 53 54 54 54 52 53 53 51 55 49 55
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current
GSW-75: Greenfield
Depth below surface (ft)
Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar
55 57 59 61 63 65 67
22 21 24 27 24 24 25 25 25 26 20 30
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current

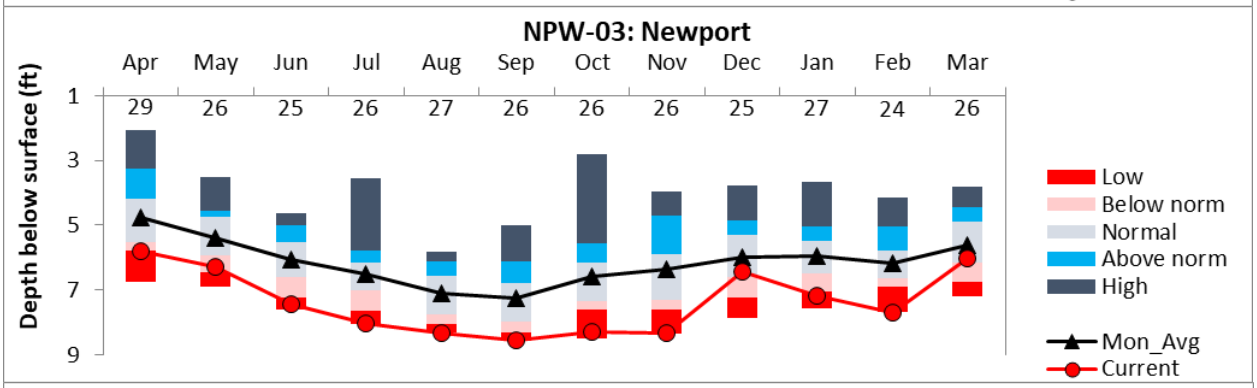

LCW-01: Lancaster
Depth below surface (ft)
Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar
54 52 51 50 50 50 48 55 46 45 42 38
-2 -1 0 1 2 3 4
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current

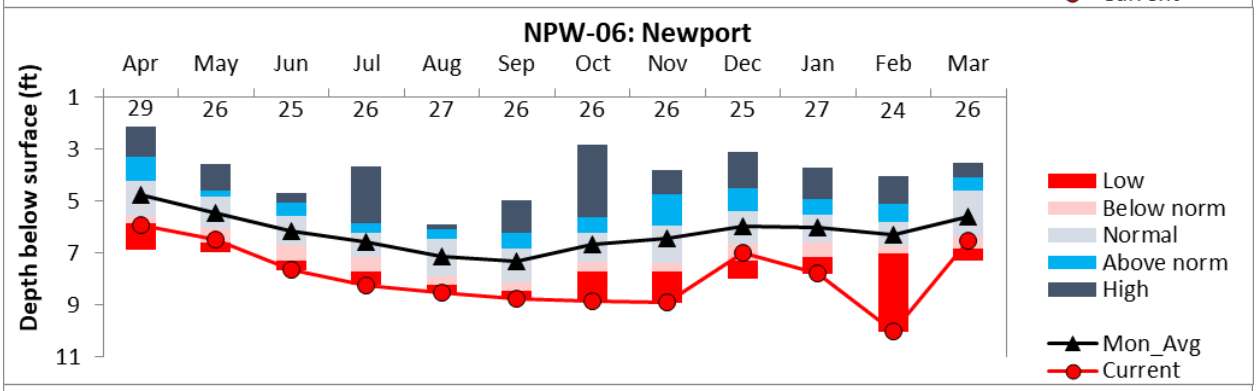

LLW-19: Lisbon
Depth below surface (ft)
Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar
30 27 27 27 28 27 27 26 26 28 26 28
8 10 12 14 16
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current


NAW-218: Nashua
Depth below surface (ft)
Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar
50 59 57 55 59 57 56 57 57 55 57 61
24 26 28 30 32 34
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current


NFW-53: New Durham
Depth below surface (ft)
Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar
28 27 26 25 28 26 27 27 27 27 26 29
17 18 19 20 21 22
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current


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


NPW-03: Newport
Depth below surface (ft)
Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar
29 26 25 26 27 26 26 26 25 27 24 26
1
3
5
7
9
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current


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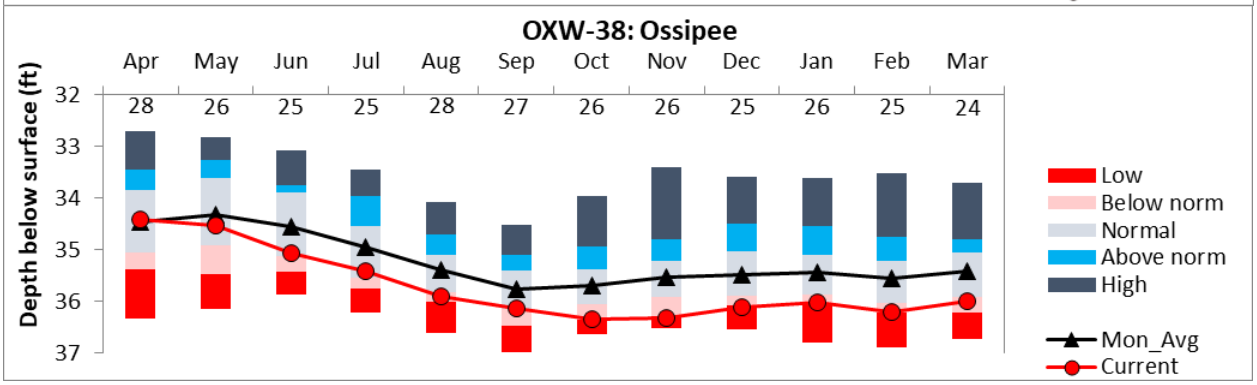
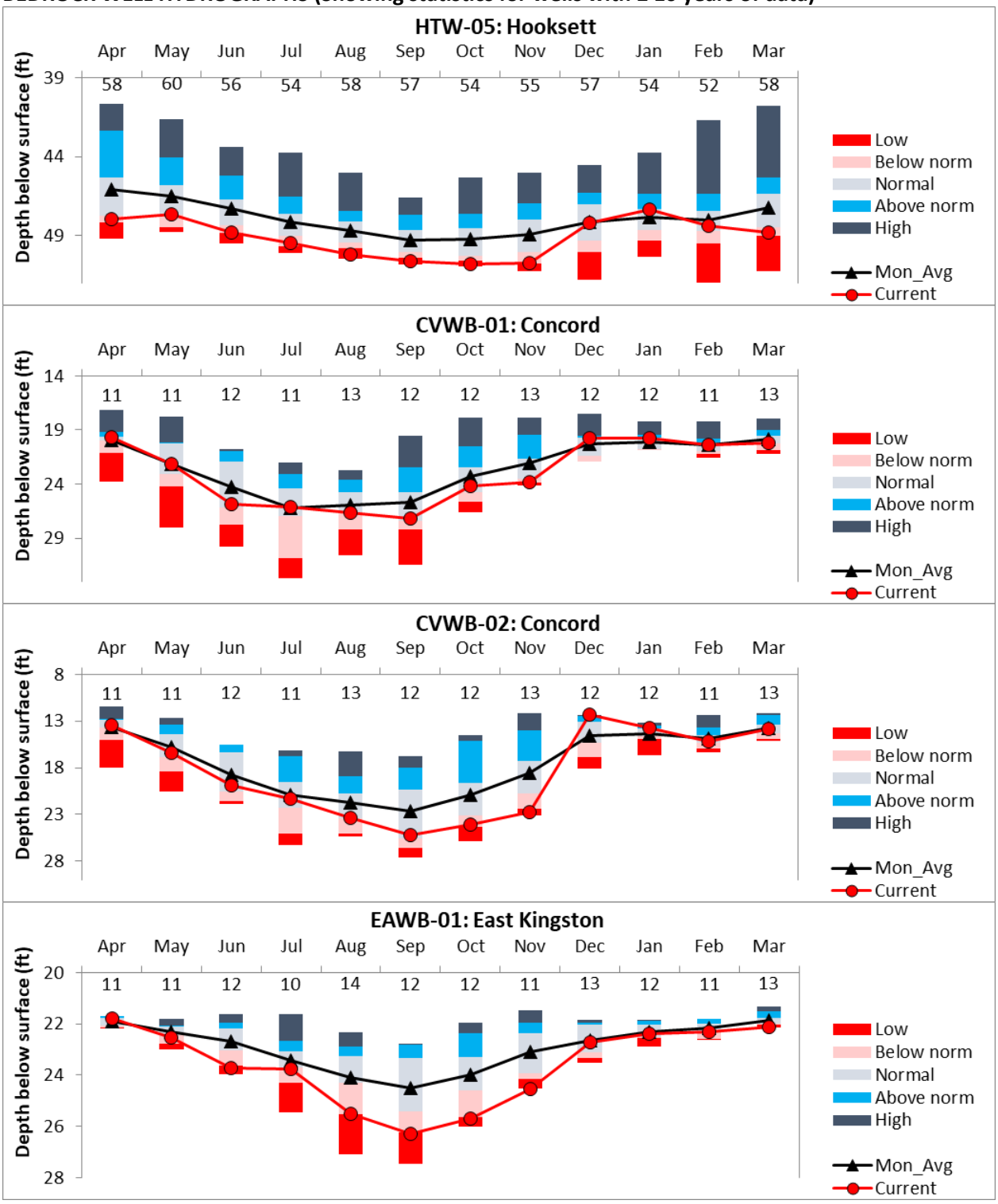
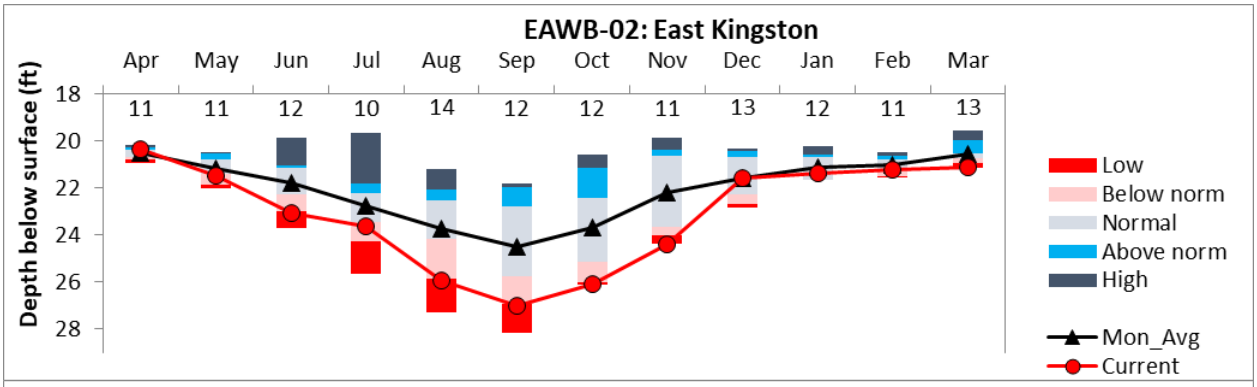
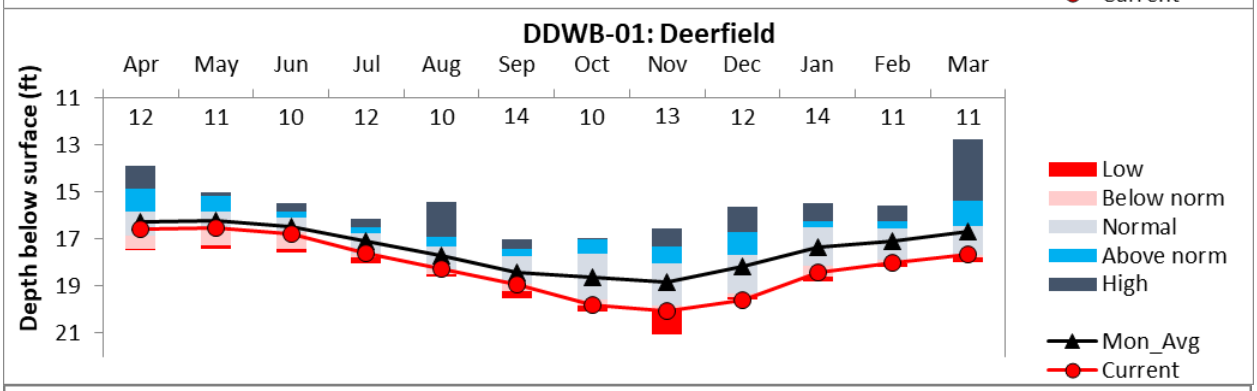
1
3
5
7
9
11
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current

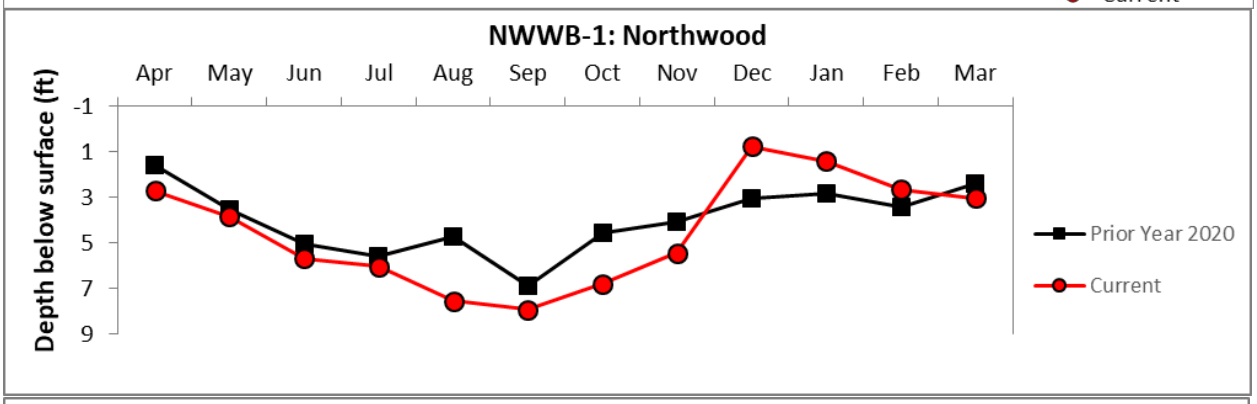

OXW-38: Ossipee
Depth below surface (ft)
Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar
28 26 25 25 28 27 26 26 25 26 25 24
32
33
34
35
36
37
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current

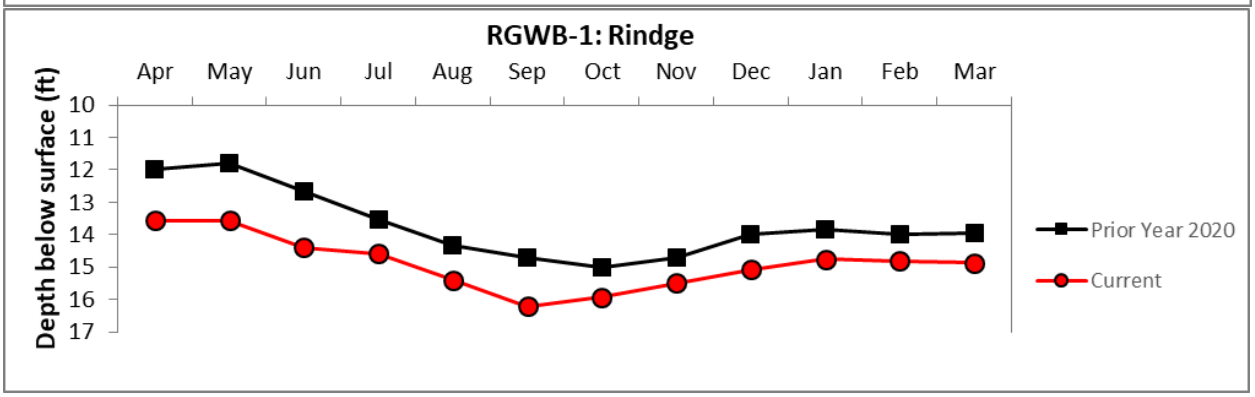
BEDROCK WELL HYDROGRAPHS (Showing statistics for wells with ≥ 10 years of data)

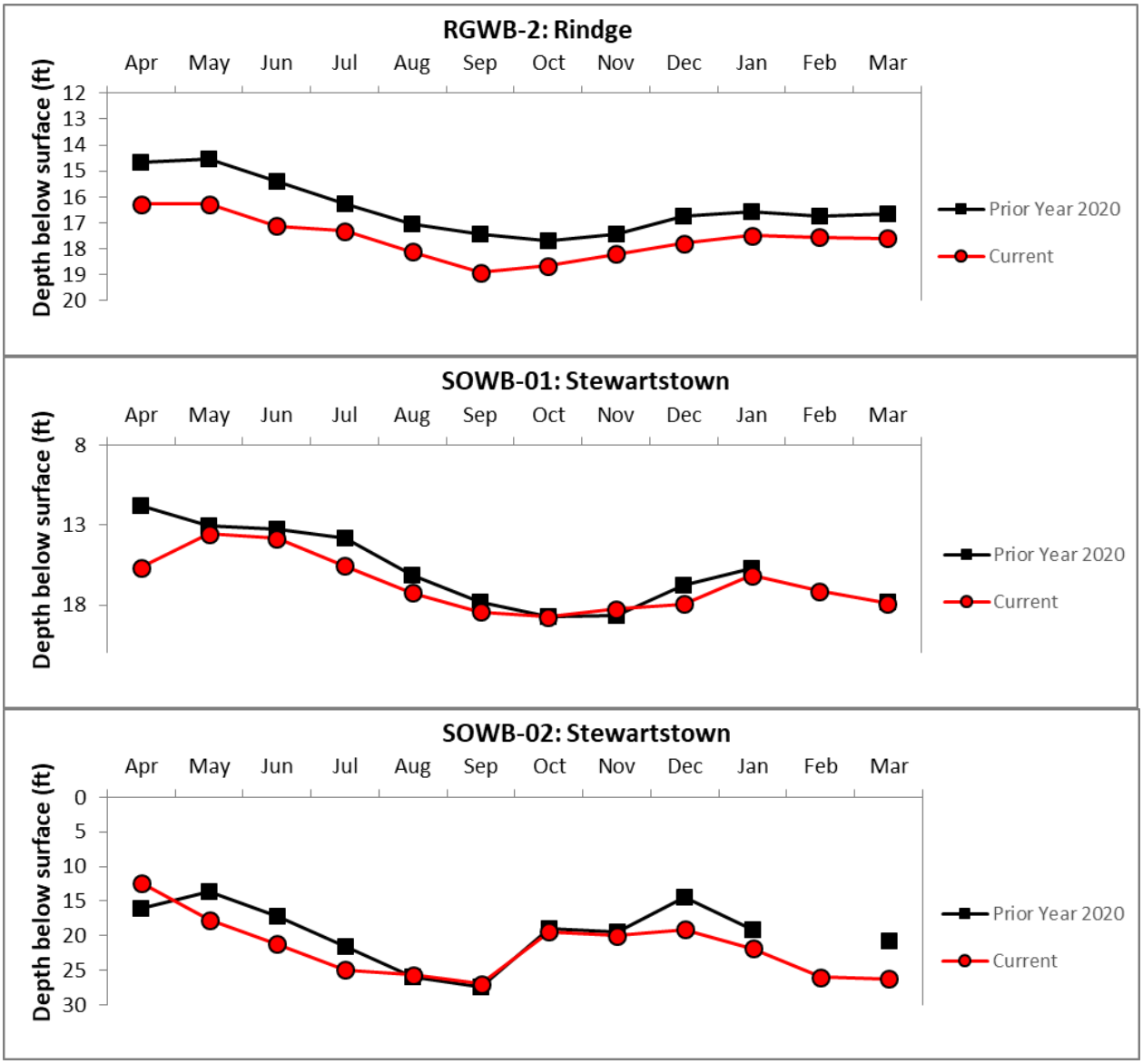


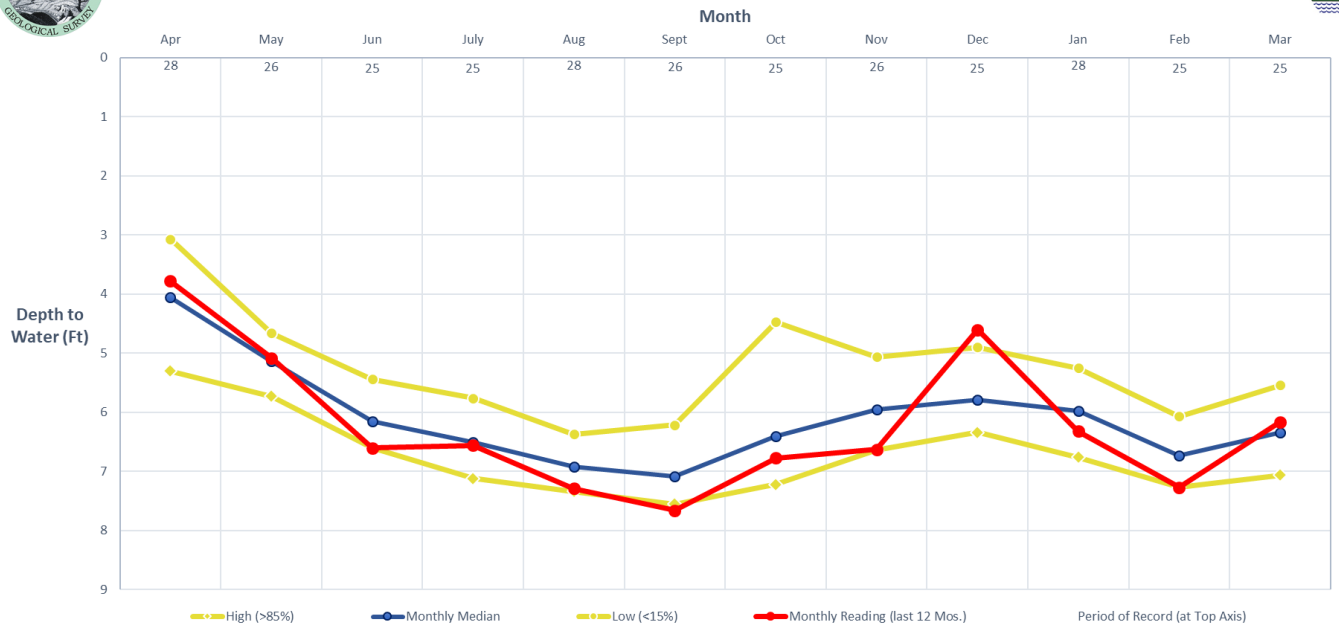

EAWB-02: East Kingston
Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar
11 11 12 10 14 12 12 11 13 12 11 13
Depth below surface (ft)
18 20 22 24 26 28
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current


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

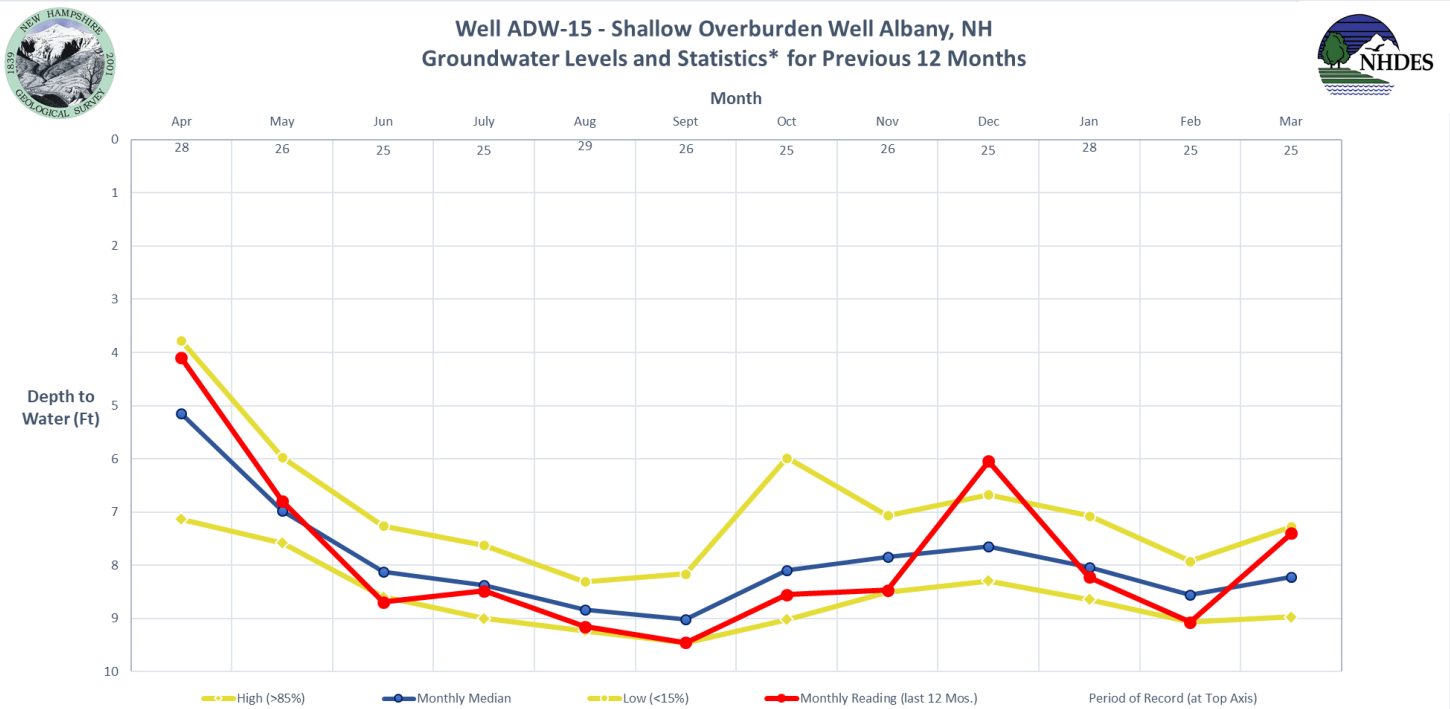

NWWB-1: Northwood
Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar
Depth below surface (ft)
-1 1 3 5 7 9
Prior Year 2020
Current


RGWB-1: Rindge
Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar
Depth below surface (ft)
10 11 12 13 14 15 16 17
Prior Year 2020
Current

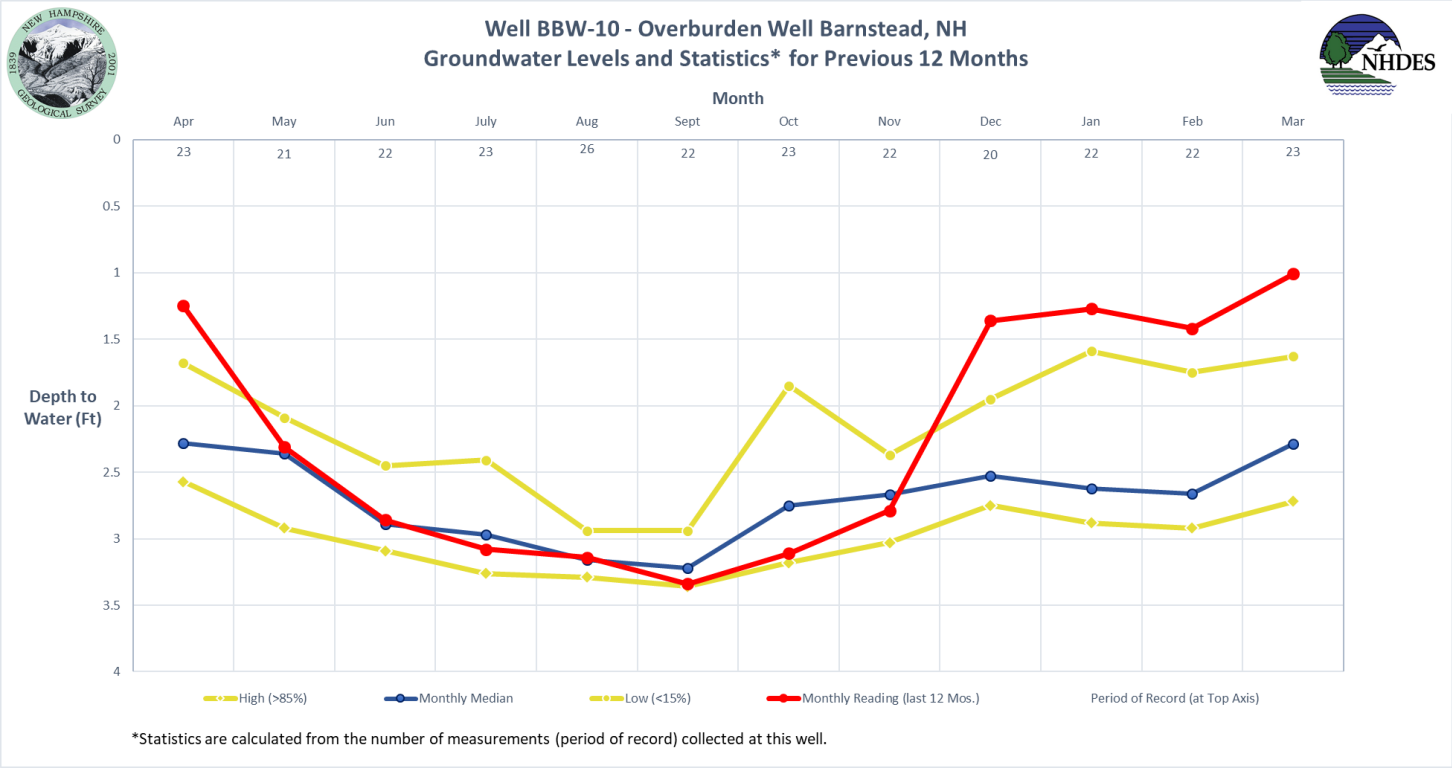

RGWB-2: Rindge
Depth below surface (ft)
Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar
12 13 14 15 16 17 18 19 20
Prior Year 2020
Current
SOWB-01: Stewartstown
Depth below surface (ft)
Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar
8 13 18
Prior Year 2020
Current
SOWB-02: Stewartstown
Depth below surface (ft)
Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar
0 5 10 15 20 25 30
Prior Year 2020
Current

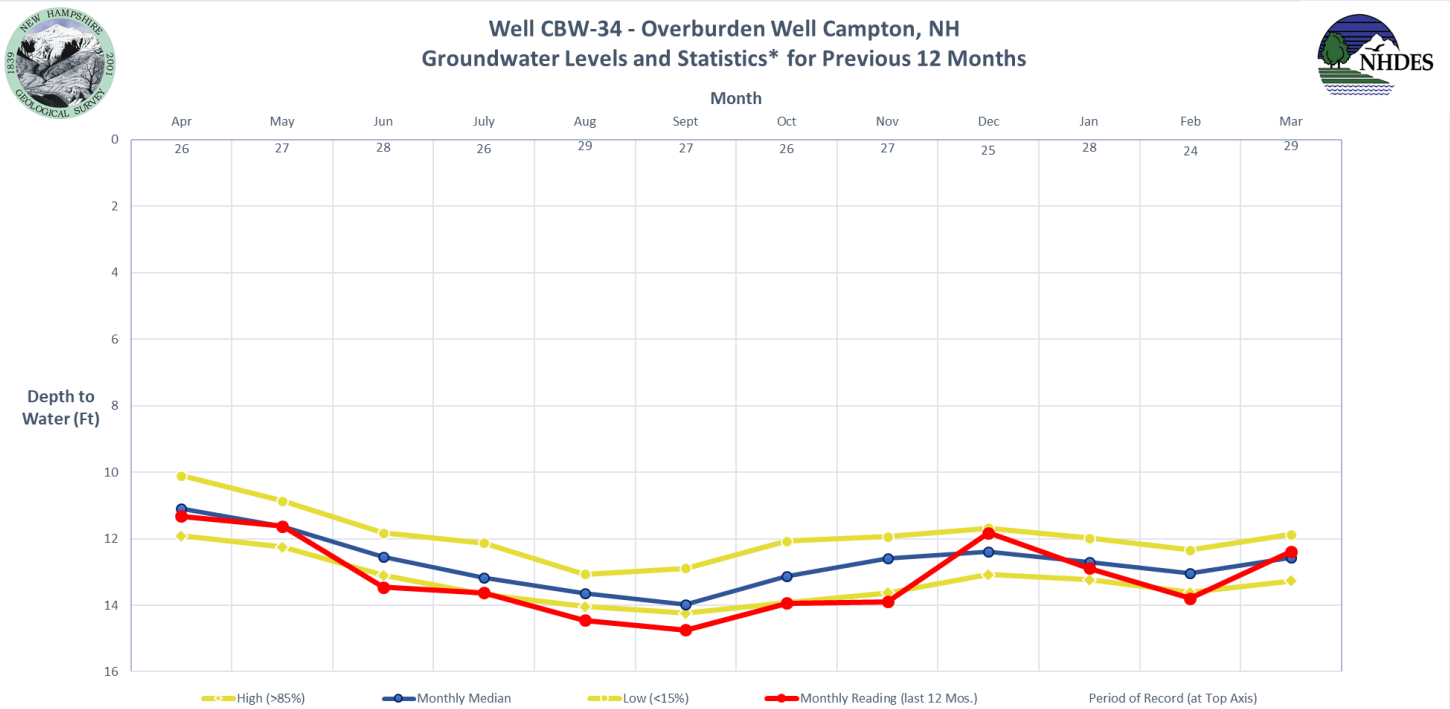


*Statistics are calculated from the number of measurements (period of record) collected at this well.

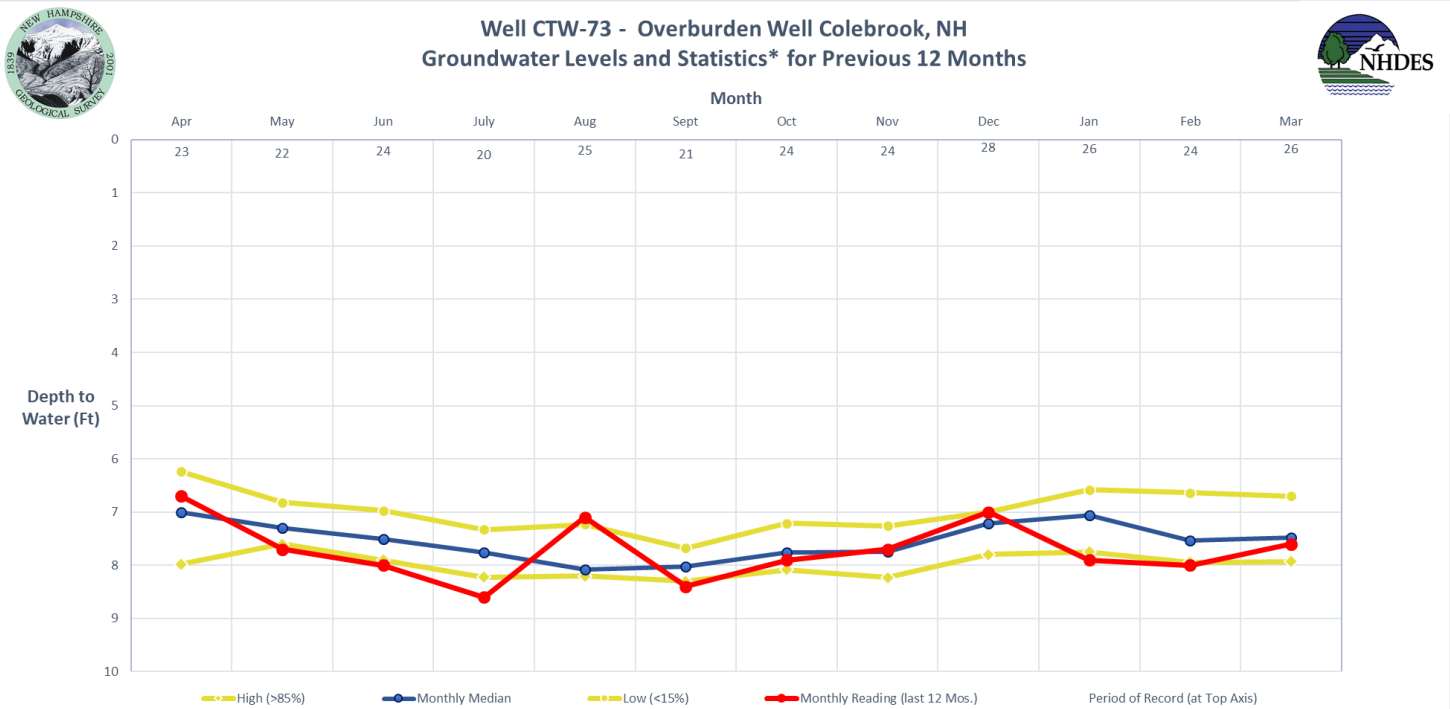


*Statistics are calculated from the number of measurements (period of record) collected at this well.

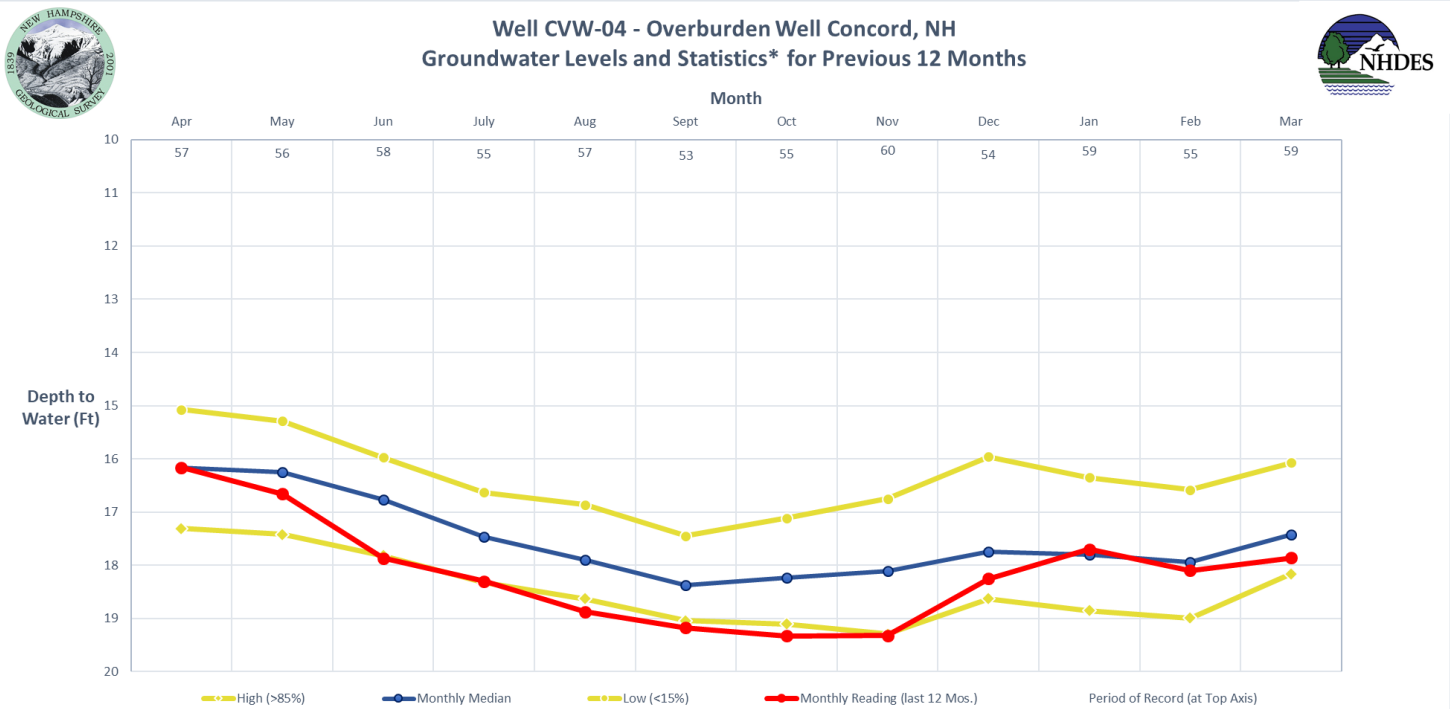

Well BBW-10 - Overburden Well Barnstead, NH
Groundwater Levels and Statistics* for Previous 12 Months
Month
Apr May Jun July Aug Sept Oct Nov Dec Jan Feb Mar
23 21 22 23 26 22 23 22 20 22 22 23
Depth to Water (Ft)
0 0.5 1 1.5 2 2.5 3 3.5 4
High (>85%)
Monthly Median
Low (<15%)
Monthly Reading (last 12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



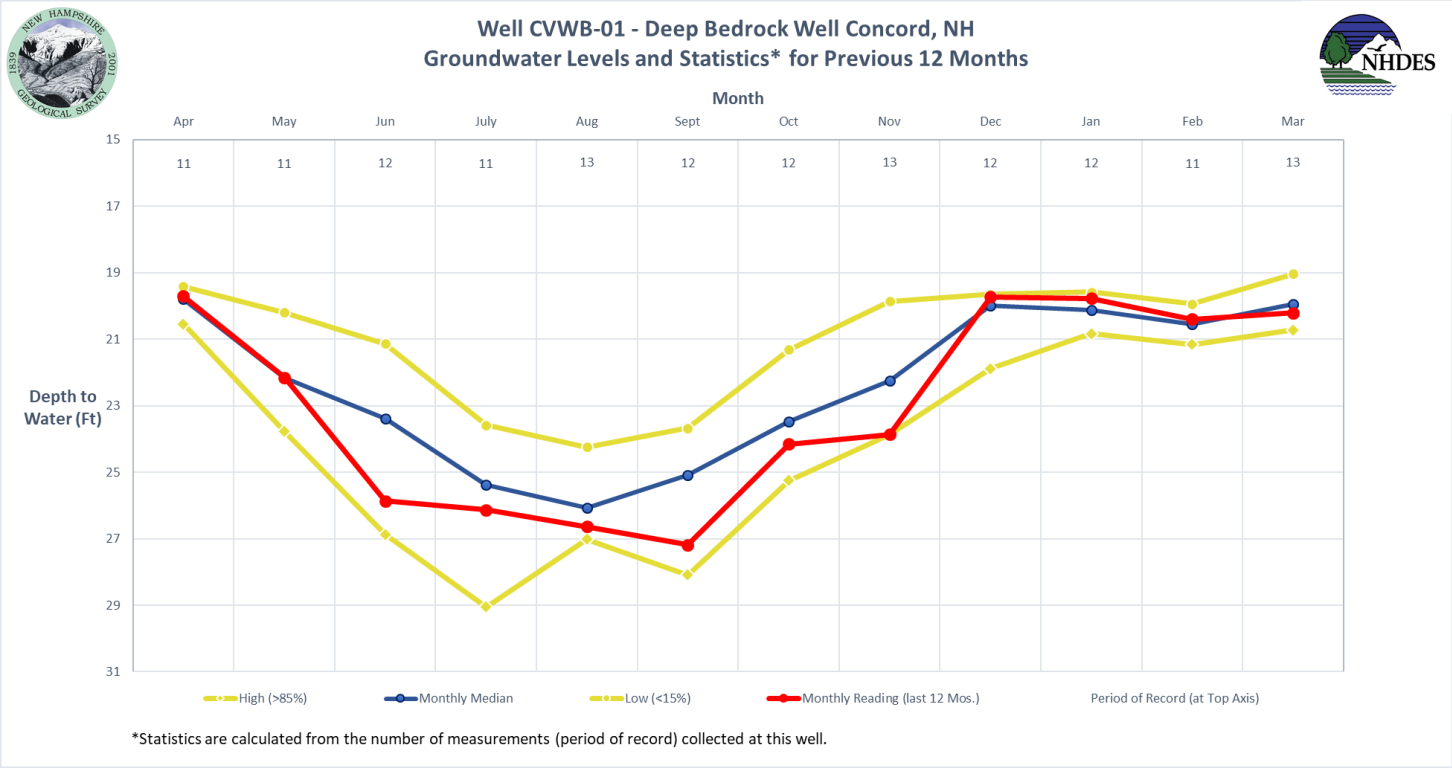
*Statistics are calculated from the number of measurements (period of record) collected at this well.

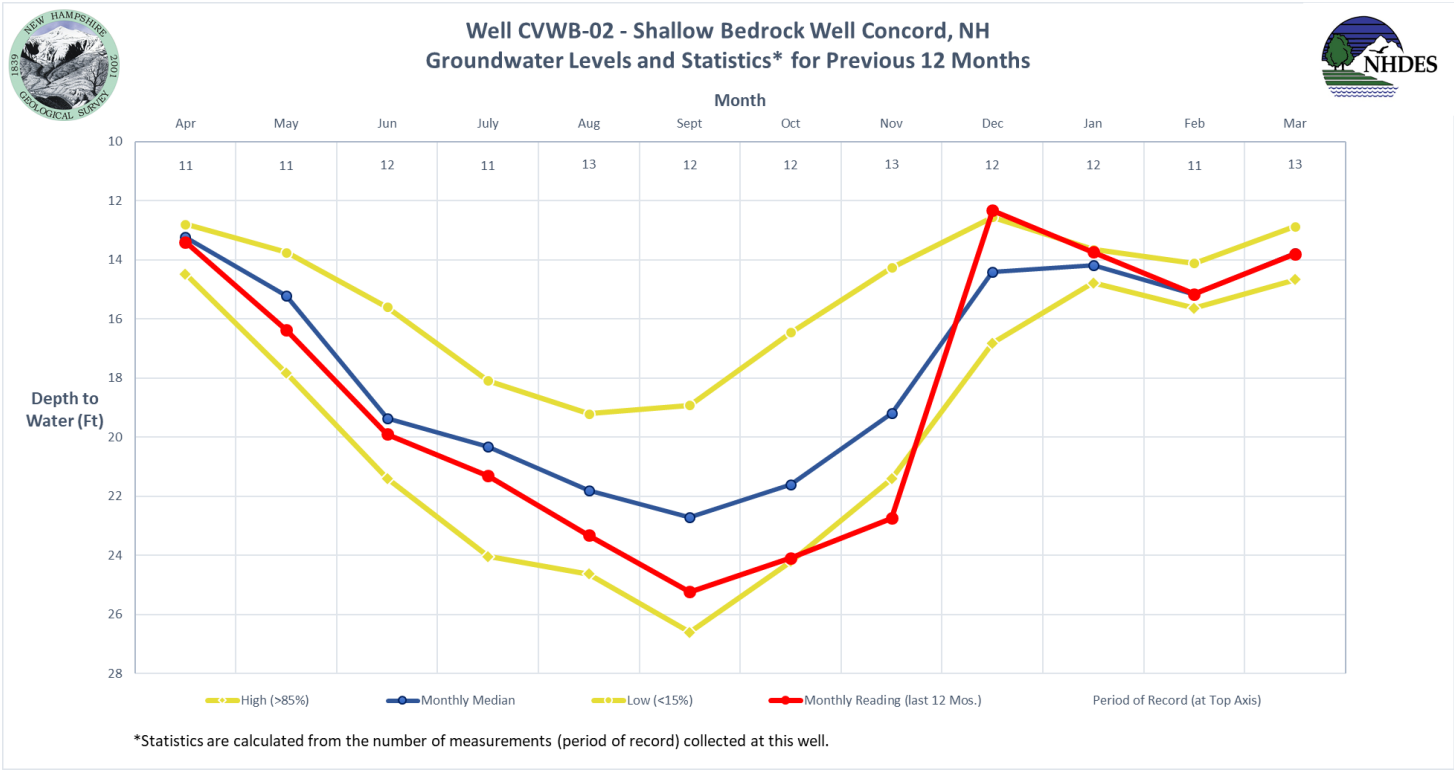


*Statistics are calculated from the number of measurements (period of record) collected at this well.

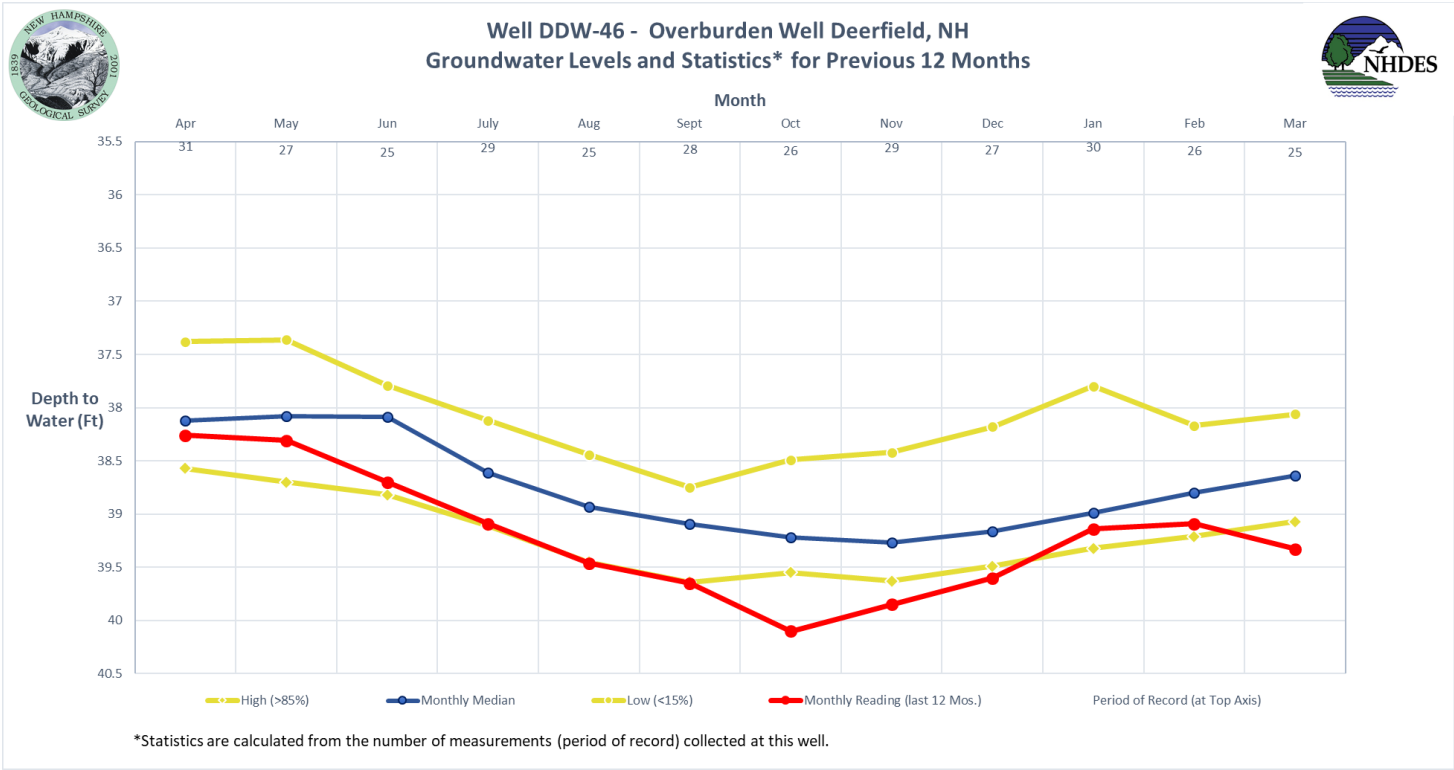


*Statistics are calculated from the number of measurements (period of record) collected at this well.

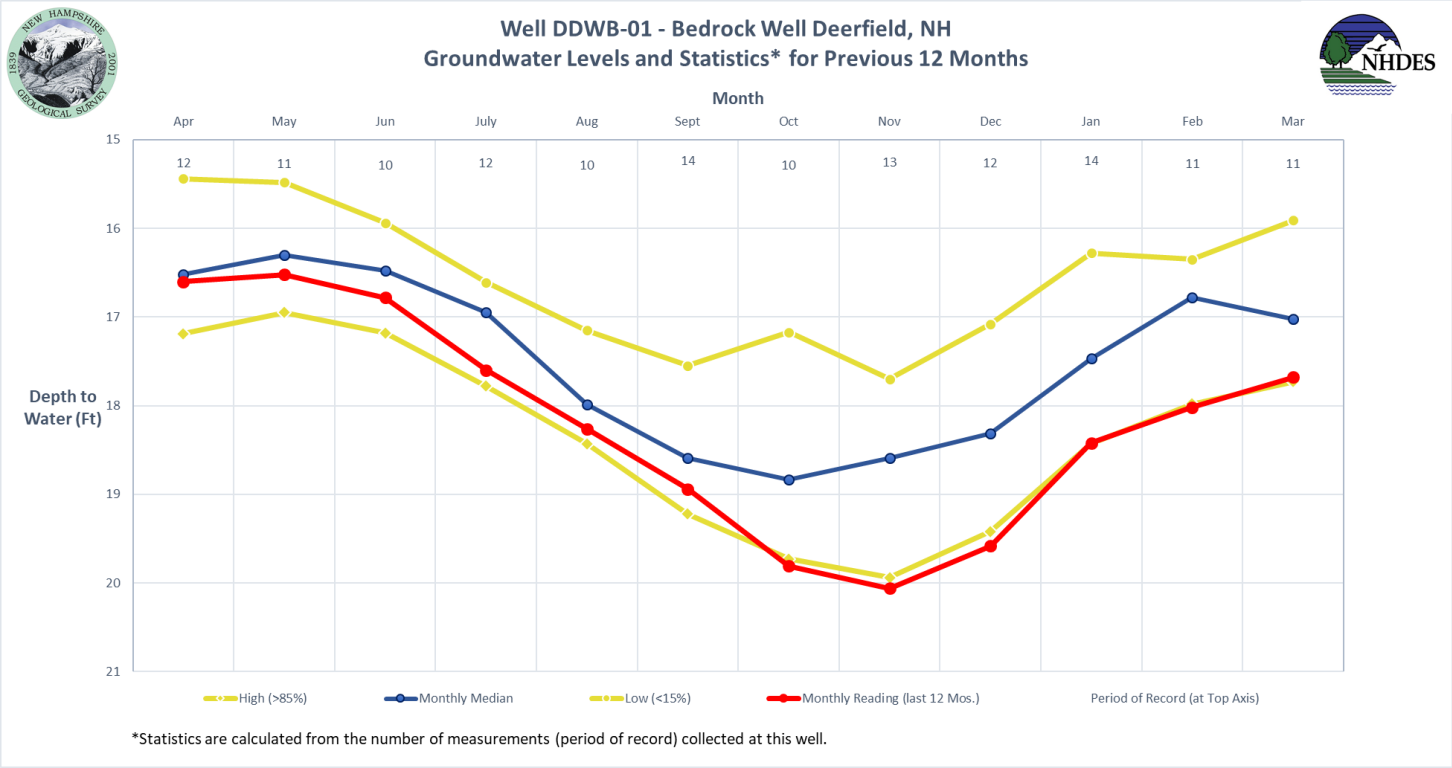

Well CVWB-01 - Deep Bedrock Well Concord, NH
Groundwater Levels and Statistics* for Previous 12 Months
Month
Apr
May
Jun
July
Aug
Sept
Oct
Nov
Dec
Jan
Feb
Mar
11
11
12
11
13
12
12
13
12
12
11
13
15
17
19
21
23
25
27
29
31
Depth to Water (Ft)
High (>85%)
Monthly Median
Low (<15%)
Monthly Reading (last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



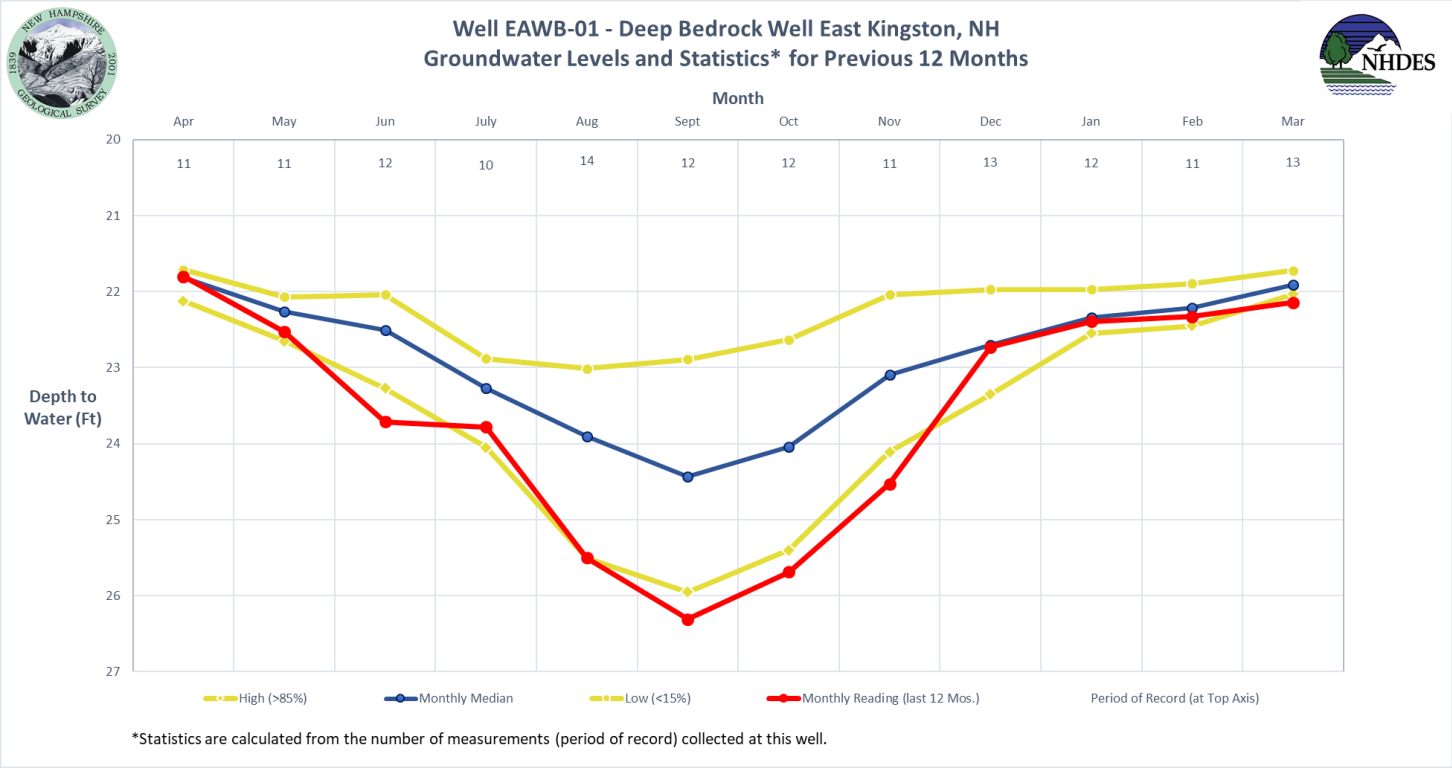
*Statistics are calculated from the number of measurements (period of record) collected at this well.



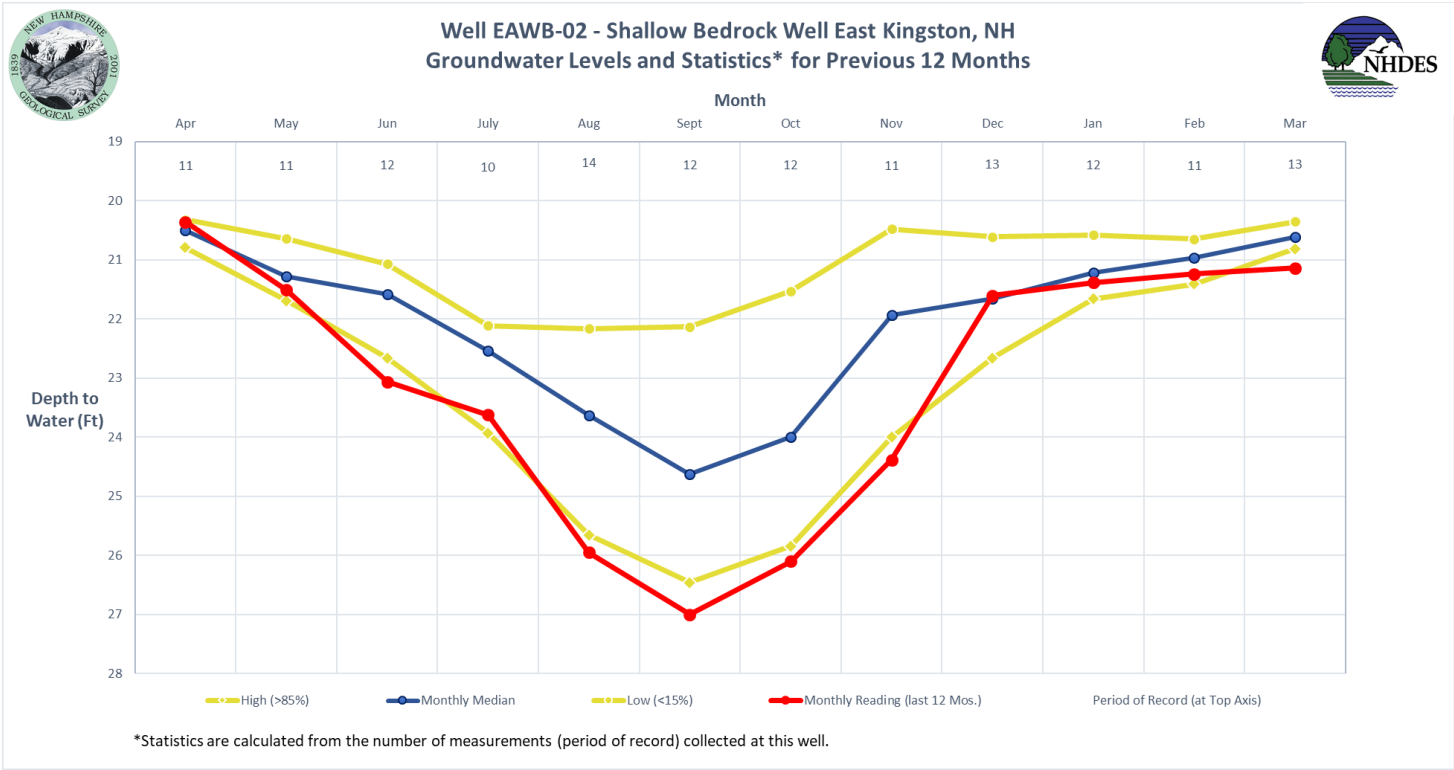
*Statistics are calculated from the number of measurements (period of record) collected at this well.



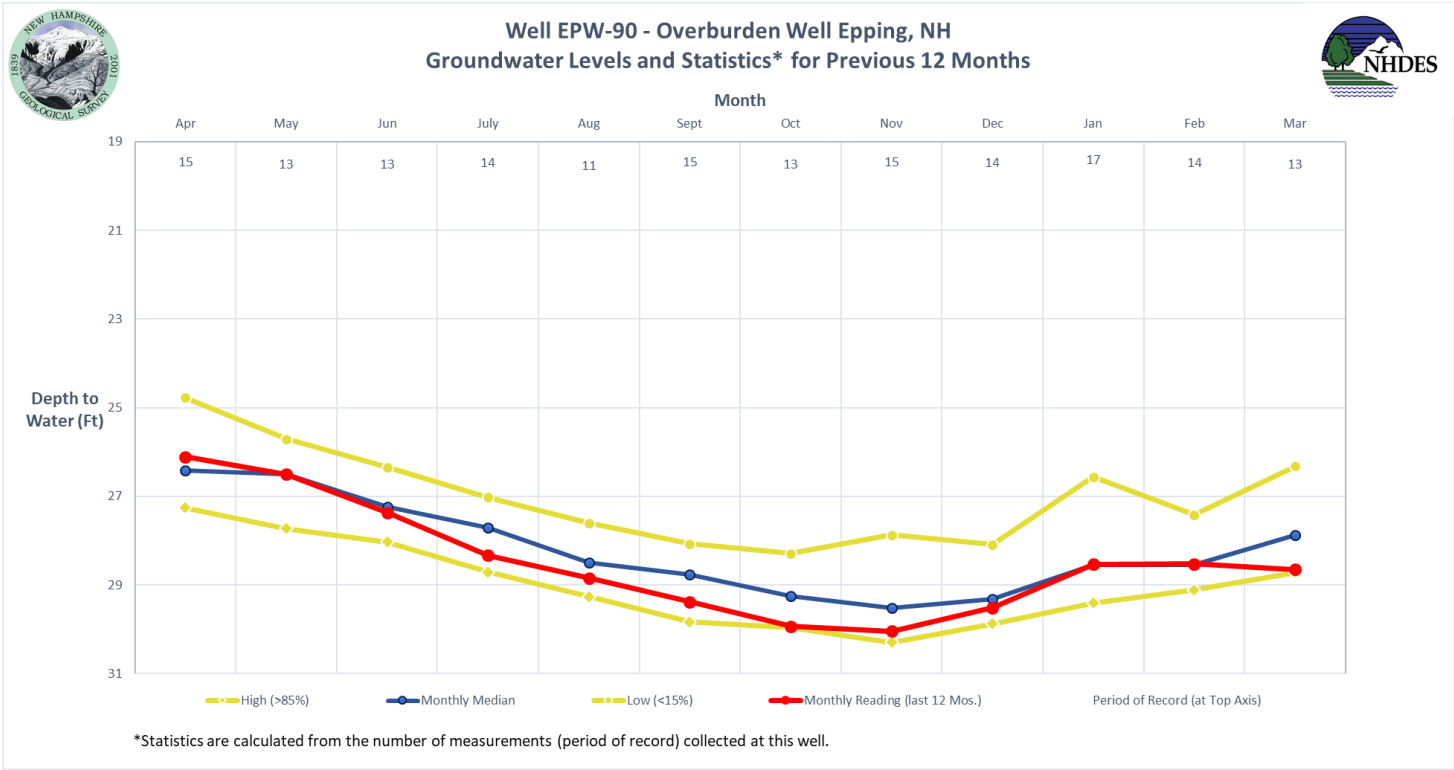
*Statistics are calculated from the number of measurements (period of record) collected at this well.



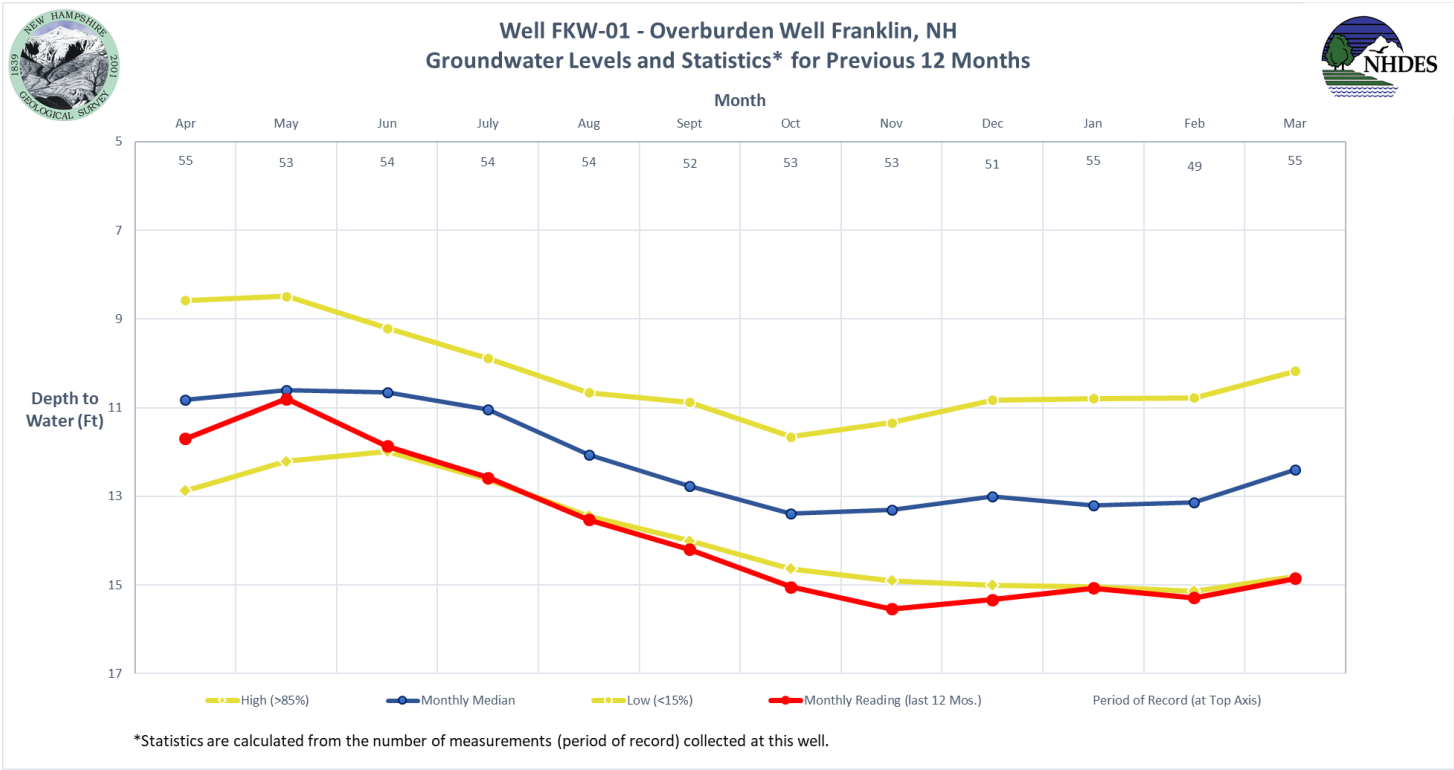
*Statistics are calculated from the number of measurements (period of record) collected at this well.



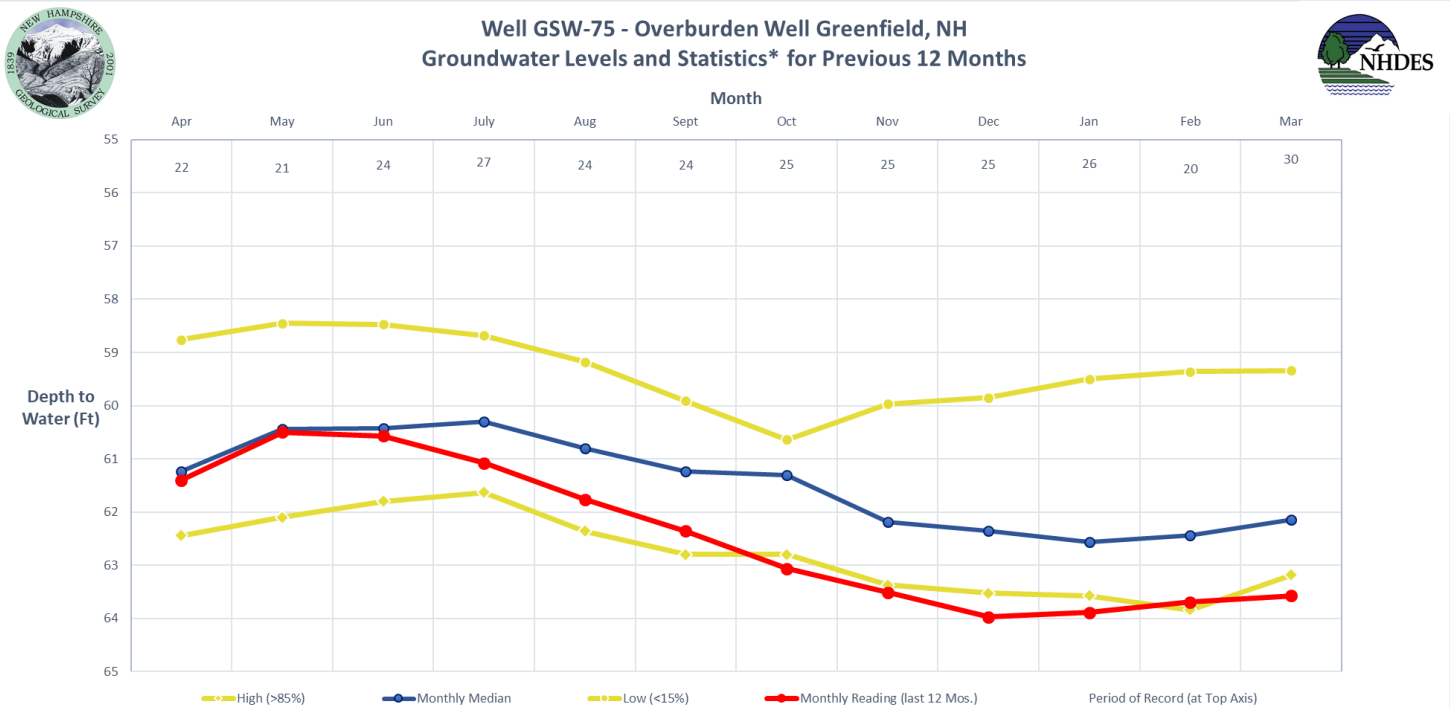
*Statistics are calculated from the number of measurements (period of record) collected at this well.



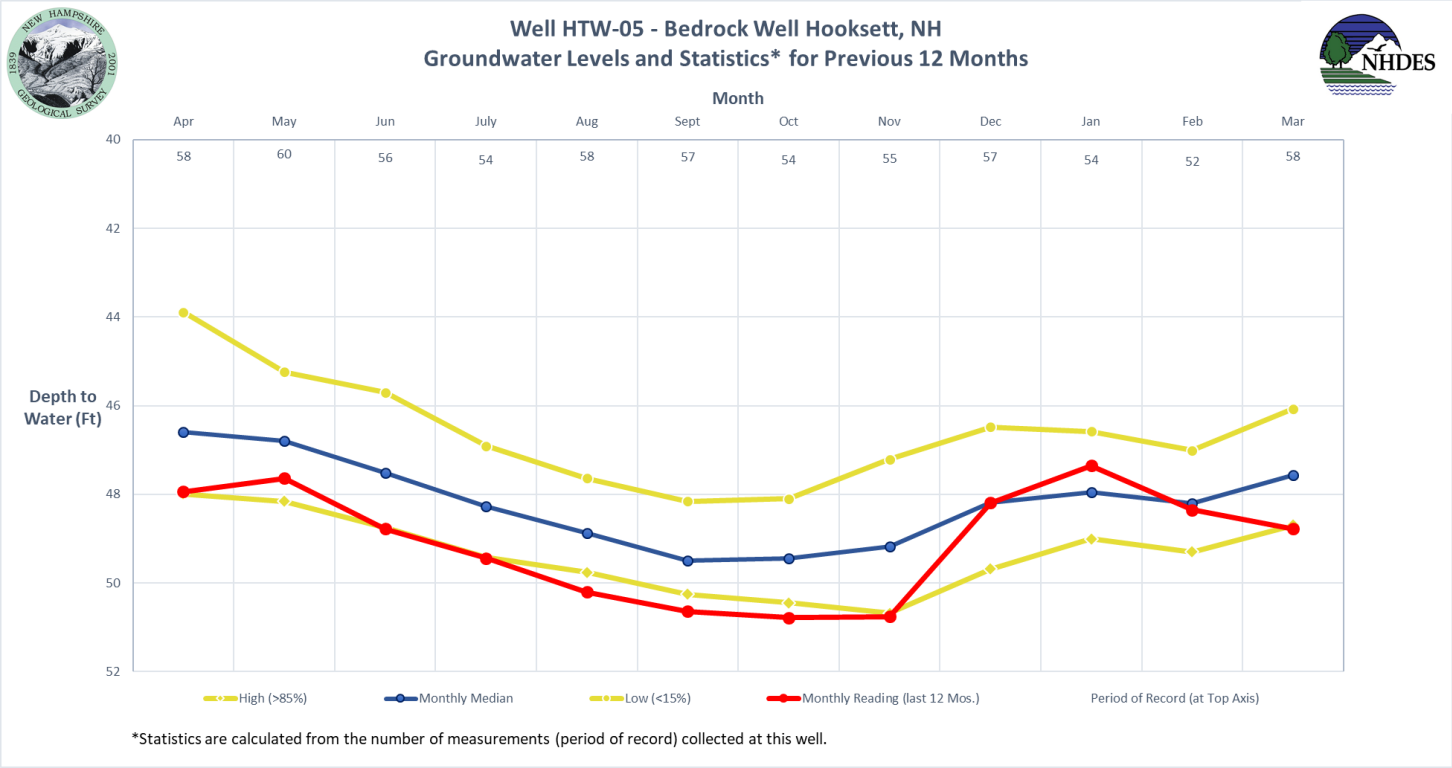
*Statistics are calculated from the number of measurements (period of record) collected at this well.

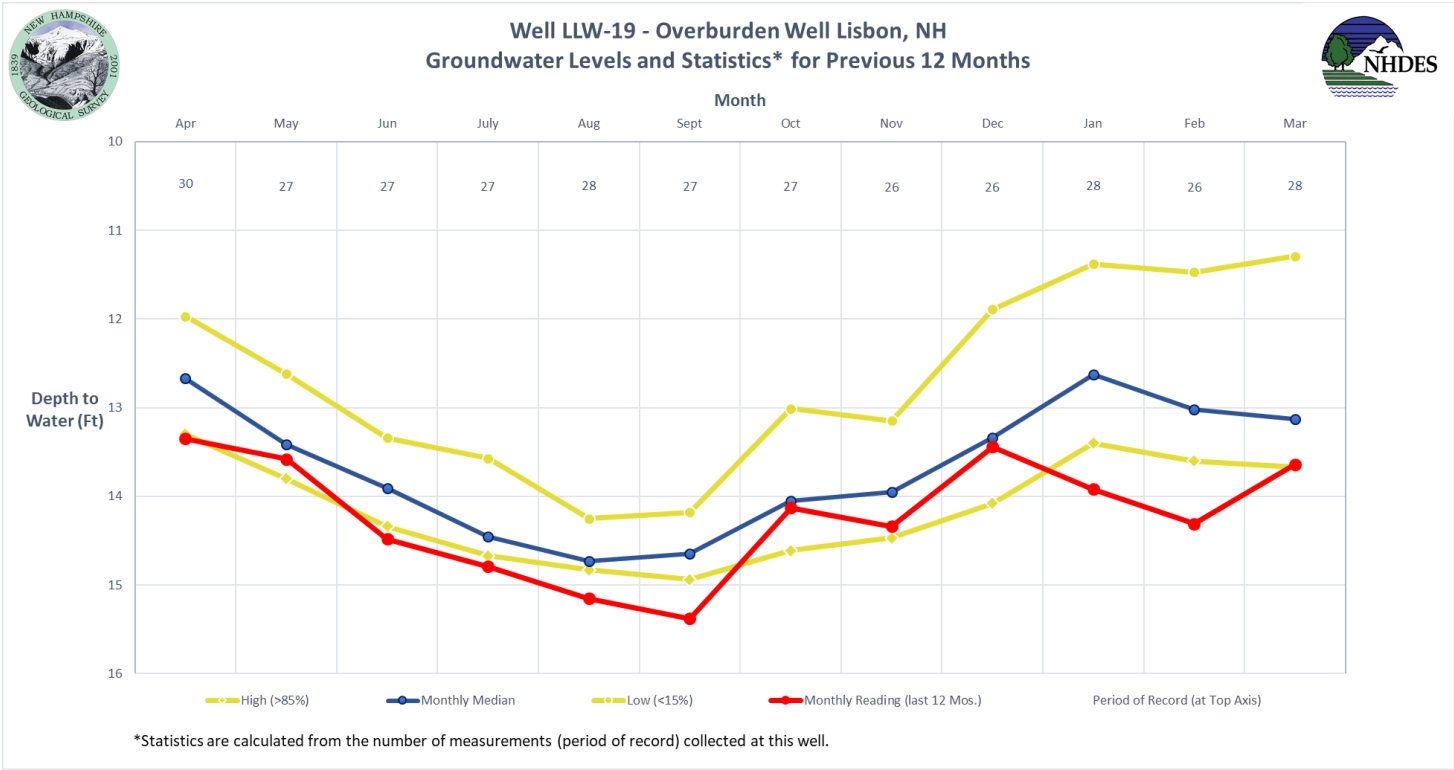


*Statistics are calculated from the number of measurements (period of record) collected at this well.

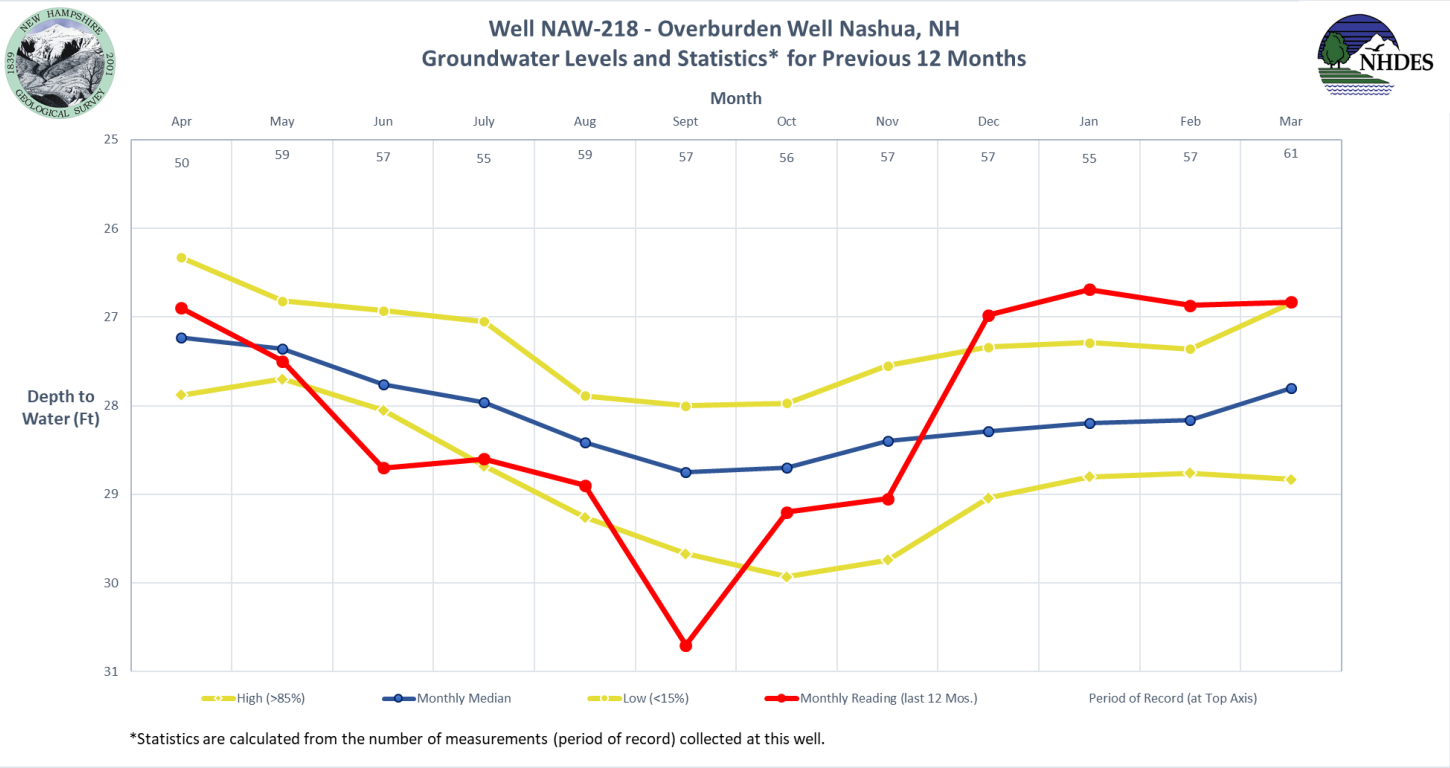


*Statistics are calculated from the number of measurements (period of record) collected at this well.

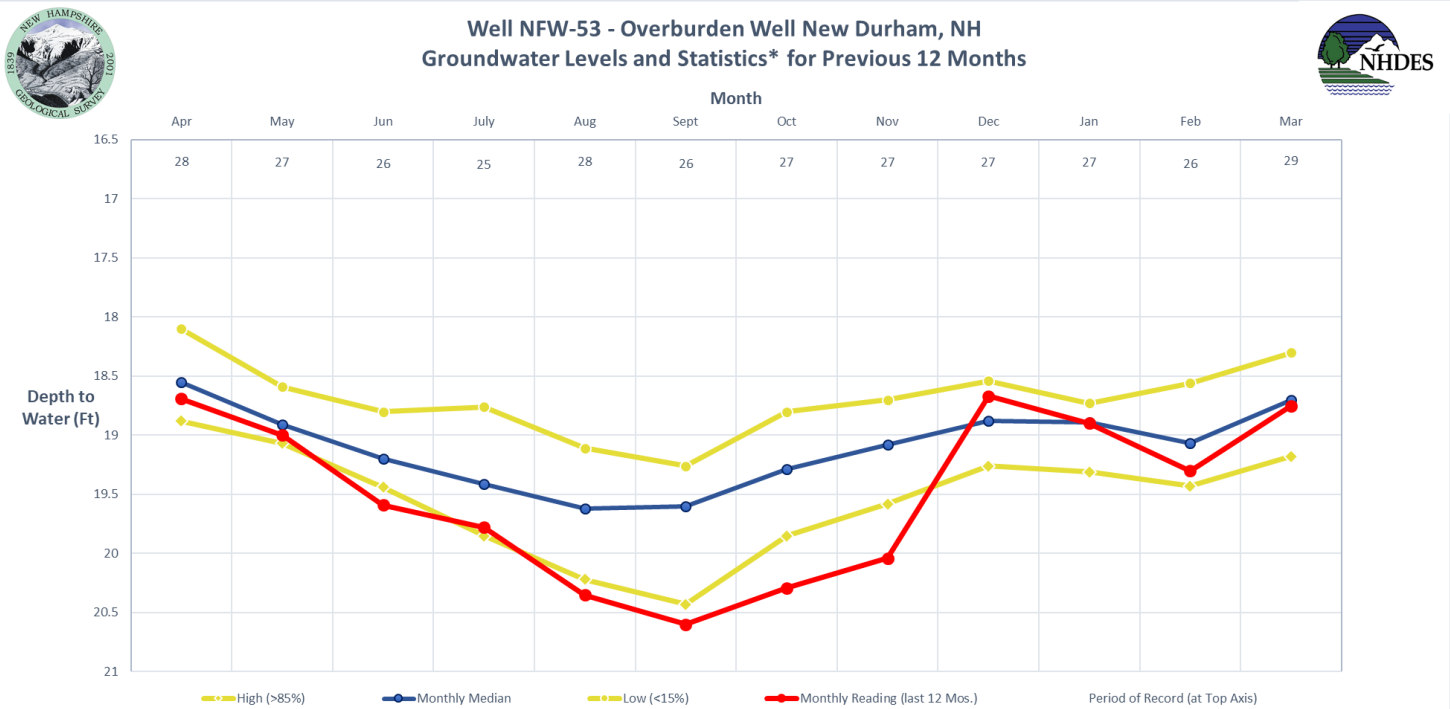

Well HTW-05 - Bedrock Well Hooksett, NH
Groundwater Levels and Statistics* for Previous 12 Months
Month
Apr
May
Jun
July
Aug
Sept
Oct
Nov
Dec
Jan
Feb
Mar
58
60
56
54
58
57
54
55
57
54
52
58
40
42
44
46
48
50
52
Depth to Water (Ft)
High (>85%)
Monthly Median
Low (<15%)
Monthly Reading (last 12 Mos.)
Period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



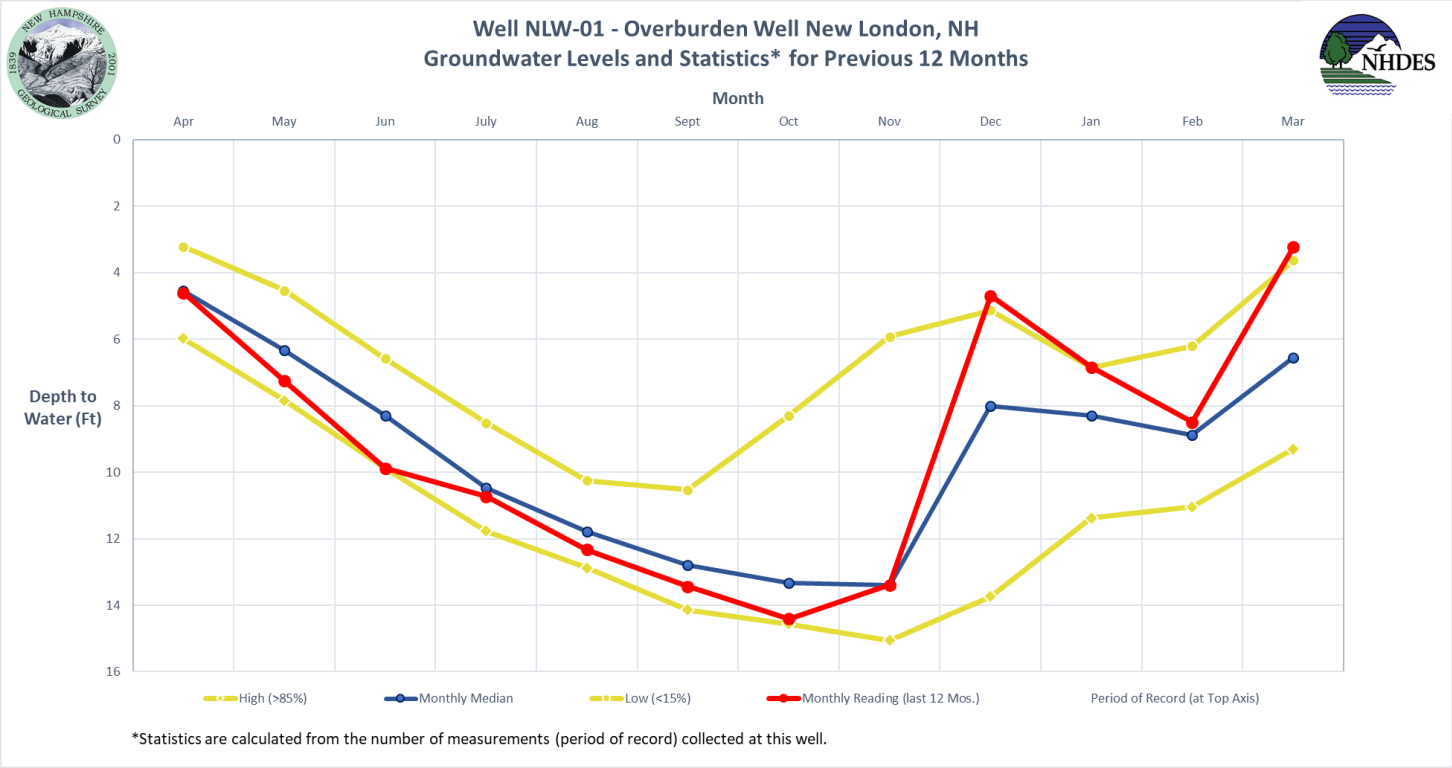
*Statistics are calculated from the number of measurements (period of record) collected at this well.



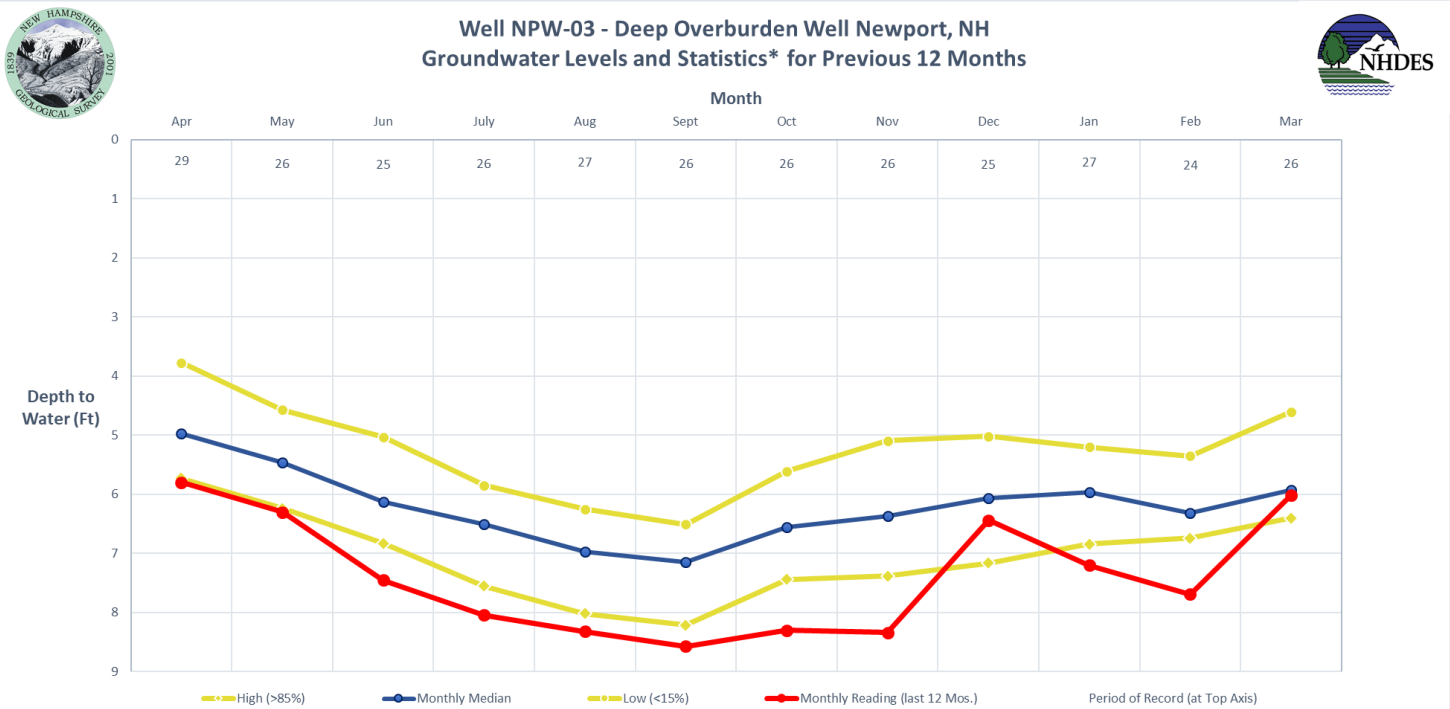
*Statistics are calculated from the number of measurements (period of record) collected at this well.



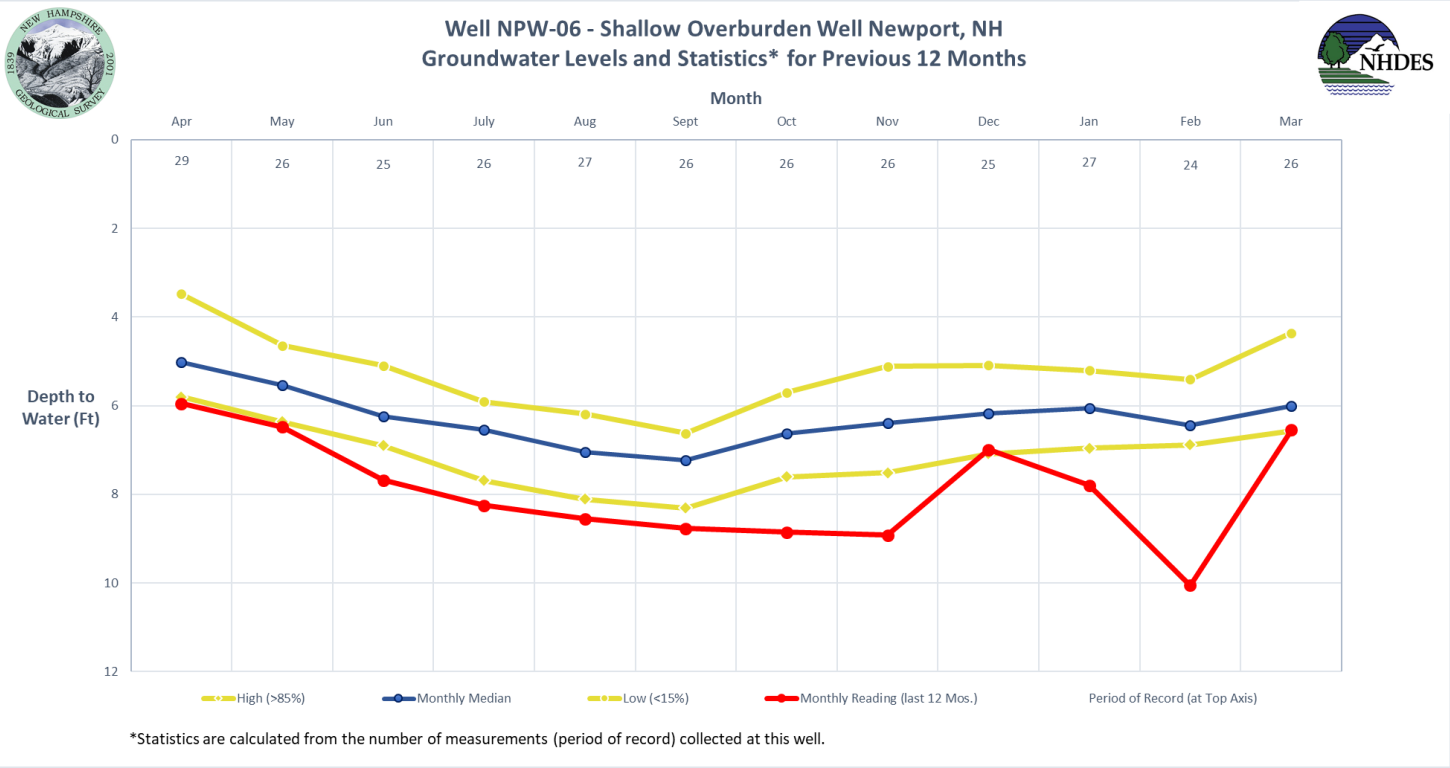
*Statistics are calculated from the number of measurements (period of record) collected at this well.



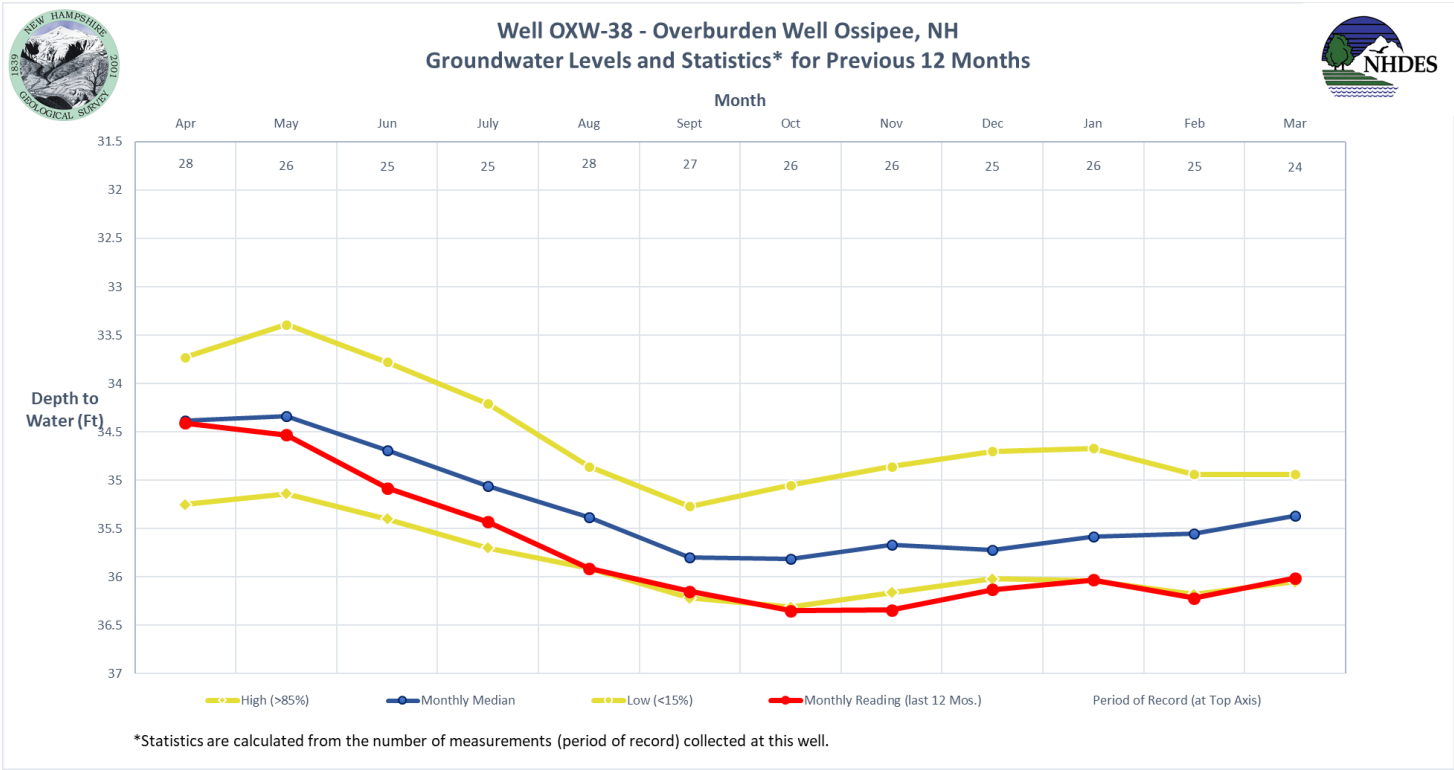
*Statistics are calculated from the number of measurements (period of record) collected at this well.



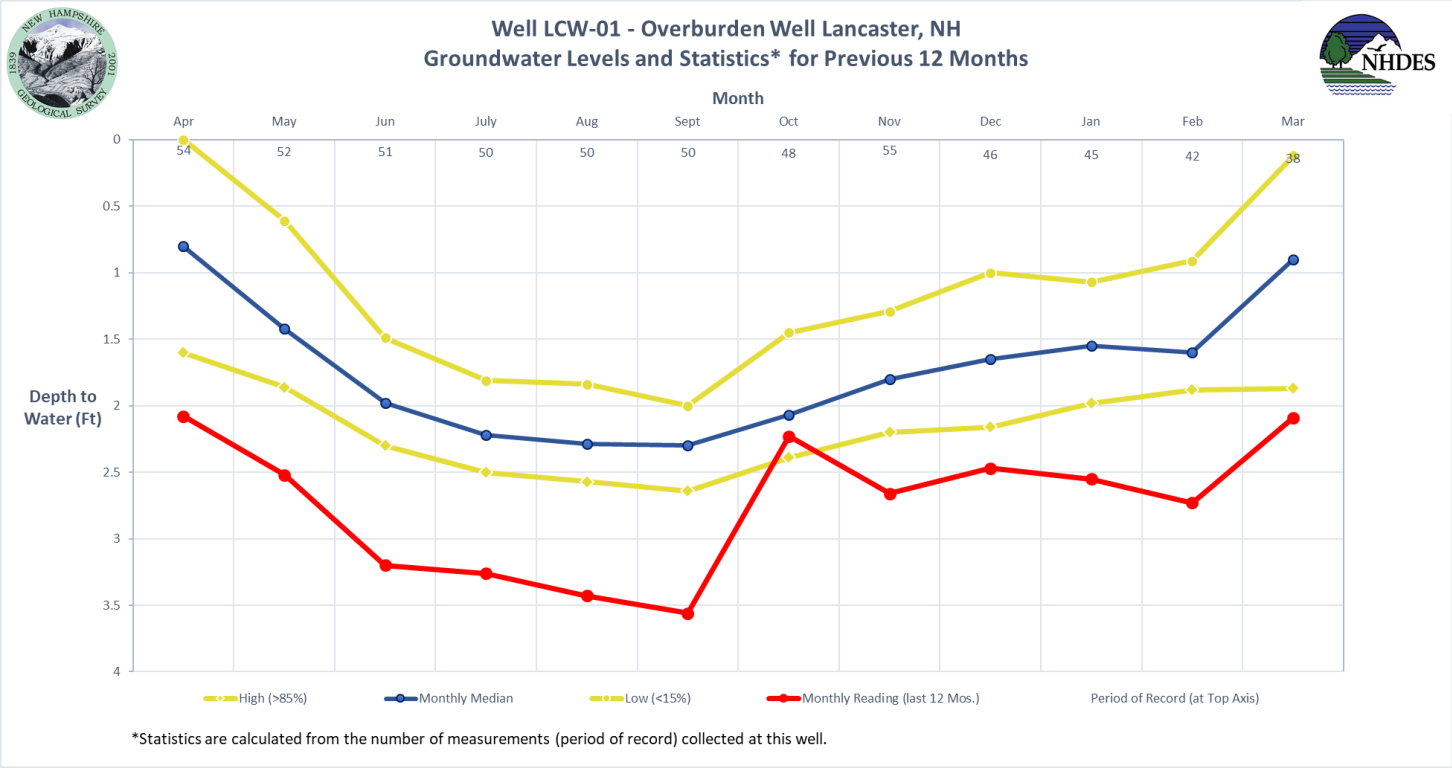
*Statistics are calculated from the number of measurements (period of record) collected at this well.



*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.