# MEMO

**To:** Alan Shelvey, DPW Commissioner

**From:** Evan Pilachowski, City Engineer

**Date:** October 13, 2010

**Re:** 2010 Brook Temperature Monitoring Summary

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I have analyzed the temperature monitoring data from 2010. Graphs are attached that summarize the findings. In addition to the graphs, I have analyzed the habitat suitability of Moon Brook for brook trout in relation to temperature and the accuracy of the determination of Moon Brook as a Coldwater Fishery according to standards established by the Surface Water Quality Bureau of the New Mexico Environment Department (Bureau). According to a study conducted by the Bureau in July of 1999, a coldwater fishery is classified as having instantaneous temperatures below 75.2 °F (24 °C), no single day with temperatures above 68 °F (20 °C) for more than 8 hours, and no more than three days in a row with maximum temperatures above 68 °F (20 °C). The following table was prepared using these standards for the 153 day period from May 1, 2010 to October 1, 2010.

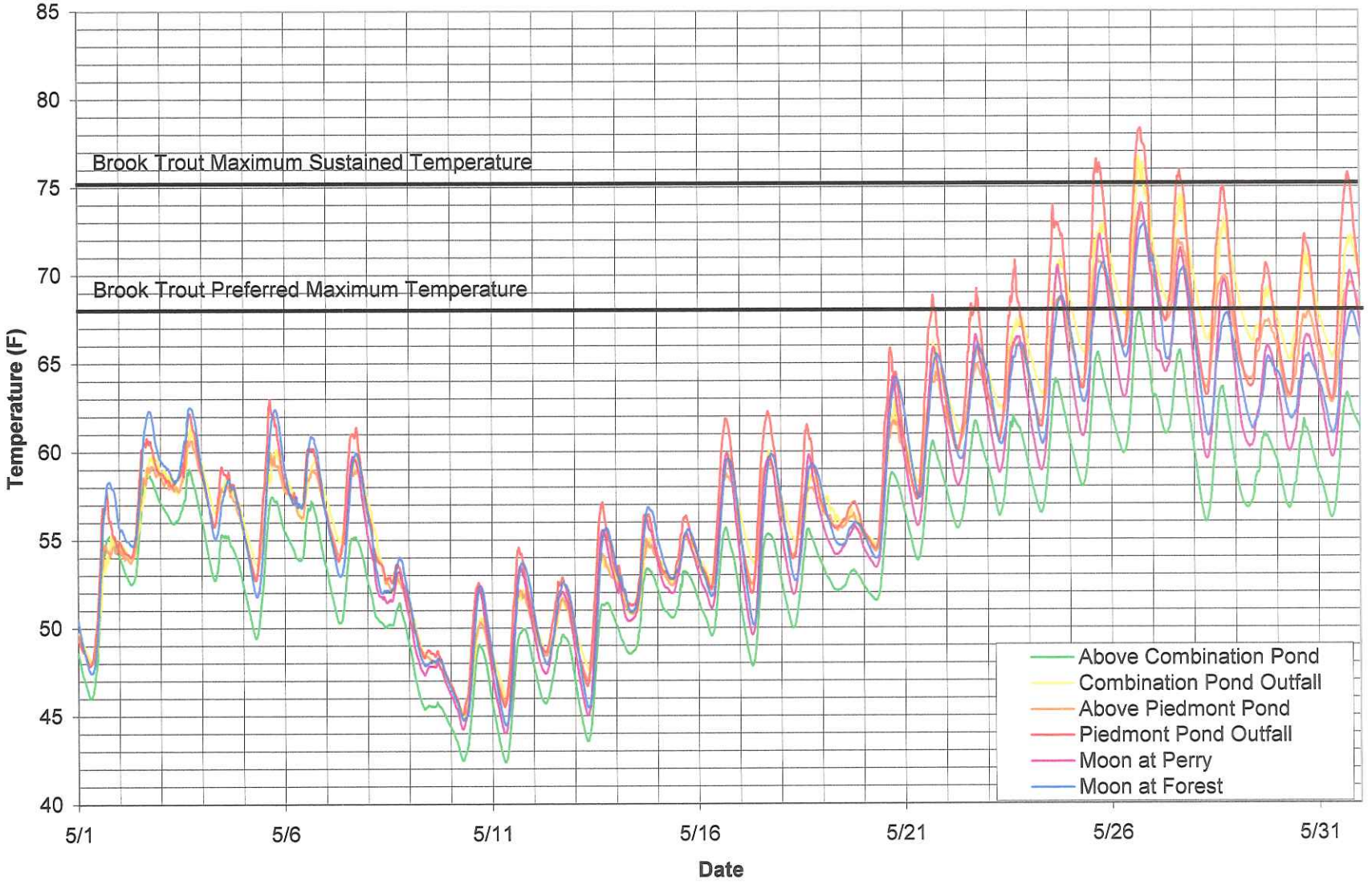
| Location | Number of Day Outside Coldwater Fisheries Criteria | Maximum Recorded Temperature (degrees F) |
|---|---|---|
| Paint Mine Brook | 14 | 75.6 |
| Mussey Brook Above Fairgrounds | 46 | 75.3 |
| Mussey Brook Below Fairgrounds | 64 | 80.6 |
| Moon Brook Above Combination Pond | 7 | 72.5 |
| Moon Brook Below Combination Pond Outfall | 92 | 85.8 |
| Moon Brook Above Piedmont Pond | 70 | 78.5 |
| Moon Brook Below Piedmont Pond Outfall | 79 | 83.1 |
| Moon Brook at Perry St* | 47 | 81.6 |
| Moon Brook at Forest St | 55 | 84.1 |
| Tenney Brook at Sewards | 65 | 81.8 |
| Tenney Brook at Lincoln Ave | 72 | 84.0 |

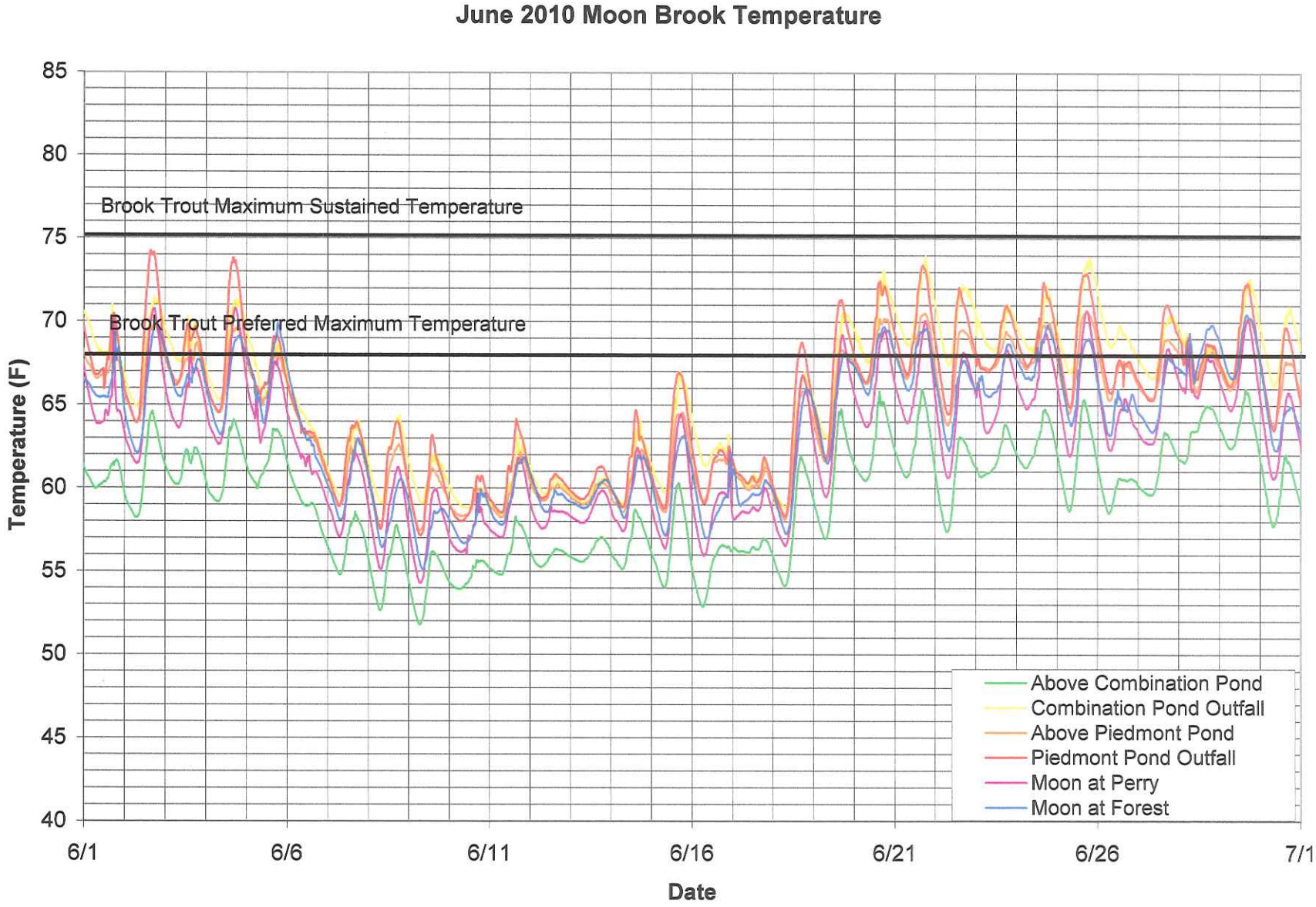
* May 7, 2010 to October 1, 2010

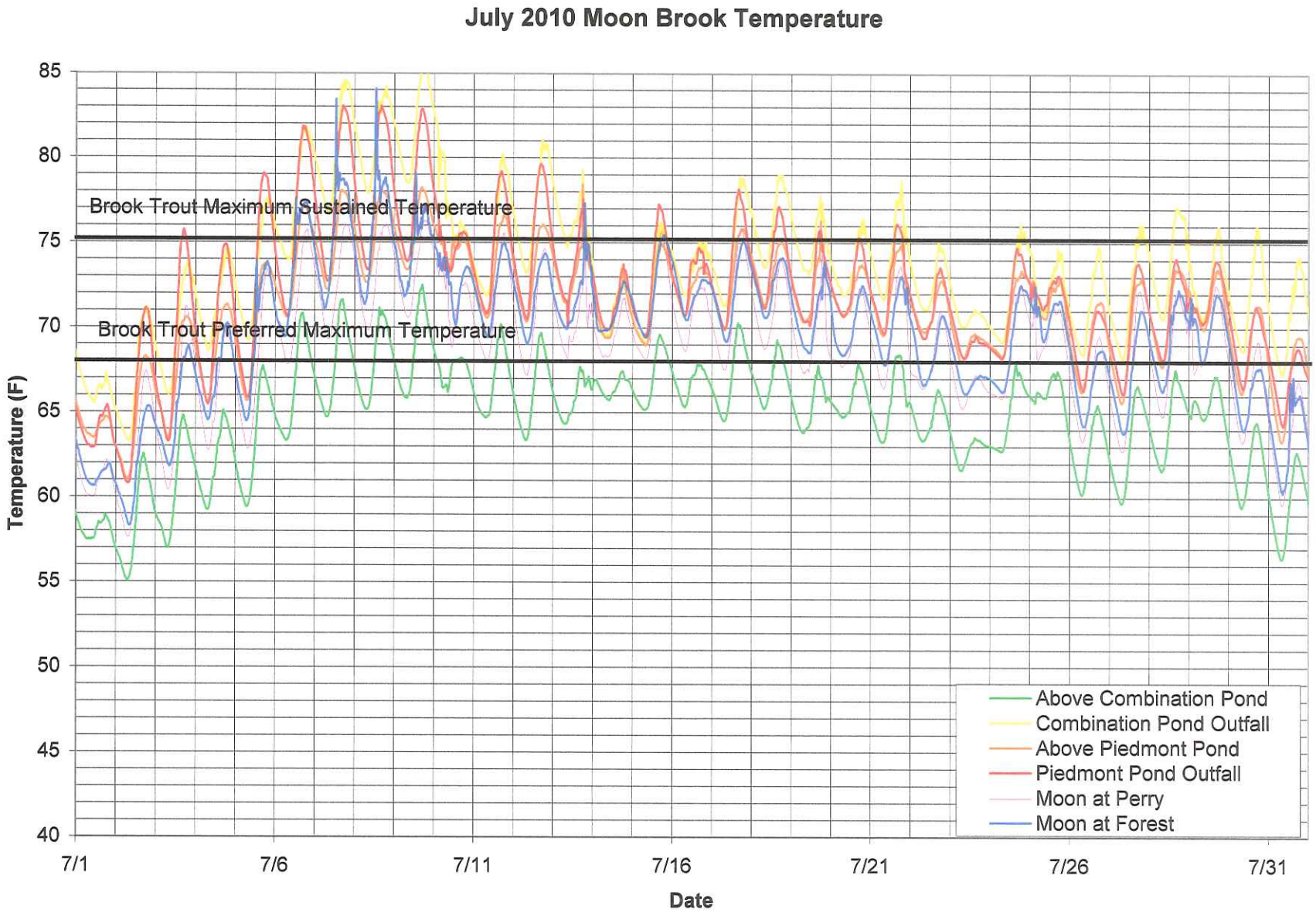
As in years past, temperature gains through Combination Pond have been the most significant measured temperature increase. There are lesser temperature gains as

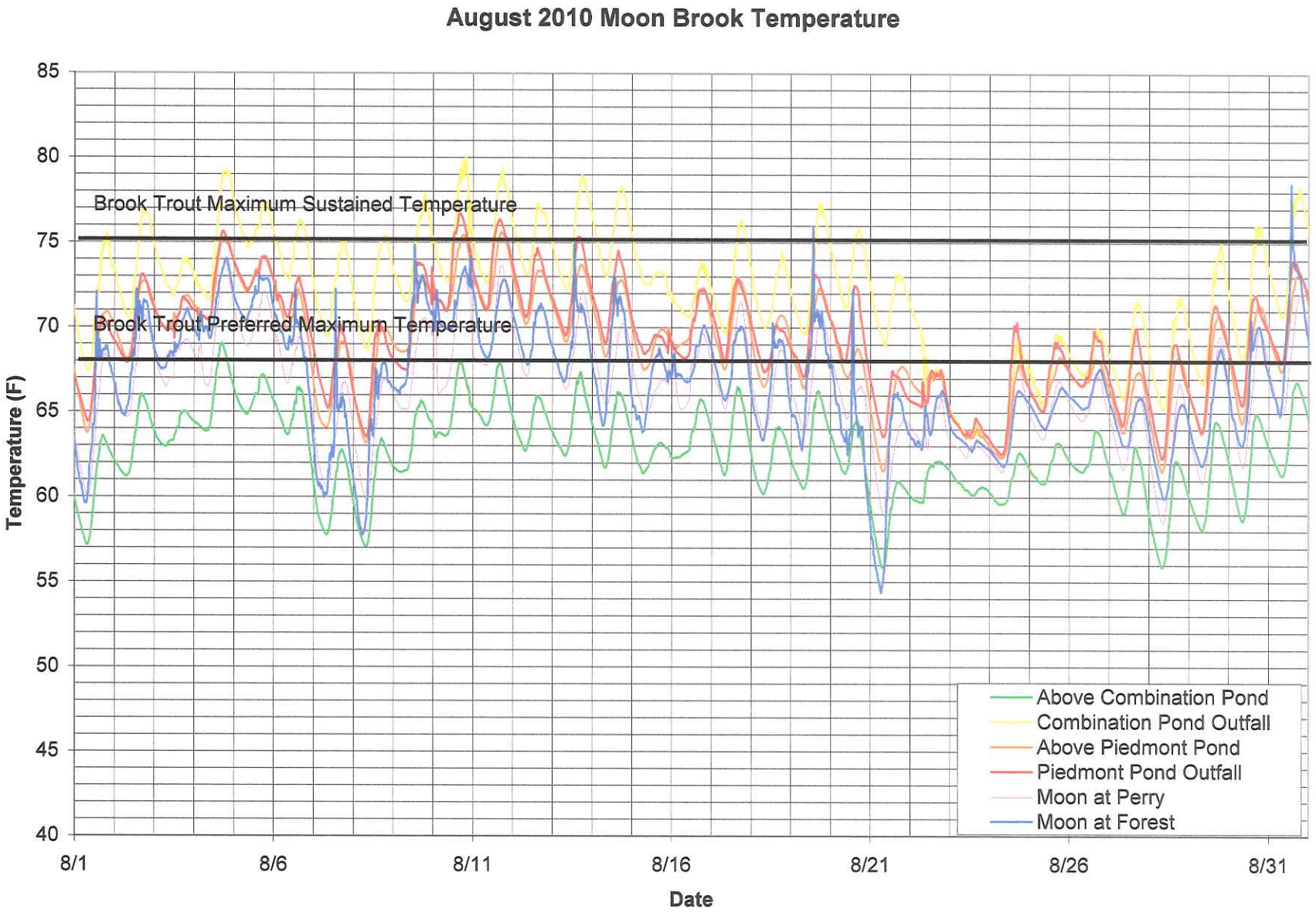
Moon Brook and Mussey Brook flow through Piedmont Pond and Fairgrounds respectively. Temperature gains across Dunklee Pond were small, but measureable. Temperature readings were taken in East Creek and Otter Creek for the first time this year, but the results were inconclusive since both temperature recorders appeared to be out of the water for a significant amount of time during the monitoring period.

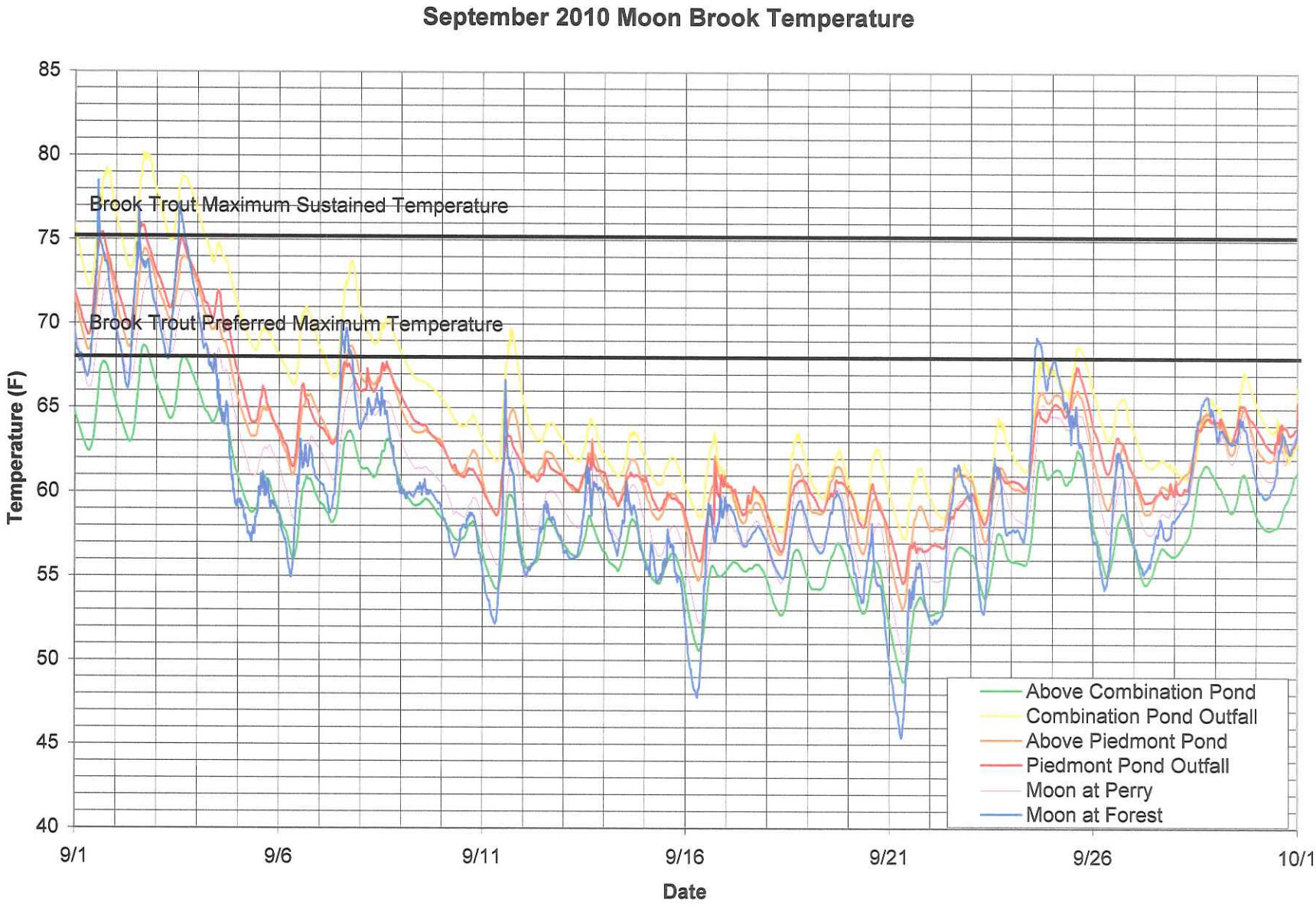
## May 2010 Moon Brook Temperature

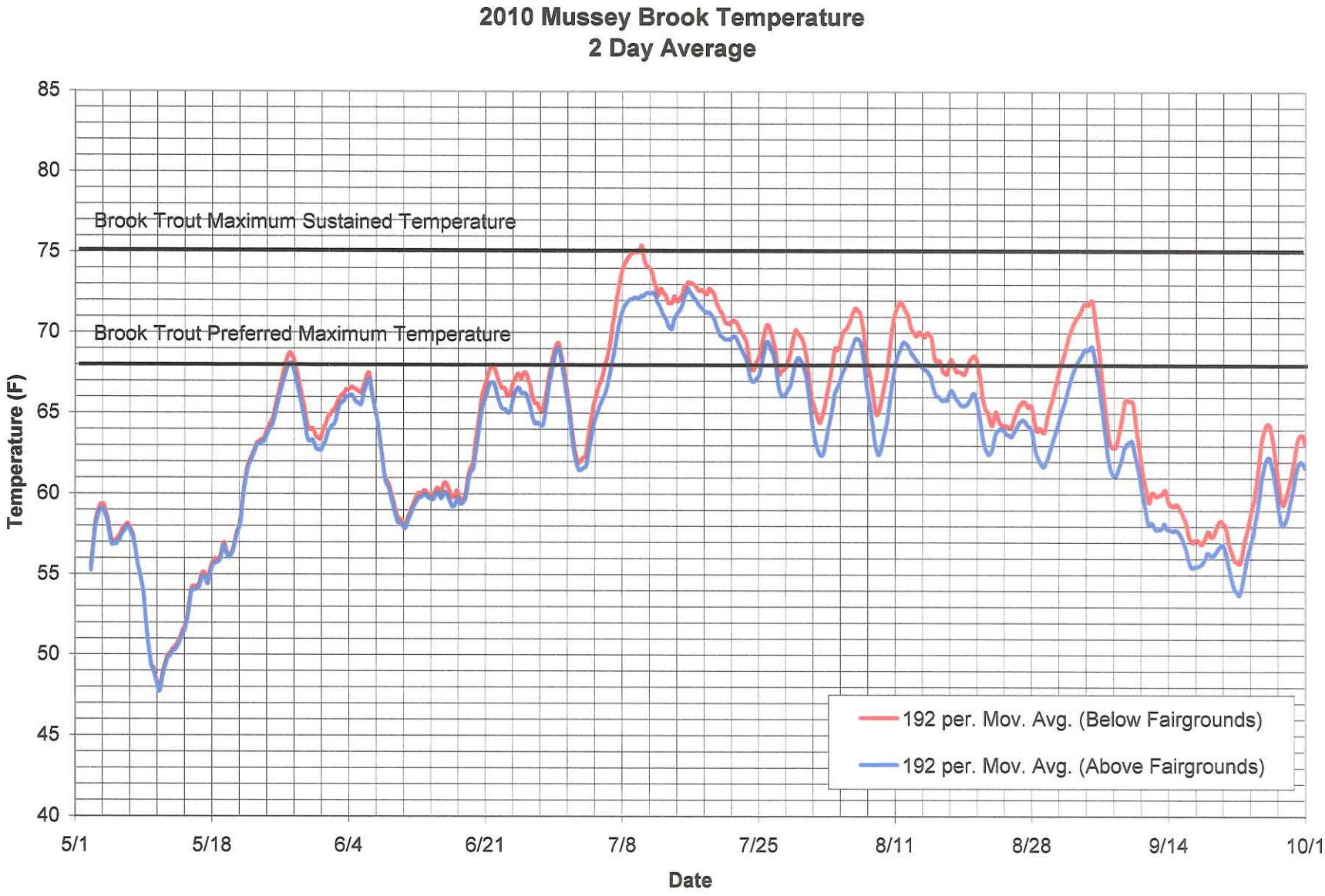



June 2010 Moon Brook Temperature
85
80
75
70
65
60
55
50
45
40
Temperature (F)
Brook Trout Maximum Sustained Temperature
Brook Trout Preferred Maximum Temperature
Above Combination Pond
Combination Pond Outfall
Above Piedmont Pond
Piedmont Pond Outfall
Moon at Perry
Moon at Forest
6/1
6/6
6/11
6/16
6/21
6/26
7/1
Date

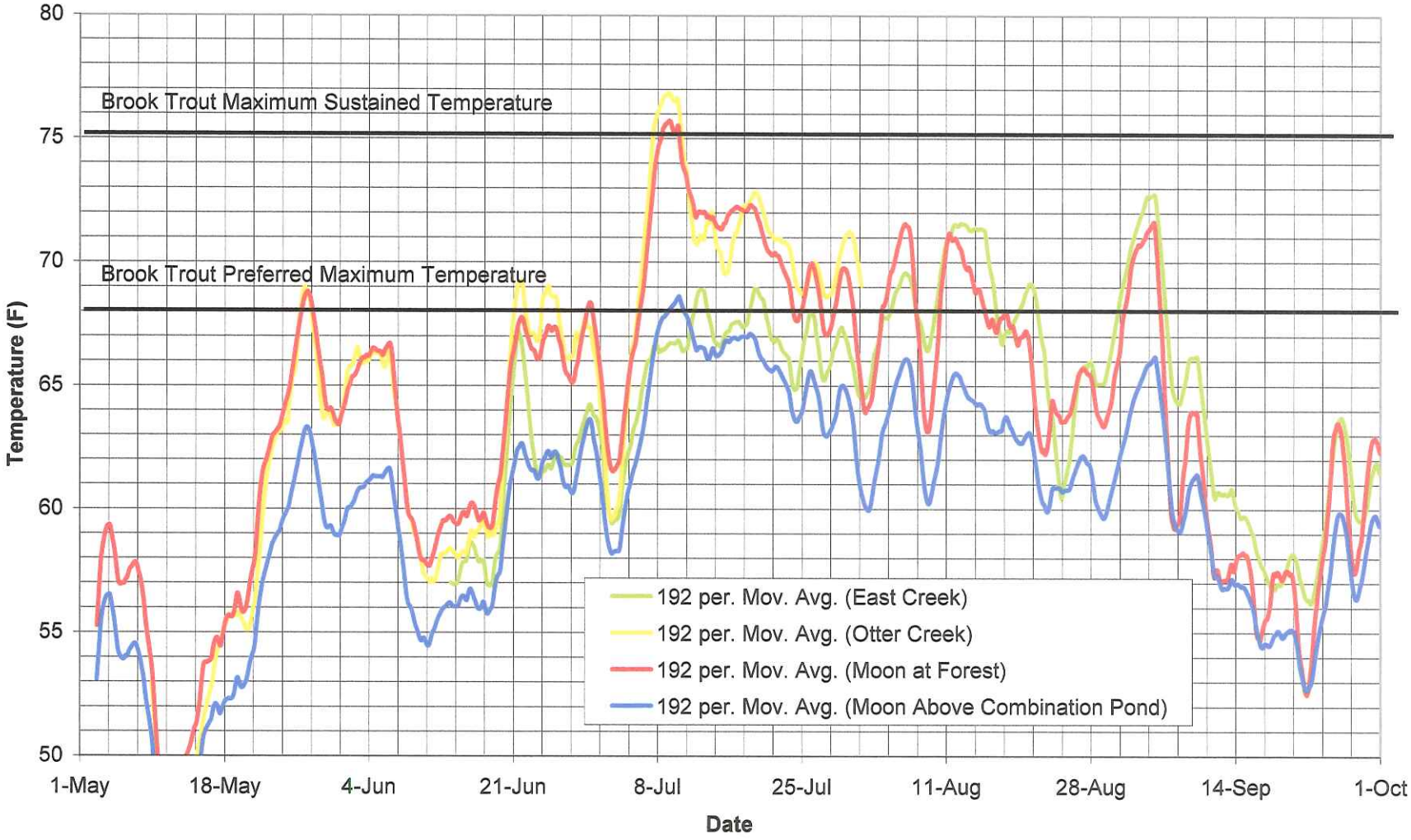

July 2010 Moon Brook Temperature
Temperature (F)
85
80
75
70
65
60
55
50
45
40
Brook Trout Maximum Sustained Temperature
Brook Trout Preferred Maximum Temperature
7/1
7/6
7/11
7/16
7/21
7/26
7/31
Date
Above Combination Pond
Combination Pond Outfall
Above Piedmont Pond
Piedmont Pond Outfall
Moon at Perry
Moon at Forest


August 2010 Moon Brook Temperature
Temperature (F)
85
80
75
70
65
60
55
50
45
40
Brook Trout Maximum Sustained Temperature
Brook Trout Preferred Maximum Temperature
8/1
8/6
8/11
8/16
8/21
8/26
8/31
Date
Above Combination Pond
Combination Pond Outfall
Above Piedmont Pond
Piedmont Pond Outfall
Moon at Perry
Moon at Forest

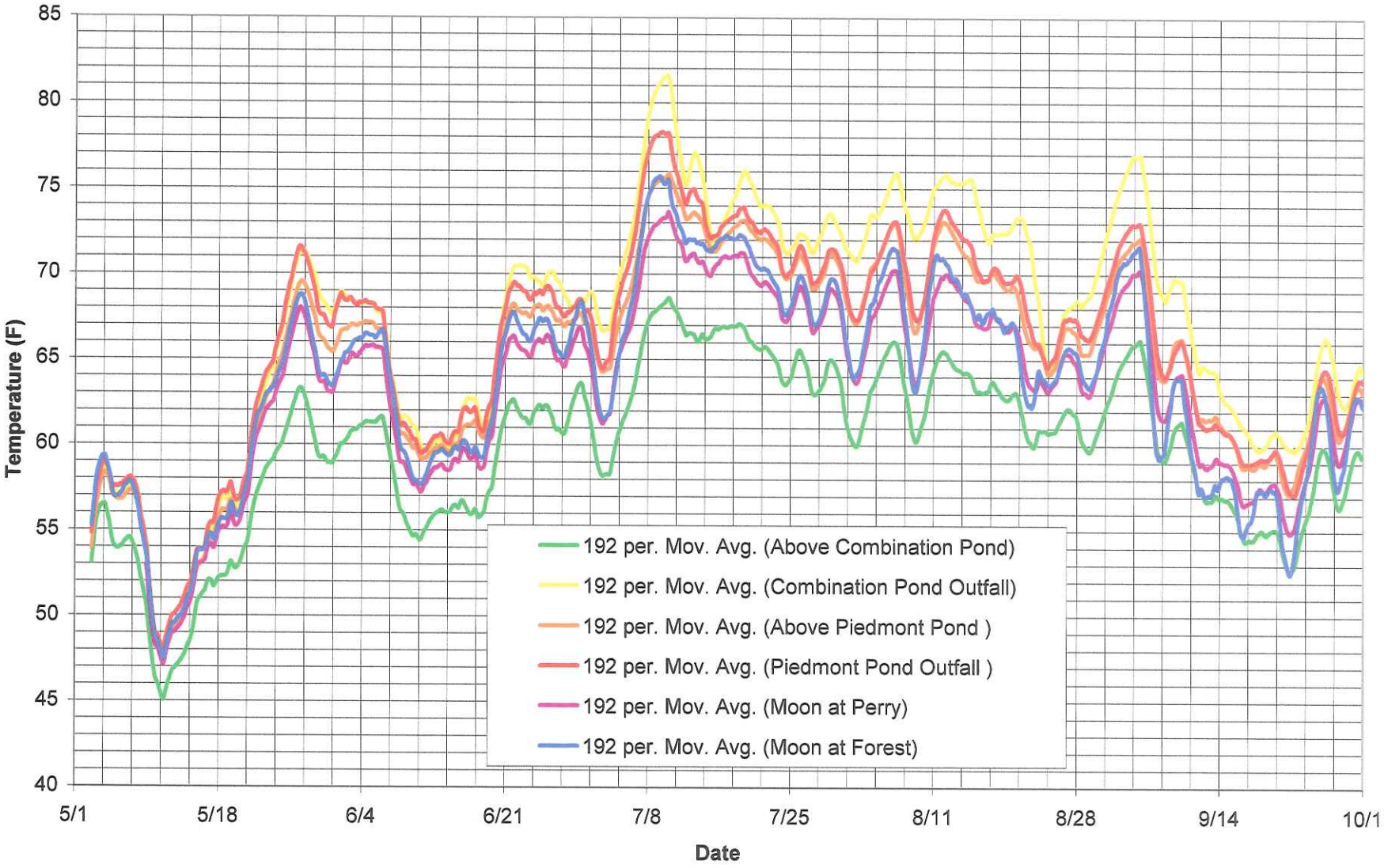
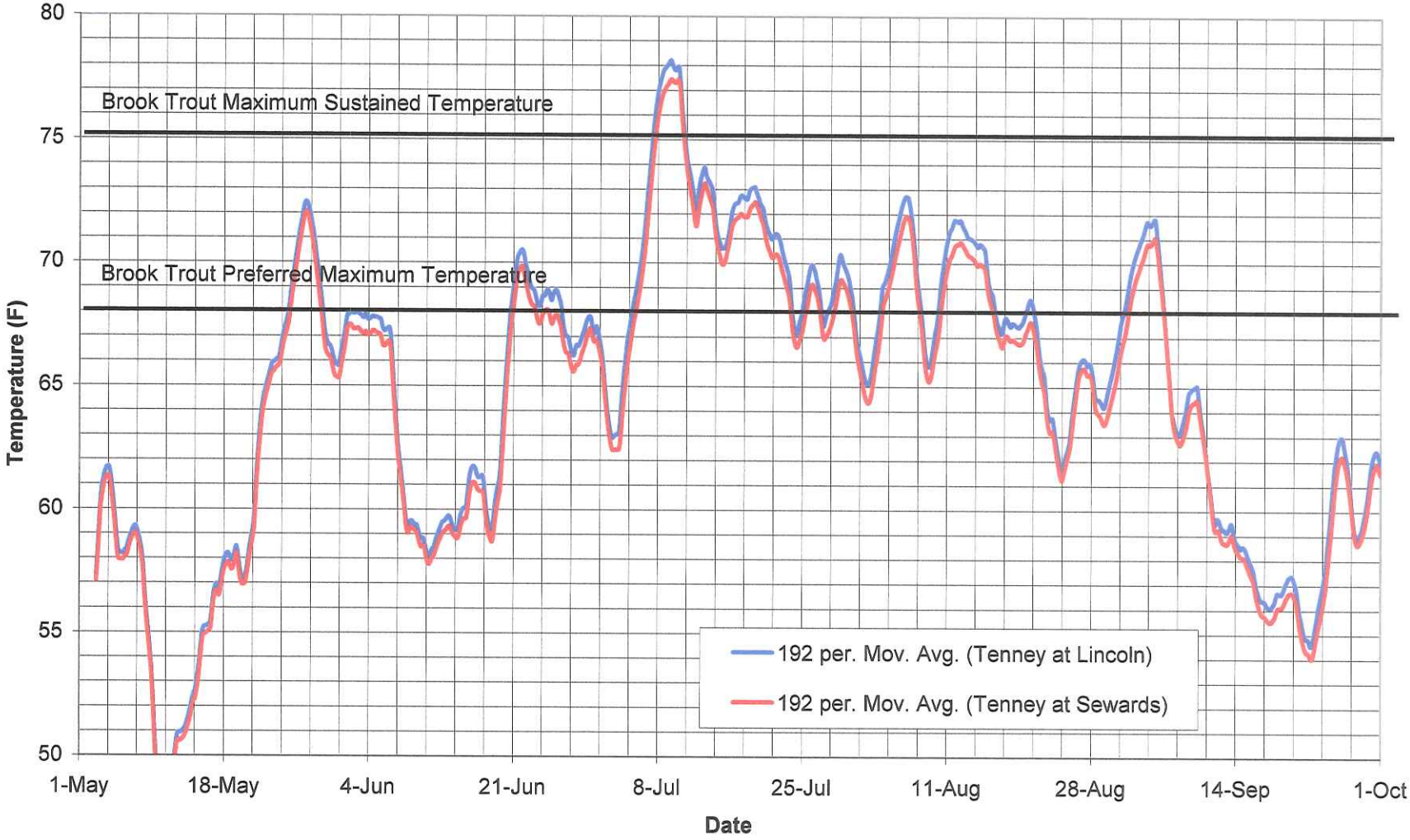

September 2010 Moon Brook Temperature
Brook Trout Maximum Sustained Temperature
Brook Trout Preferred Maximum Temperature
Temperature (F)
85
80
75
70
65
60
55
50
45
40
9/1
9/6
9/11
9/16
9/21
9/26
10/1
Date
Above Combination Pond
Combination Pond Outfall
Above Piedmont Pond
Piedmont Pond Outfall
Moon at Perry
Moon at Forest


2010 Mussey Brook Temperature
2 Day Average
Brook Trout Maximum Sustained Temperature
Brook Trout Preferred Maximum Temperature
192 per. Mov. Avg. (Below Fairgrounds)
192 per. Mov. Avg. (Above Fairgrounds)
Temperature (F)
85
80
75
70
65
60
55
50
45
40
5/1
5/18
6/4
6/21
7/8
7/25
8/11
8/28
9/14
10/1
Date

## 2010 Stream Temperature Comparison
## 2 Day Average



## Moon Brook Temperature 2010 With 2 Day Trend Line



## 2010 Tenney Brook Temperature
## 2 Day Average