N00102.AR.001230
NSY PORTSMOUTH
5090.3a

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

ANGUS S. KING, JR.
GOVERNOR

MARTHA KIRKPATRICK
COMMISSIONER

February 3, 2003

Mr. Fred Evans
Department of the Navy
Northern Division
Naval Facilities Engineering Command
10 Industrial Highway, Mailstop 82
Lester, PA 19113-2090

re: Draft Final Site 10 Additional Investigation Report, Portsmouth Naval Shipyard, Kittery, ME, January 2003 and Responses to MEDEP Follow-Up Comments dated November 26, 2002, Draft Site 10 Additional Investigation Report, Portsmouth Naval Shipyard, Kittery, Maine, October 17, 2002

Dear Fred:

The Maine Department of Environmental Protection has reviewed the document and responses to comments referenced above. The Department's comments follow.

1. Executive Summary, p. ES-3, 2nd para

"However, at BA-MW05, lead was only detected in one set of the groundwater samples."

This statement appears to be factual, according to all other parts of this report, except Table 1 in Attachment 2 of Appendix G. This table shows a lead concentration of 29.4 μg/L for sample event "B". We believe that this is in error, and should be deleted.

2. Section 2.6, p. 2-5, 1st sentence

"Each monitoring well was sampled on 2 consecutive days within a 3-day interval at low tide."

This is not true, according to Table 4-1. Only MW01 and MW03 were sampled on consecutive days. The other three were sampled two days apart. Four days were required to sample all five wells, spanning from November 12 to November 15.

3. Section 3.2, p. 3-3, 1st sentence and 1st bullet

"Two of the assumptions that were made in the estimation of the hydraulic conductivity (related to limitations of the filed observations) are as noted below:

AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-7688
RAY BLDG., HOSPITAL ST.

BANGOR
106 HOGAN ROAD
BANGOR, MAINE 04401
(207) 941-4570 FAX: (207) 941-4584

PORTLAND
312 CANCO ROAD
PORTLAND, MAINE 04103
(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04769-2094
(207) 764-0477 FAX: (207) 764-1507

web site: www.state.me.us/dep

printed on recycled paper

- Low-tide water levels on the afternoon of November 14 were comparable to the low-tide water levels on the afternoon of November 12."

MEDEP has agreed to the report language wherein a higher hydraulic conductivity (250 ft/day) is used for dilution calculations in lieu of the single-well pumping test value (40 ft/day). The current report reflects this action properly. However, in MEDEP's Response 6 of November 26, 2002 data were presented that a difference of 0.2 feet between the low tide elevations occurred. While this difference might appear significantly small, it would account for 40 percent of the Navy's derived pumping test drawdown, and therefore is not insignificant. In light of the small amount of drawdown incurred (less than 0.5 feet), the above assumption is only useful if the word "comparable" is replaced with "identical". Even though the tide elevations appear not to be identical, the application of the analytical method requires the assumption of being identical. Please change this one word.

Also see our comment on the Navy's response to our Response 6 below.

4. Figure 3-1, Subsurface Cross Section and Conceptual Groundwater Flow System

The issue of graphically representing the nature of the crawl space under Building 238 was discussed with the Navy, and Notes 4 and 5 have been added. The note says that the "crawl-space height varies from approximately 3 to 8 feet from north to south". Is the intent to describe the soil "floor" in the crawl space as undulating between 3 and 8 feet below the building floor in the N-S orientation, or is there a general increase from 3 to 8 feet going north to south? Note 4 is interpreted to imply the latter. In Attachment 1 of Appendix G the Navy agreed to add a note saying that the "vertical scale does not apply to the building or crawl-space height". The note actually says "crawl space (elevation not surveyed)". Elevation is not the same thing as crawl-space height. Please remove the ambiguity from Note 4.

Also, can the building be entered to check the levelness of the floor? We're not looking for quantitative measurements but rather a qualitative description.

5. Figures 3-2 and 3-3

It is interesting to note that the range in the tide cycle at all four monitoring wells on November 11 was 8.95 feet (derived by subtracting Figure 3-3 values from Figure 3-2 values). This exact match over even short distances at Site 10 is further evidence that the fill has a high hydraulic conductivity.

6. Table 4-1, Summary of Site 10 Analytical Program

On page 3 of 4, the screened interval for BA-MW-01 is incorrect. It has a 15-foot screen, which spans from 6 to 21 feet bgs. Please correct this entry. The screen is correctly drawn in Figure 3-1.

Also, the Depth column in this table references footnote 1 however there is no footnote for the table.

Responses to MEDEP Follow-Up Comments dated November 26, 2002

7. Navy response to MEDEP 11/16/02 Comment 6

The following comment discusses similarities between tidal fluctuations in Portland and Portsmouth Harbor. We recognize that the Navy has agreed to use a hydraulic conductivity of 250 ft/day and therefore this is largely an academic exercise. However, it is entirely possible that the issue of tidal fluctuation could arise again at another site at PNSY. We urge the Navy to record tide heights using the Seavey Island tidal gauge when sampling tidally influenced wells in the future to avoid the tidal issue questions we have encountered at Site 10.

The MEDEP indicated that Portsmouth Harbor tidal fluctuations are related to Portland tidal fluctuation by a 0.89 coefficient assuming that local weather and sea conditions are not dissimilar.

The Navy responded, "As noted in the MEDEP's comment, the validity of the 0.89 coefficient is dependent upon the assumption that local weather and sea conditions... are not dissimilar. Unless information is available to show the weather and sea conditions for both locations were the same, the Navy does not believe the Casco Bay data can be reliable applied to Seavey Island."

The assumption does not require weather and sea conditions to be "the same", but rather only "not dissimilar." In general we believe that it is a reasonable assumption that at most times of the year weather and sea conditions between Portsmouth Harbor and Casco Bay are not dissimilar due to their relative proximity. Therefore, in general, the MEDEP believes it is incumbent upon the Navy to demonstrate that weather and sea conditions were not similar on November 14, 2001.

Regardless, the MEDEP has attached data showing that in fact weather conditions[1] and sea conditions[2] were very nearly the same at both Isle of Shoals (the buoy closest to Portsmouth Harbor and which we believe fairly accurately represents sea conditions at Portsmouth Harbor) and a buoy station located 12 nautical miles southeast of Portland (see attached). Therefore we stand by our position that a coefficient of 0.89 does apply for the purpose of calculating tide heights at Seavey Island on the days in question. This leads to our conclusion that an average spatially-integrated value for hydraulic conductivity would be much closer to 250 ft/day than 40 ft/day.

[1] Data from http://www.wunderground.com

[2] Data from http://www.ndbc.noaa.gov/Maps/northeast_hist.shtml ; data descriptions at http://www.ndbc.noaa.gov/measdes.shtml , data available for wind direction, wind speed, wind gust speed, barometric pressure, air temp, water temp, and dewpoint.

Please feel free to contact me at (207) 287-8010 if you have any questions.

Sincerely,

Iver McLeod
Project Manager
Bureau of Remediation and Waste Management

attachments

pc w/ attachments:
Larry Dearborn, MEDEP
Matt Audet, USEPA
Marty Raymond, PNS
Debbie Cohen, TtNUS
Carolyn Lepage, TAG Advisor
File

pc w/out attachments:
Denise Messier, MEDEP
Ken Finkelstein
Ken Munney
Peter Britz, RAB
Doug Bogen, RAB
Don Card, RAB
Alan Davis, RAB
Michele Dionne, RAB
Mary Marshall, RAB
Phil McCarthy, RAB
Jack McKenna, RAB
Diana McNabb, RAB
Onil Roy, RAB
Roger Wells, RAB
James Horrigan, SAPL
Claire McBane, NH F&W

12 Nautical Miles SE of Portland, ME
Standard Meteorological Conditions for 11/12/01 and 11/14/01

(see below for key)

YYYY	MM	DD	hh	WD	WSPD	GST	WVHT	DPD	APD	MWD	BAR	ATMP	WTMP	DEWP	VIS	TIDE
2001	11	12	00	314	5.1	6.4	0.43	3.23	3.41	999	1020.2	2.8	9.0	-4.9	99.0	99.00
2001	11	12	01	298	4.2	5.2	0.32	9.09	4.02	999	1020.8	2.6	9.0	-5.1	99.0	99.00
2001	11	12	02	288	6.1	7.4	0.26	9.09	5.44	999	1021.1	2.3	9.0	-5.4	99.0	99.00
2001	11	12	03	303	7.5	8.9	0.23	9.09	5.67	999	1021.5	2.0	8.9	-4.9	99.0	99.00
2001	11	12	04	292	7.1	8.8	0.24	10.00	5.61	999	1021.8	1.5	8.9	-5.9	99.0	99.00
2001	11	12	05	283	6.9	8.1	0.25	10.00	4.70	999	1022.2	1.4	8.9	-5.6	99.0	99.00
2001	11	12	06	290	7.0	8.1	0.31	9.09	4.19	999	1022.4	1.1	8.9	-5.8	99.0	99.00
2001	11	12	07	307	6.4	7.5	0.32	8.33	3.80	999	1022.5	1.1	8.9	-6.0	99.0	99.00
2001	11	12	08	299	5.1	6.7	0.31	8.33	4.02	999	1022.7	0.8	8.8	-5.3	99.0	99.00
2001	11	12	09	314	6.0	8.0	0.43	9.09	3.47	999	1023.0	0.7	8.8	-6.2	99.0	99.00
2001	11	12	10	317	4.3	6.2	0.40	9.09	3.69	999	1023.1	0.4	9.0	-6.9	99.0	99.00
2001	11	12	11	307	4.0	5.3	0.34	9.09	4.55	999	1023.5	0.3	9.0	-7.1	99.0	99.00
2001	11	12	12	286	2.2	3.1	0.31	10.00	4.47	999	1023.9	0.4	9.0	-6.8	99.0	99.00
2001	11	12	13	270	4.0	5.1	0.34	10.00	4.16	999	1024.4	0.8	9.0	-6.6	99.0	99.00
2001	11	12	14	303	5.0	6.5	0.34	9.09	3.94	999	1024.9	0.6	9.0	-5.9	99.0	99.00
2001	11	12	15	309	2.8	4.7	0.43	9.09	3.96	999	1024.9	1.0	9.0	-6.0	99.0	99.00
2001	11	12	16	334	3.6	5.6	0.39	3.57	3.88	999	1024.9	1.7	9.0	-6.3	99.0	99.00
2001	11	12	17	315	7.6	9.5	0.40	9.09	4.23	999	1024.4	2.9	9.1	-6.4	99.0	99.00
2001	11	12	18	338	8.2	11.4	0.47	2.70	3.24	999	1024.4	3.5	9.1	-6.2	99.0	99.00
2001	11	12	19	313	8.3	10.2	0.54	2.70	3.16	999	1024.7	4.2	9.1	-6.1	99.0	99.00
2001	11	12	20	320	10.6	12.7	0.66	3.23	3.22	999	1025.4	3.9	9.1	-5.9	99.0	99.00
2001	11	12	21	313	9.9	12.2	0.54	2.94	3.20	999	1026.3	3.5	9.0	-6.7	99.0	99.00
2001	11	12	22	311	7.7	10.3	0.48	2.86	3.35	999	1027.4	3.0	8.9	-7.0	99.0	99.00
2001	11	12	23	311	6.3	7.4	0.35	3.03	3.53	999	1028.3	2.4	8.8	-7.5	99.0	99.00

12 Nautical Miles SE of Portland, ME
Standard Meteorological Conditions for 11/12/01 and 11/14/01
(cont.)

YYYY	MM	DD	hh	WD	WSPD	GST	WVHT	DPD	APD	MWD	BAR	ATMP	WTMP	DEWP	VIS	TIDE
2001	11	14	00	167	4.3	5.4	0.20	12.50	4.77	999	1028.7	6.2	8.8	-1.3	99.0	99.00
2001	11	14	01	210	3.5	4.6	0.20	12.50	4.59	999	1028.4	7.2	8.7	-1.1	99.0	99.00
2001	11	14	02	204	3.8	4.7	0.19	12.50	4.35	999	1028.1	7.4	8.9	0.7	99.0	99.00
2001	11	14	03	184	6.4	7.9	0.25	12.50	3.46	999	1027.7	8.0	8.9	2.1	99.0	99.00
2001	11	14	04	193	6.4	7.6	0.47	2.94	3.15	999	1027.1	8.5	8.9	3.0	99.0	99.00
2001	11	14	05	203	8.4	10.1	0.59	3.13	3.32	999	1026.6	8.5	8.9	2.8	99.0	99.00
2001	11	14	06	216	7.6	8.9	0.73	3.70	3.51	999	1026.3	7.7	8.8	2.7	99.0	99.00
2001	11	14	07	230	6.6	7.9	0.73	3.85	3.63	999	1026.0	7.0	8.8	2.7	99.0	99.00
2001	11	14	08	238	6.9	8.0	0.79	4.35	3.85	999	1025.5	6.0	8.8	1.3	99.0	99.00
2001	11	14	09	233	6.3	7.4	0.86	4.35	3.95	999	1025.3	5.7	8.8	1.7	99.0	99.00
2001	11	14	10	229	7.0	8.1	0.82	4.35	3.94	999	1024.9	5.8	8.9	1.7	99.0	99.00
2001	11	14	11	222	6.8	8.0	0.82	4.76	3.98	999	1024.5	6.1	8.9	2.0	99.0	99.00
2001	11	14	12	223	6.0	7.1	0.76	5.00	4.03	999	1023.9	6.5	8.9	3.2	99.0	99.00
2001	11	14	13	226	7.2	8.5	0.89	5.26	4.07	999	1023.4	6.5	8.9	3.1	99.0	99.00
2001	11	14	14	213	8.2	9.7	0.87	5.26	3.90	999	1022.6	7.1	9.0	3.7	99.0	99.00
2001	11	14	15	214	7.5	8.7	0.84	5.26	3.99	999	1022.9	6.6	9.0	3.4	99.0	99.00
2001	11	14	16	209	7.1	8.2	0.87	4.55	4.08	999	1021.8	7.3	8.9	3.7	99.0	99.00
2001	11	14	17	220	4.7	5.9	0.89	5.26	4.05	999	1021.0	7.3	8.9	3.1	99.0	99.00
2001	11	14	18	203	5.7	6.7	0.83	5.00	4.12	999	1020.4	8.3	8.8	4.1	99.0	99.00
2001	11	14	19	203	6.1	7.3	0.83	5.00	4.12	999	1020.0	8.9	8.8	4.7	99.0	99.00
2001	11	14	20	210	6.3	7.1	0.80	5.26	4.12	999	1019.5	9.2	8.9	5.2	99.0	99.00
2001	11	14	21	201	5.1	5.7	0.85	5.56	4.16	999	1019.3	9.3	8.9	5.7	99.0	99.00
2001	11	14	22	224	6.6	7.7	0.78	5.26	4.14	999	1019.4	9.9	8.9	4.2	99.0	99.00
2001	11	14	23	239	5.2	6.0	0.70	4.00	3.91	999	1019.6	9.6	8.8	4.5	99.0	99.00

Key:
YYYY = year
MM = month
DD = day
hh = hour
WD = wind direction, degrees from true north
WSPD = wind speed (m/s)
GST = peak wind gust speed (m/s)
WVHT = wave height (m)
DPD = dominant wave period (seconds)
APD = average wave period (seconds)
MWD = mean wave direction
BAR = barometric pressure
ATMP = air temp (C)
WTMP = sea surface temp (C)
DEWP = dewpoint temp
VIS = station visibility (statute miles)
TIDE = tide, in feet

Any data field that contains "9 filled" represents missing data for that observation hour. (Example: 999.0 99.0)

Isle of Shoals

Standard Meteorological Conditions for 11/12/01 and 11/14/01

(see below for key)

YYYY	MM	DD	hh	WD	WSPD	GST	WVHT	DPD	APD	MWD	BAR	ATMP	WTMP	DEWP	VIS	TIDE
2001	11	12	00	322	7.2	8.8	99.00	99.00	99.00	999	1020.8	3.0	999.0	-6.2	99.0	99.00
2001	11	12	01	311	6.4	7.5	99.00	99.00	99.00	999	1021.3	2.6	999.0	-5.9	99.0	99.00
2001	11	12	02	308	9.4	10.2	99.00	99.00	99.00	999	1021.4	2.4	999.0	-6.2	99.0	99.00
2001	11	12	03	307	13.3	14.3	99.00	99.00	99.00	999	1021.5	1.6	999.0	-7.0	99.0	99.00
2001	11	12	04	288	9.7	10.8	99.00	99.00	99.00	999	1022.0	1.1	999.0	-7.7	99.0	99.00
2001	11	12	05	284	9.4	10.7	99.00	99.00	99.00	999	1022.2	0.9	999.0	-7.8	99.0	99.00
2001	11	12	06	281	8.8	10.2	99.00	99.00	99.00	999	1022.5	0.8	999.0	-7.3	99.0	99.00
2001	11	12	07	286	10.2	11.2	99.00	99.00	99.00	999	1022.3	1.0	999.0	-7.1	99.0	99.00
2001	11	12	08	283	8.2	9.1	99.00	99.00	99.00	999	1022.6	0.9	999.0	-7.2	99.0	99.00
2001	11	12	09	281	8.7	9.5	99.00	99.00	99.00	999	1023.0	0.8	999.0	-6.8	99.0	99.00
2001	11	12	10	278	7.6	8.6	99.00	99.00	99.00	999	1023.3	0.8	999.0	-7.3	99.0	99.00
2001	11	12	11	271	6.3	6.8	99.00	99.00	99.00	999	1023.9	0.6	999.0	-7.6	99.0	99.00
2001	11	12	12	269	7.4	8.1	99.00	99.00	99.00	999	1024.3	0.8	999.0	-6.9	99.0	99.00
2001	11	12	13	280	7.4	8.0	99.00	99.00	99.00	999	1024.8	1.1	999.0	-7.0	99.0	99.00
2001	11	12	14	296	9.7	11.8	99.00	99.00	99.00	999	1024.8	1.2	999.0	-6.7	99.0	99.00
2001	11	12	15	306	8.1	9.5	99.00	99.00	99.00	999	1025.2	1.8	999.0	-6.5	99.0	99.00
2001	11	12	16	302	11.2	12.1	99.00	99.00	99.00	999	1024.5	2.8	999.0	-6.4	99.0	99.00
2001	11	12	17	302	9.8	11.8	99.00	99.00	99.00	999	1024.5	3.2	999.0	-6.7	99.0	99.00
2001	11	12	18	305	7.6	8.4	99.00	99.00	99.00	999	1024.9	3.3	999.0	-7.5	99.0	99.00
2001	11	12	19	309	10.9	12.6	99.00	99.00	99.00	999	1024.9	3.7	999.0	-8.1	99.0	99.00
2001	11	12	20	310	10.8	13.0	99.00	99.00	99.00	999	1025.7	3.8	999.0	-6.4	99.0	99.00
2001	11	12	21	326	10.6	11.2	99.00	99.00	99.00	999	1026.8	3.6	999.0	-7.5	99.0	99.00
2001	11	12	22	303	10.8	13.2	99.00	99.00	99.00	999	1027.6	3.2	999.0	-9.0	99.0	99.00
2001	11	12	23	308	11.1	12.0	99.00	99.00	99.00	999	1028.4	2.6	999.0	-7.3	99.0	99.00

Isle of Shoals
Standard Meteorological Conditions for 11/12/01 and 11/14/01
(cont.)

YYYY	MM	DD	hh	WD	WSPD	GST	WVHT	DPD	APD	MWD	BAR	ATMP	WTMP	DEWP	VIS	TIDE
2001	11	14	00	193	5.9	6.3	99.00	99.00	99.00	999	1028.5	7.6	999.0	-1.6	99.0	99.00
2001	11	14	01	222	6.1	6.8	99.00	99.00	99.00	999	1028.1	7.8	999.0	0.0	99.0	99.00
2001	11	14	02	211	5.2	5.5	99.00	99.00	99.00	999	1028.0	7.5	999.0	0.9	99.0	99.00
2001	11	14	03	211	8.6	9.3	99.00	99.00	99.00	999	1027.6	7.9	999.0	0.5	99.0	99.00
2001	11	14	04	217	9.2	10.0	99.00	99.00	99.00	999	1027.0	7.6	999.0	0.7	99.0	99.00
2001	11	14	05	221	8.4	9.0	99.00	99.00	99.00	999	1026.8	7.0	999.0	0.8	99.0	99.00
2001	11	14	06	215	8.1	9.4	99.00	99.00	99.00	999	1026.2	6.6	999.0	1.2	99.0	99.00
2001	11	14	07	221	8.2	8.8	99.00	99.00	99.00	999	1025.8	6.3	999.0	1.5	99.0	99.00
2001	11	14	08	231	8.8	9.1	99.00	99.00	99.00	999	1025.2	6.0	999.0	1.7	99.0	99.00
2001	11	14	09	222	7.1	7.6	99.00	99.00	99.00	999	1025.2	5.5	999.0	2.0	99.0	99.00
2001	11	14	10	228	7.5	8.1	99.00	99.00	99.00	999	1024.6	5.9	999.0	2.1	99.0	99.00
2001	11	14	11	219	8.4	9.2	99.00	99.00	99.00	999	1024.2	6.0	999.0	2.4	99.0	99.00
2001	11	14	12	229	7.3	7.8	99.00	99.00	99.00	999	1023.9	5.9	999.0	2.1	99.0	99.00
2001	11	14	13	222	6.5	7.0	99.00	99.00	99.00	999	1023.8	6.0	999.0	2.3	99.0	99.00
2001	11	14	14	228	6.0	6.5	99.00	99.00	99.00	999	1023.3	5.8	999.0	1.9	99.0	99.00
2001	11	14	15	192	2.7	3.1	99.00	99.00	99.00	999	1022.4	6.3	999.0	1.5	99.0	99.00
2001	11	14	16	244	5.7	6.3	99.00	99.00	99.00	999	1022.3	7.3	999.0	1.3	99.0	99.00
2001	11	14	17	250	4.9	5.4	99.00	99.00	99.00	999	1021.3	8.7	999.0	1.5	99.0	99.00
2001	11	14	18	257	4.6	4.9	99.00	99.00	99.00	999	1020.7	9.8	999.0	-0.7	99.0	99.00
2001	11	14	19	252	3.8	3.9	99.00	99.00	99.00	999	1020.1	10.4	999.0	-1.7	99.0	99.00
2001	11	14	20	232	6.2	6.4	99.00	99.00	99.00	999	1019.7	10.8	999.0	-1.6	99.0	99.00
2001	11	14	21	244	5.3	5.6	99.00	99.00	99.00	999	1019.7	10.6	999.0	2.7	99.0	99.00
2001	11	14	22	233	4.2	4.2	99.00	99.00	99.00	999	1019.7	10.8	999.0	2.2	99.0	99.00
2001	11	14	23	237	5.8	6.5	99.00	99.00	99.00	999	1019.7	10.1	999.0	1.0	99.0	99.00

Key:
YYYY = year
MM = month
DD = day
hh = hour
WD = wind direction, degrees from true north
WSPD = wind speed (m/s)
GST = peak wind gust speed (m/s)
WVHT = wave height (m)
DPD = dominant wave period (seconds)
APD = average wave period (seconds)
MWD = mean wave direction
BAR = barometric pressure
ATMP = air temp (C)
WTMP = sea surface temp (C)
DEWP = dewpoint temp
VIS = station visibility (statute miles)
TIDE = tide, in feet

Any data field that contains "9 filled" represents missing data for that observation hour. (Example: 999.0 99.0)

wunderground.com

History for Portland, Maine

November 12, 2001

Mean Temperature	**31.5** °F / **-0.3** °C
Max Temperature	**39.9** °F / **4.4** °C
Min Temperature	**23.0** °F / **-5.0** °C
Heating Degree Days	**34**
Growing Degree Days	**0** (Base **50** °F / **9** °C)
Dew Point	**17.0** °F / **-8.4** °C
Precipitation	-
Snow Depth	-
Standard Pressure	**30.3** in / **1026.0** hPa
Sea Level Pressure	**30.3** in / **1025.7** hPa
Visibility	**10.0** miles / **16.1** kilometers
Wind Speed	**7.2** mph / **11.6** km/h
Max Wind Speed	**18.4** mph / **29.6** km/h
Gust Speed	**23.0** mph / **37.0** km/h
Events	

Time	Temperature	Dew Point	Humidity	Pressure	Visibility	Wind Speed	Gust Speed	Precipitation	Events	Conditions
00:51	28.40 °F / -2.0 °C	19.40 °F / -7.0 °C	69%	30.18 in / 1022.0 hPa	10.0 miles / 16.1 kilometers	5.8 mph / 9.3 km/h	N/A	N/A		Overcast
01:51	28.40 °F / -2.0 °C	17.60 °F / -8.0 °C	64%	30.21 in / 1023.0 hPa	10.0 miles / 16.1 kilometers	4.6 mph / 7.4 km/h	N/A	N/A		Overcast
02:51	26.96 °F / -2.8 °C	17.06 °F / -8.3 °C	66%	30.21 in / 1023.0 hPa	10.0 miles / 16.1 kilometers	5.8 mph / 9.3 km/h	N/A	N/A		Clear
03:51	26.60 °F / -3.0 °C	17.60 °F / -8.0 °C	69%	30.21 in / 1023.0 hPa	10.0 miles / 16.1 kilometers	3.5 mph / 5.6 km/h	N/A	N/A		Scattered Clouds
04:51	24.80 °F / -4.0 °C	17.60 °F / -8.0 °C	74%	30.21 in / 1023.0 hPa	10.0 miles / 16.1 kilometers	6.9 mph / 11.1 km/h	N/A	N/A		Partly Cloudy
05:51	24.08 °F / -4.4 °C	17.06 °F / -8.3 °C	75%	30.24 in / 1024.0 hPa	10.0 miles / 16.1 kilometers	0.0 mph / 0.0 km/h	N/A	N/A		Mostly Cloudy
06:51	23.00 °F / -5.0 °C	17.96 °F / -7.8 °C	81%	30.24 in / 1024.0 hPa	10.0 miles / 16.1 kilometers	0.0 mph / 0.0 km/h	N/A	N/A		Scattered Clouds

07:51	26.60 °F / - 3.0 °C	19.40 °F / - 7.0 °C	74%	30.27 in / 1025.0 hPa	10.0 miles / 16.1 kilometers	0.0 mph / 0.0 km/h	N/A	N/A	Clear
08:51	33.80 °F / 1.0 °C	21.20 °F / - 6.0 °C	60%	30.27 in / 1025.0 hPa	10.0 miles / 16.1 kilometers	6.9 mph / 11.1 km/h	N/A	N/A	Clear
09:51	35.60 °F / 2.0 °C	19.40 °F / - 7.0 °C	52%	30.27 in / 1025.0 hPa	10.0 miles / 16.1 kilometers	10.4 mph / 16.7 km/h	N/A	N/A	Clear
10:51	37.40 °F / 3.0 °C	19.40 °F / - 7.0 °C	48%	30.27 in / 1025.0 hPa	10.0 miles / 16.1 kilometers	8.1 mph / 13.0 km/h	N/A	N/A	Partly Cloudy
11:51	37.40 °F / 3.0 °C	15.80 °F / - 9.0 °C	41%	30.24 in / 1024.0 hPa	10.0 miles / 16.1 kilometers	17.3 mph / 27.8 km/h	21.9 mph / 35.2 km/h	N/A	Partly Cloudy
12:51	39.92 °F / 4.4 °C	15.98 °F / - 8.9 °C	38%	30.27 in / 1025.0 hPa	10.0 miles / 16.1 kilometers	18.4 mph / 29.6 km/h	21.9 mph / 35.2 km/h	N/A	Mostly Cloudy
13:51	39.20 °F / 4.0 °C	17.60 °F / - 8.0 °C	42%	30.27 in / 1025.0 hPa	10.0 miles / 16.1 kilometers	18.4 mph / 29.6 km/h	23.0 mph / 37.0 km/h	N/A	Partly Cloudy
14:51	37.40 °F / 3.0 °C	15.80 °F / - 9.0 °C	41%	30.30 in / 1026.0 hPa	10.0 miles / 16.1 kilometers	13.8 mph / 22.2 km/h	21.9 mph / 35.2 km/h	N/A	Clear
15:51	35.60 °F / 2.0 °C	14.00 °F / - 10.0 °C	41%	30.33 in / 1027.0 hPa	10.0 miles / 16.1 kilometers	12.7 mph / 20.4 km/h	N/A	N/A	Partly Cloudy
16:51	33.80 °F / 1.0 °C	15.80 °F / - 9.0 °C	48%	30.36 in / 1028.0 hPa	10.0 miles / 16.1 kilometers	6.9 mph / 11.1 km/h	N/A	N/A	Clear
17:51	30.20 °F / - 1.0 °C	15.80 °F / - 9.0 °C	55%	30.39 in / 1029.0 hPa	10.0 miles / 16.1 kilometers	5.8 mph / 9.3 km/h	N/A	N/A	Clear
18:51	28.40 °F / - 2.0 °C	15.80 °F / - 9.0 °C	59%	30.39 in / 1029.0 hPa	10.0 miles / 16.1 kilometers	9.2 mph / 14.8 km/h	N/A	N/A	Clear
19:51	28.40 °F / - 2.0 °C	15.80 °F / - 9.0 °C	59%	30.42 in / 1030.0 hPa	10.0 miles / 16.1 kilometers	8.1 mph / 13.0 km/h	N/A	N/A	Clear
20:51	26.06 °F / - 3.3 °C	15.08 °F / - 9.4 °C	63%	30.42 in / 1030.0 hPa	10.0 miles / 16.1 kilometers	5.8 mph / 9.3 km/h	N/A	N/A	Clear
21:51	28.40 °F / - 2.0 °C	15.80 °F / - 9.0 °C	59%	30.42 in / 1030.0 hPa	10.0 miles / 16.1 kilometers	0.0 mph / 0.0 km/h	N/A	N/A	Clear
22:51	28.40 °F / - 2.0 °C	14.00 °F / - 10.0 °C	55%	30.42 in / 1030.0 hPa	10.0 miles / 16.1 kilometers	0.0 mph / 0.0 km/h	N/A	N/A	Clear
23:51	26.60 °F / - 3.0 °C	15.80 °F / - 9.0 °C	64%	30.42 in / 1030.0 hPa	10.0 miles / 16.1 kilometers	5.8 mph / 9.3 km/h	N/A	N/A	Clear

Astronomy

Sunrise:	**06:29 AM (EST)**	Moon Rise:	**01:46 AM (EST)**	**11/11**
Sunset:	**04:19 PM (EST)**	Moon Set:	**02:49 PM (EST)**	**11/11**

Moon Phase

more...

Nov. 12 Nov. 15 Nov. 22 Nov. 30 Dec. 07

Copyright © 2003 The Weather Underground, Inc.

wunderground.com

History for Portsmouth, New Hampshire

November 12, 2001

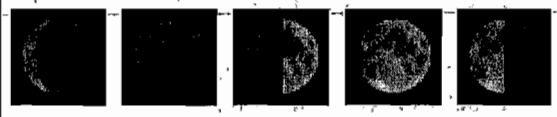
Mean Temperature	**33.8** °F / **1.0** °C
Max Temperature	**41.0** °F / **5.0** °C
Min Temperature	**26.6** °F / **-3.0** °C
Heating Degree Days	**32**
Growing Degree Days	**0** (Base **50** °F / **9** °C)
Dew Point	**19.7** °F / **-6.8** °C
Precipitation	-
Snow Depth	-
Standard Pressure	**30.3** in / **1027.0** hPa
Sea Level Pressure	**30.3** in / **1026.7** hPa
Visibility	**27.4** miles / **44.1** kilometers
Wind Speed	**9.1** mph / **14.6** km/h
Max Wind Speed	**16.1** mph / **25.9** km/h
Gust Speed	**23.0** mph / **37.0** km/h
Events	

Time	Temperature	Dew Point	Humidity	Pressure	Visibility	Wind Speed	Gust Speed	Precipitation	Events	Condition
00:55	28.40 °F / -2.0 °C	17.60 °F / -8.0 °C	64%	30.21 in / 1023.0 hPa	20.0 miles / 32.2 kilometers	10.4 mph / 16.7 km/h	N/A	N/A		Clear
01:55	28.40 °F / -2.0 °C	17.60 °F / -8.0 °C	64%	30.21 in / 1023.0 hPa	20.0 miles / 32.2 kilometers	6.9 mph / 11.1 km/h	N/A	N/A		Clear
03:55	26.60 °F / -3.0 °C	17.60 °F / -8.0 °C	69%	30.24 in / 1024.0 hPa	20.0 miles / 32.2 kilometers	6.9 mph / 11.1 km/h	N/A	N/A		Clear
04:55	26.60 °F / -3.0 °C	17.60 °F / -8.0 °C	69%	30.24 in / 1024.0 hPa	20.0 miles / 32.2 kilometers	4.6 mph / 7.4 km/h	N/A	N/A		Clear
05:55	26.60 °F / -3.0 °C	17.60 °F / -8.0 °C	69%	30.24 in / 1024.0 hPa	20.0 miles / 32.2 kilometers	5.8 mph / 9.3 km/h	N/A	N/A		Scattered Clouds
06:55	26.60 °F / -3.0 °C	19.40 °F / -7.0 °C	74%	30.27 in / 1025.0 hPa	20.0 miles / 32.2 kilometers	5.8 mph / 9.3 km/h	N/A	N/A		Scattered Clouds
07:55	30.20 °F / -1.0 °C	23.00 °F / -5.0 °C	75%	30.27 in / 1025.0 hPa	30.0 miles / 48.3 kilometers	8.1 mph / 13.0 km/h	N/A	N/A		Unknown

08:55	33.80 °F / 1.0 °C	23.00 °F / - 5.0 °C	65%	30.30 in / 1026.0 hPa	30.0 miles / 48.3 kilometers	9.2 mph / 14.8 km/h	N/A	N/A	Unknown
09:55	37.40 °F / 3.0 °C	24.80 °F / - 4.0 °C	60%	30.30 in / 1026.0 hPa	30.0 miles / 48.3 kilometers	11.5 mph / 18.5 km/h	N/A	N/A	Unknown
10:55	37.40 °F / 3.0 °C	24.80 °F / - 4.0 °C	60%	30.30 in / 1026.0 hPa	30.0 miles / 48.3 kilometers	13.8 mph / 22.2 km/h	20.7 mph / 33.3 km/h	N/A	Partly Cloudy
11:55	39.20 °F / 4.0 °C	24.80 °F / - 4.0 °C	56%	30.27 in / 1025.0 hPa	30.0 miles / 48.3 kilometers	15.0 mph / 24.1 km/h	N/A	N/A	Scattered Clouds
12:55	41.00 °F / 5.0 °C	21.20 °F / - 6.0 °C	45%	30.27 in / 1025.0 hPa	30.0 miles / 48.3 kilometers	16.1 mph / 25.9 km/h	23.0 mph / 37.0 km/h	N/A	Scattered Clouds
13:55	41.00 °F / 5.0 °C	21.20 °F / - 6.0 °C	45%	30.30 in / 1026.0 hPa	30.0 miles / 48.3 kilometers	12.7 mph / 20.4 km/h	N/A	N/A	Scattered Clouds
14:55	39.20 °F / 4.0 °C	21.20 °F / - 6.0 °C	49%	30.33 in / 1027.0 hPa	30.0 miles / 48.3 kilometers	15.0 mph / 24.1 km/h	N/A	N/A	Scattered Clouds
15:55	37.40 °F / 3.0 °C	19.40 °F / - 7.0 °C	48%	30.36 in / 1028.0 hPa	30.0 miles / 48.3 kilometers	15.0 mph / 24.1 km/h	N/A	N/A	Partly Cloudy
16:55	33.80 °F / 1.0 °C	19.40 °F / - 7.0 °C	56%	30.39 in / 1029.0 hPa	30.0 miles / 48.3 kilometers	9.2 mph / 14.8 km/h	N/A	N/A	Partly Cloudy
17:55	32.00 °F / - 0.0 °C	17.60 °F / - 8.0 °C	55%	30.42 in / 1030.0 hPa	30.0 miles / 48.3 kilometers	10.4 mph / 16.7 km/h	N/A	N/A	Clear
18:55	32.00 °F / - 0.0 °C	17.60 °F / - 8.0 °C	55%	30.42 in / 1030.0 hPa	30.0 miles / 48.3 kilometers	5.8 mph / 9.3 km/h	N/A	N/A	Clear
19:55	28.40 °F / - 2.0 °C	17.60 °F / - 8.0 °C	64%	30.45 in / 1031.0 hPa	30.0 miles / 48.3 kilometers	6.9 mph / 11.1 km/h	N/A	N/A	Clear
20:55	28.40 °F / - 2.0 °C	17.60 °F / - 8.0 °C	64%	30.45 in / 1031.0 hPa	30.0 miles / 48.3 kilometers	6.9 mph / 11.1 km/h	N/A	N/A	Clear
21:55	28.40 °F / - 2.0 °C	17.60 °F / - 8.0 °C	64%	30.45 in / 1031.0 hPa	30.0 miles / 48.3 kilometers	4.6 mph / 7.4 km/h	N/A	N/A	Clear
22:55	28.40 °F / - 2.0 °C	17.60 °F / - 8.0 °C	64%	30.45 in / 1031.0 hPa	30.0 miles / 48.3 kilometers	2.3 mph / 3.7 km/h	N/A	N/A	Clear
23:55	28.40 °F / - 2.0 °C	17.60 °F / - 8.0 °C	64%	30.45 in / 1031.0 hPa	30.0 miles / 48.3 kilometers	6.9 mph / 11.1 km/h	N/A	N/A	Clear

Astronomy				
Sunrise:	06:30 AM (EST)	Moon Rise:	01:49 AM (EST)	11/11
Sunset:	04:23 PM (EST)	Moon Set:	02:51 PM (EST)	11/11

Moon Phase



more...

Nov. 12 Nov. 15 Nov. 22 Nov. 30 Dec. 07

Copyright © 2003 The Weather Underground, Inc.

wunderground.com

History for Portsmouth, New Hampshire

November 14, 2001

Mean Temperature	41.0 °F / 5.0 °C
Max Temperature	51.8 °F / 11.0 °C
Min Temperature	30.2 °F / -1.0 °C
Heating Degree Days	24
Growing Degree Days	0 (Base 50 °F / 9 °C)
Dew Point	32.8 °F / 0.4 °C
Precipitation	0.00 in / 0.00 cm
Snow Depth	-
Standard Pressure	30.2 in / 1022.6 hPa
Sea Level Pressure	30.2 in / 1022.2 hPa
Visibility	17.2 miles / 27.7 kilometers
Wind Speed	4.5 mph / 7.3 km/h
Max Wind Speed	9.2 mph / 14.8 km/h
Gust Speed	N/A
Events	

Time	Temperature	Dew Point	Humidity	Pressure	Visibility	Wind Speed	Gust Speed	Precipitation	Events	Conditions
00:55	30.20 °F / -1.0 °C	24.80 °F / -4.0 °C	80%	30.33 in / 1027.0 hPa	20.0 miles / 32.2 kilometers	2.3 mph / 3.7 km/h	N/A	N/A		Clear
01:55	32.00 °F / -0.0 °C	24.80 °F / -4.0 °C	75%	30.30 in / 1026.0 hPa	20.0 miles / 32.2 kilometers	1.2 mph / 1.9 km/h	N/A	N/A		Clear
03:55	30.20 °F / -1.0 °C	24.80 °F / -4.0 °C	80%	30.30 in / 1026.0 hPa	20.0 miles / 32.2 kilometers	4.6 mph / 7.4 km/h	N/A	N/A		Mostly Cloudy
04:55	30.20 °F / -1.0 °C	24.80 °F / -4.0 °C	80%	30.27 in / 1025.0 hPa	20.0 miles / 32.2 kilometers	2.3 mph / 3.7 km/h	N/A	N/A		Mostly Cloudy
06:55	30.20 °F / -1.0 °C	24.80 °F / -4.0 °C	80%	30.27 in / 1025.0 hPa	20.0 miles / 32.2 kilometers	3.5 mph / 5.6 km/h	N/A	N/A		Scattered Clouds
07:55	33.80 °F / 1.0 °C	24.80 °F / -4.0 °C	70%	30.24 in / 1024.0 hPa	20.0 miles / 32.2 kilometers	3.5 mph / 5.6 km/h	N/A	N/A		Scattered Clouds
09:55	44.60 °F / 7.0 °C	33.80 °F / 1.0 °C	66%	30.24 in / 1024.0 hPa	20.0 miles / 32.2 kilometers	9.2 mph / 14.8 km/h	N/A	N/A		Scattered Clouds

12:55	51.80 °F / 11.0 °C	37.40 °F / 3.0 °C	58%	30.15 in / 1021.0 hPa	15.0 miles / 24.1 kilometers	9.2 mph / 14.8 km/h	N/A	N/A	Mostly Cloudy
13:55	51.80 °F / 11.0 °C	39.20 °F / 4.0 °C	62%	30.15 in / 1021.0 hPa	15.0 miles / 24.1 kilometers	9.2 mph / 14.8 km/h	N/A	N/A	Overcast
14:55	50.00 °F / 10.0 °C	41.00 °F / 5.0 °C	71%	30.15 in / 1021.0 hPa	15.0 miles / 24.1 kilometers	4.6 mph / 7.4 km/h	N/A	N/A	Overcast
15:55	48.20 °F / 9.0 °C	39.20 °F / 4.0 °C	71%	30.12 in / 1020.0 hPa	15.0 miles / 24.1 kilometers	2.3 mph / 3.7 km/h	N/A	N/A	Overcast
17:55	44.60 °F / 7.0 °C	35.60 °F / 2.0 °C	71%	30.12 in / 1020.0 hPa	15.0 miles / 24.1 kilometers	4.6 mph / 7.4 km/h	N/A	N/A	Overcast
18:55	44.60 °F / 7.0 °C	35.60 °F / 2.0 °C	71%	30.15 in / 1021.0 hPa	15.0 miles / 24.1 kilometers	3.5 mph / 5.6 km/h	N/A	N/A	Overcast
19:55	44.60 °F / 7.0 °C	37.40 °F / 3.0 °C	76%	30.12 in / 1020.0 hPa	15.0 miles / 24.1 kilometers	2.3 mph / 3.7 km/h	N/A	N/A	Overcast
20:55	44.60 °F / 7.0 °C	37.40 °F / 3.0 °C	76%	30.12 in / 1020.0 hPa	15.0 miles / 24.1 kilometers	6.9 mph / 11.1 km/h	N/A	N/A	Scattered Clouds
21:55	42.80 °F / 6.0 °C	39.20 °F / 4.0 °C	87%	30.12 in / 1020.0 hPa	15.0 miles / 24.1 kilometers	3.5 mph / 5.6 km/h	N/A	N/A	Mostly Cloudy

Astronomy

Sunrise:	06:32 AM (EST)	Moon Rise:	04:18 AM (EST)	11/13
Sunset:	04:21 PM (EST)	Moon Set:	03:46 PM (EST)	11/13

Moon Phase

more...

Nov. 14 Nov. 15 Nov. 22 Nov. 30 Dec. 07

Copyright © 2003 The Weather Underground, Inc.

wunderground.com

History for Portland, Maine

November 14, 2001

Mean Temperature	41.9 °F / 5.5 °C
Max Temperature	44.6 °F / 7.0 °C
Min Temperature	39.2 °F / 4.0 °C
Heating Degree Days	24
Growing Degree Days	0 (Base 50 °F / 9 °C)
Dew Point	33.8 °F / 1.0 °C
Precipitation	-
Snow Depth	-
Standard Pressure	30.1 in / 1020.0 hPa
Sea Level Pressure	9999.9 in / 9999.9 hPa
Visibility	8.8 miles / 14.1 kilometers
Wind Speed	0.0 mph / 0.0 km/h
Max Wind Speed	0.0 mph / 0.0 km/h
Gust Speed	N/A
Events	

Time	Temperature	Dew Point	Humidity	Pressure	Visibility	Wind Speed	Gust Speed	Precipitation	Events	Conditions
19:51	44.60 °F / 7.0 °C	33.80 °F / 1.0 °C	66%	30.12 in / 1020.0 hPa	10.0 miles / 16.1 kilometers	0.0 mph / 0.0 km/h	N/A	N/A		Overcast
20:51	42.80 °F / 6.0 °C	32.00 °F / - 0.0 °C	66%	30.12 in / 1020.0 hPa	9.0 miles / 14.5 kilometers	0.0 mph / 0.0 km/h	N/A	N/A		Overcast
21:51	42.80 °F / 6.0 °C	32.00 °F / - 0.0 °C	66%	30.12 in / 1020.0 hPa	10.0 miles / 16.1 kilometers	0.0 mph / 0.0 km/h	N/A	N/A		Mostly Cloudy
22:51	39.20 °F / 4.0 °C	37.40 °F / 3.0 °C	93%	30.12 in / 1020.0 hPa	6.0 miles / 9.7 kilometers	0.0 mph / 0.0 km/h	N/A	N/A		Mist

Astronomy				
Sunrise:	06:32 AM (EST)	Moon Rise:	04:16 AM (EST)	11/13
Sunset:	04:17 PM (EST)	Moon Set:	03:43 PM (EST)	11/13

Moon Phase

more...

Nov. 14 Nov. 15 Nov. 22 Nov. 30 Dec. 07

Copyright © 2003 The Weather Underground, Inc.