

Bridgeton Landfill, LLC

Weekly Data Submittal

Week of February 4, 2018 – February 10, 2018

**Required by Section 52.F of Agreed Order, Case No. 13SL-CC01088
Effective May 13, 2013**

Contents:

Attachment A – Leachate Levels in Leachate Collection Sumps

Attachment B – Temperature Monitoring Probe Analytical Charts

Attachment C – Gas Interceptor Wellhead Temperature Graphs

Attachment D – Neck-Area Gas Extraction Wellhead Temperature Graphs

Provided Separately:

- Leachate Level in Leachate Collection Sump Raw Data Excel Spreadsheet**
- Temperature Monitoring Probe Raw Data Excel Spreadsheet**
- Heat Extraction System TMP Raw Data Excel Spreadsheet**
- Gas Interceptor Well Reading Raw Data Excel Spreadsheet**
- Neck-Area Gas Extraction Well Data Excel Spreadsheet**

February 16, 2018

Commentary on Data

February 16, 2018

Attachment A – Leachate Levels in Leachate Collection Sumps

Downhole discharge piping and the pump for LCS-1D were replaced the week of 2/5/18. Pump startup activities are scheduled for the week of 2/12/18.

The pump in LCS-2D was non-operational during the weekly reporting period.

The Blackhawk pneumatic pumps in LCS-3D were non-operational during the weekly reporting period. The Blackhawk pneumatic pumps are scheduled to be replaced with a QED AP-4 pneumatic pump the week of 2/12/18. The liquid level in LCS-3D was measured manually.

The level sensor in LCS-4B is currently operational and responsive. A liquid level was not recorded by the level sensor during the weekly reporting period. LCS-4B is equipped with a flow meter that displayed no flow during the weekly reporting period. Therefore, it can be concluded that the liquid level was below the bottom of the pump and level sensor in LCS-4B.

LCS-5B and LCS-6B were fully operational during the weekly reporting period.

Attachment B - Temperature Monitoring Probe Analytical Charts

The following Temperature Monitoring Probes (TMPs) indicated generally consistent profiles to previous observations: TMP-1, -2R, -3, -3R, -4, -4R, -6, -9, -11R, -14R, -16R, -17, -18, -21, -22, -23, -24, -25R, -26, -27, -28R, -29, -33, -34, -35, -36, -37, -38, -39, -40, -41, -42, -43, -44, -45, -46, -47, -48, and -49.

TMP readings for evaluation of the Heat Extraction System (HES) are provided as attachment “Heat Extraction System TMP Raw Data Excel Spreadsheet,” but are not discussed in this report.

Attachment C - Gas Interceptor Wellhead Temperature Graphs

As part of the HES, there are currently cooling water circulation loops installed in twelve Gas Interceptor Wells (GIWs) (GIW-02 through GIW-13). The remaining well (GIW-01) had a measured gas temperature within its historical operating limits.

In the Weekly Data Submittal for the week of January 28, 2018 – February 3, 2018, submitted to MDNR on February 9, 2018, data for the week of February 4, 2018 – February 10, 2018 (the current week’s data) and not the previous week’s data (data for the week of January 28, 2018 – February 3, 2018) were submitted. Therefore, this week, two weeks’ worth of data (January 28, 2018 – February 10, 2018) are being submitted to include the historical data not previously submitted. All data in the past two weeks are within historical trends.

Attachment D – Neck Area Gas Extraction Well Data

Weekly gas temperature data is collected for select Gas Extraction Wells (GEWs) located in the neck area of the landfill. These wells include GEW-008, -009, -010, -038, -039, -040, 041R, -043R, -053, -054, -055, -056R, -109, and -110. As indicated in the notes section for Attachment C, last week, the current week’s data (data for the week of February 4, 2018 – February 10, 2018) and not the previous week’s

data (January 28, 2018 – February 3, 2018) were submitted. Therefore, this week, two weeks' worth of data (January 28, 2018 – February 10, 2018) are being submitted to include the historical data not previously submitted. All data in the past two weeks are within historical trends.

North Quarry Oxygen Levels

GEW-1A is noted as having an oxygen concentration greater than 2.0% since its installation in December 2015.

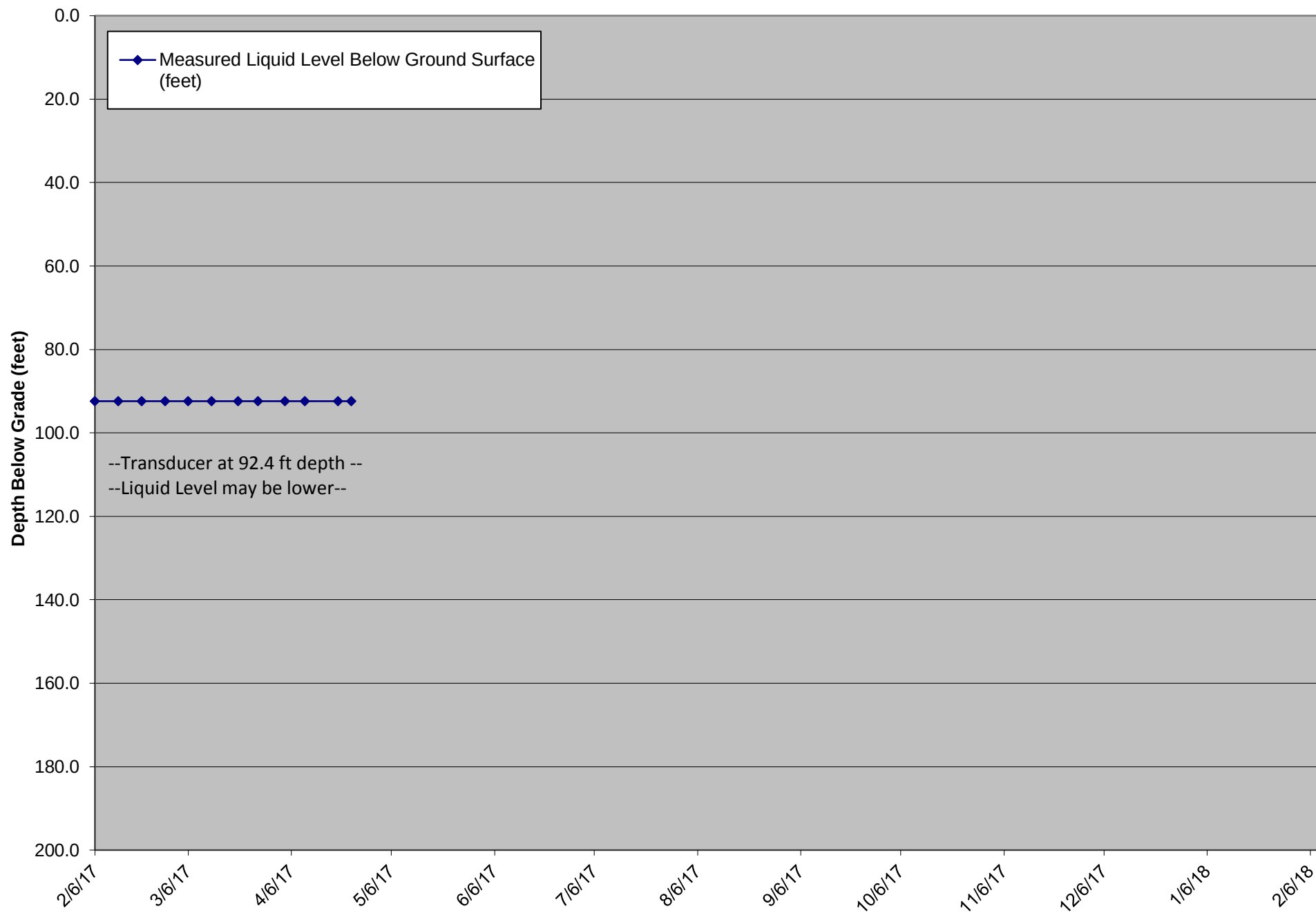
The area in which GEW-1A is installed is very saturated. Bridgeton has installed a sump near GEW-1A and increased the force main capacity during the North Quarry capping projects in an effort to lower the potentiometric surface in the area to improve gas quality and reduce ambient air intrusion at the well. In addition, Bridgeton tested a 5 hp electric pump in GEW-1A to provide increased capacity in an effort to sufficiently dewater the well and expose perforations. However, rapid recharge prevented exposure of perforations.

As an alternative measure, Bridgeton is preparing a design to extend the EVOH to the north in the vicinity of GEW-1A to control surface exceedances of methane and to collect landfill gas through additional landfill gas controls associated with the EVOH cap. This conceptual design was discussed in correspondence to St. Louis County Department of Public Health-Air Pollution Control Program (SLCDPH/APCP) dated February 9, 2018. The February 9, 2018 letter requested that SLCDPH/APCP consider the extension of the North Quarry EVOH cap system and additional gas collection controls as a replacement to GEW-1A. If the approach is approved by SLCDPH/APCP, Bridgeton will provide a project schedule, monitoring frequency, and design detail within ninety (90) days of obtaining concurrence. Further, the February 9, 2018 letter requested an additional ninety (90) days for the area in the vicinity of GEW-1A to be addressed for adequate monitoring requirements to allow time to complete design, procurement, and construction schedules. SLCDPH/APCP responded to the February 9, 2018 request letter in correspondence dated February 13, 2018. SLCDPH/APCP indicated that they consider the EVOH liner extension to be a replacement for GEW-1A or best available alternative to a gas extraction well. The February 13, 2018 SLCDPH/APCP letter approved the 90-day extension for correcting the oxygen parameter exceedance at GEW-1A (due May 13, 2018).

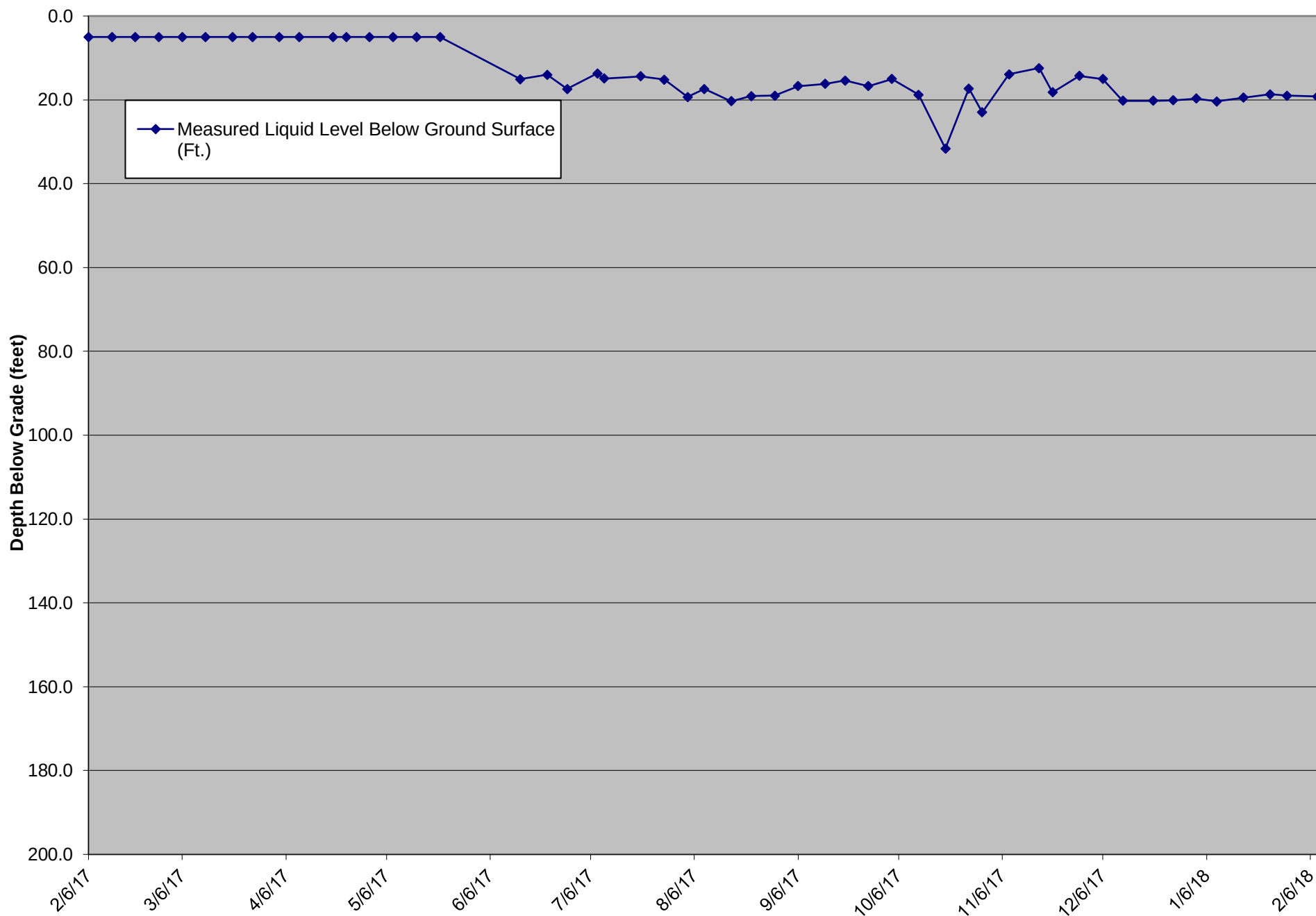
ATTACHMENT A

LEACHATE LEVELS IN LEACHATE COLLECTION SUMPS

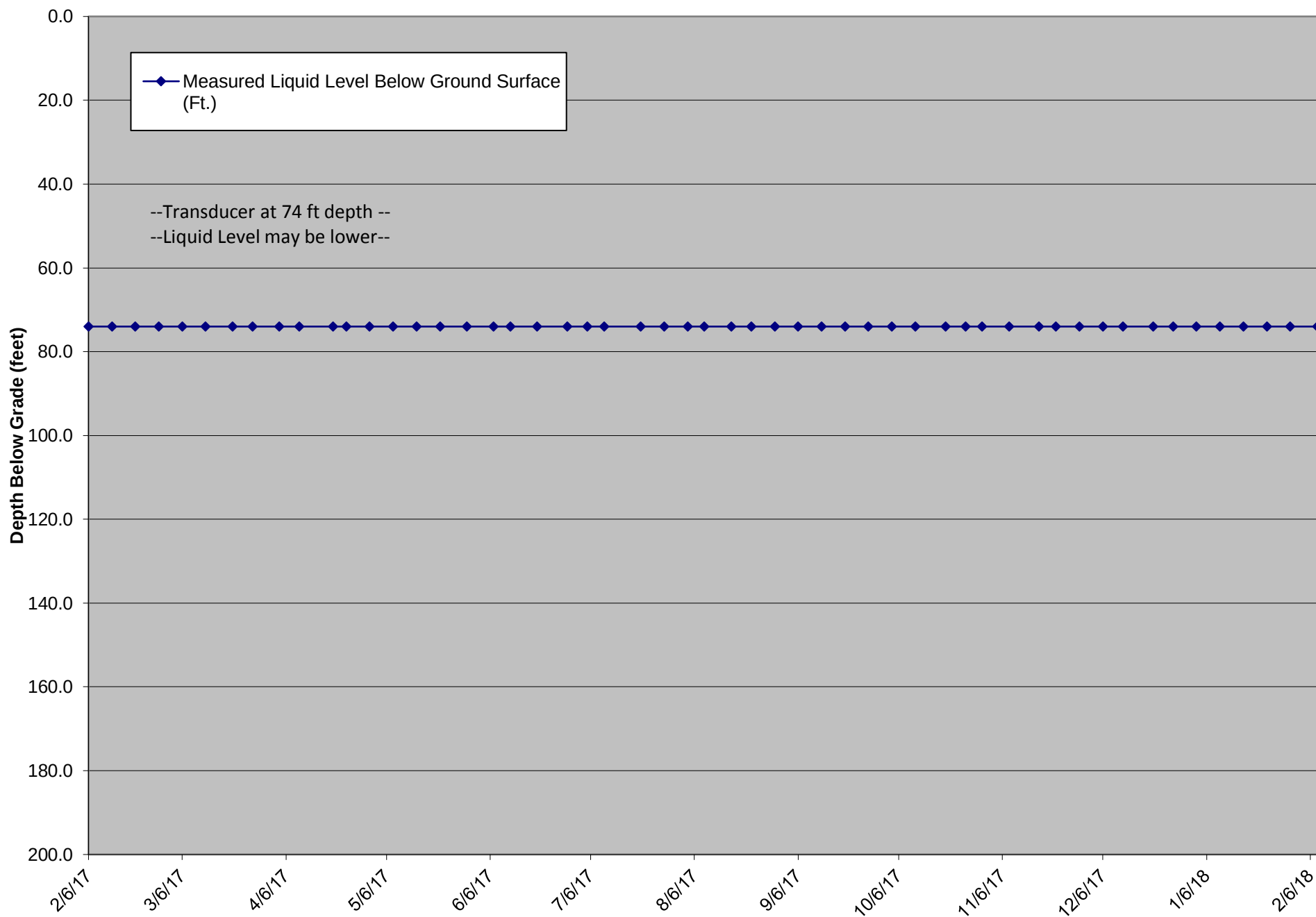
LCS-1D Liquid Level Below Ground Surface



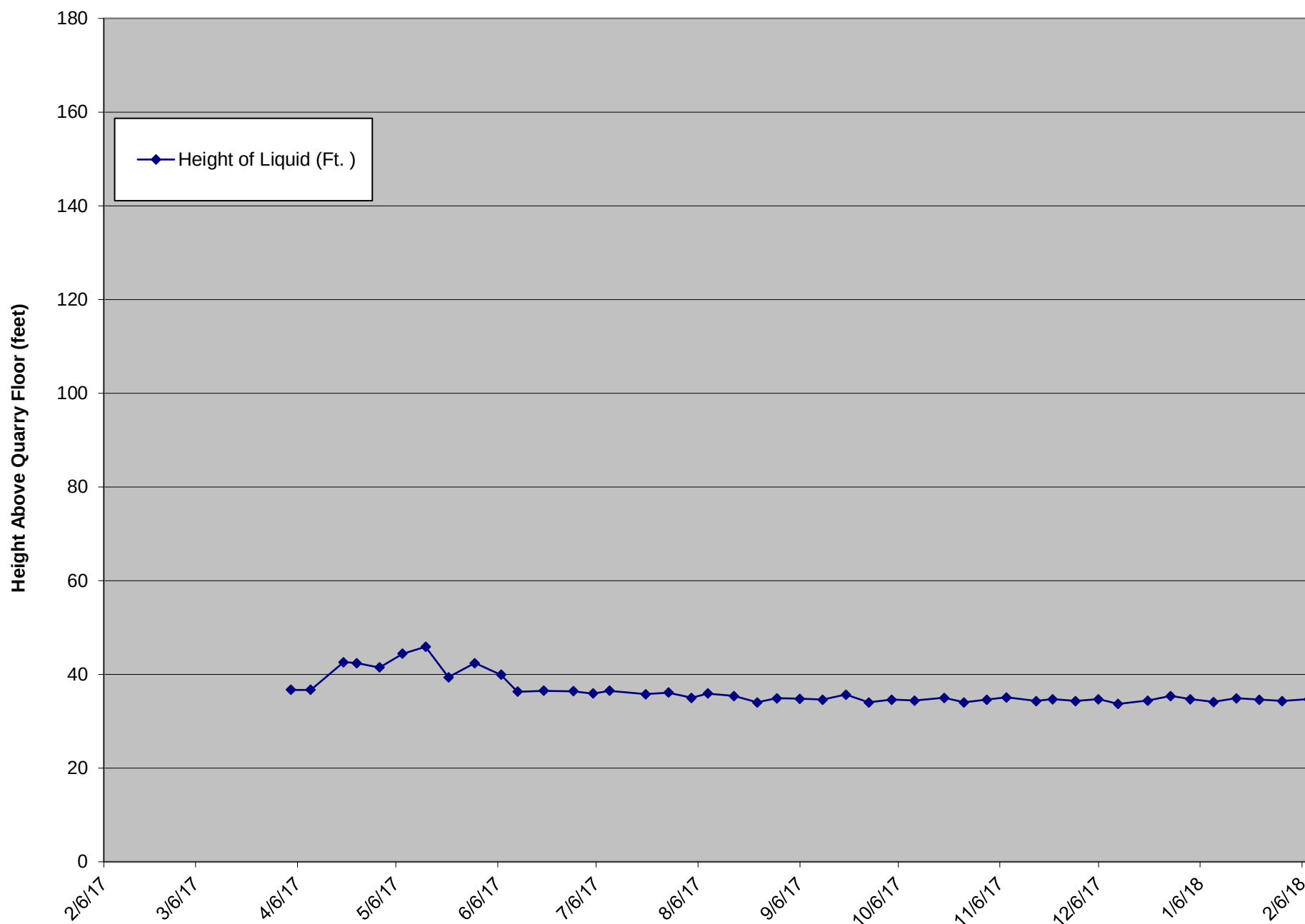
LCS-3D Liquid Level Below Ground Surface



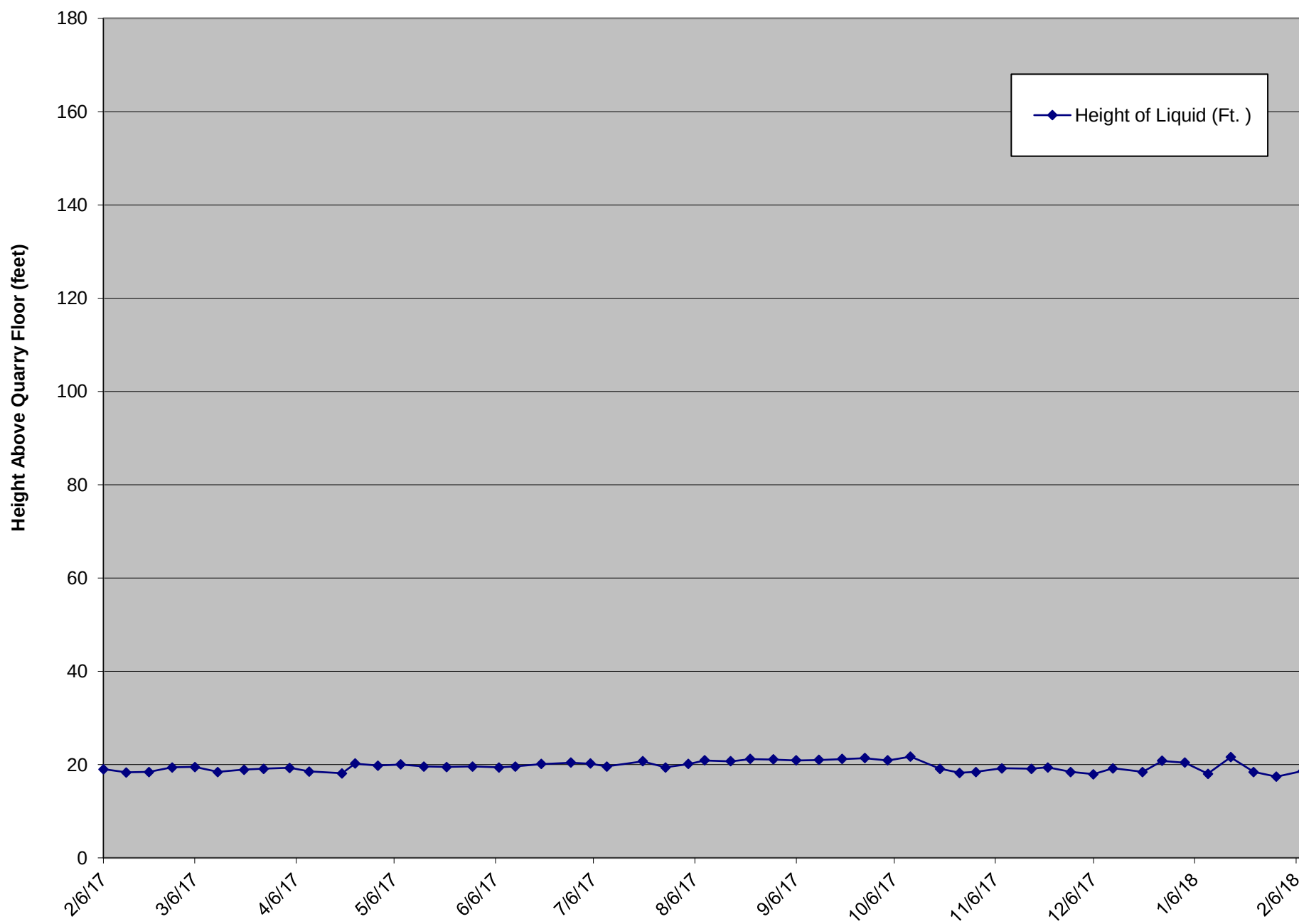
LCS-4B Liquid Level Below Ground Surface



LCS-5B Liquid Level Above Quarry Floor



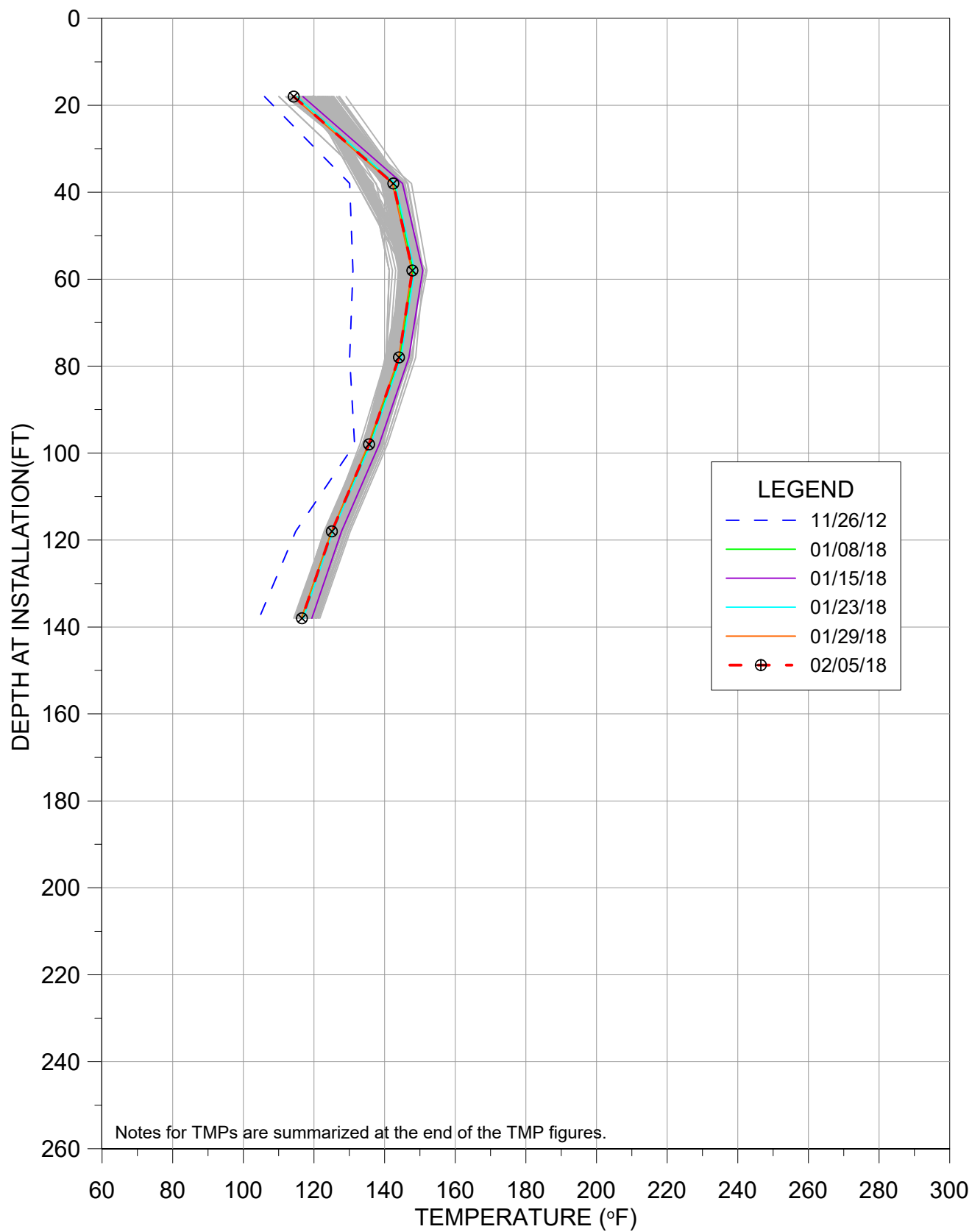
LCS-6B Liquid Level Above Quarry Floor



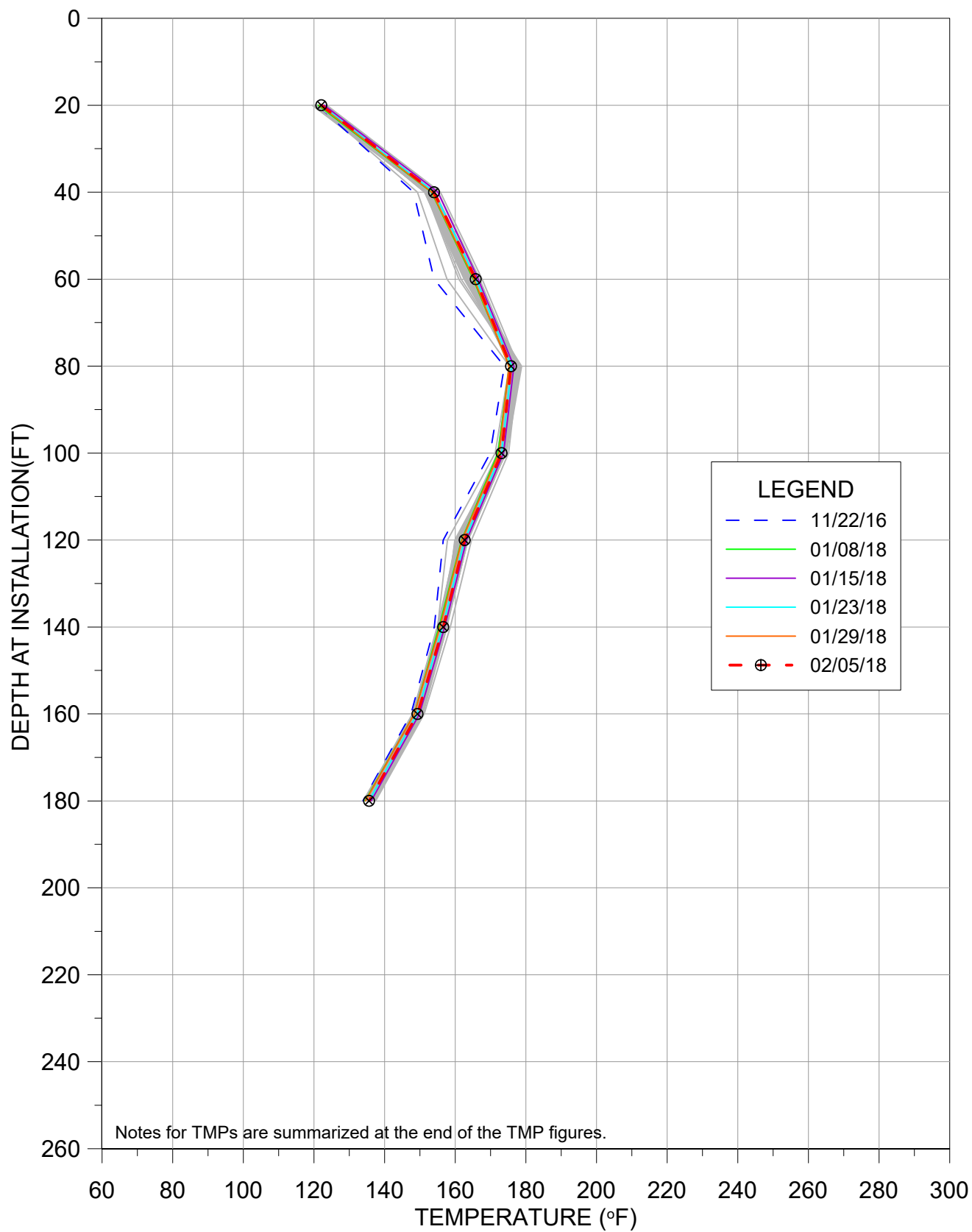
ATTACHMENT B

TEMPERATURE MONITORING PROBE ANALYTICAL CHARTS

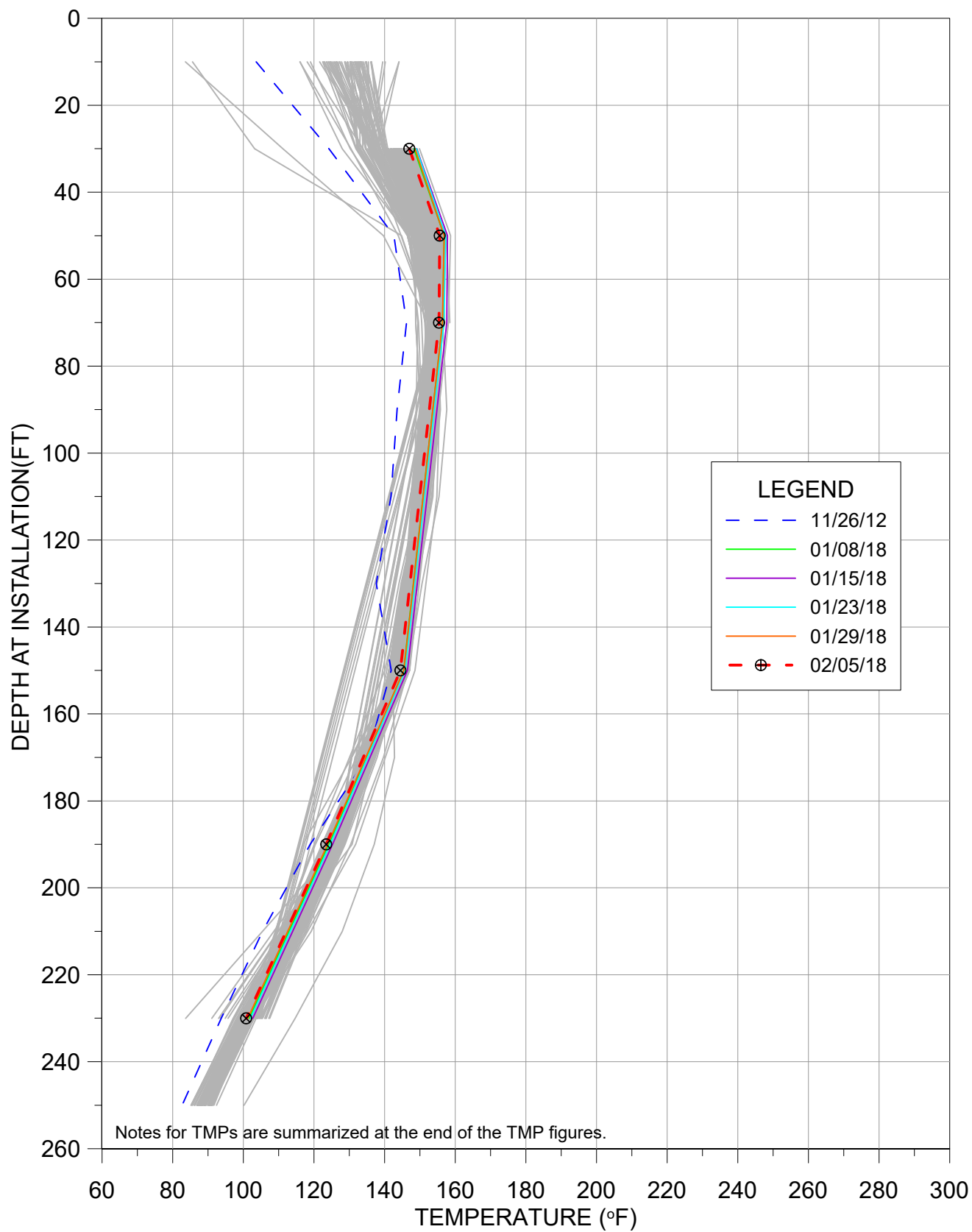
TMP-1



TMP-2R

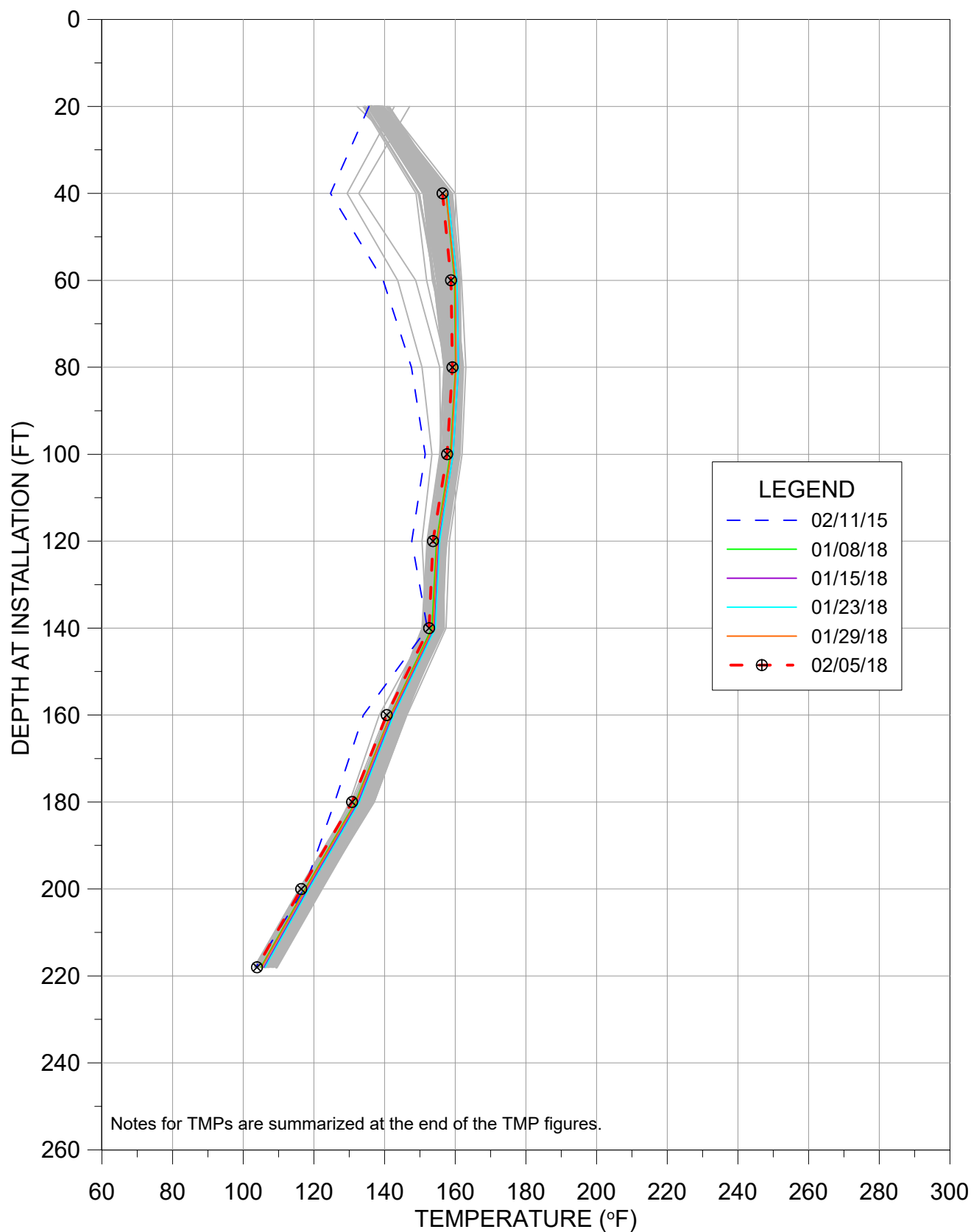


TMP-3

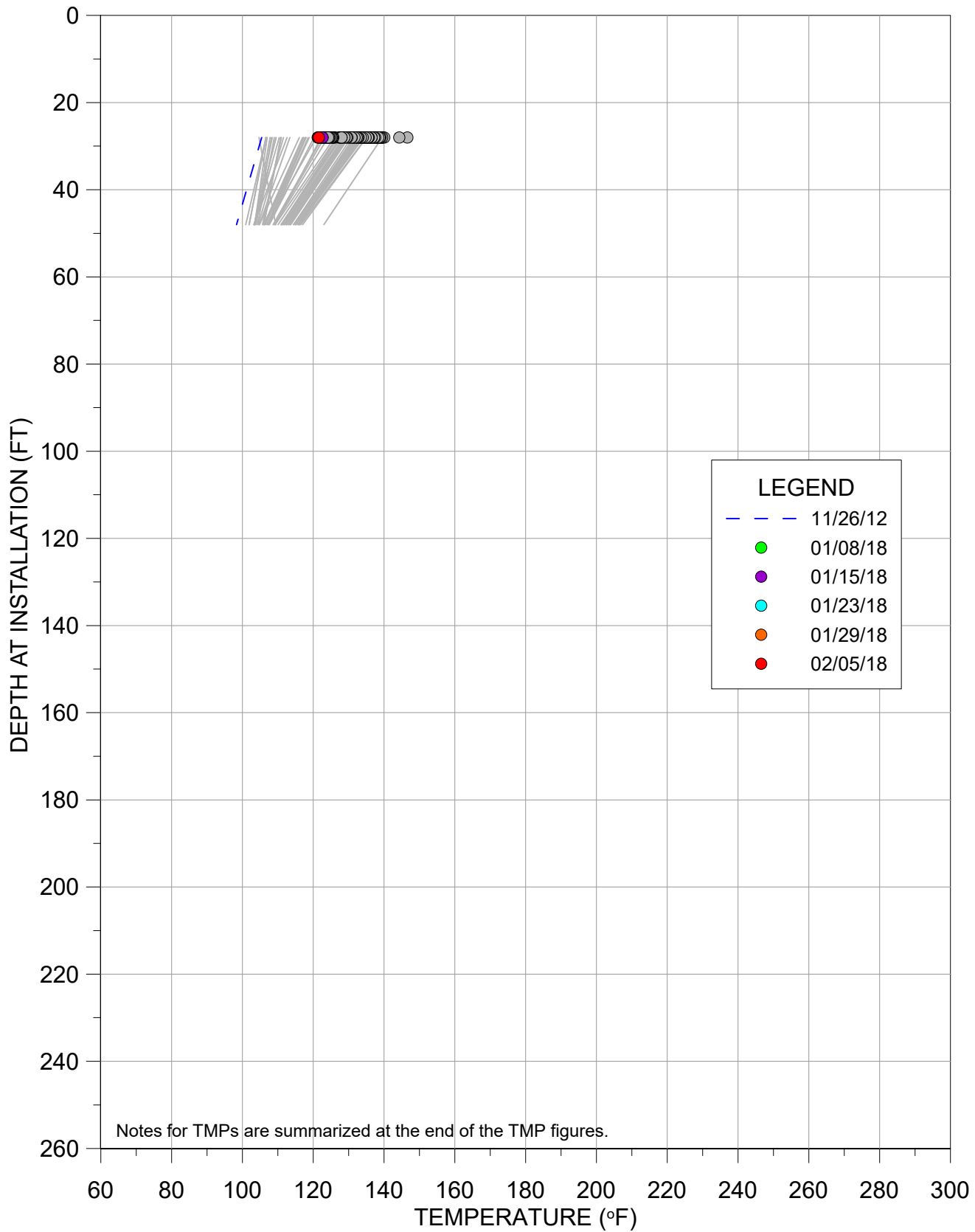


TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

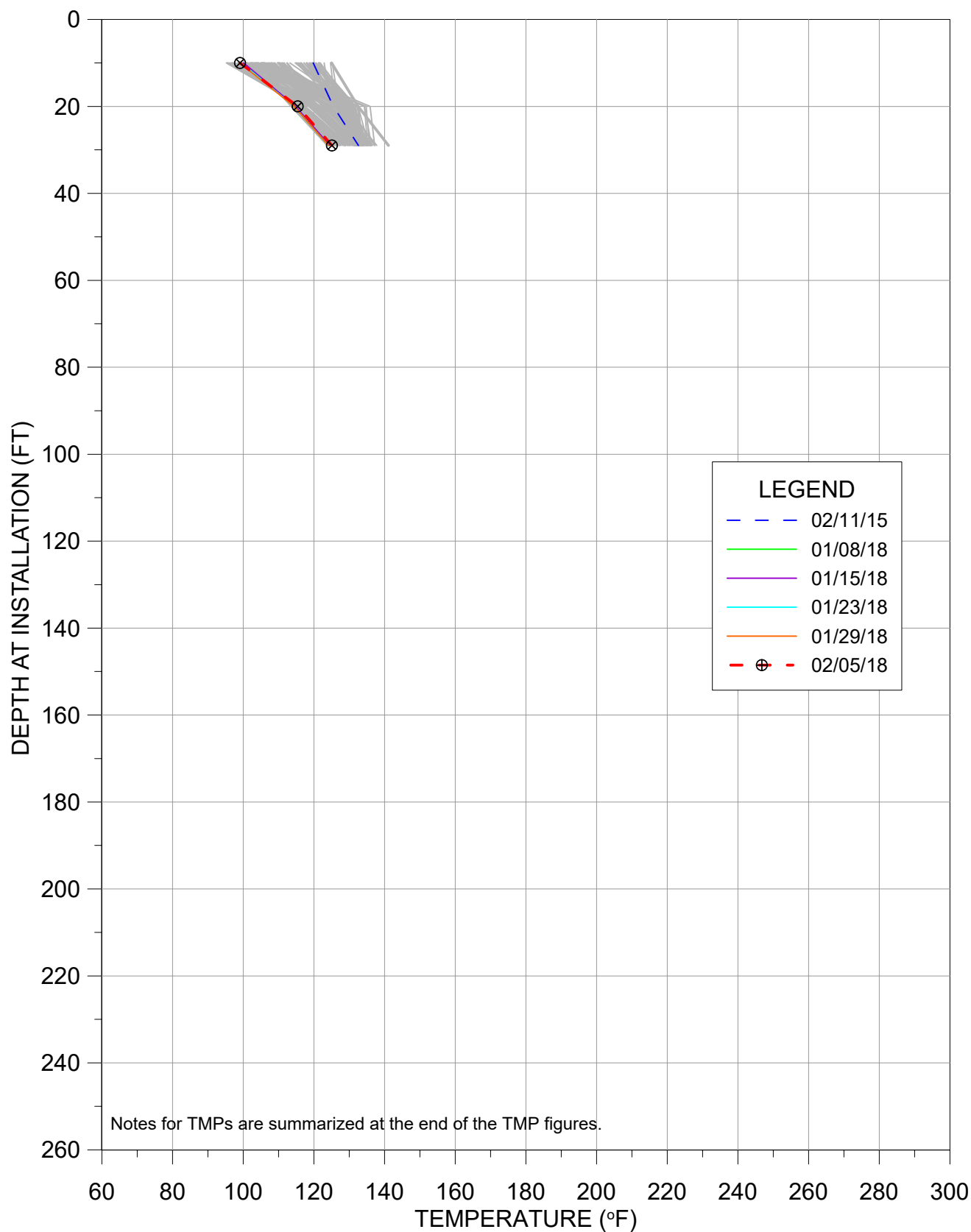
TMP-3R



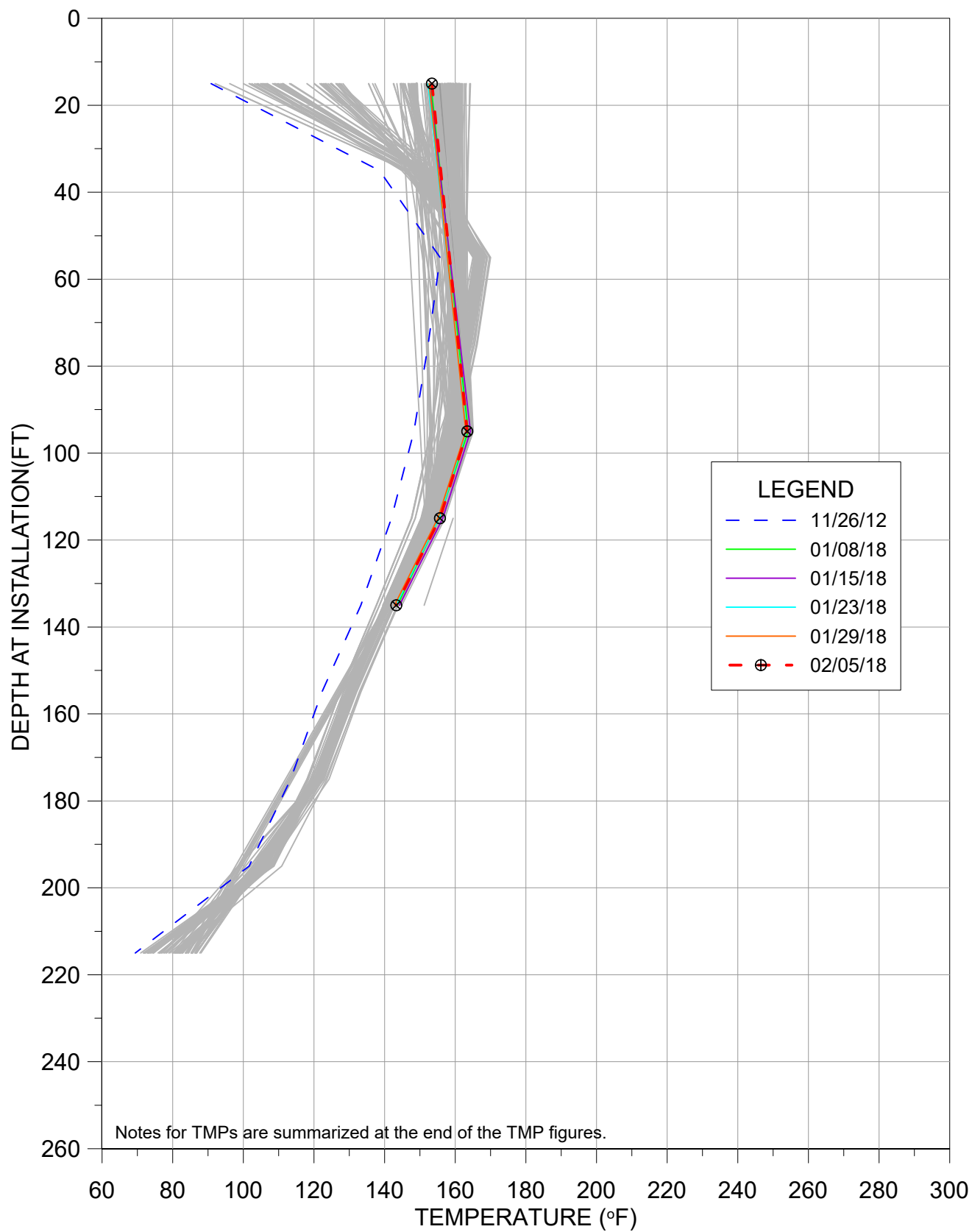
TMP-4



TMP-4R

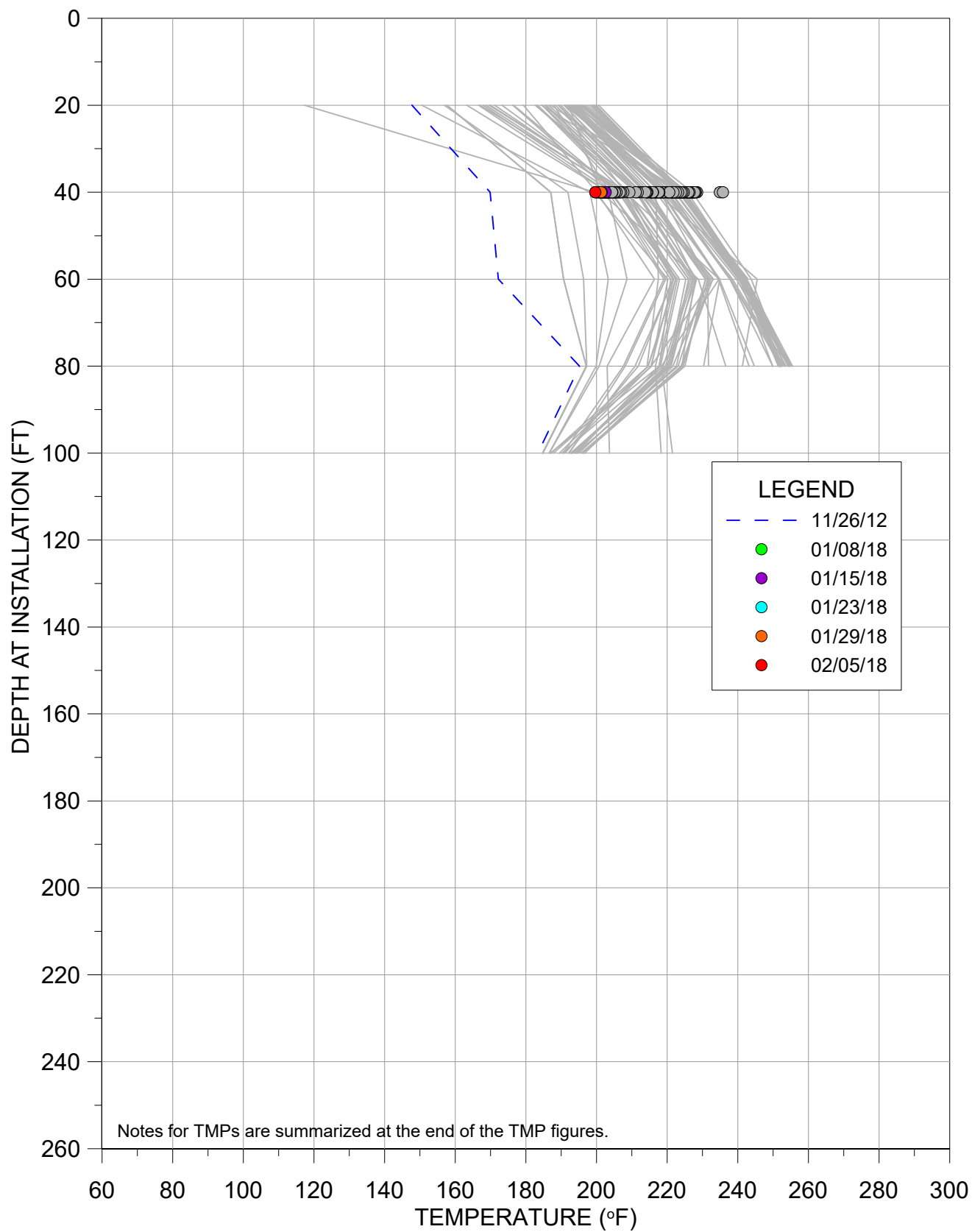


TMP-6



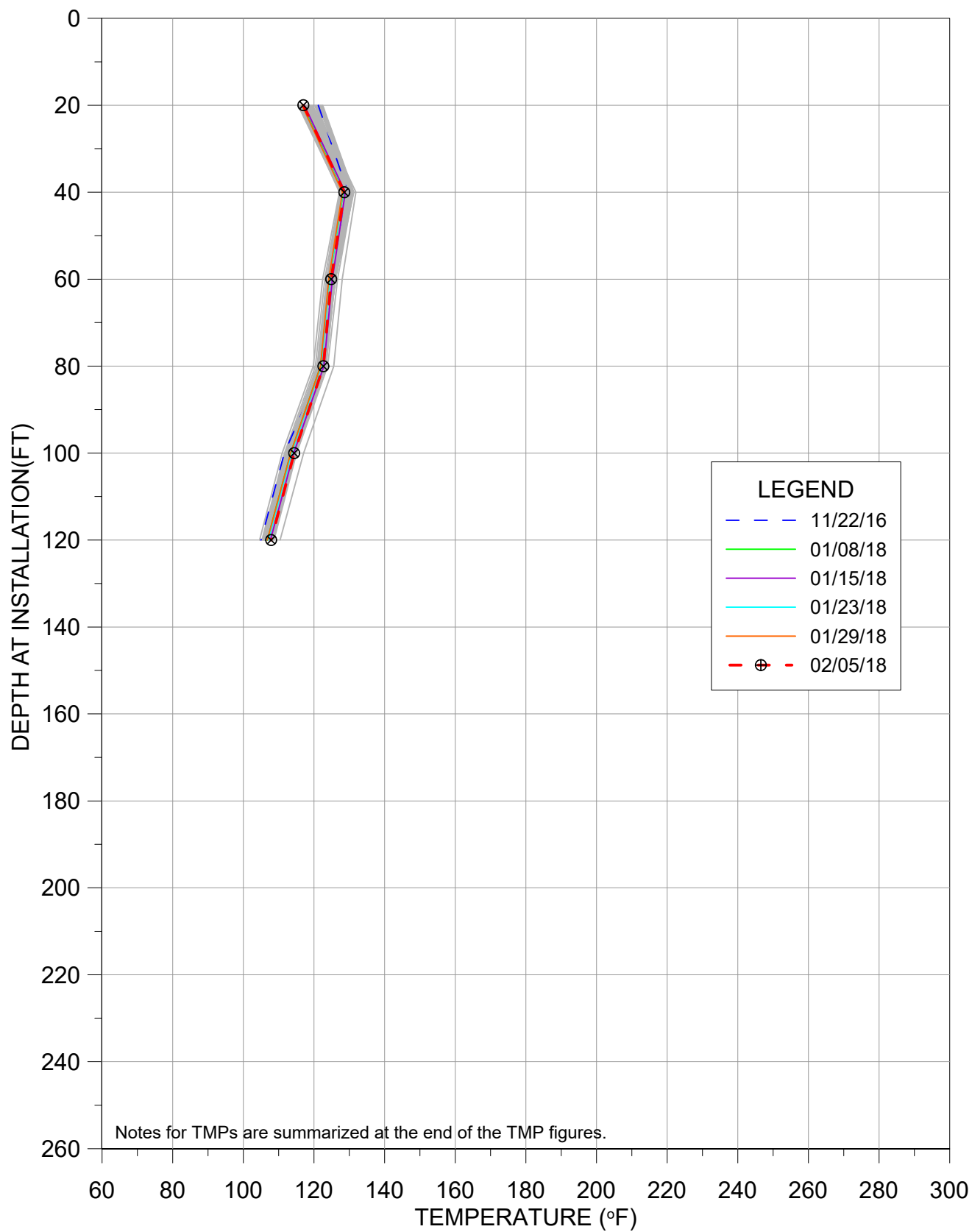
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-9



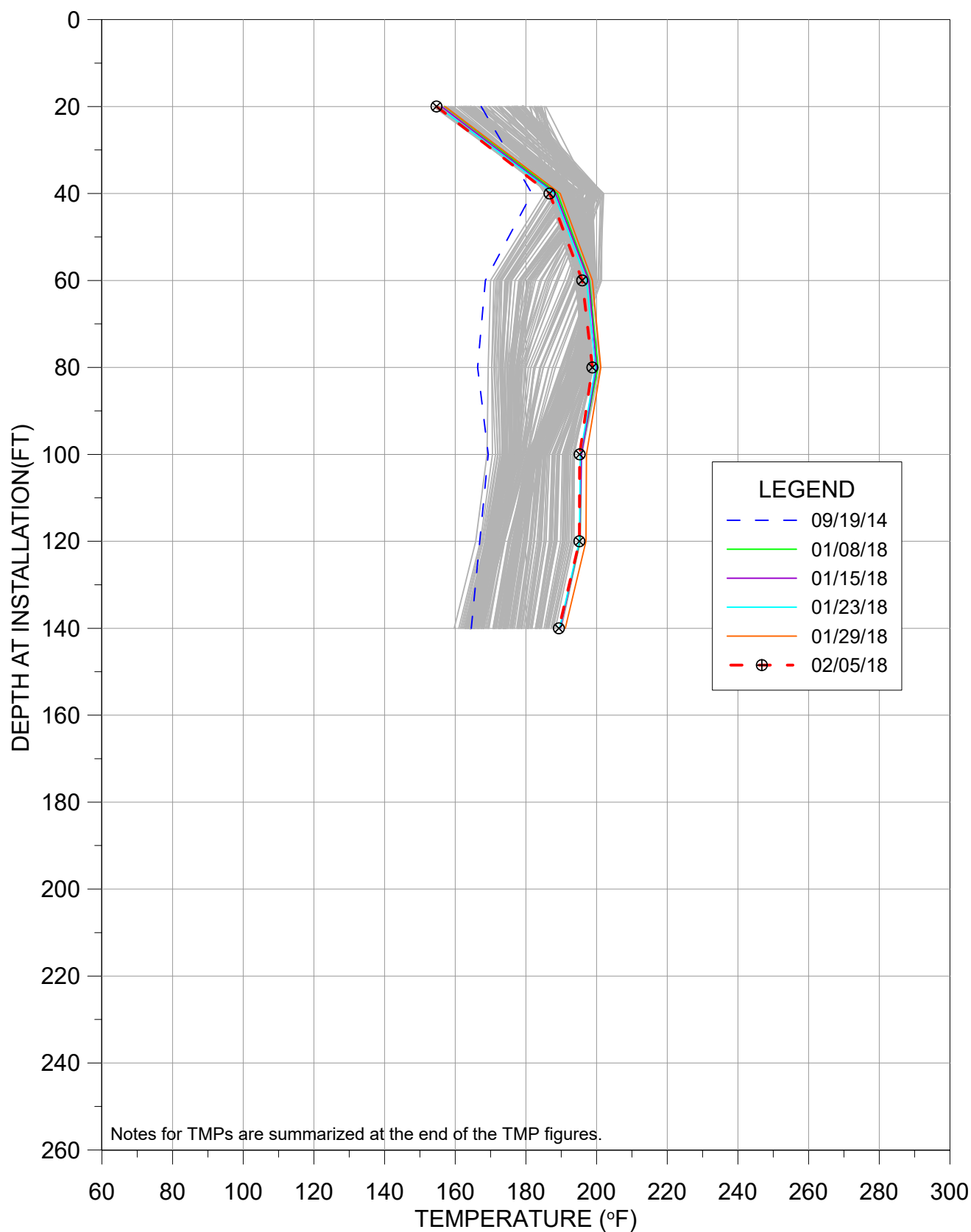
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-11R

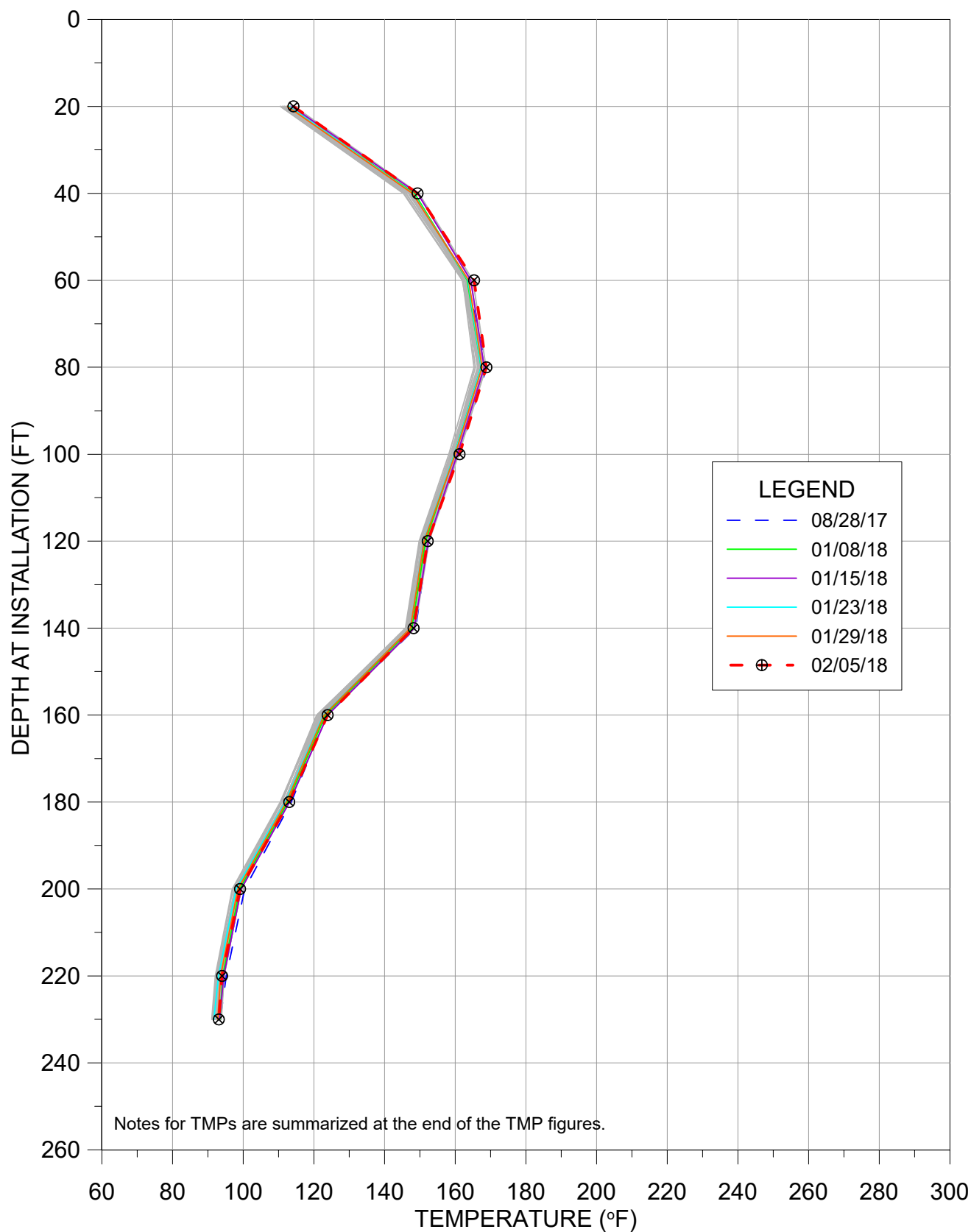


TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

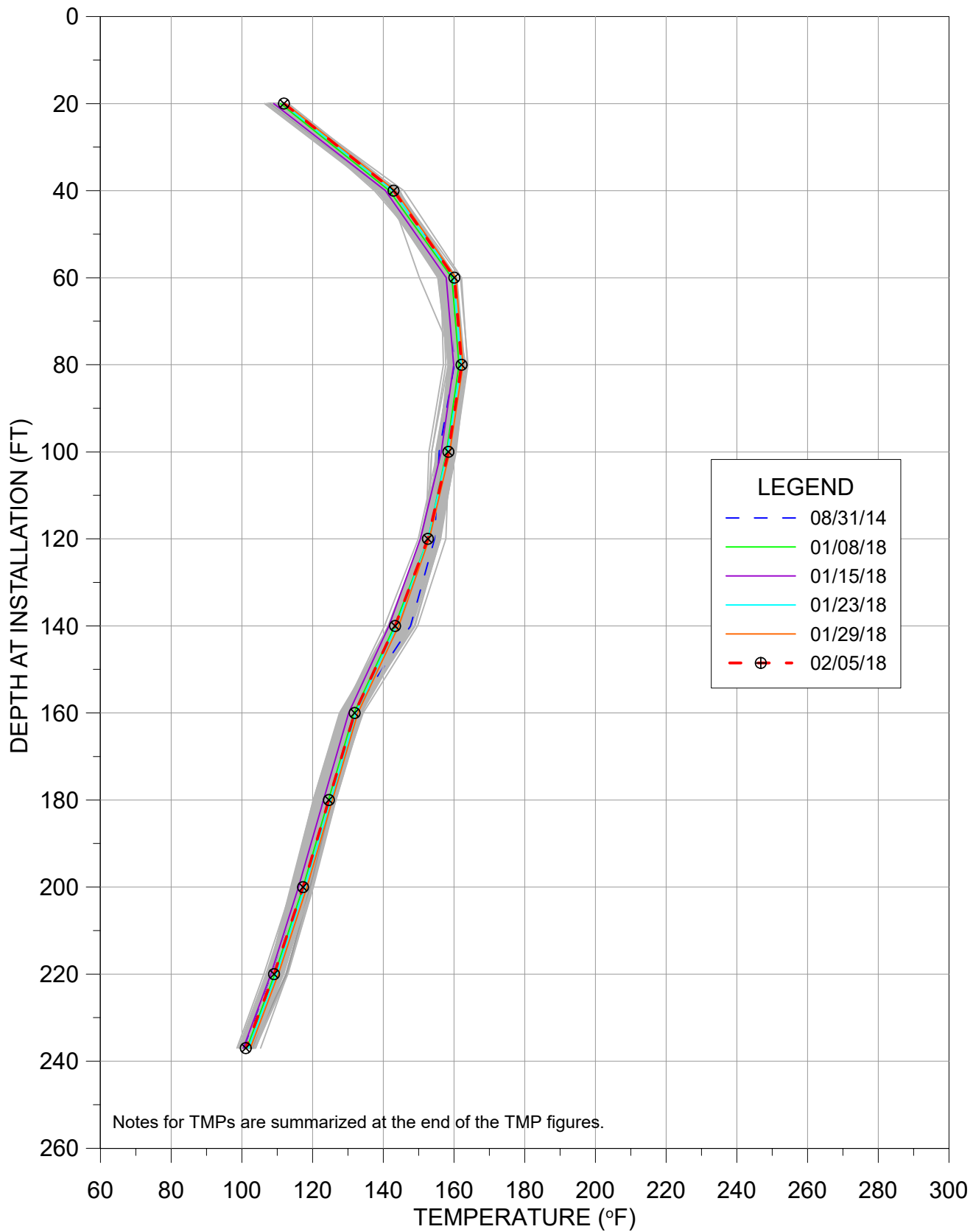
TMP-14R



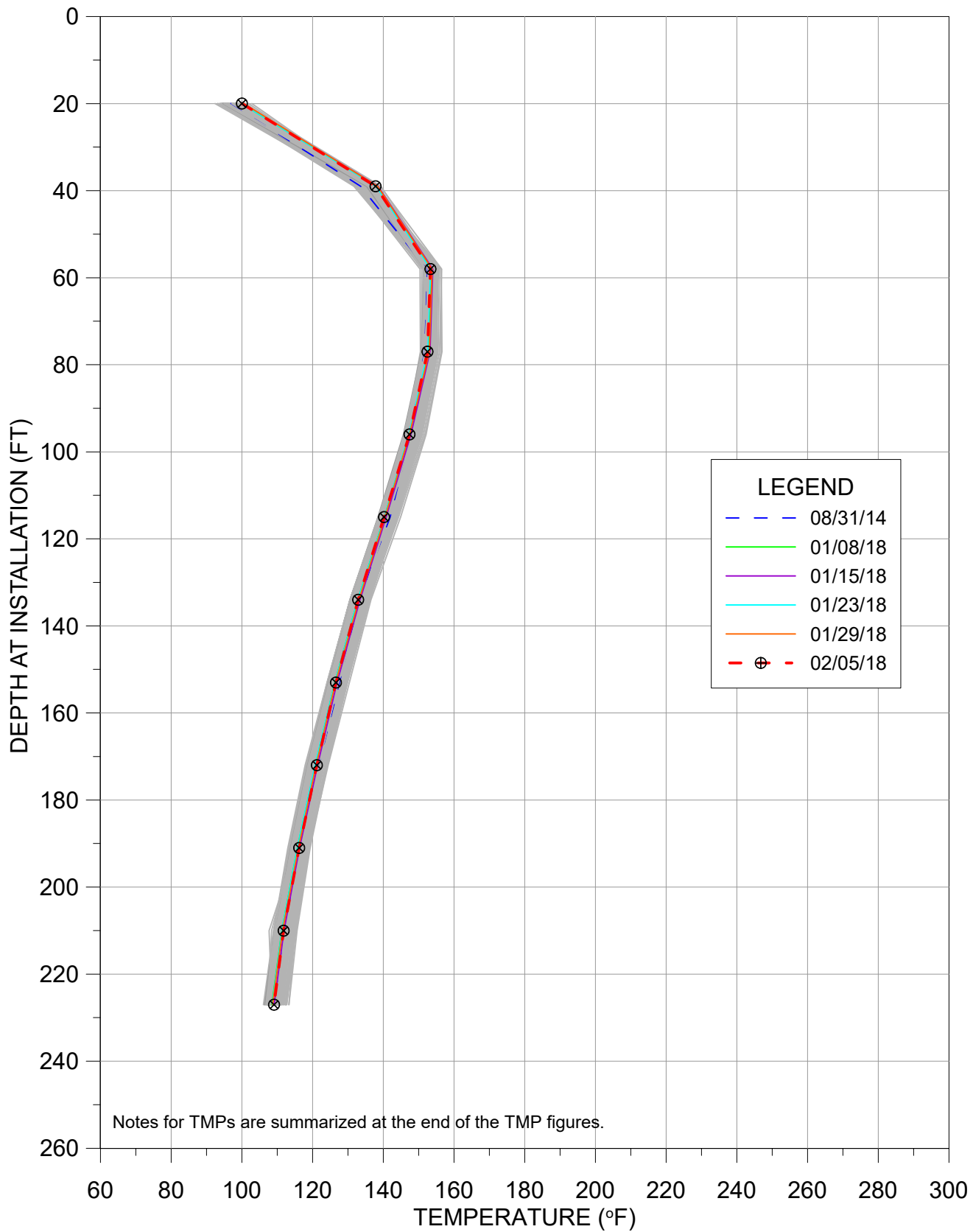
TMP-16R



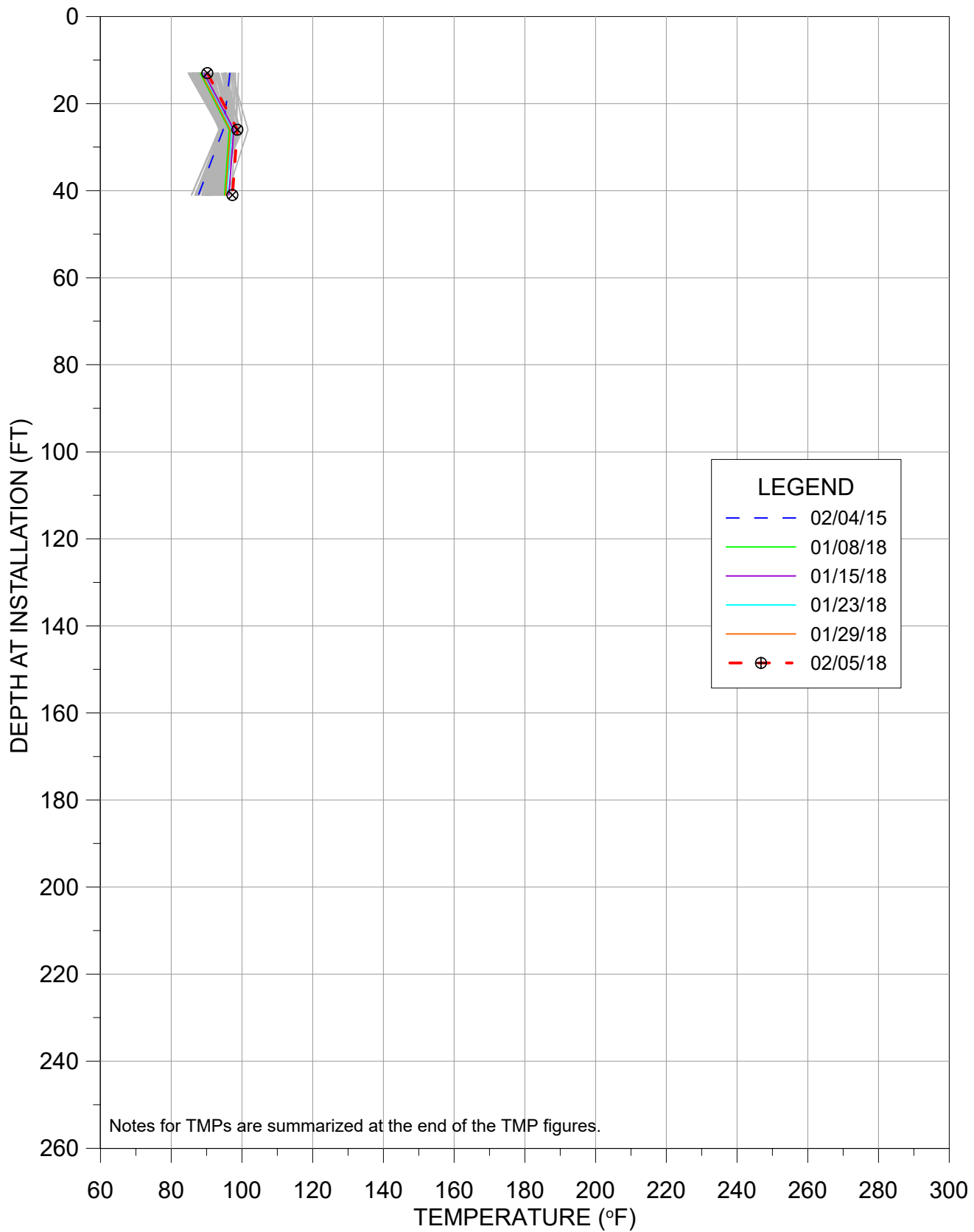
TMP-17



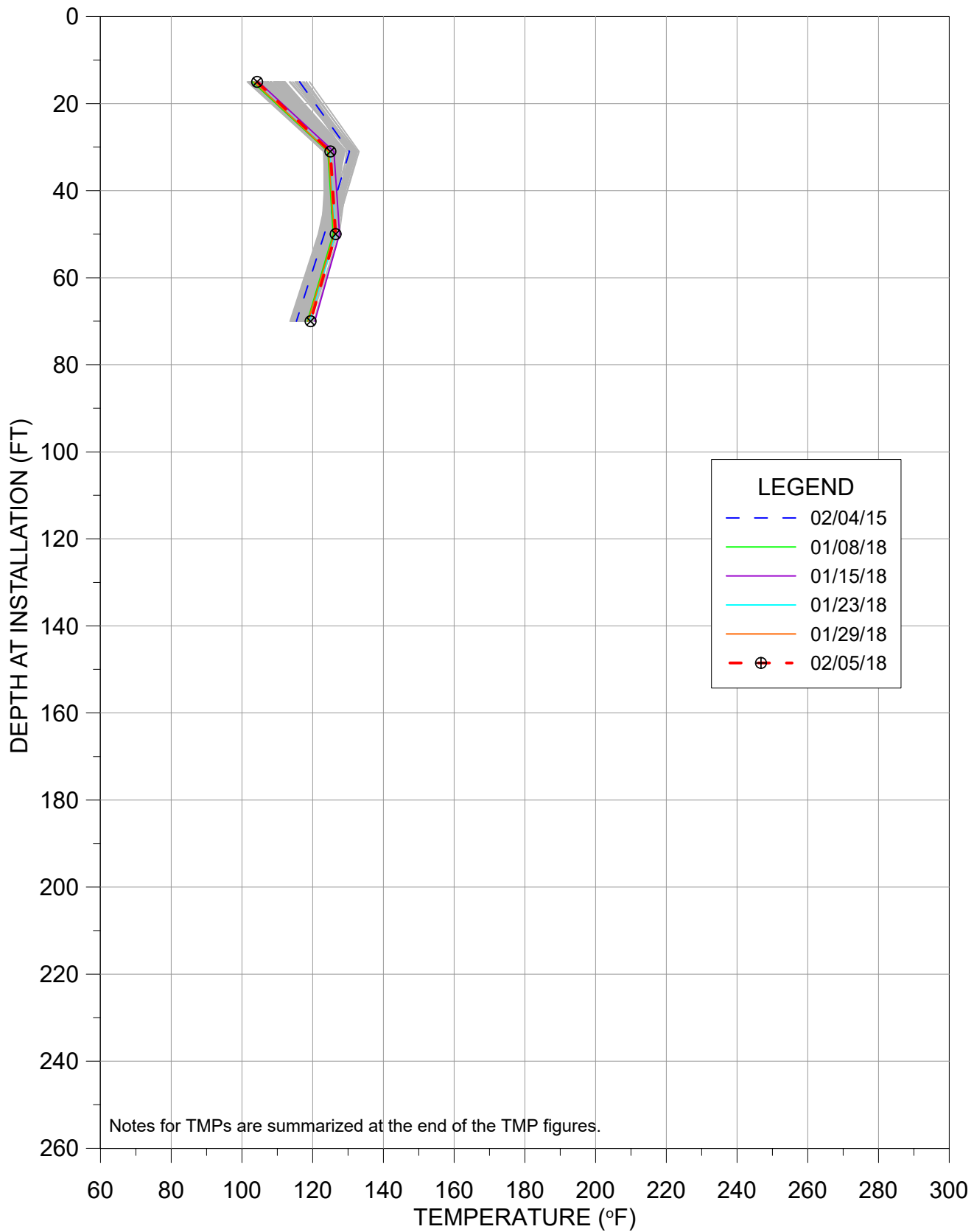
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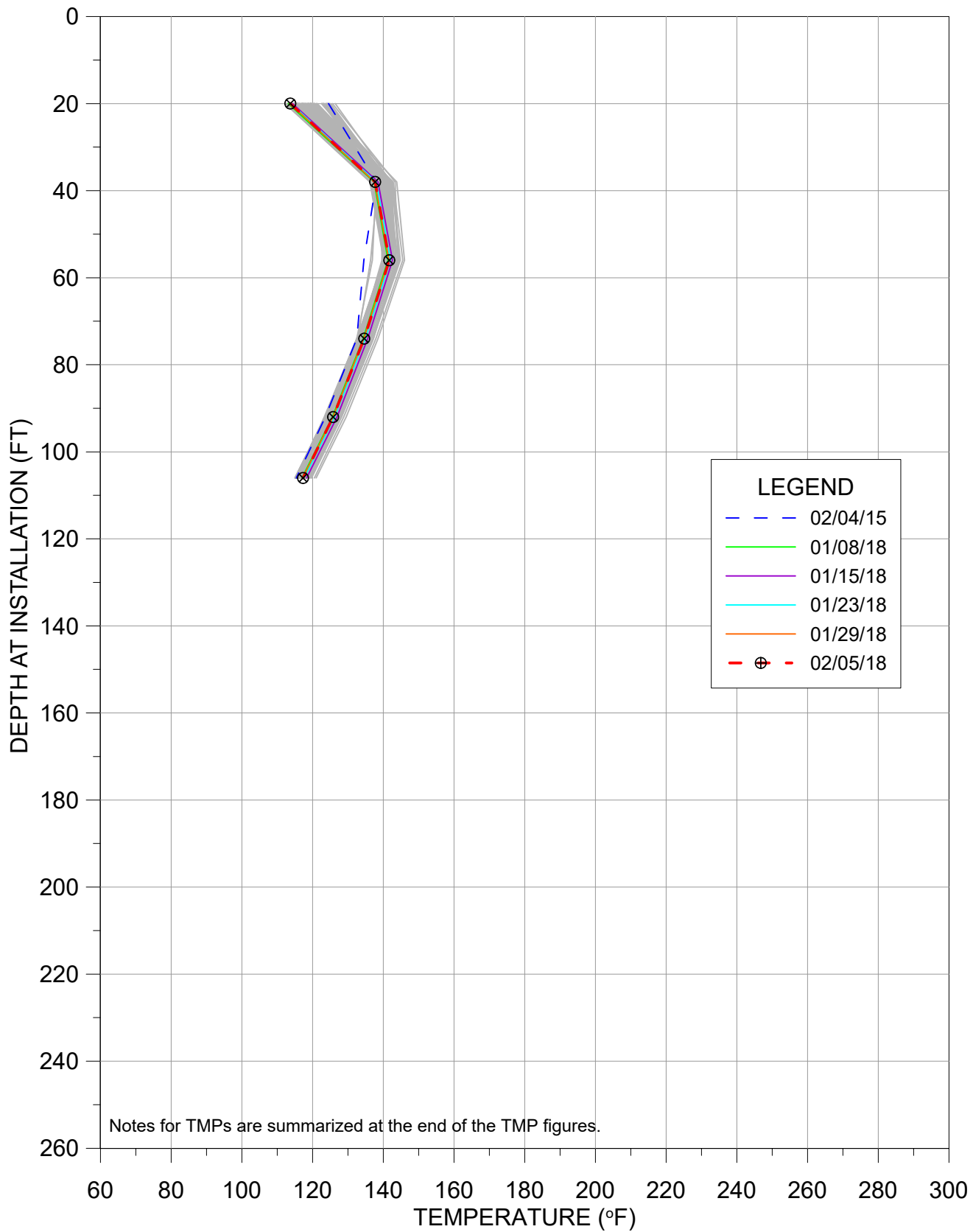
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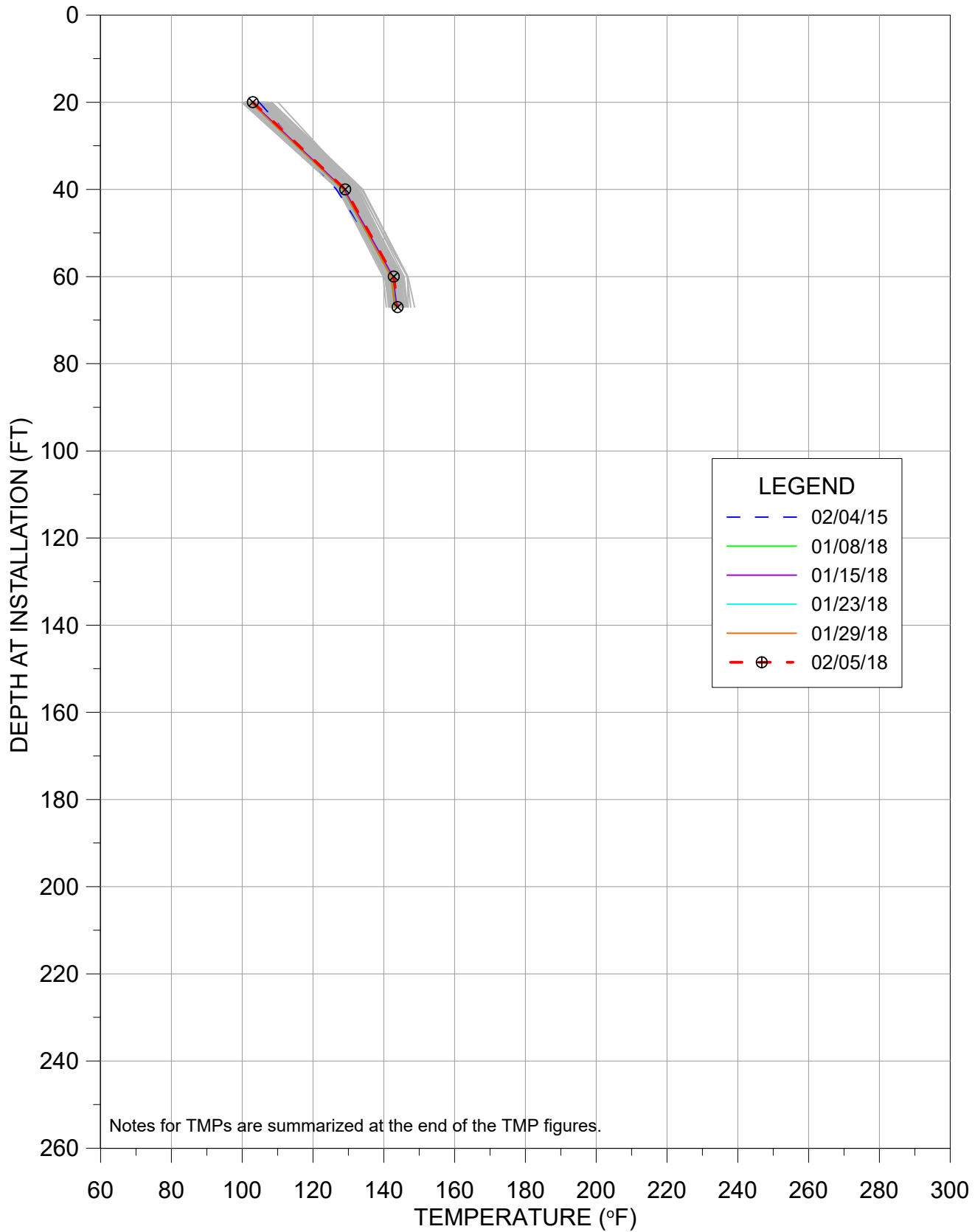
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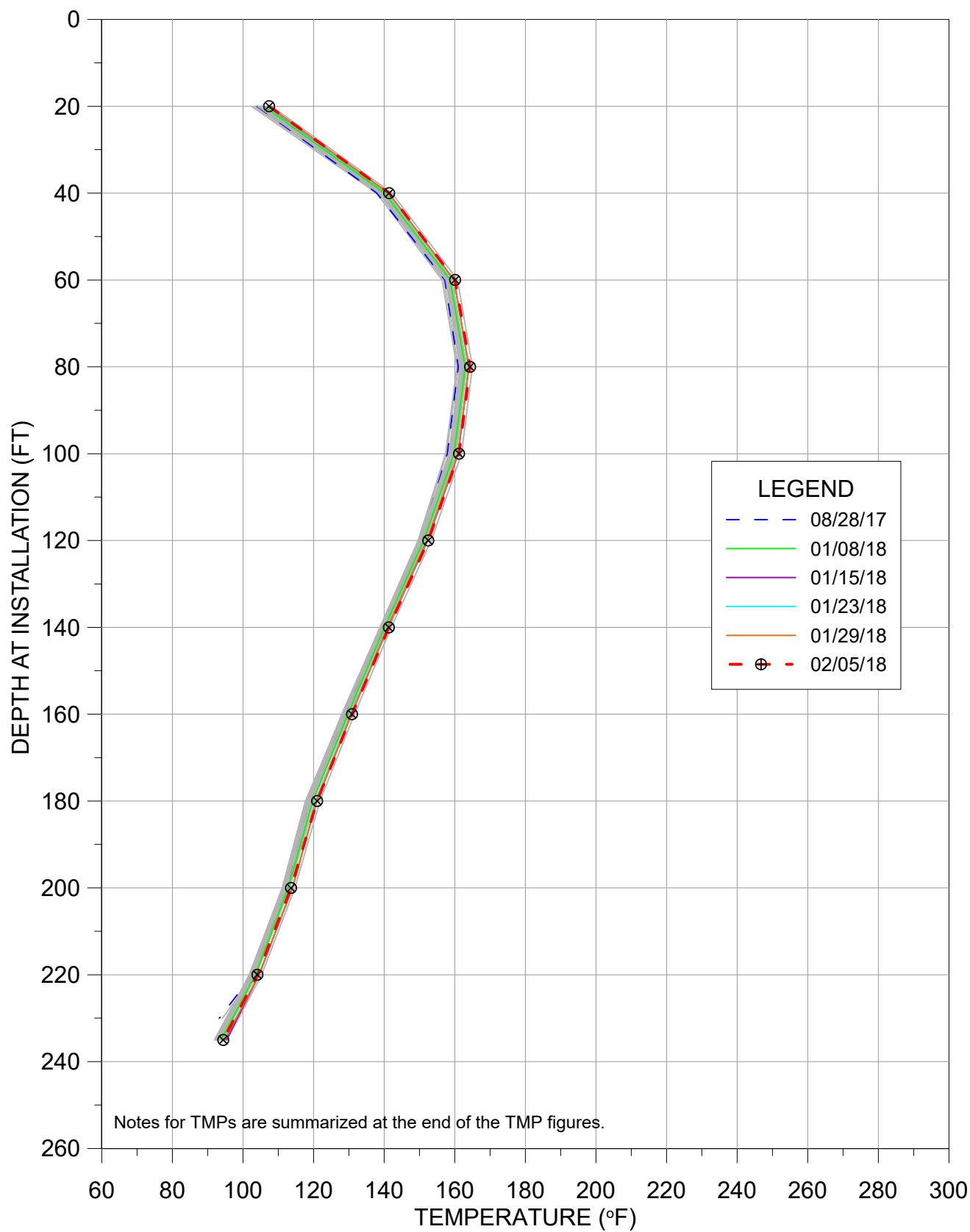
TMP-23



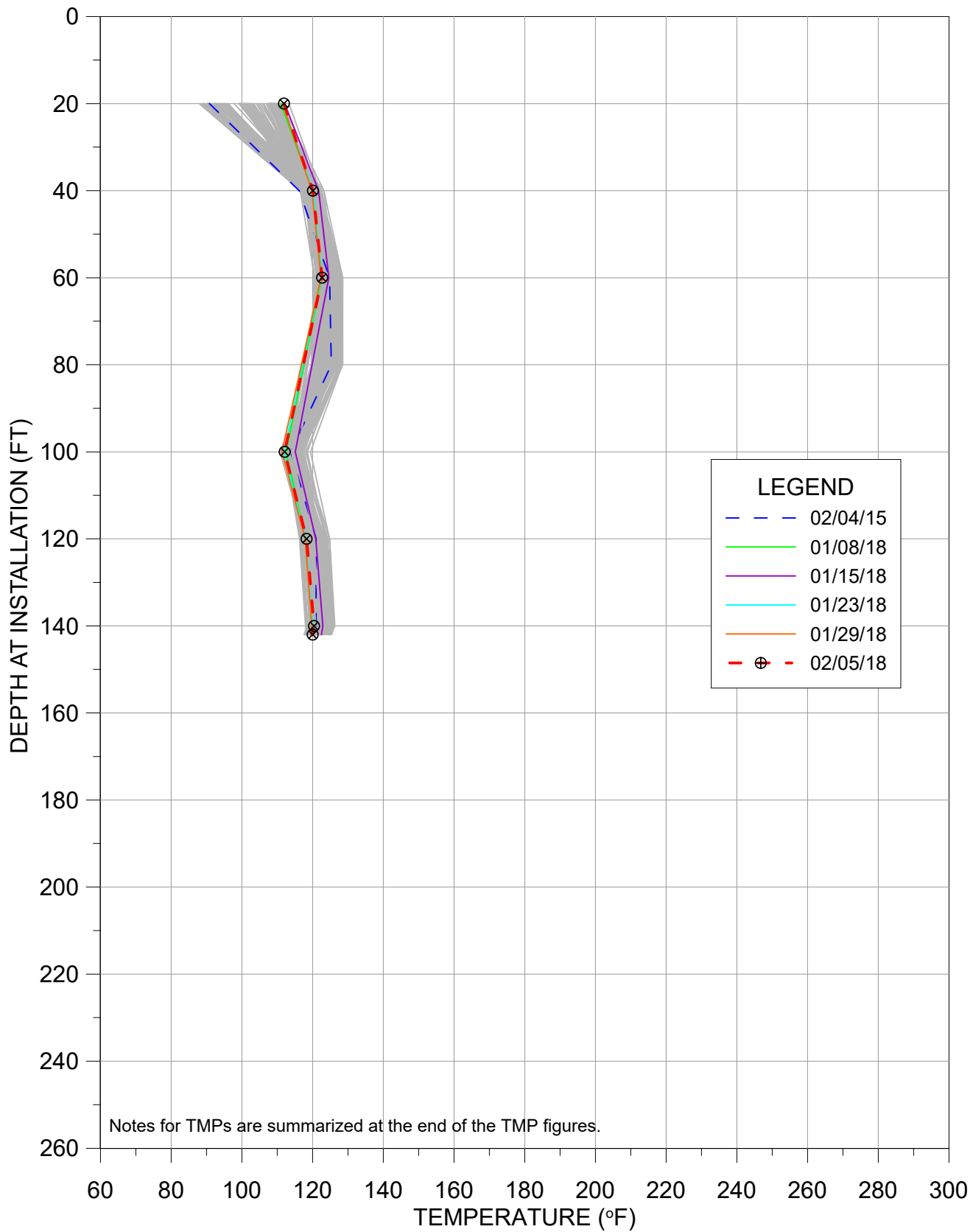
TMP-24



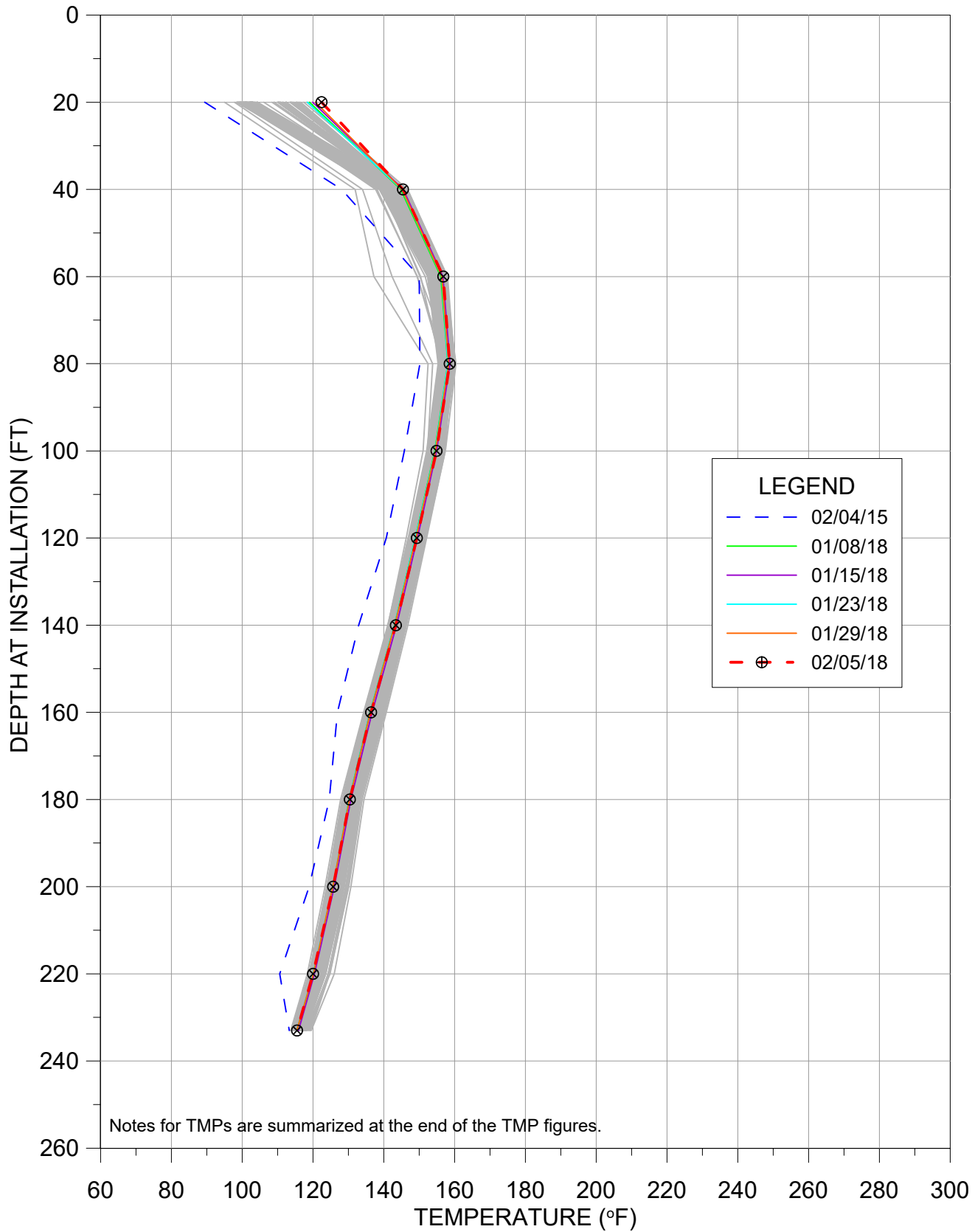
TMP-25R



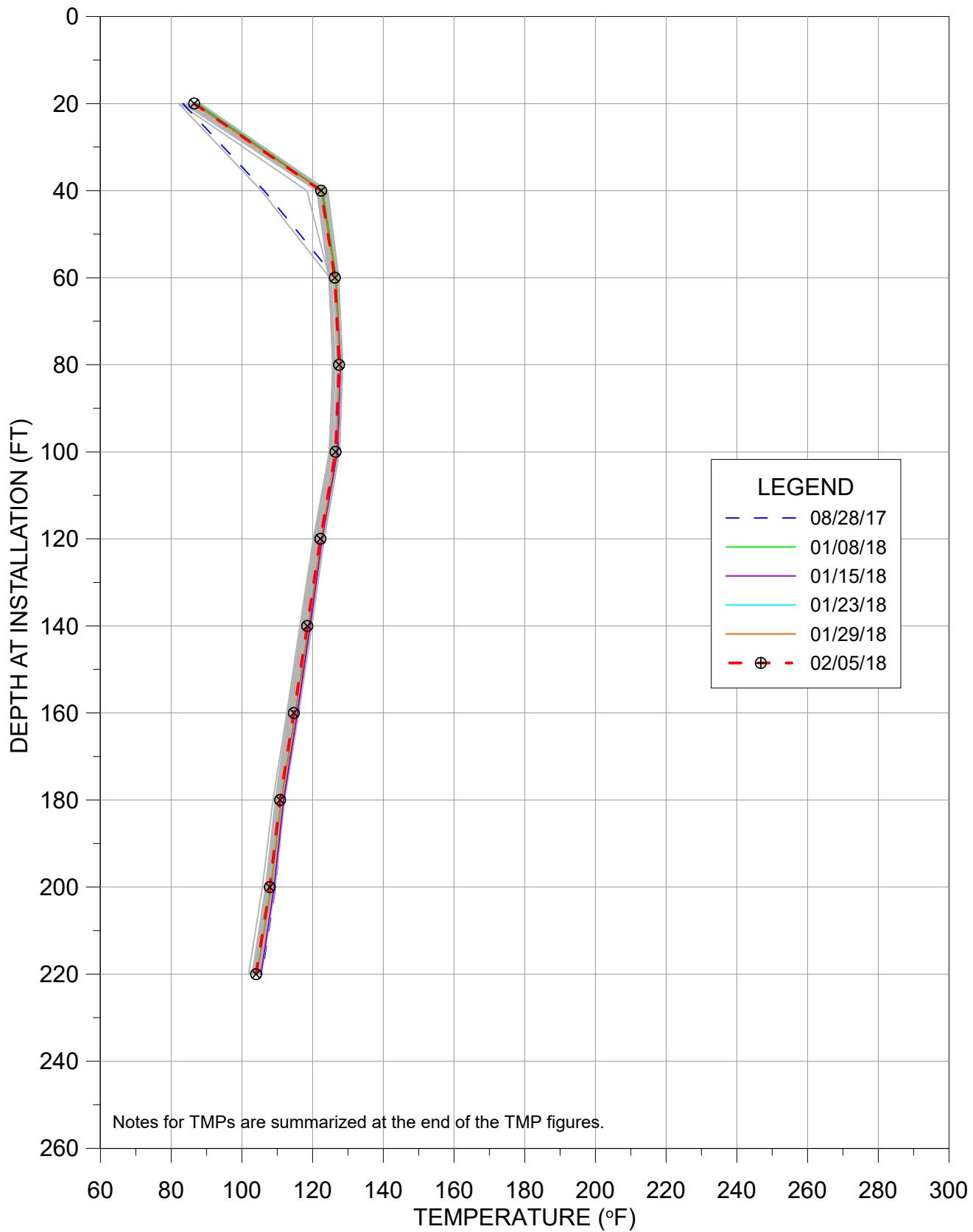
TMP-26



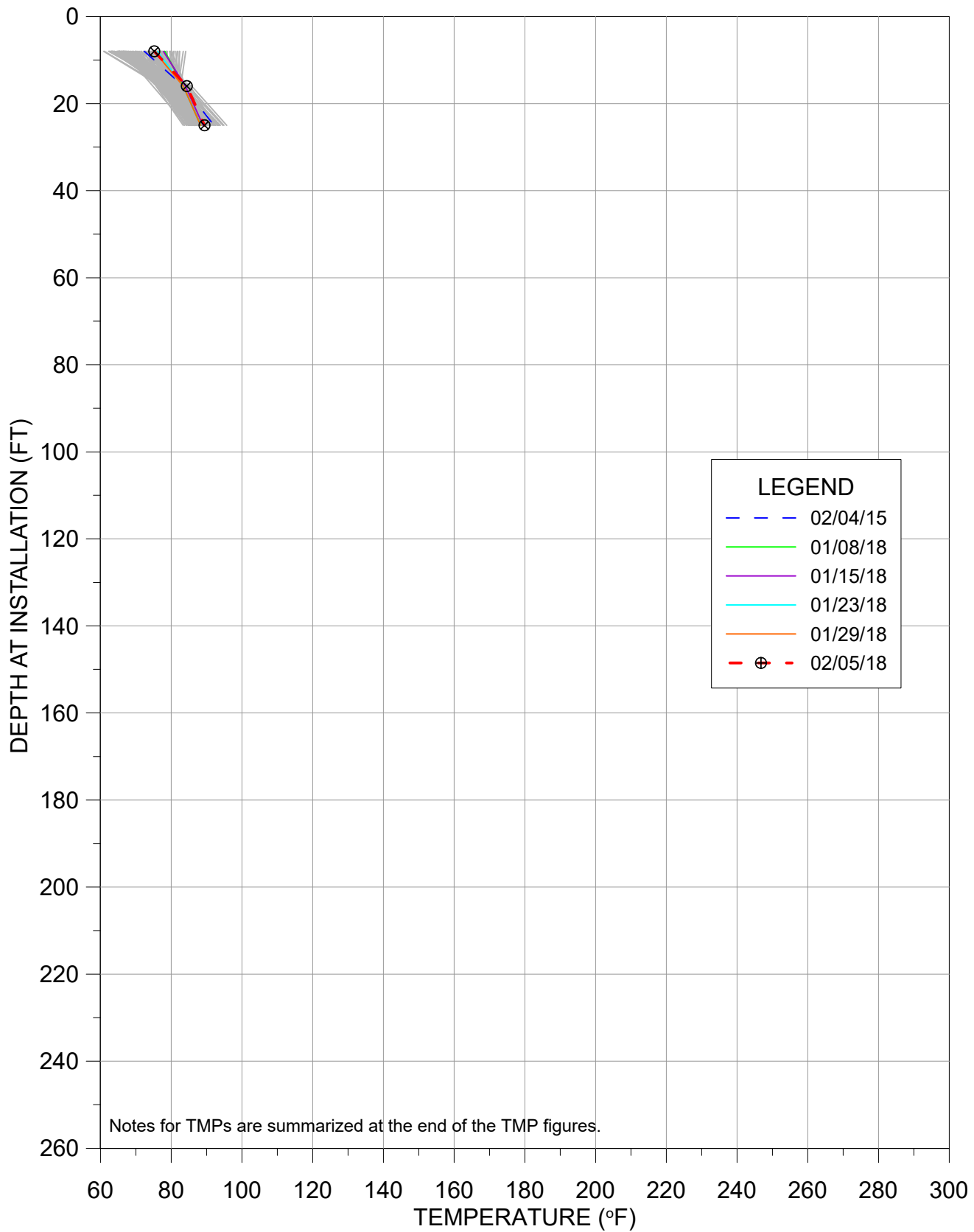
TMP-27



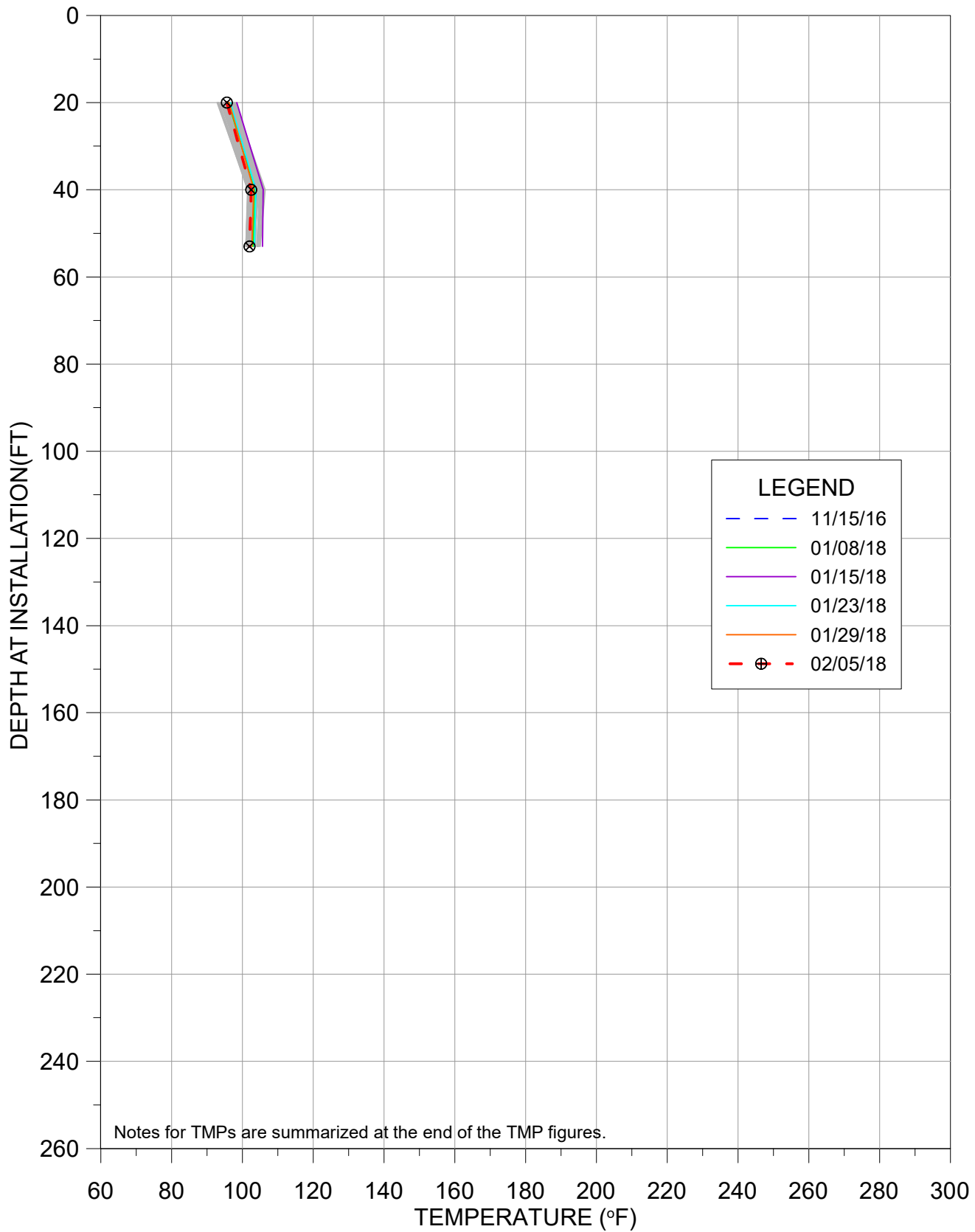
TMP-28R



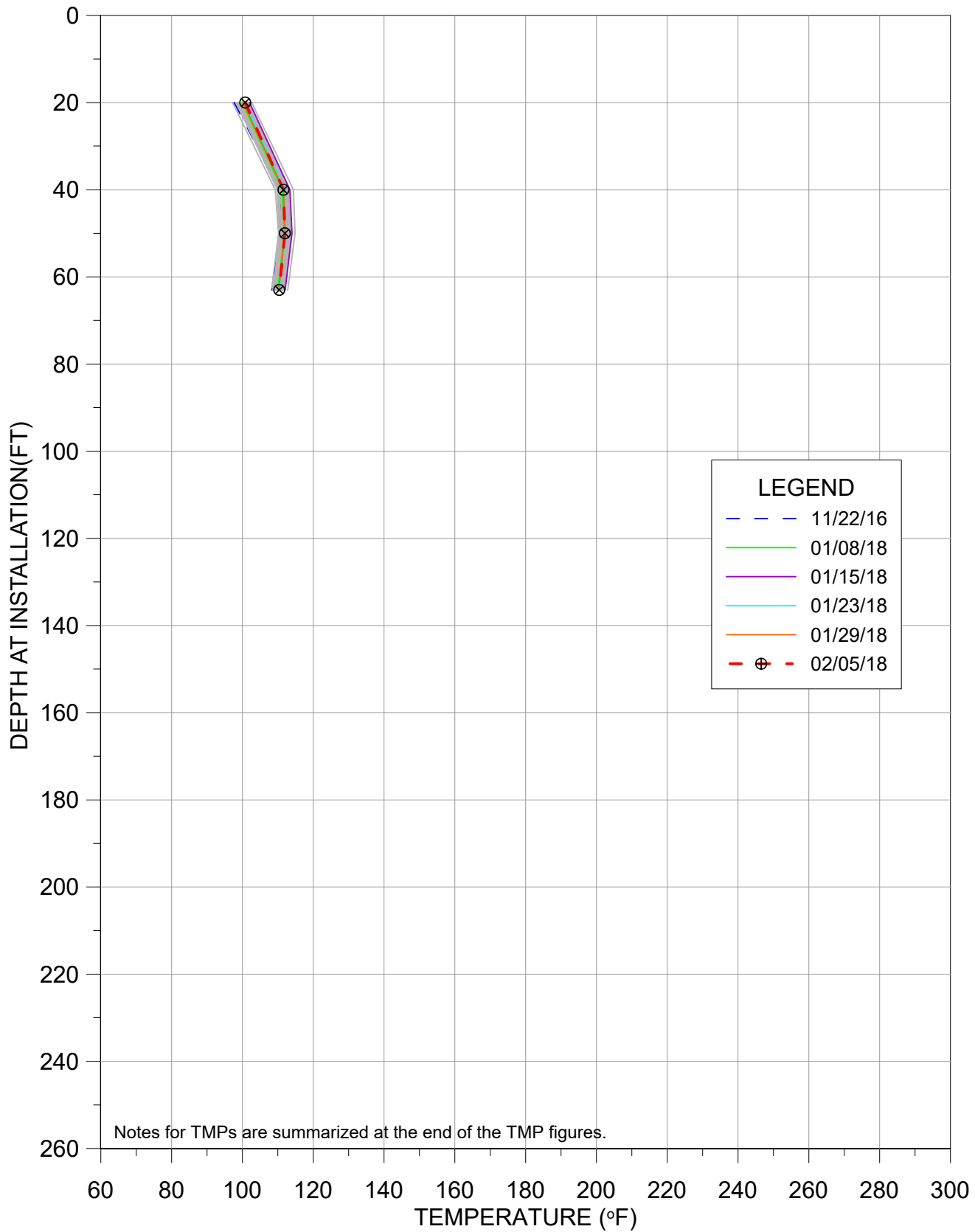
TMP-29



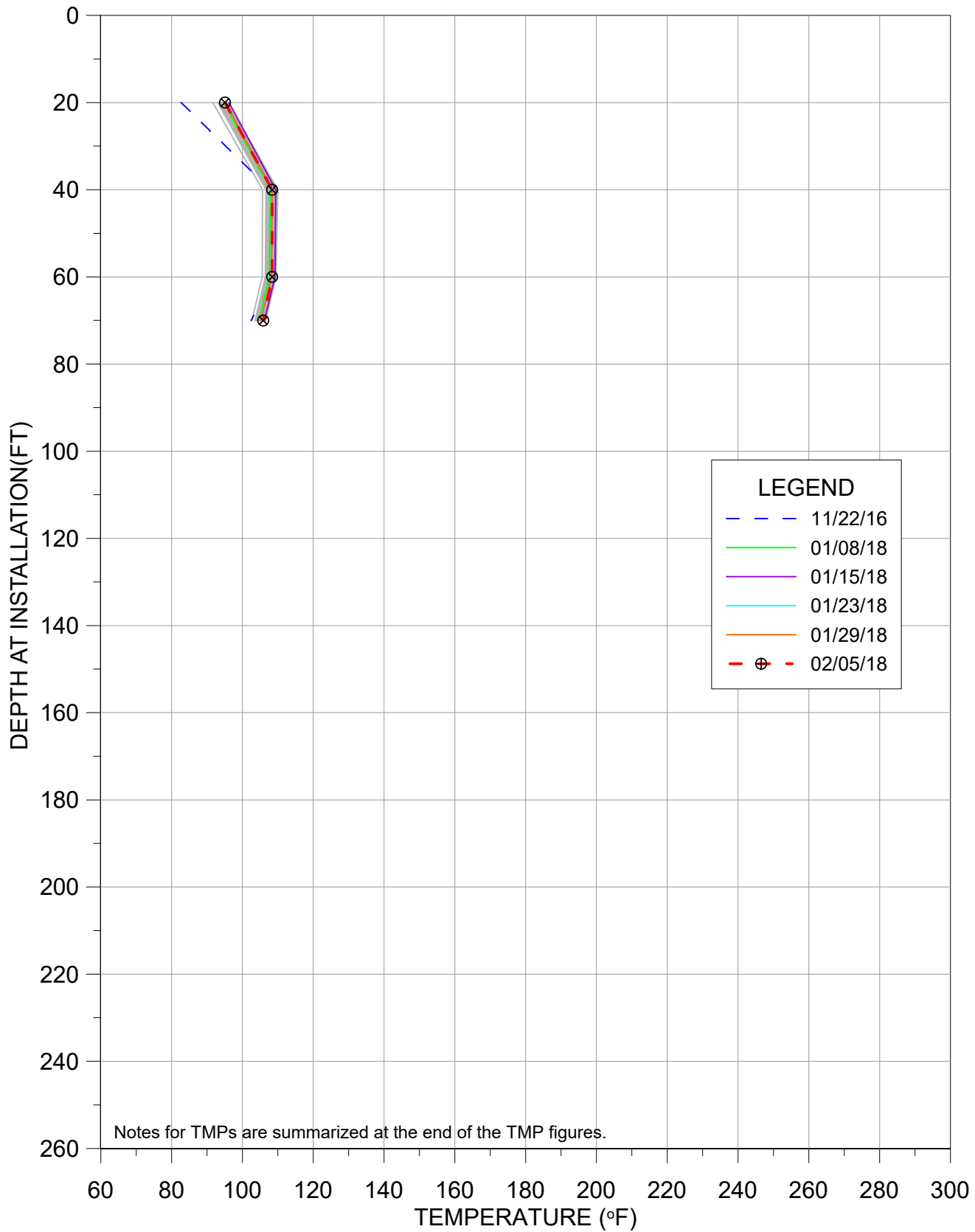
TMP-33



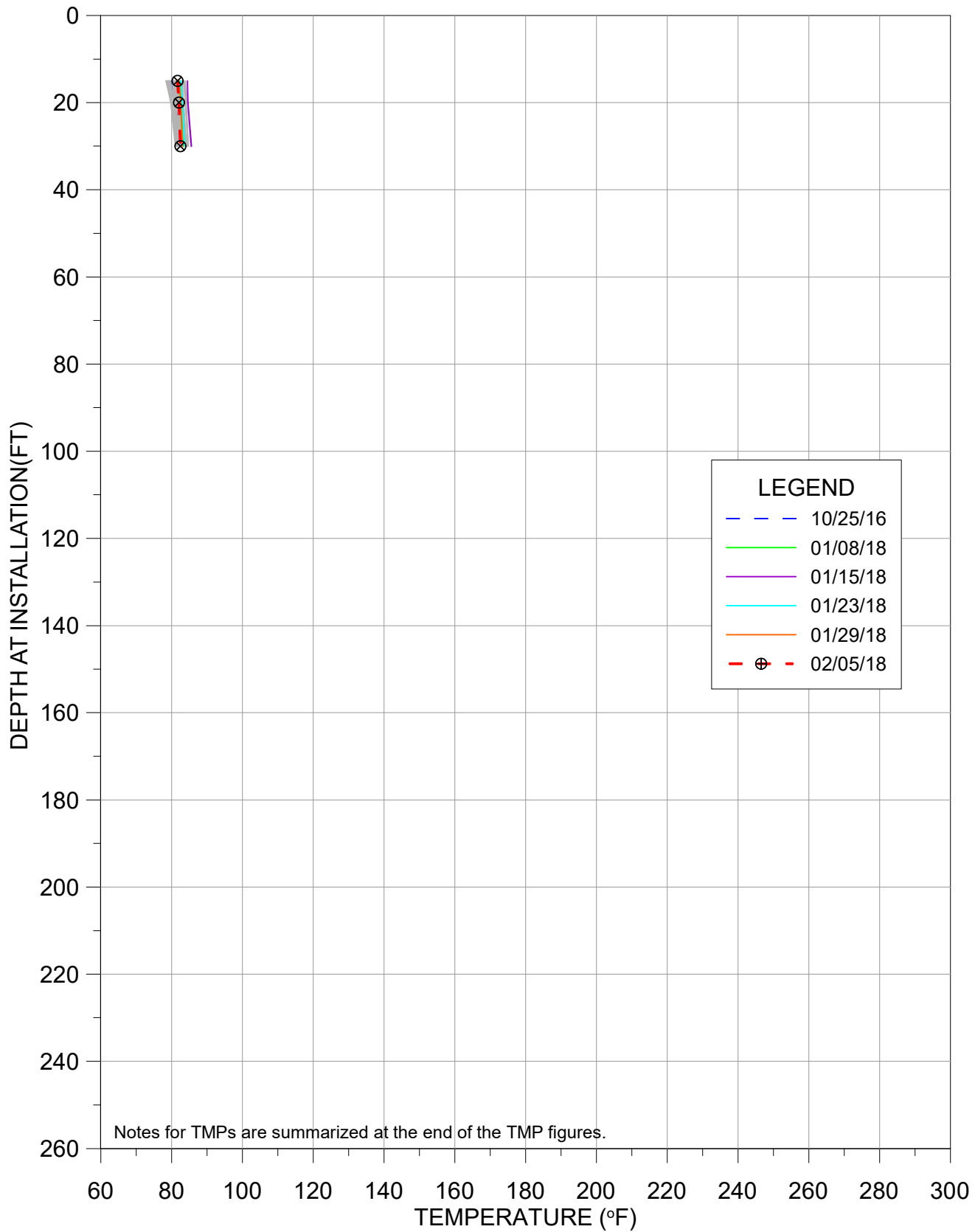
TMP-34



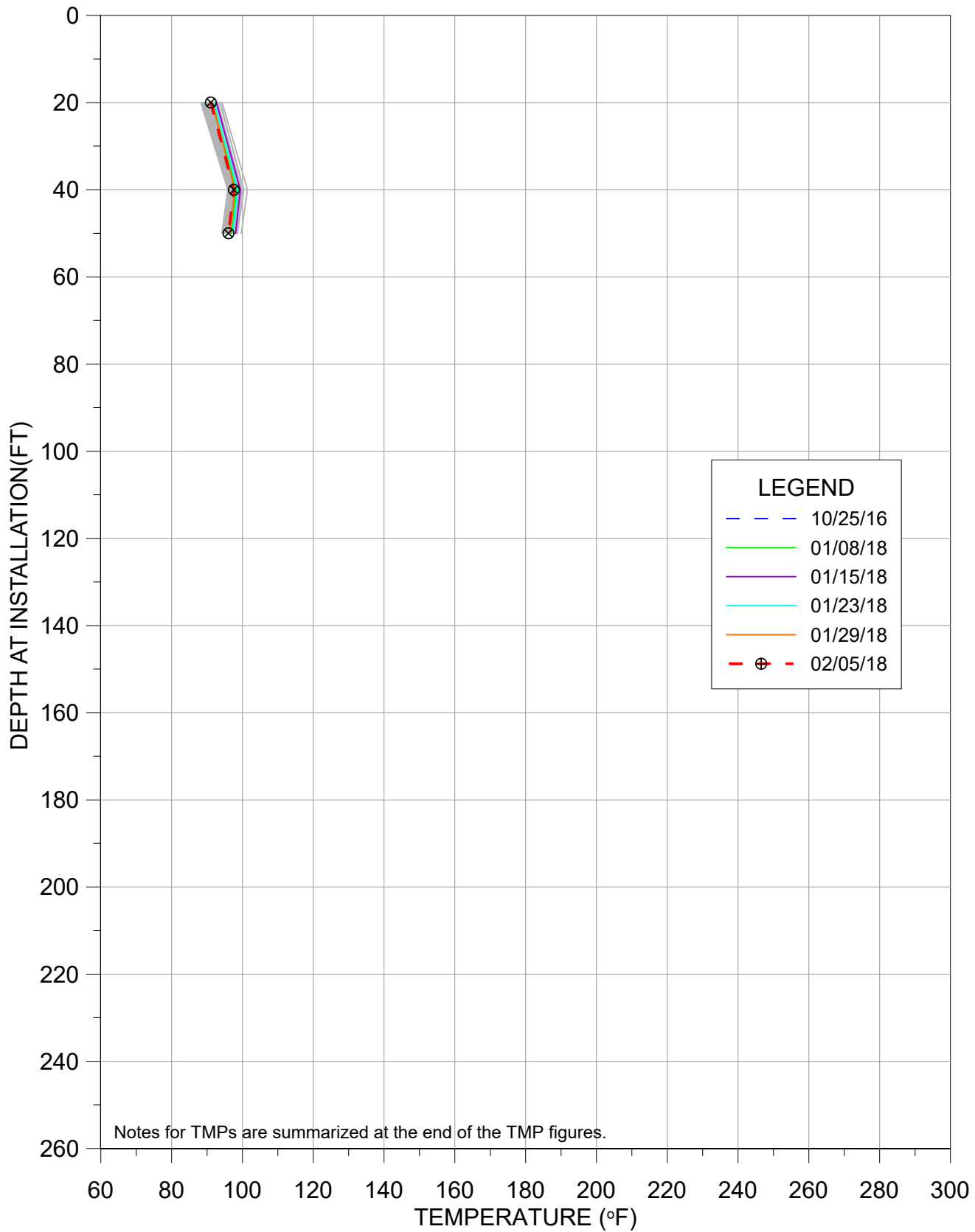
TMP-35



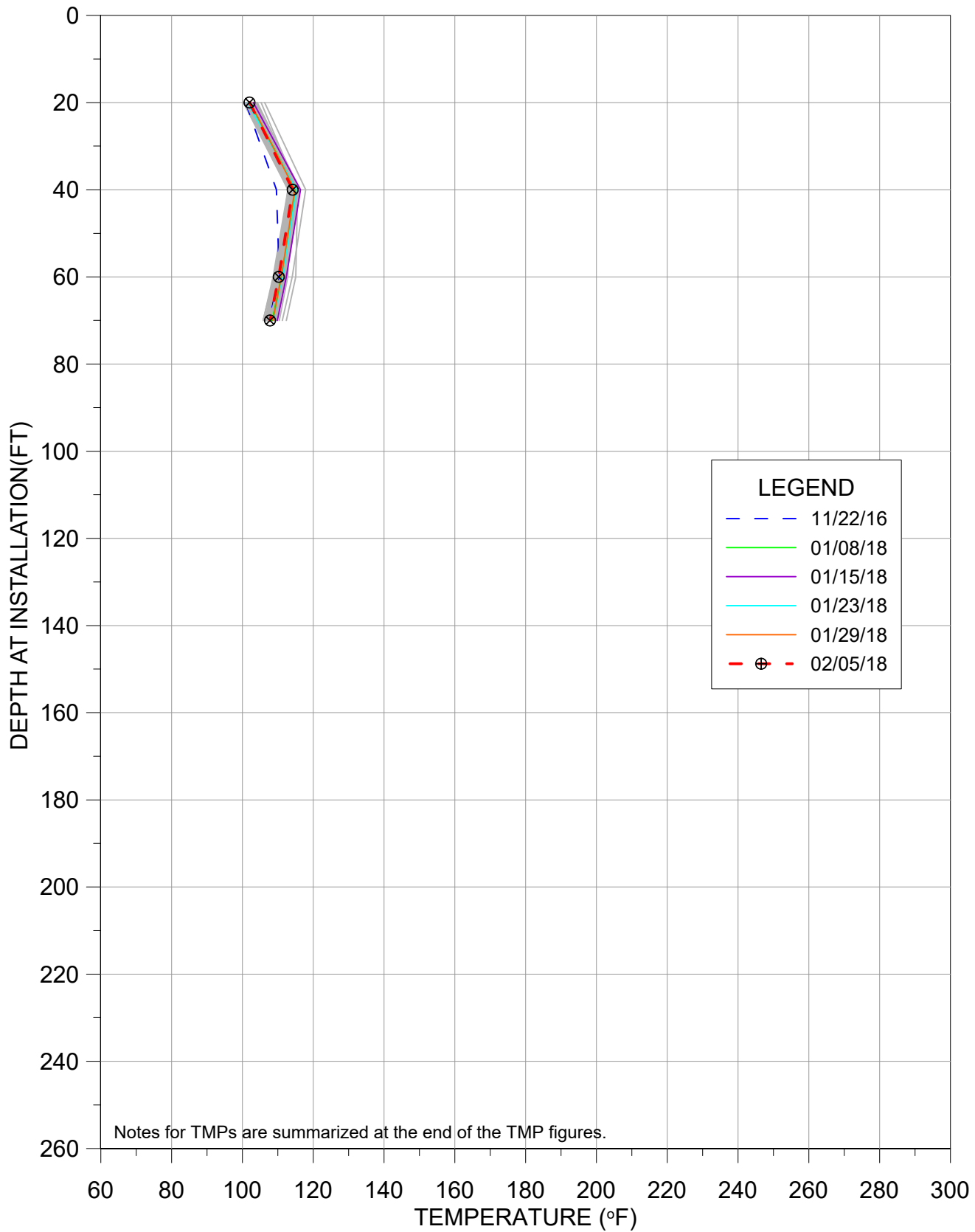
TMP-36



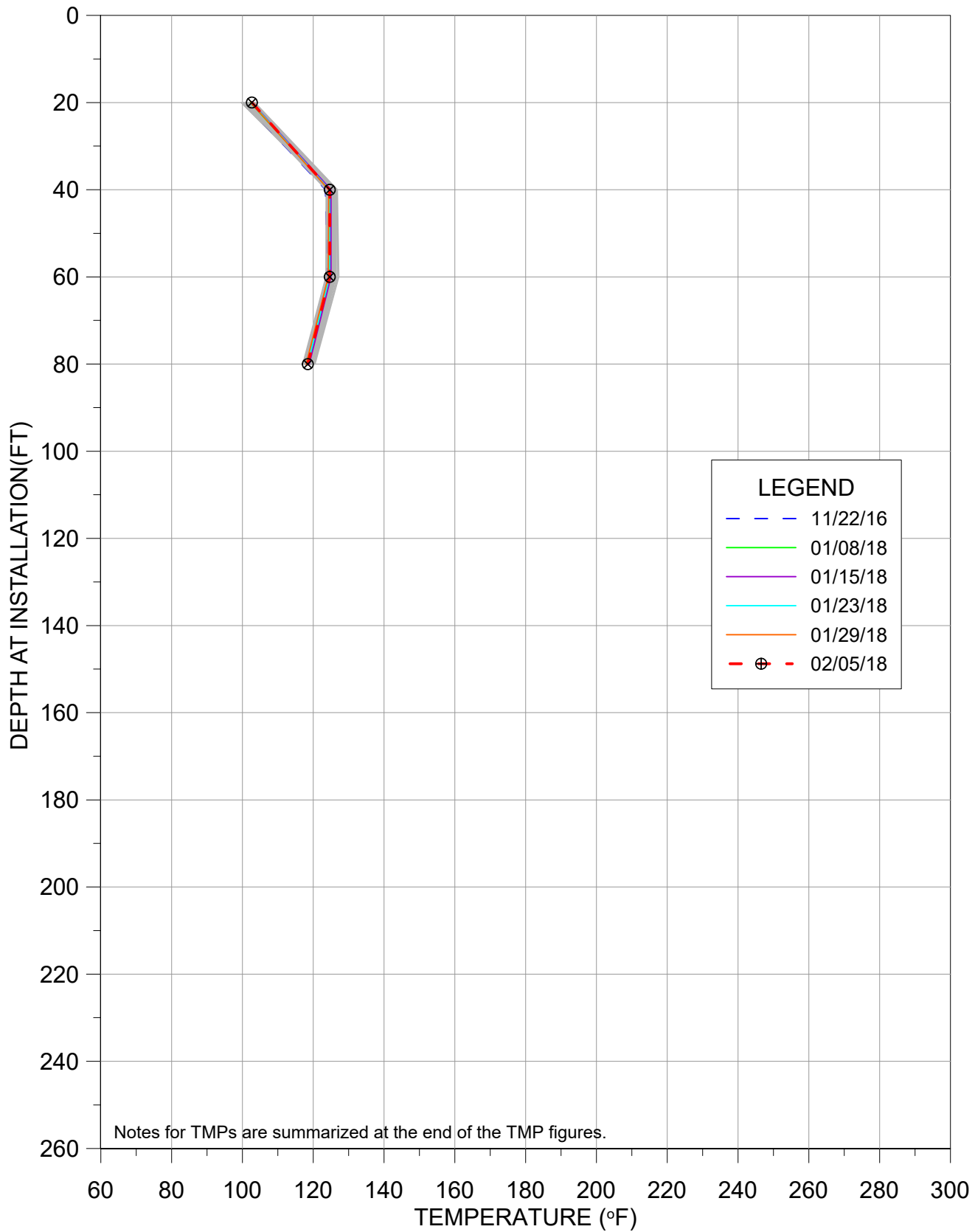
TMP-37



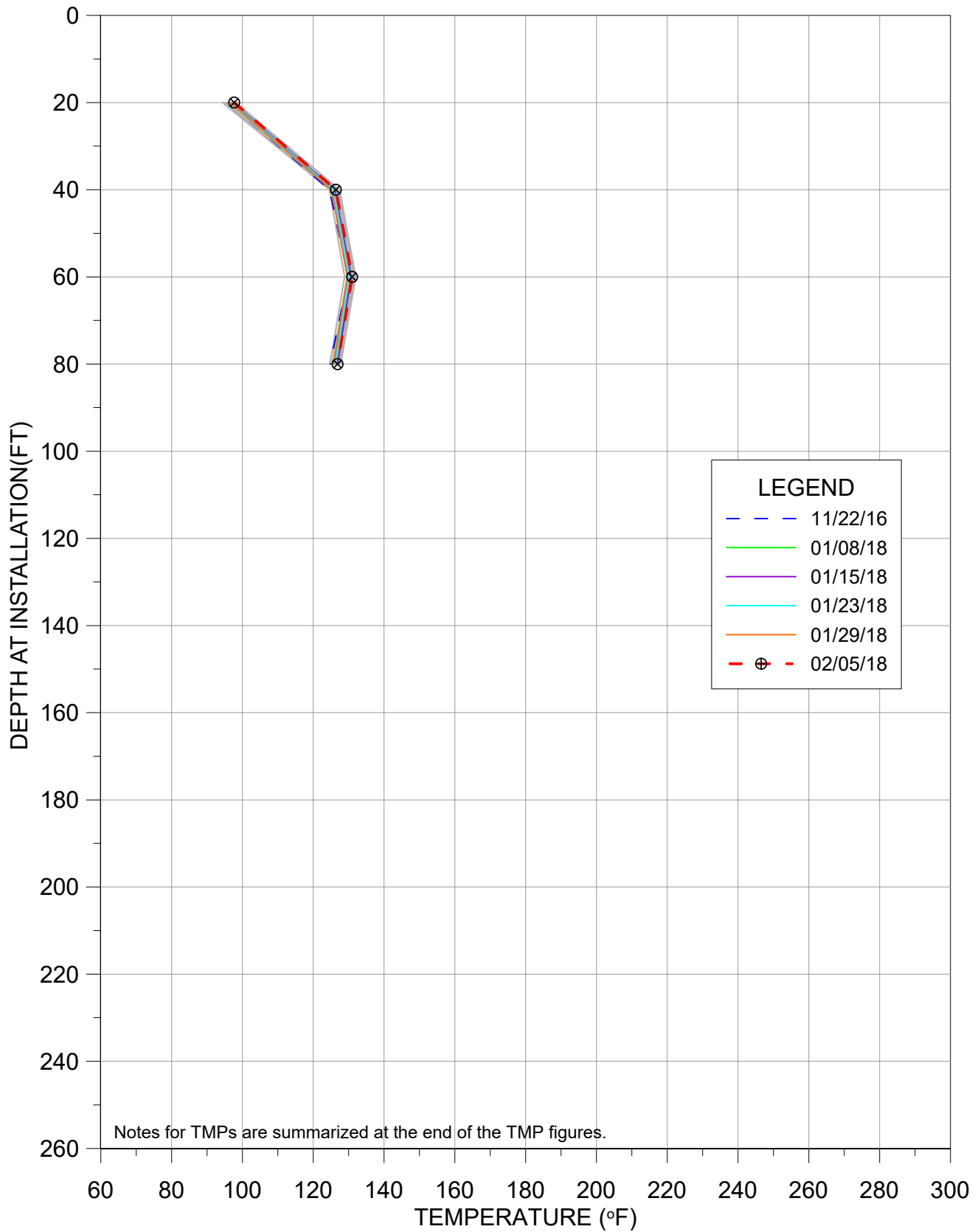
TMP-38



TMP-39

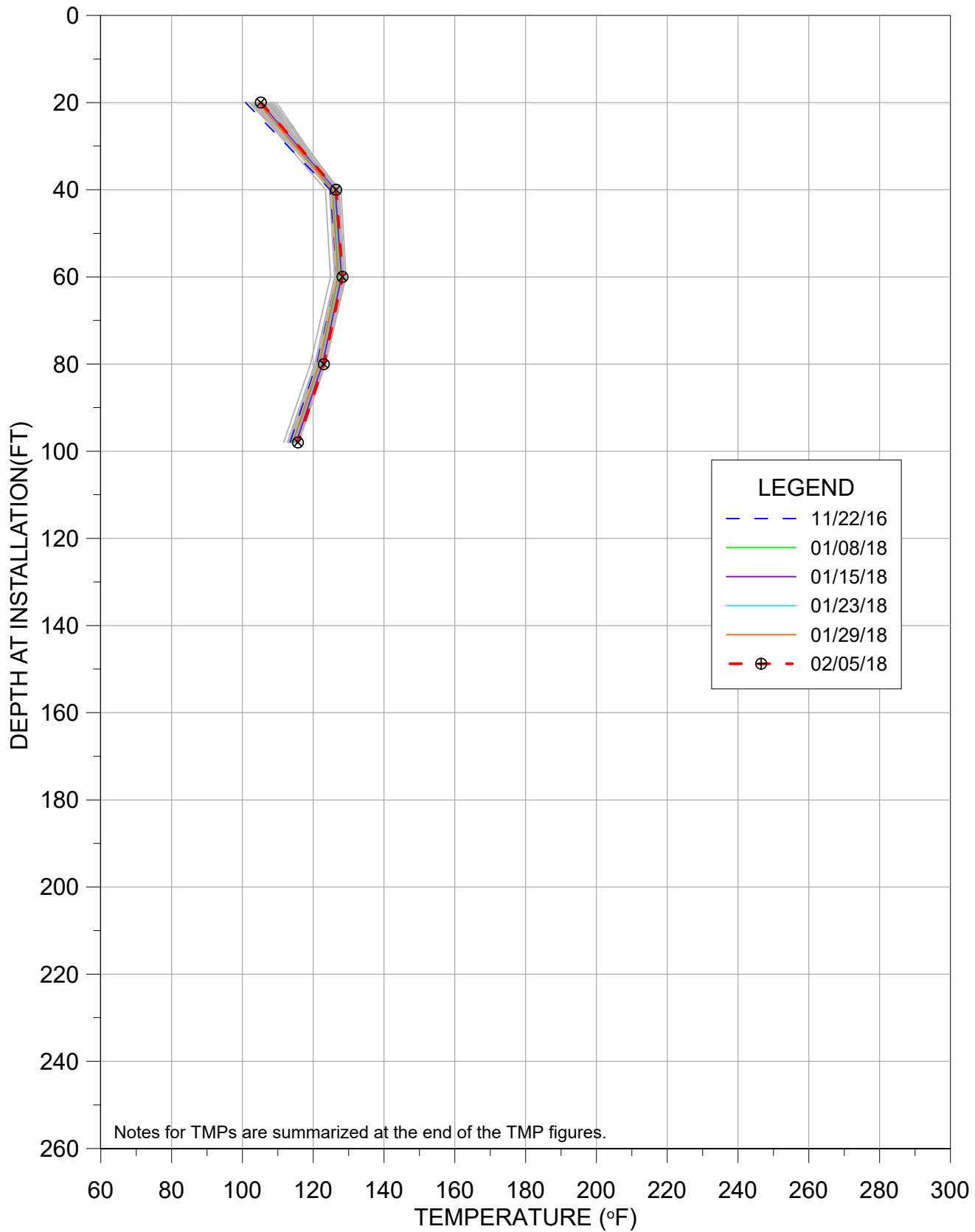


TMP-40

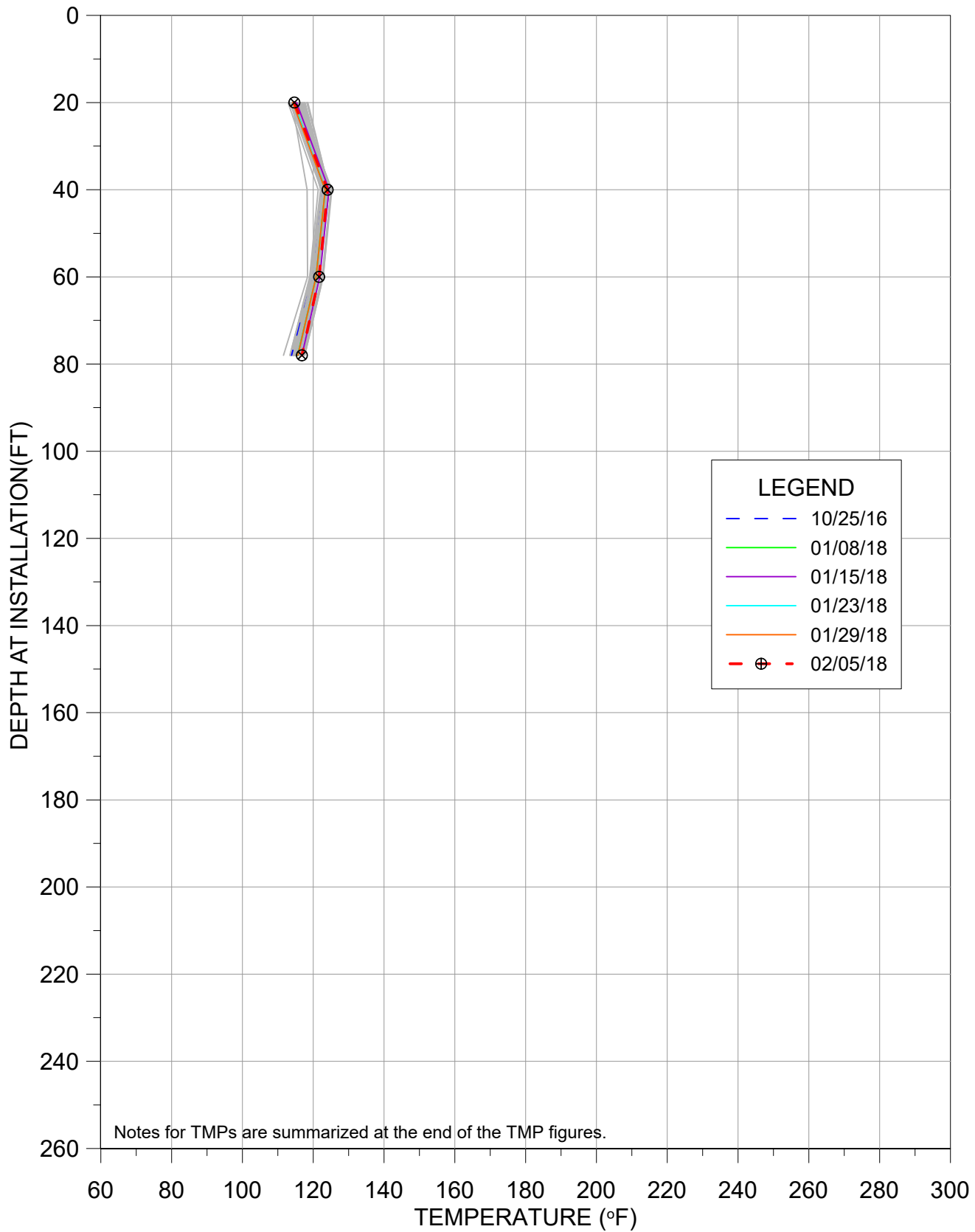


TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

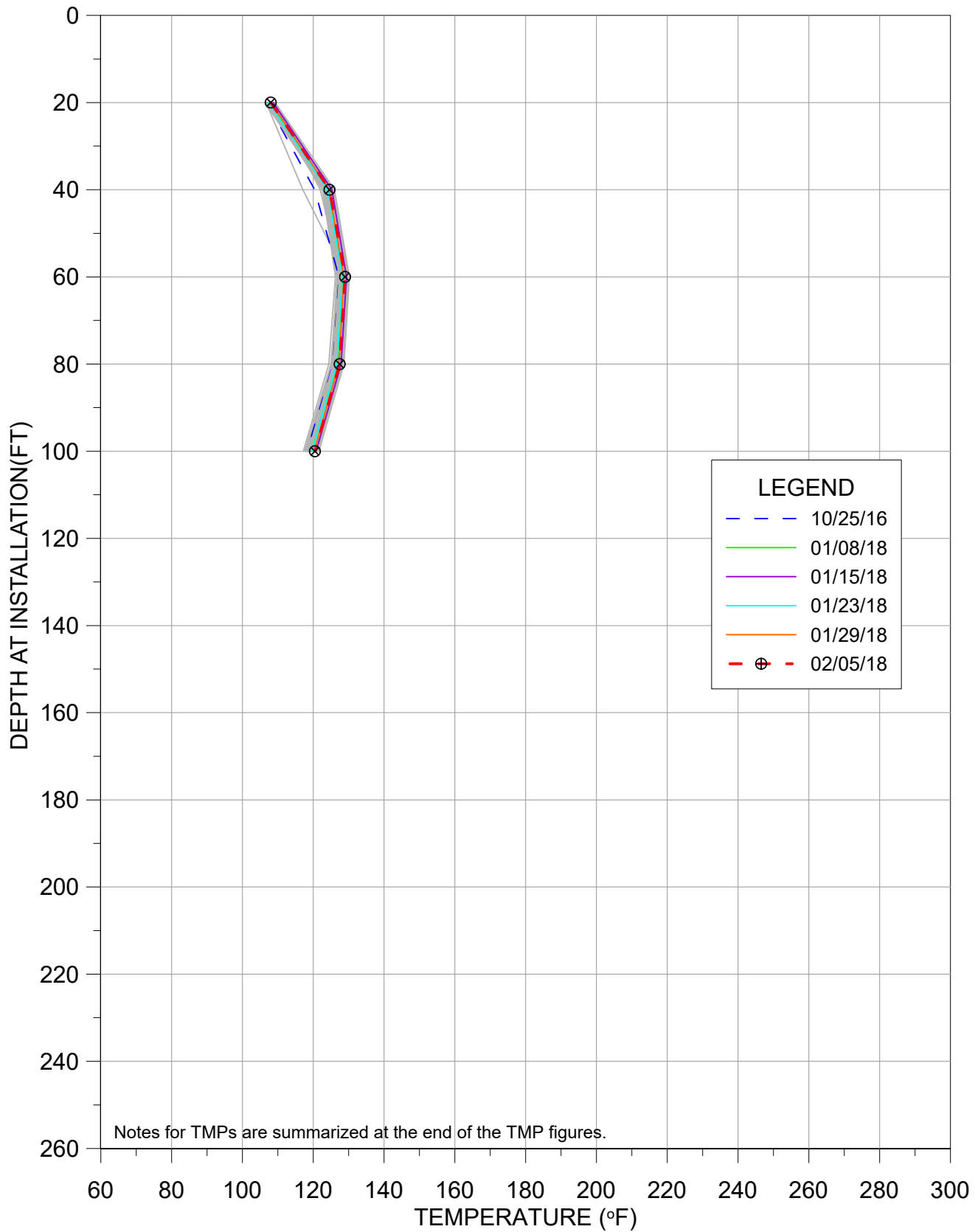
TMP-41



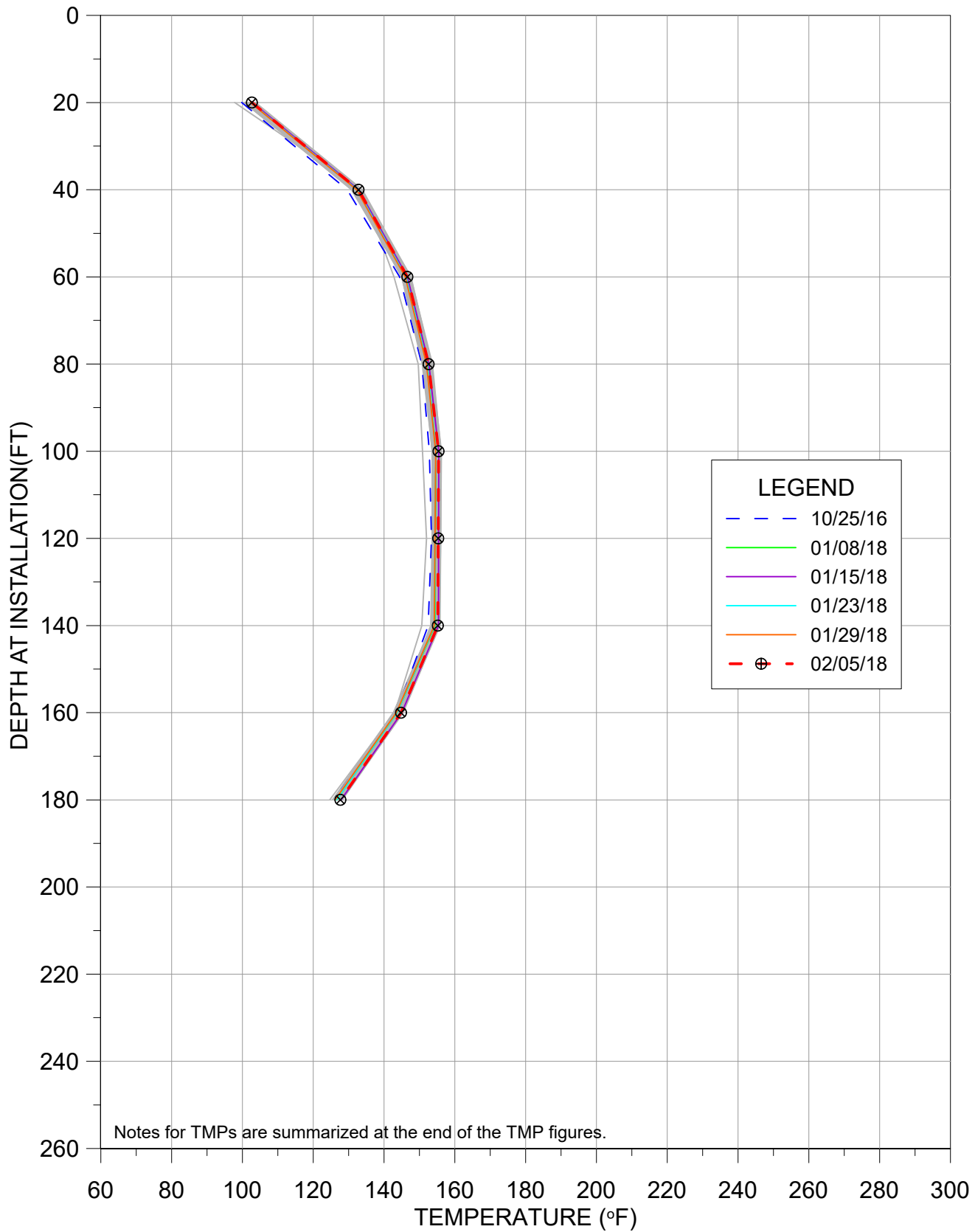
TMP-42



TMP-43

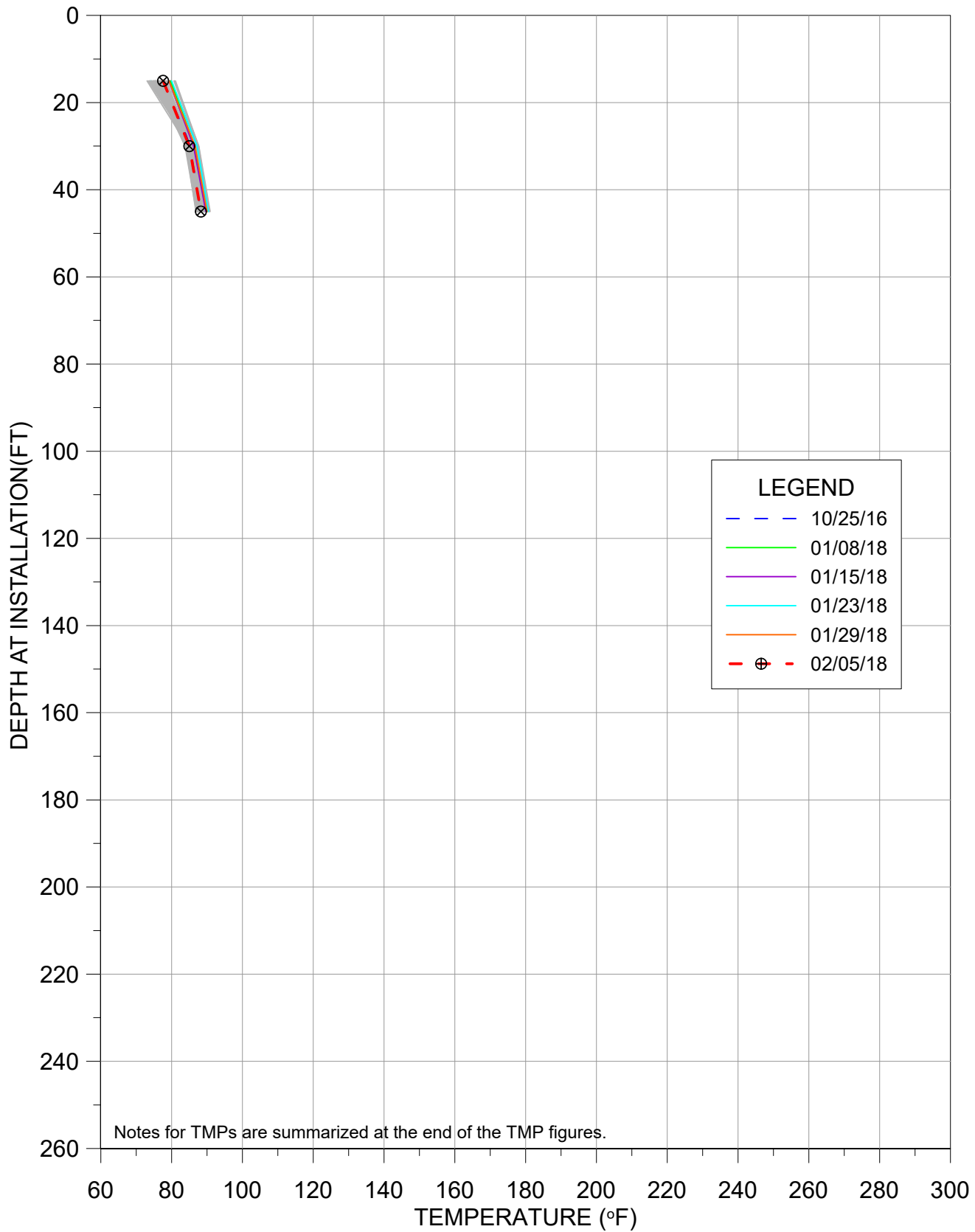


TMP-44

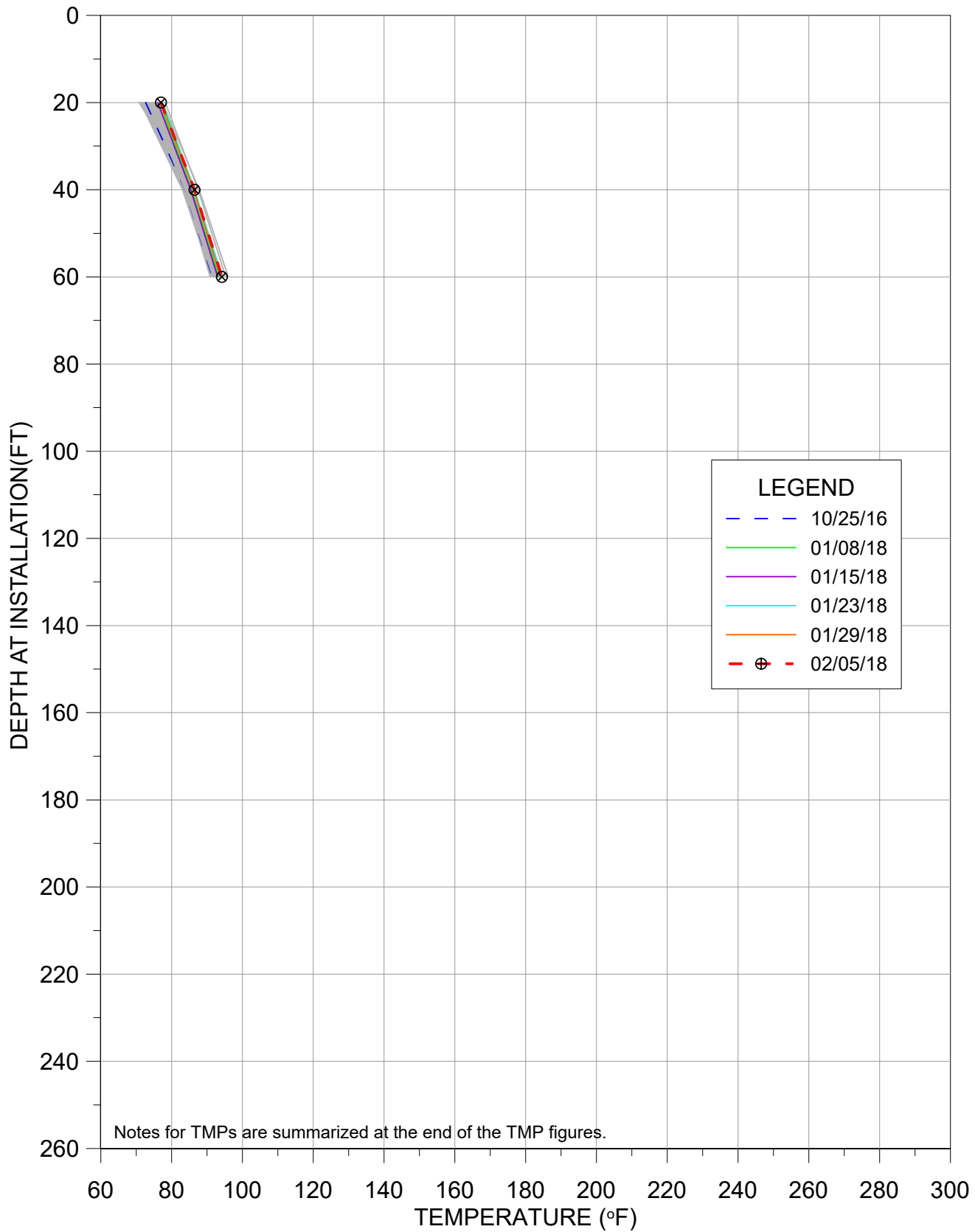


TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

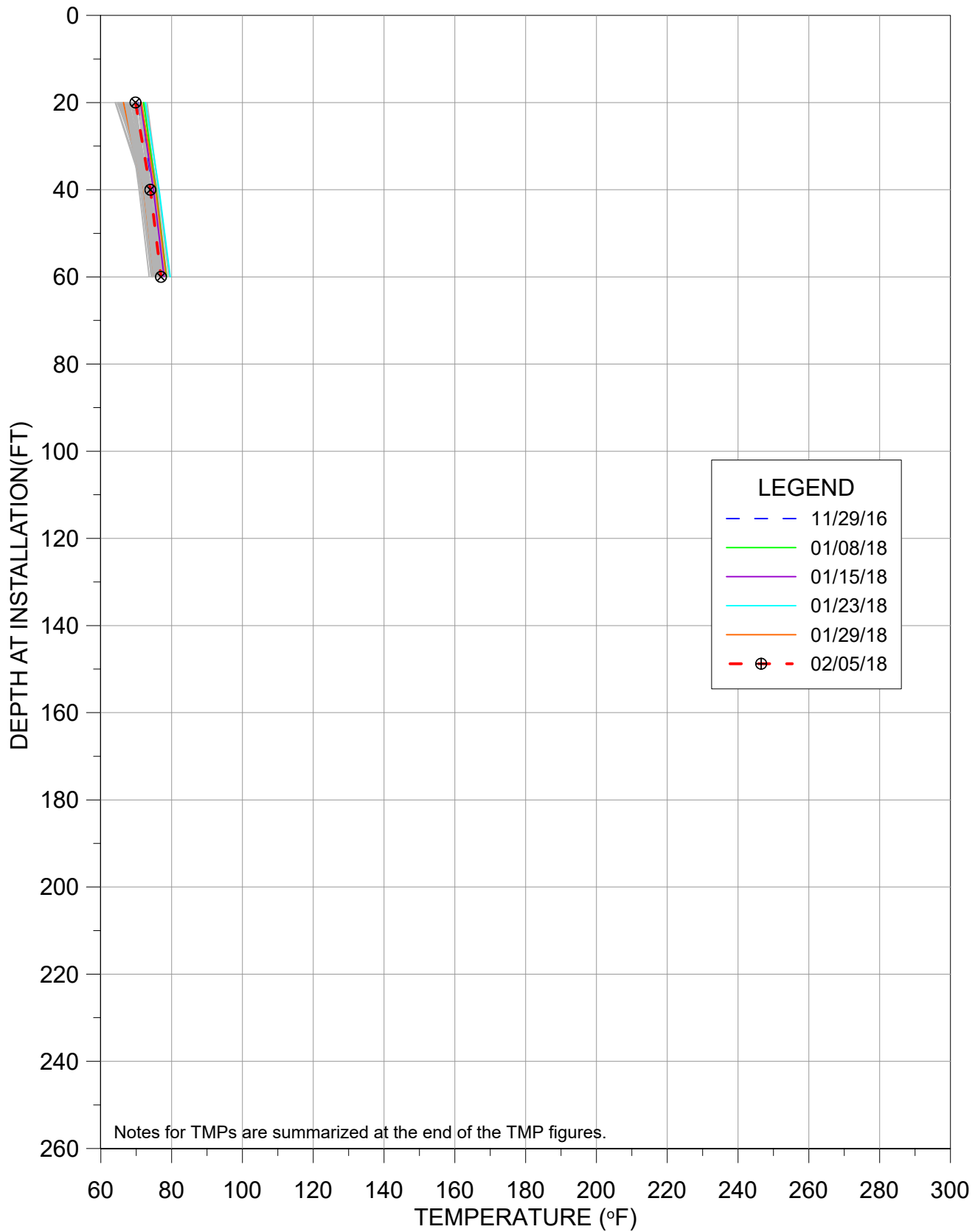
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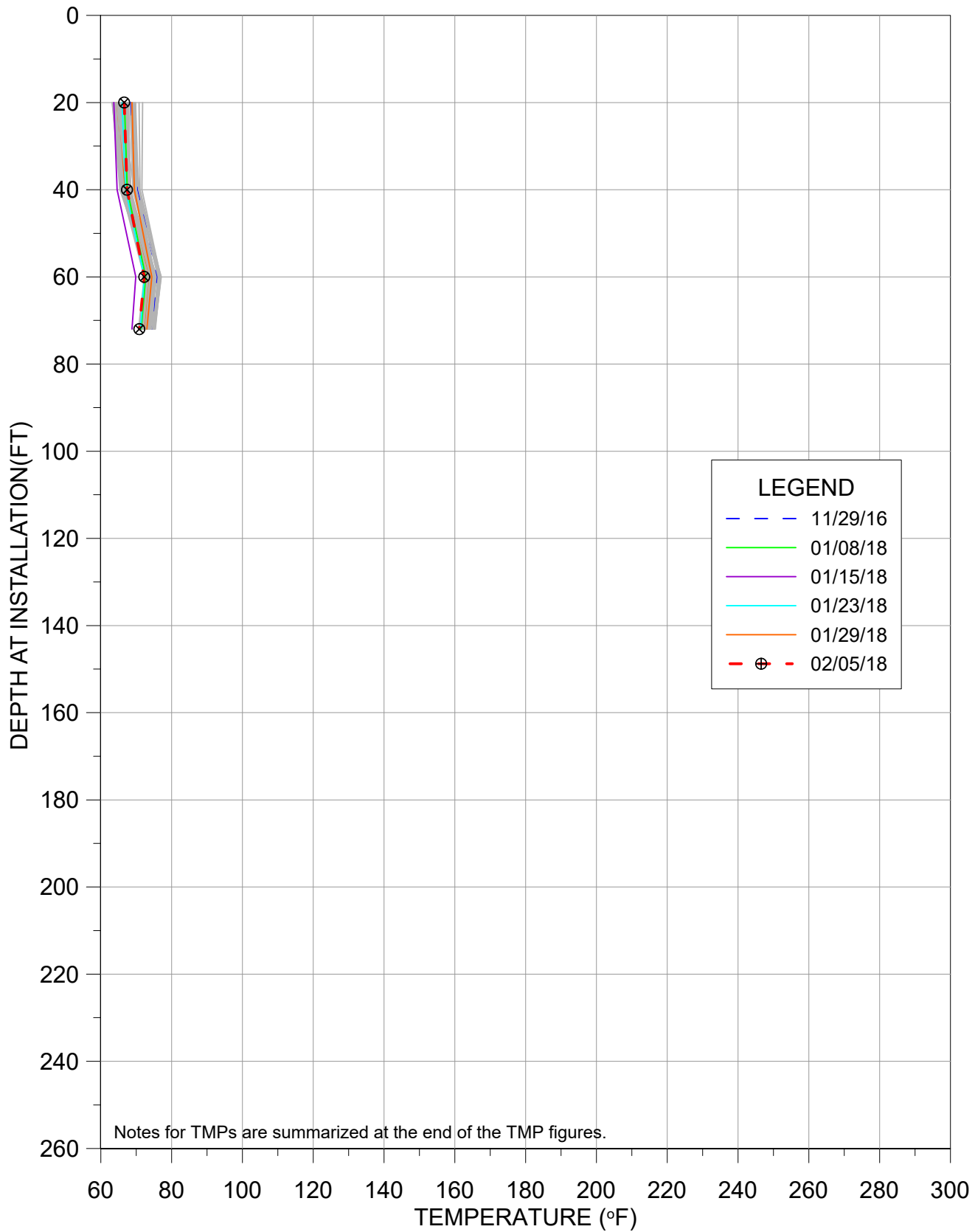
TMP-46



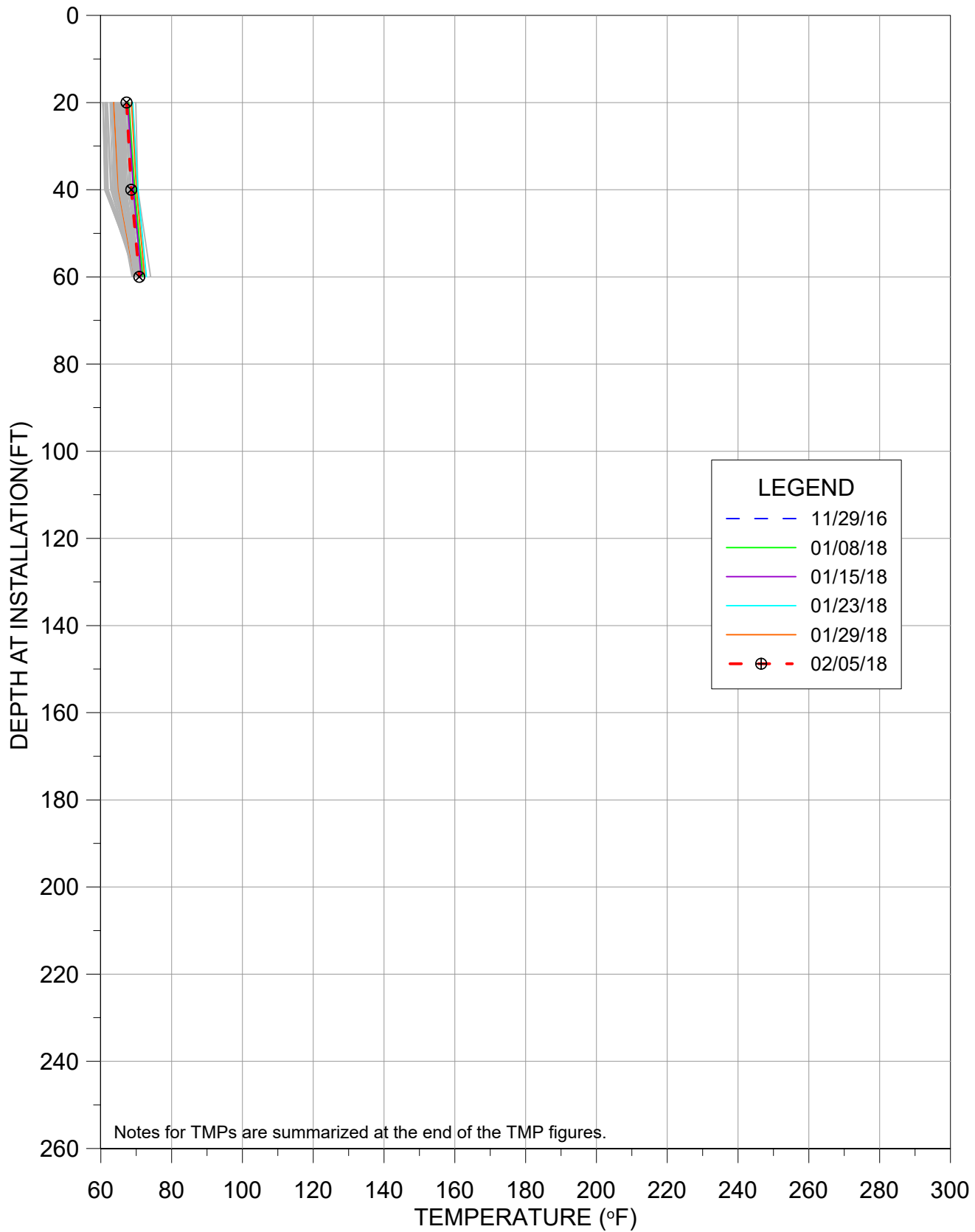
TMP-47



TMP-48

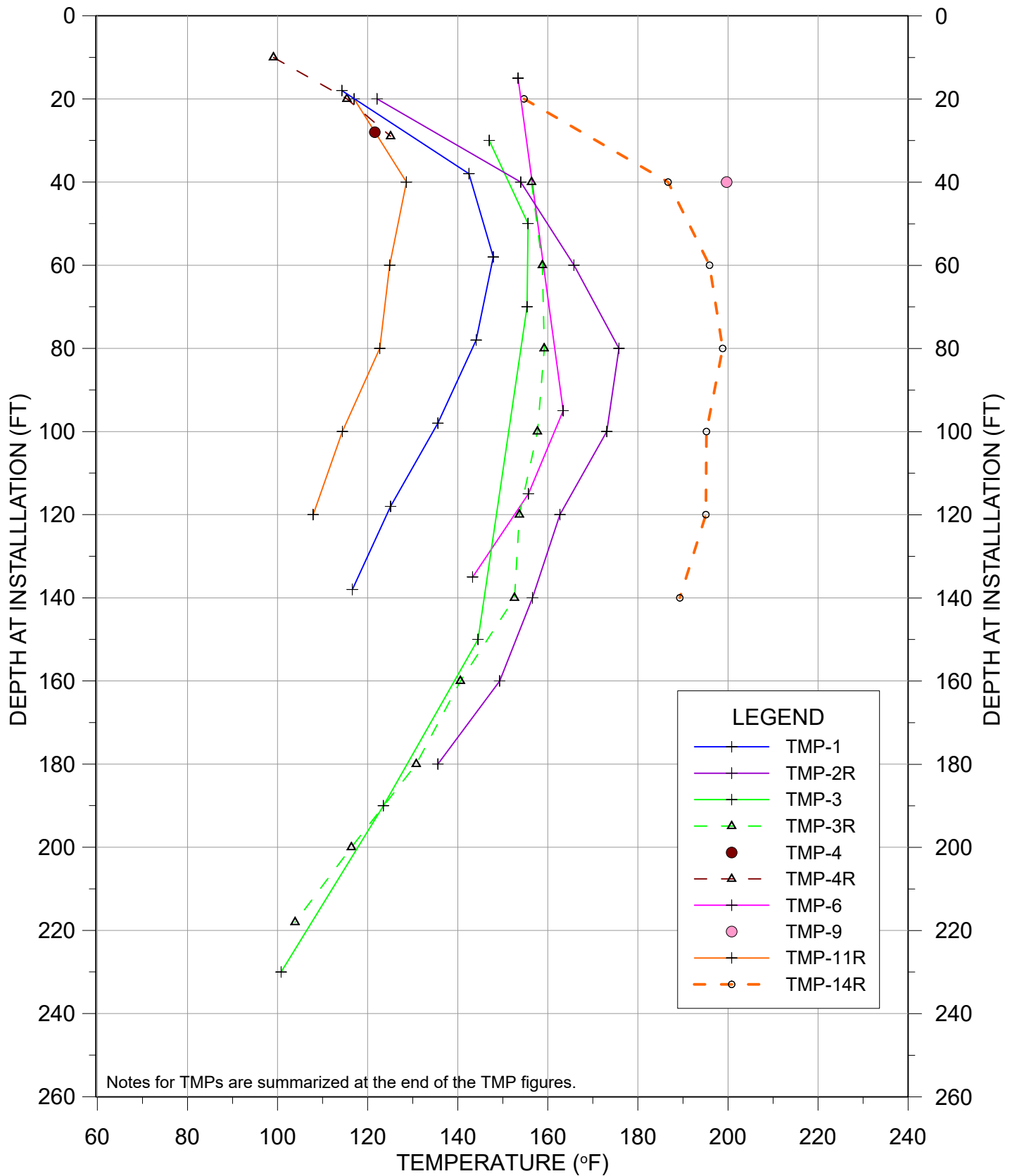


TMP-49



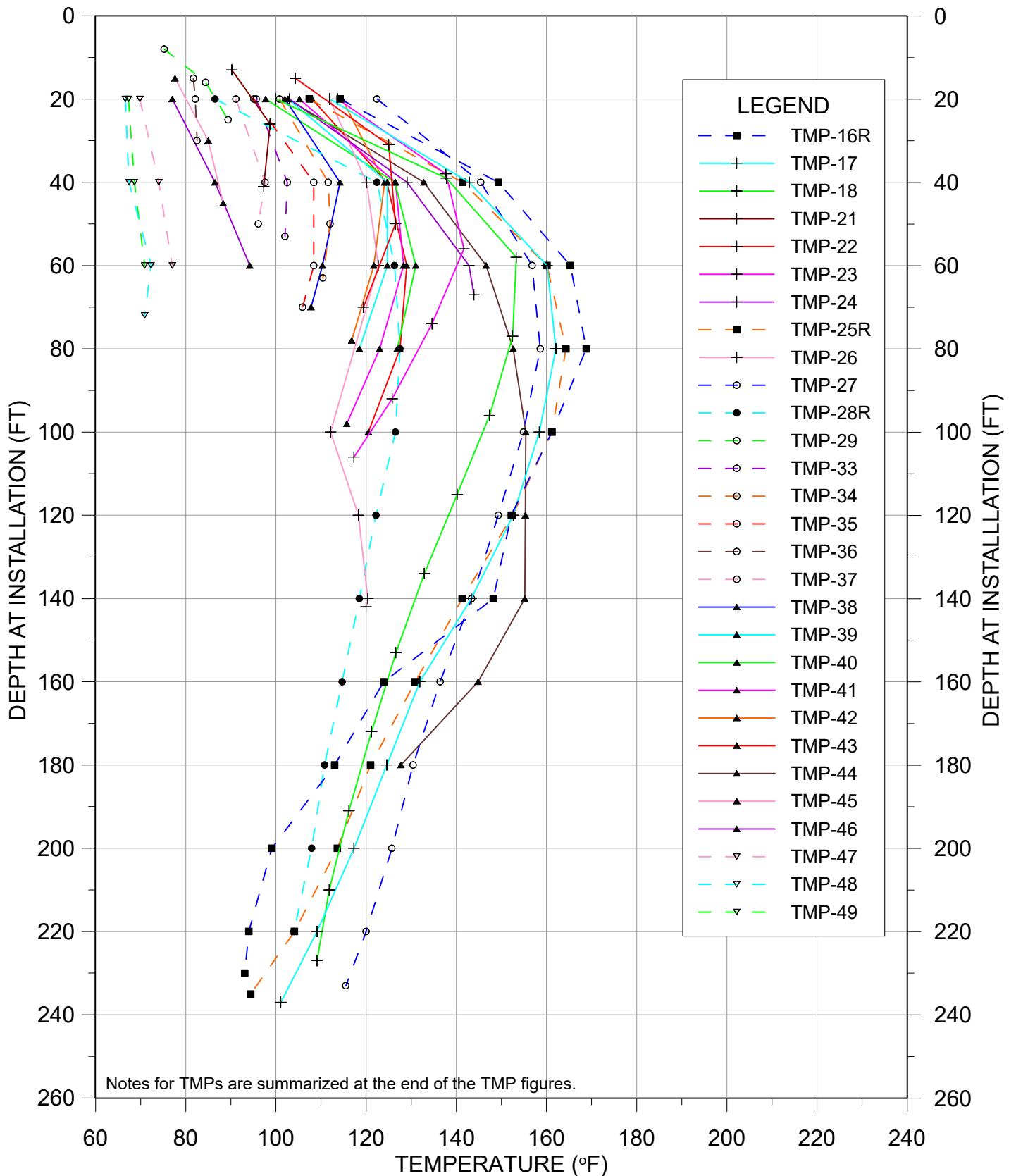
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

2/5/2018

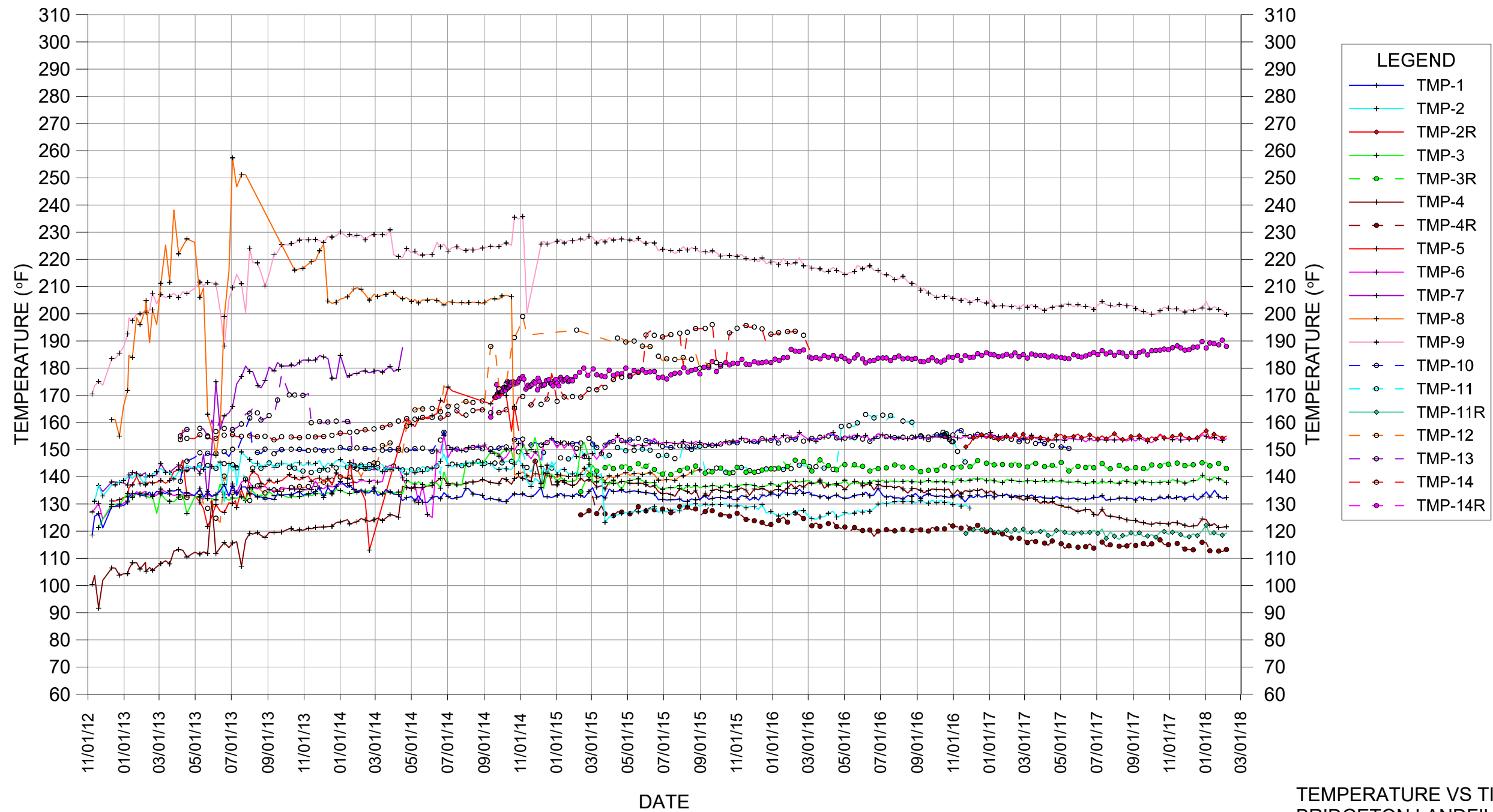


TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

2/5/2018 - NORTH QUARRY

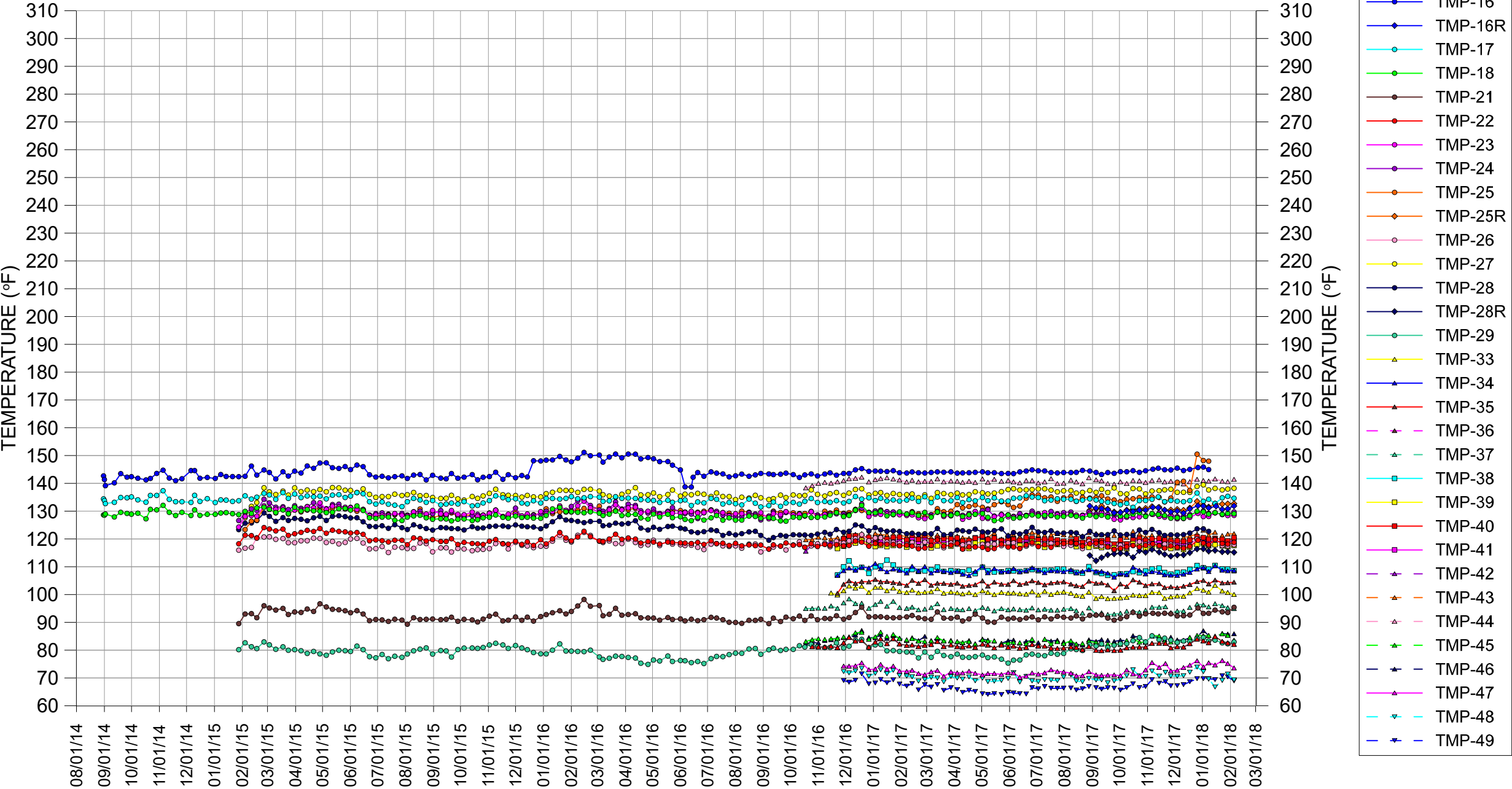


AVERAGE TEMPERATURES



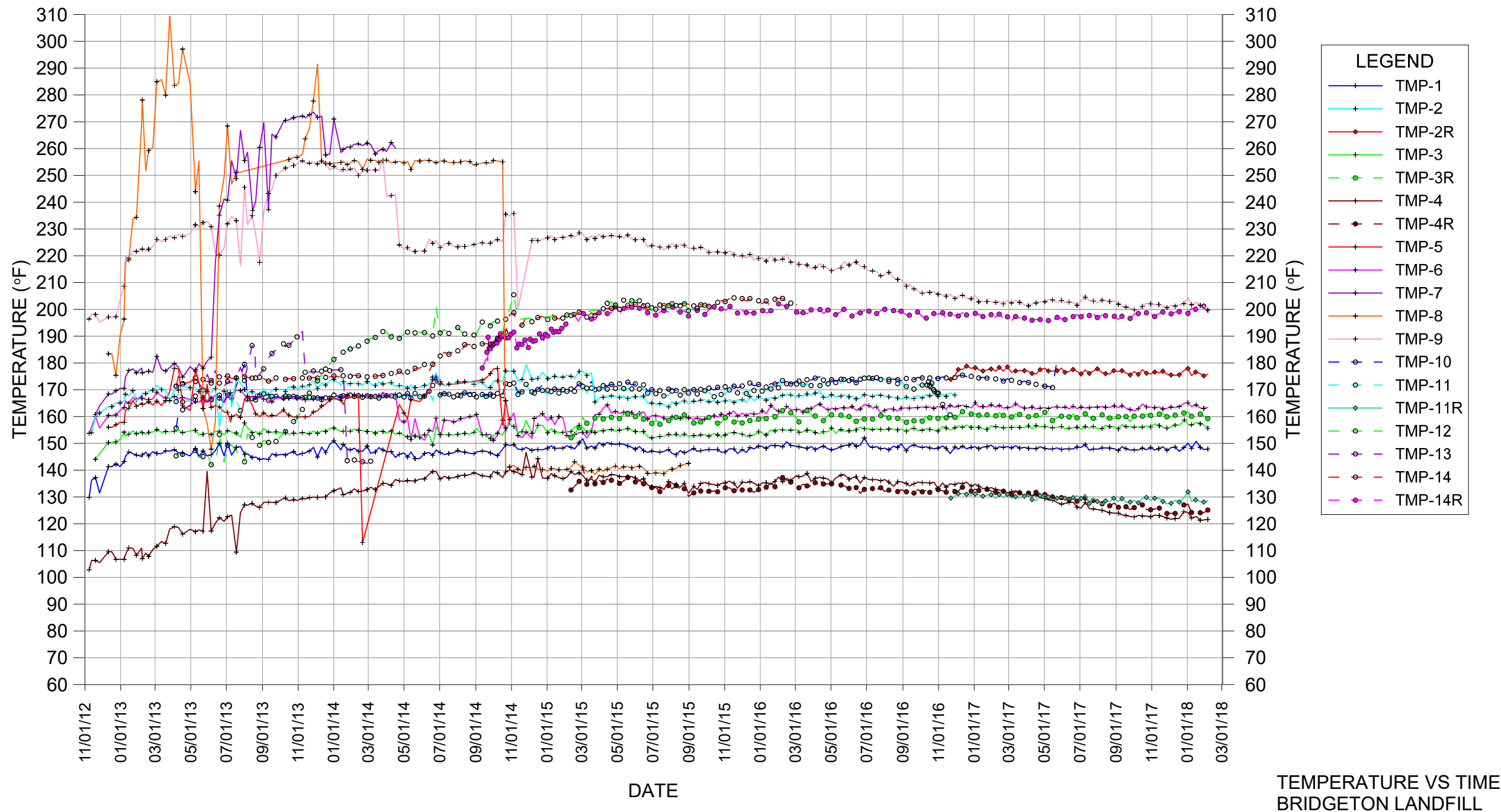
TEMPERATURE VS TIME
BRIDGETON LANDFILL

AVERAGE TEMPERATURES - NORTH QUARRY

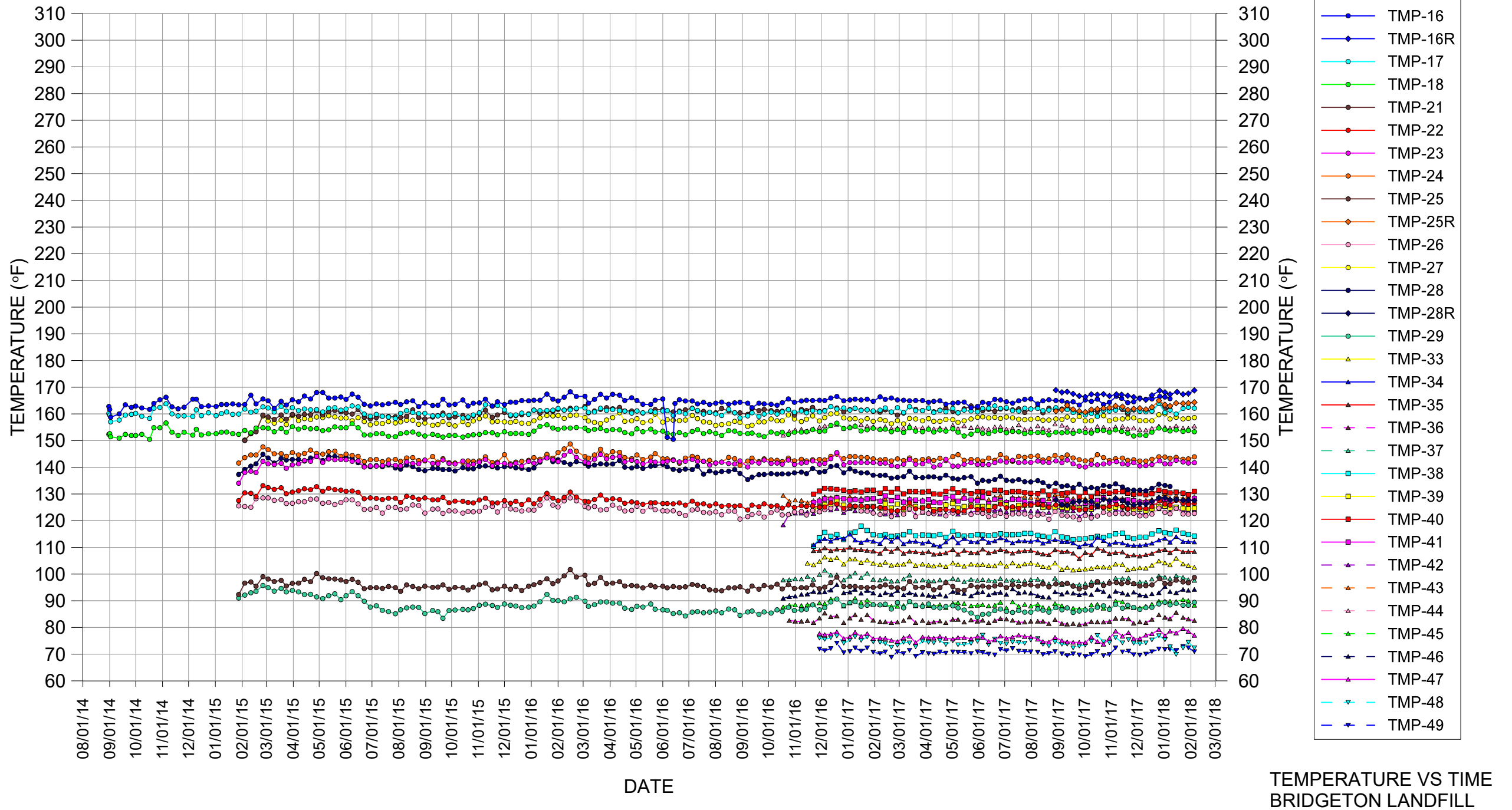


TEMPERATURE VS TIME
BRIDGETON LANDFILL

MAXIMUM TEMPERATURES



MAXIMUM TEMPERATURES - NORTH QUARRY



TMP BRIDGETON LANDFILL NOTES

TMP notes that are new for the reporting week are in **bold**.

TMP-1: NONE

TMP-2:

1. TMP-2 has been replaced by TMP-2R and will no longer be monitored or included in the presentation.

TMP-2R:

1. Data reported on 11/29/2016 was inadvertently left as the 11/22/2016 data. This was corrected on 12/5/2016 reading submittal.

TMP-3:

1. No reliable temperature readings have been obtained at 170 ft depth since 1/29/2014, except on 3/13/2014.
2. The connectivity tests on 4/11/2014 conducted by CEC showed that units at 10, 90, 130, 210 and 250 ft depths are no longer reliable.
3. The connectivity tests on 10/28/2014 conducted by Feezor Engineering showed that units at 10, 90, 110, 130, 210 and 250 ft depths are not reliable.

TMP-3R:

1. The unit at 20 ft depth had a fluctuating resistance since 9/25/2017. Therefore the temperature is determined to be unreliable.

TMP-4:

1. The connectivity tests on 4/11/2014 conducted by CEC showed that the unit at 48 ft depth is no longer reliable.

TMP-4R: NONE

TMP-5: TMP NO LONGER IN SERVICE– Verified by Connectivity testing by Feezor Engineering in March 2015.

TMP-6:

1. The connectivity tests on 4/11/2014 conducted by CEC showed that units at 35, 55, 75, 155, 175, and 195 ft depths are no longer reliable.
2. No reliable temperature readings have been obtained at the unit at 215 ft depth since 6/13/2014.

TMP-7R: TMP NO LONGER IN SERVICE

TMP-8: TMP NO LONGER IN SERVICE

TMP-9:

1. Unit at 100 ft depth had an inaccurate temperature reading on 8/1/2013 and no reading since 8/6/2013.
2. The connectivity tests on 4/11/2014 conducted by CEC showed that units at 20, 60, 80, and 100 ft depths are no longer reliable.

TMP-10:

1. All units were verified by connectivity testing by Feezor Engineering on 6/1/2017 to be unreliable.

TMP-11:

1. All units were verified by connectivity testing by Feezor Engineering on 11/23/2016 to be unreliable.
2. TMP-11 is no longer in service and will not be included in the presentation.

TMP-11R: NONE

TMP-12:

2. All units were verified by connectivity testing by Feezor Engineering in October 2015 to be unreliable.

TMP-13: TMP NO LONGER IN SERVICE

TMP-14:

1. All units were verified by connectivity testing by Feezor Engineering in March 2016 to be unreliable.

TMP-14R:

1. Due to the connectivity test results by Feezor Engineering on TMP-14 (see note above), TMP-14R is added to this reporting data set as of 3/7/2016.

TMP-15: TMP WAS NEVER IN SERVICE

TMP-16:

1. TMP-16 has been replaced by TMP-16R and will no longer be included in the presentation.

TMP-16R: NONE

TMP-17: NONE

TMP-18: NONE

TMP-19: NOT PART OF THIS SUBMITTAL (HEAT EXTRACTION TMP)

TMP-20: NOT PART OF THIS SUBMITTAL (HEAT EXTRACTION TMP)

TMP-21: NONE

TMP-22: NONE

TMP-23: NONE

TMP-24: NONE

TMP-25:

1. TMP-25 has been replaced by TMP-25R and will no longer be included in the presentation.

TMP-25R: NONE

TMP-26:

1. Resistance on unit at 80 ft dropped 12.9 ohms (11/06/2017) and subsequent resistance reading continue to be low. Upon further investigation by Feezor Engineering, this unit is determined to be unreliable.

TMP-27: NONE

TMP-28:

1. TMP-28 has been replaced by TMP-28R and will no longer be included in the presentation.

TMP-28R: NONE

TMP-29: NONE

TMP-33: NONE

TMP-34: NONE

TMP-35: NONE

TMP-36: NONE

TMP-37: NONE

TMP-38: NONE

TMP-39: NONE

TMP-40: NONE

TMP-41: NONE

TMP-42: NONE

TMP-43: NONE

TMP-44: NONE

TMP-45: NONE

TMP-46: NONE

TMP-47: NONE

TMP-48: NONE

TMP-49: NONE

TMP vs DEPTH and TMP vs ELEVATION (for 02/05/18):

1. There were no reliable temperature readings for TMP-13 since 3/19/2014.
2. There were no reliable temperature readings for TMP-7R, as determined by the connectivity test on 4/11/2014.
3. There were no reliable temperature readings for TMP-5 since 11/5/2014.
4. There were no reliable temperature readings for TMP-12 since 9/28/2015.
5. There were no reliable temperature readings for TMP-8 since 9/9/2015.
6. There were no reliable temperature readings for TMP-14, confirmed since 3/7/2016.
7. There were no reliable temperature readings for TMP-11 as determined by the connectivity test on 11/23/2016.
8. TMP-2 has been replaced by TMP-2R and will no longer be monitored.
9. TMP-11 is no longer in service and will not be included in the presentation.
10. There were no reliable temperature readings for TMP-10 since 5/30/2017.
11. TMP-16, 25, and 28 have been replaced by TMP-16R, 25R, and 28R and will be no longer reported since 1/15/2018.

ATTACHMENT C

GAS INTERCEPTOR WELLHEAD TEMPERATURE GRAPHS

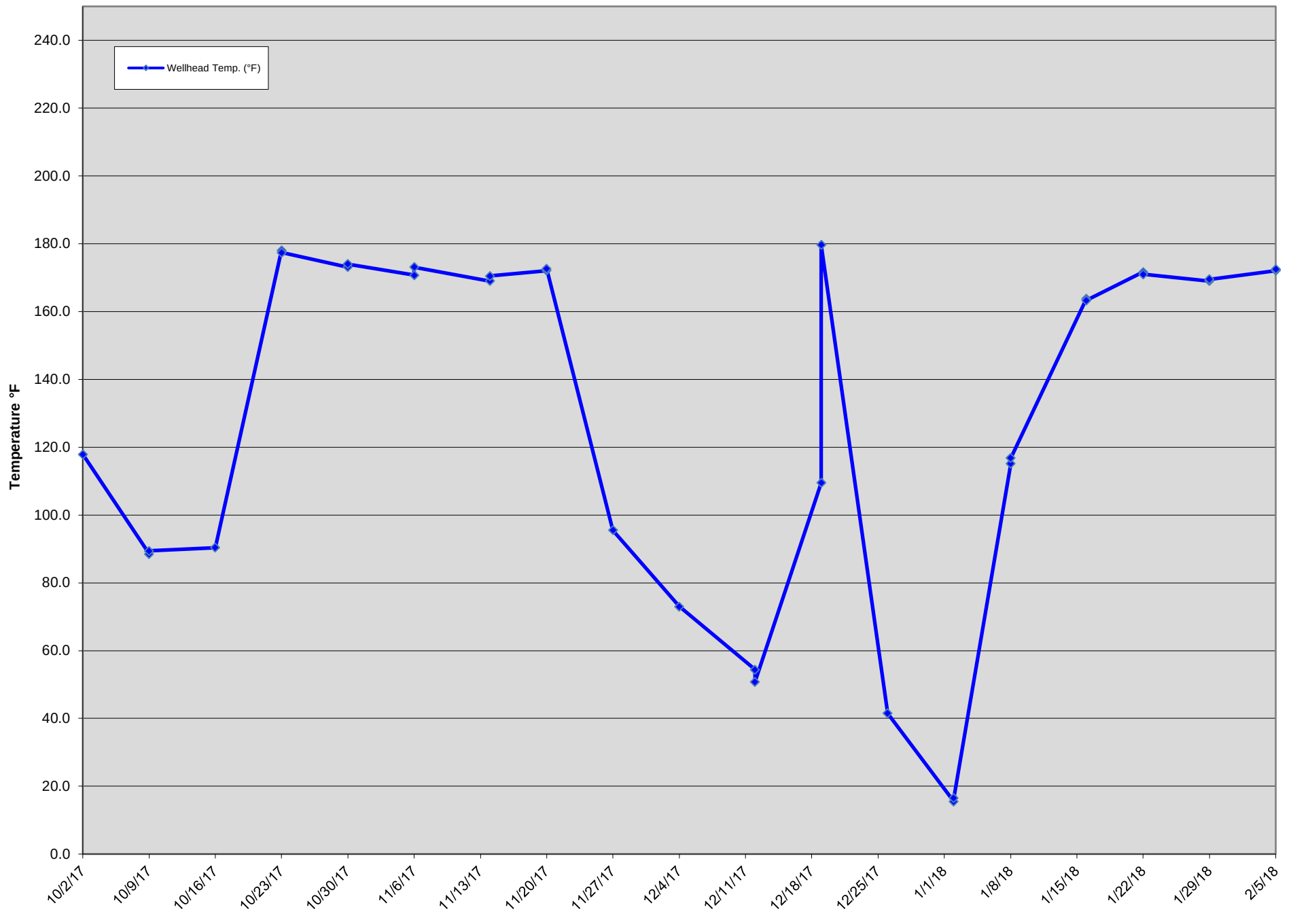


NOTE:

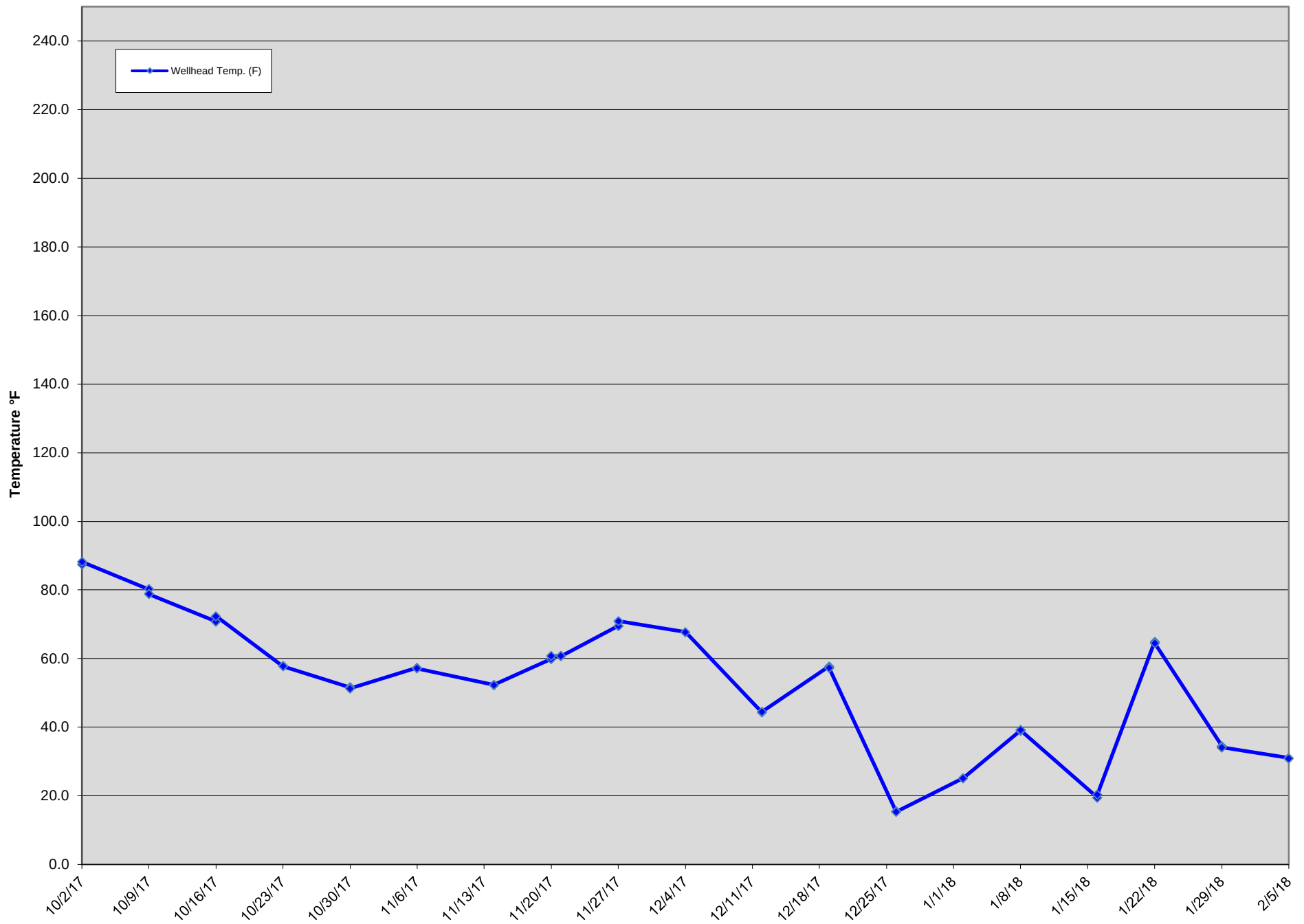
1.) AERIAL TOPOGRAPHY PROVIDED BY COOPER AERIAL SURVEYS, INC.
AND IS DATED DECEMBER 1, 2017

BRIDGETON LANDFILL, LLC 13570 SAINT CHARLES ROCK RD BRIDGETON, MO 63044		BRIDGETON LANDFILL MONTHLY REPORTING				JANUARY 2018		DRAWING NO.: 004
GAS EXTRACTION WELLS - JANUARY 2018						DESIGNED BY: PML		
						APPROVED BY: ---		
PROJECT NUMBER: BT-145		FILE PATH: C:\Users\plins\Dropbox (Feezor Engineering)\BT-145 Agreed Order Reporting\Surfer Updates\civil 3D\January 2018\January 2018.dwg		FEEZOR ENGINEERING, INC.		REVISION	DATE	

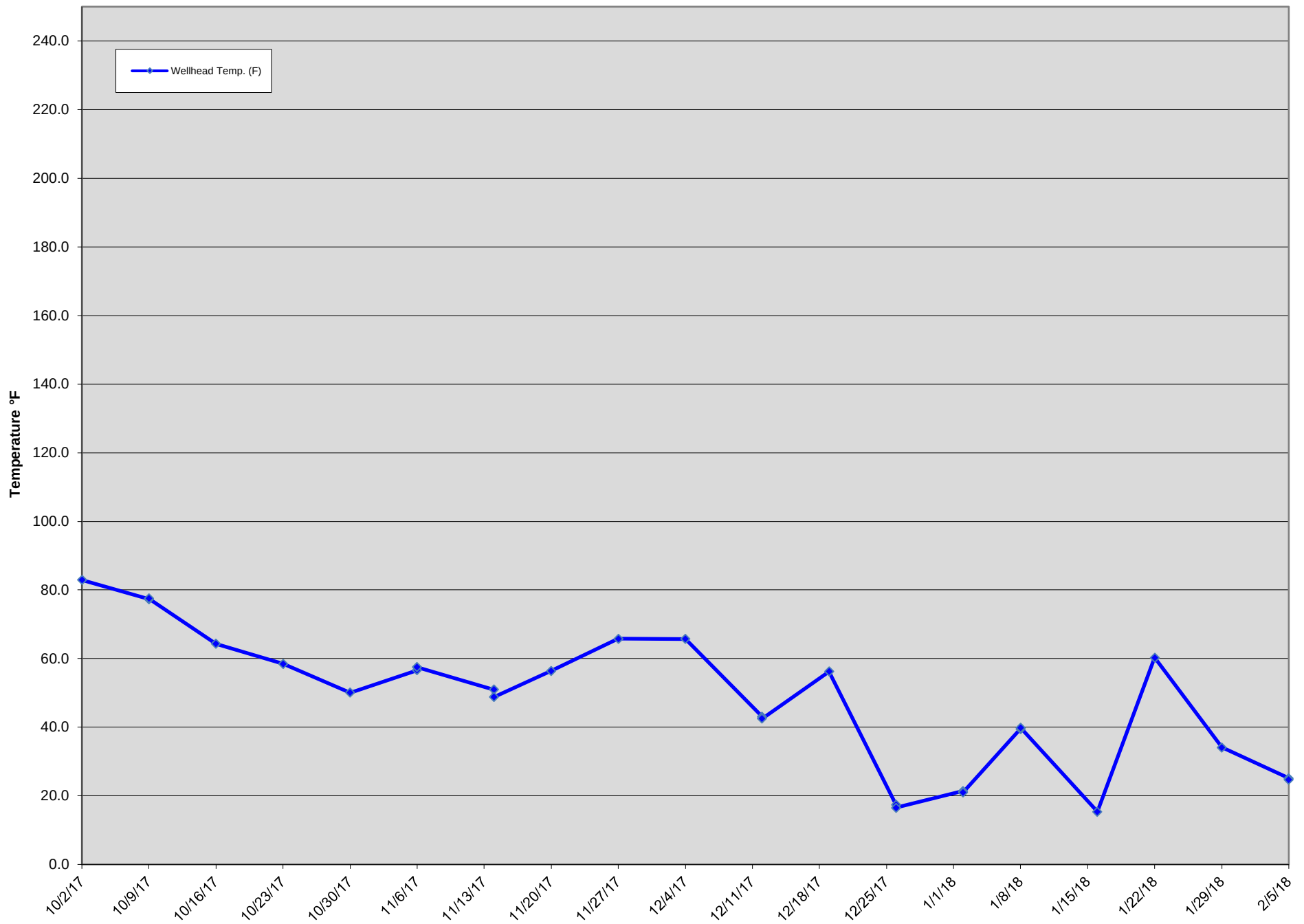
GIW-1 Wellhead Temperatures



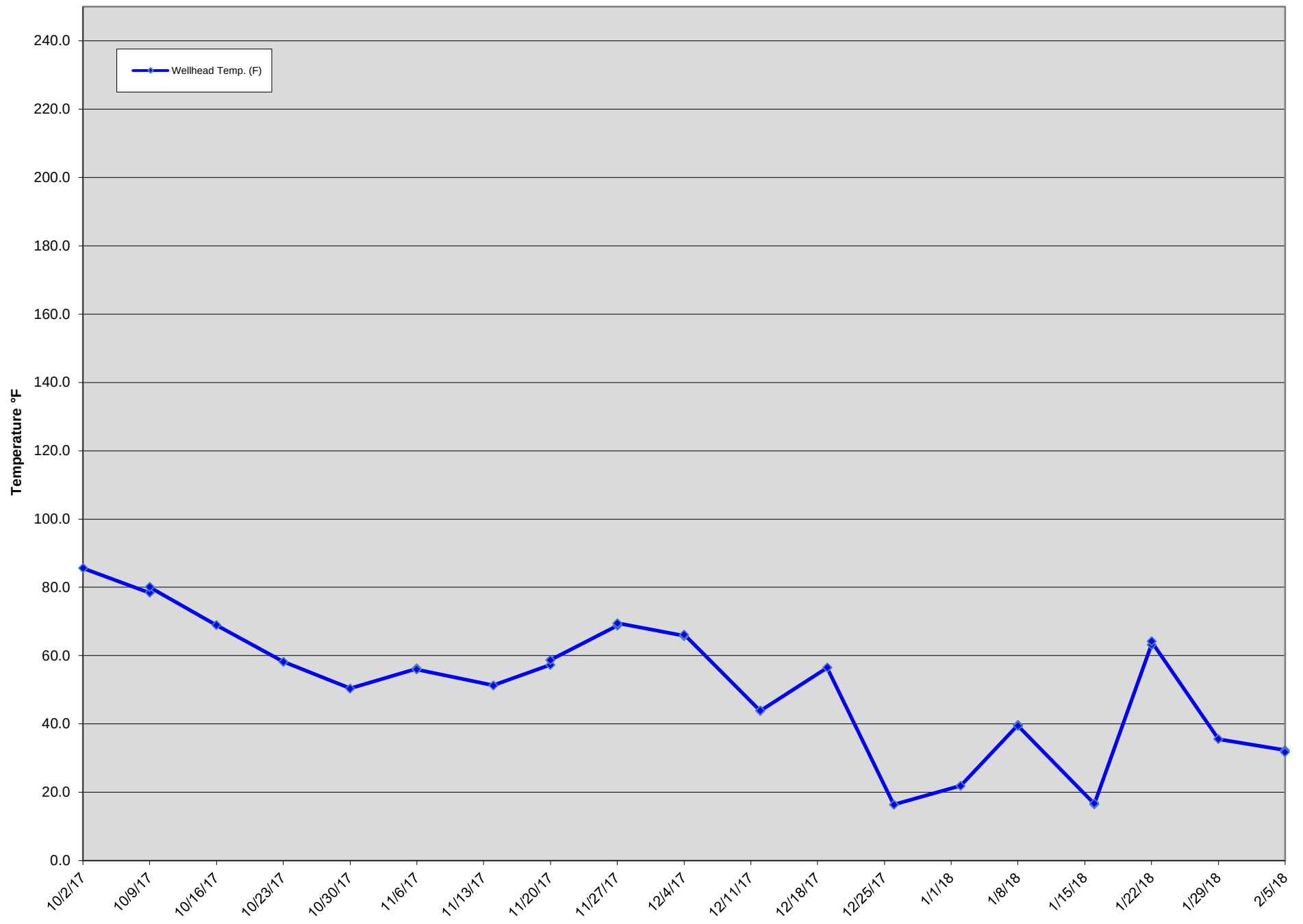
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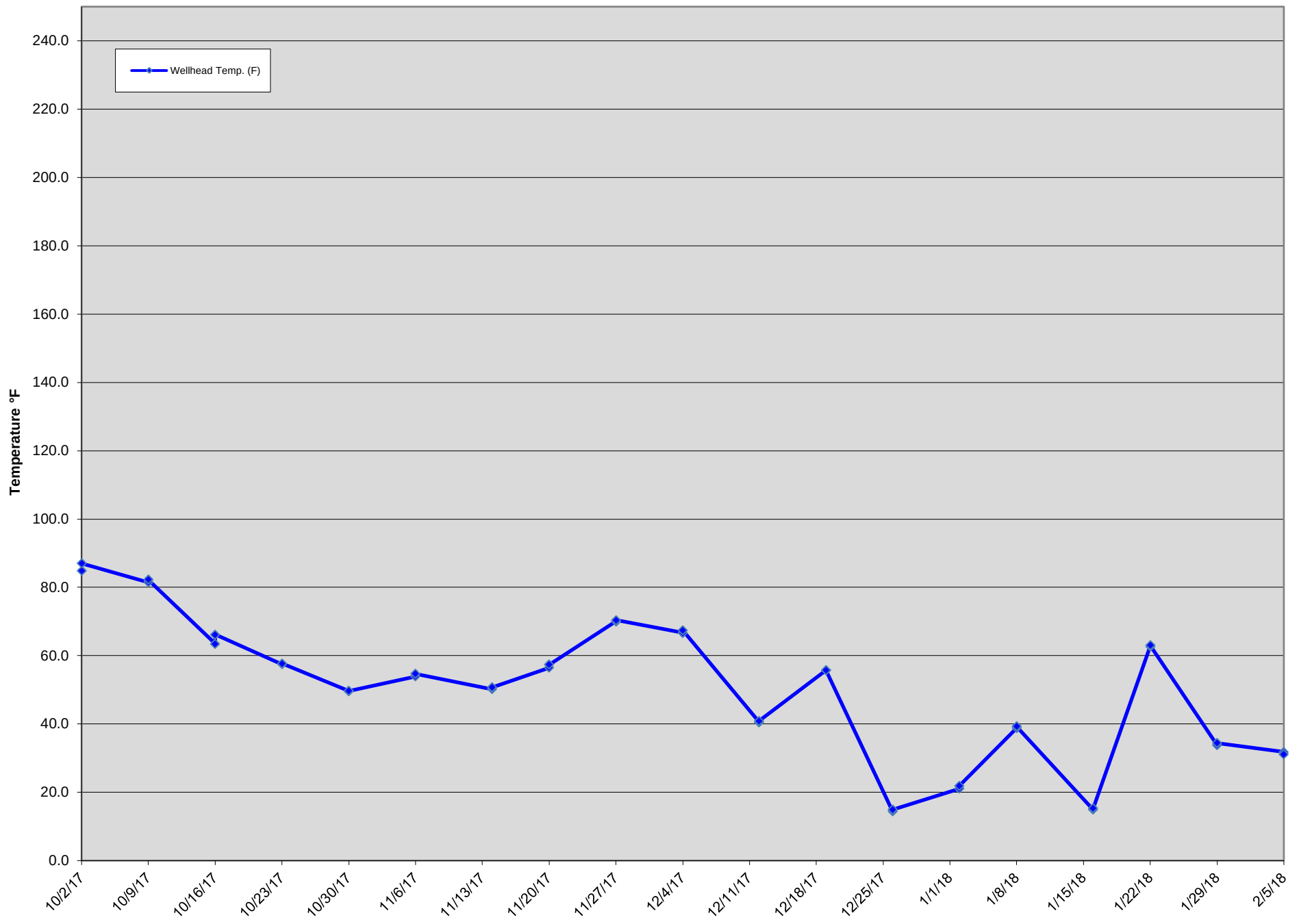
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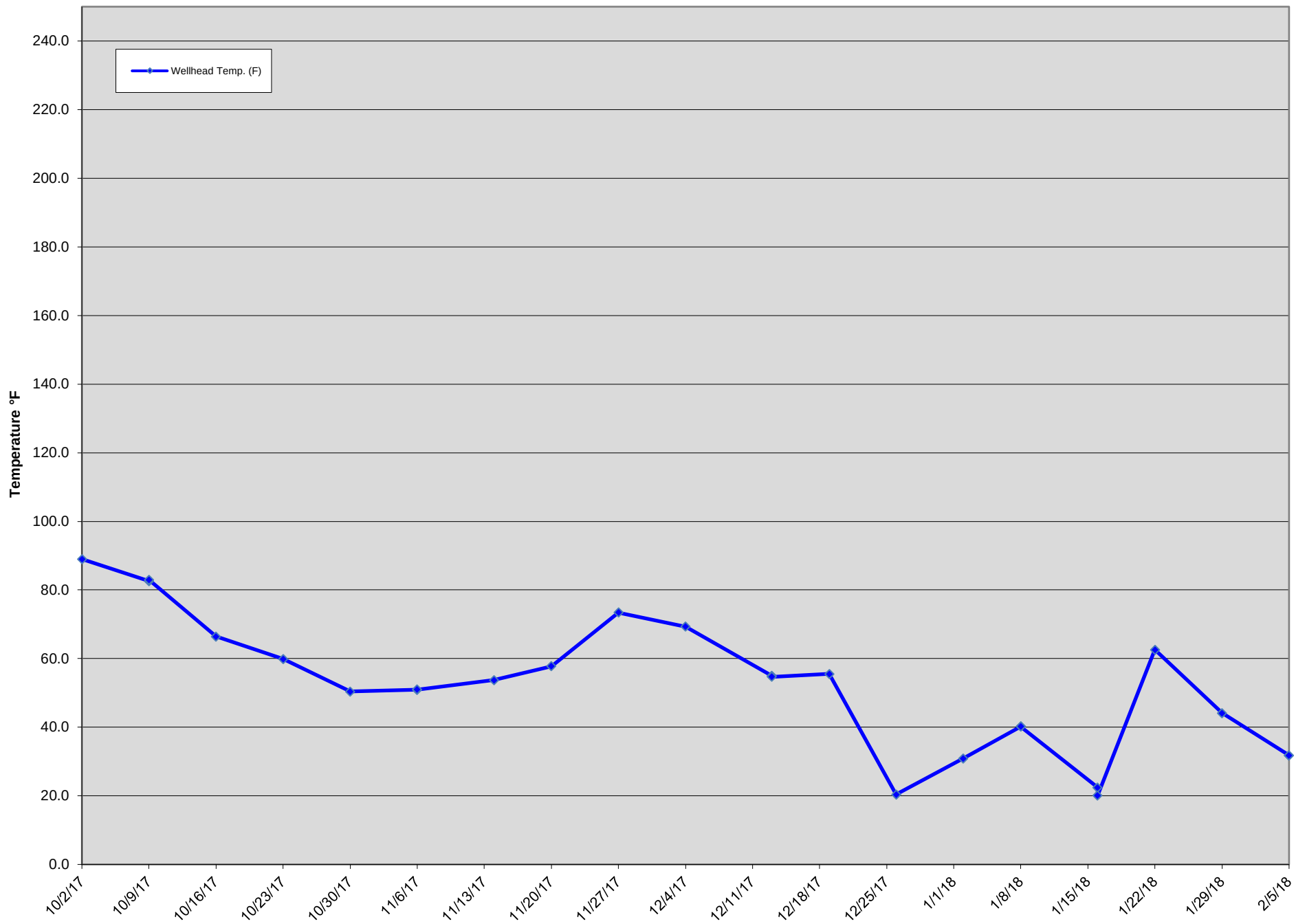
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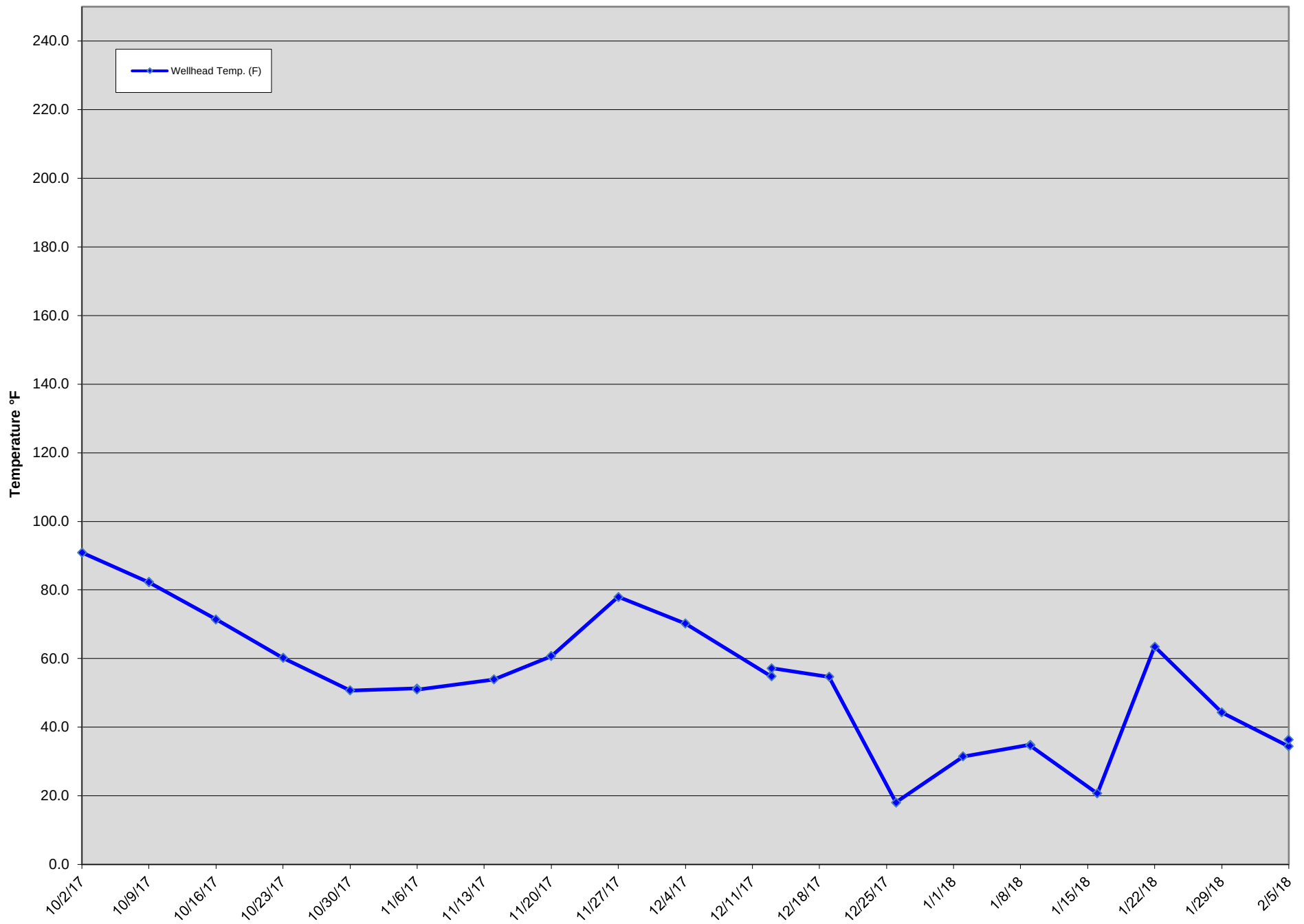
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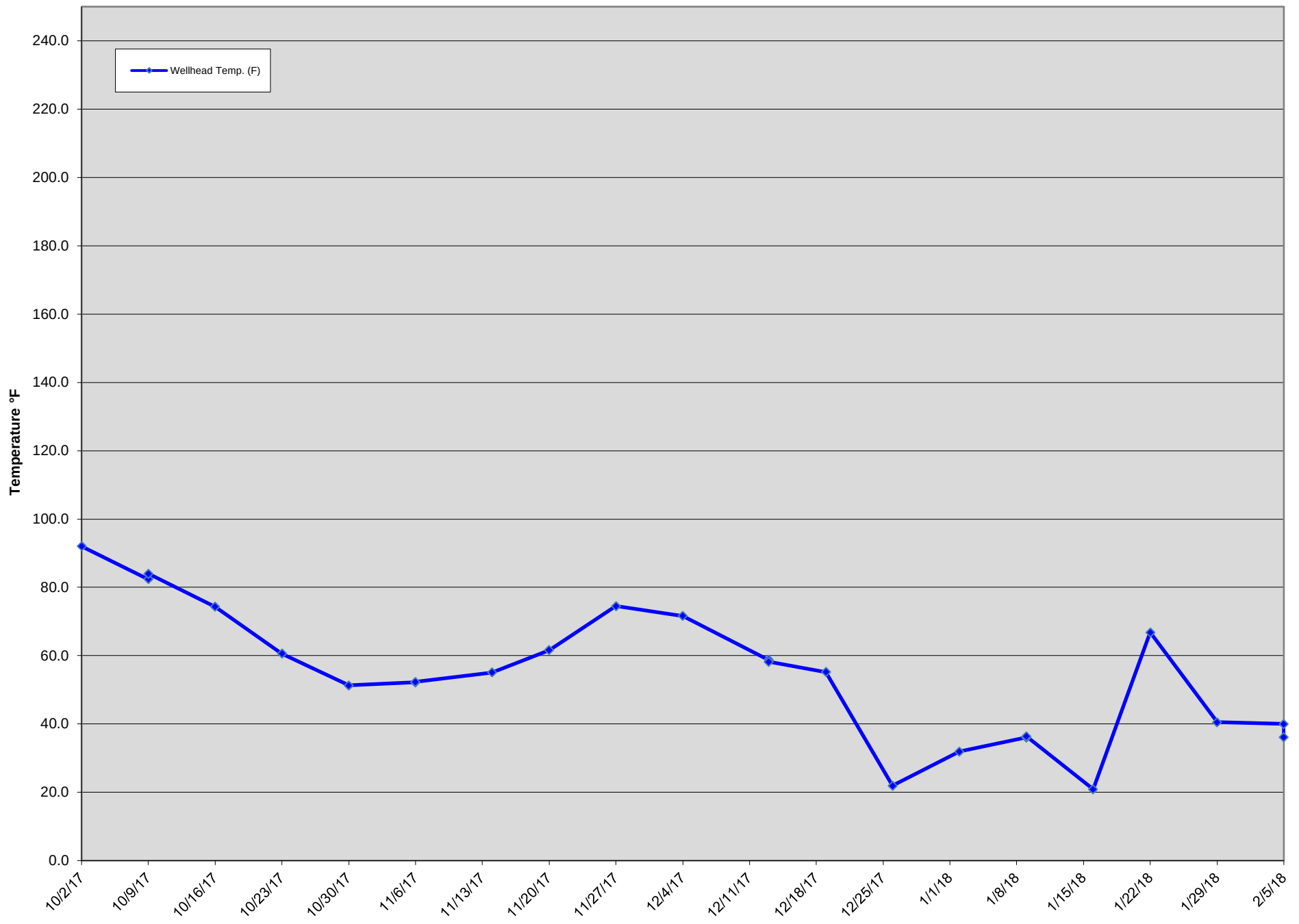
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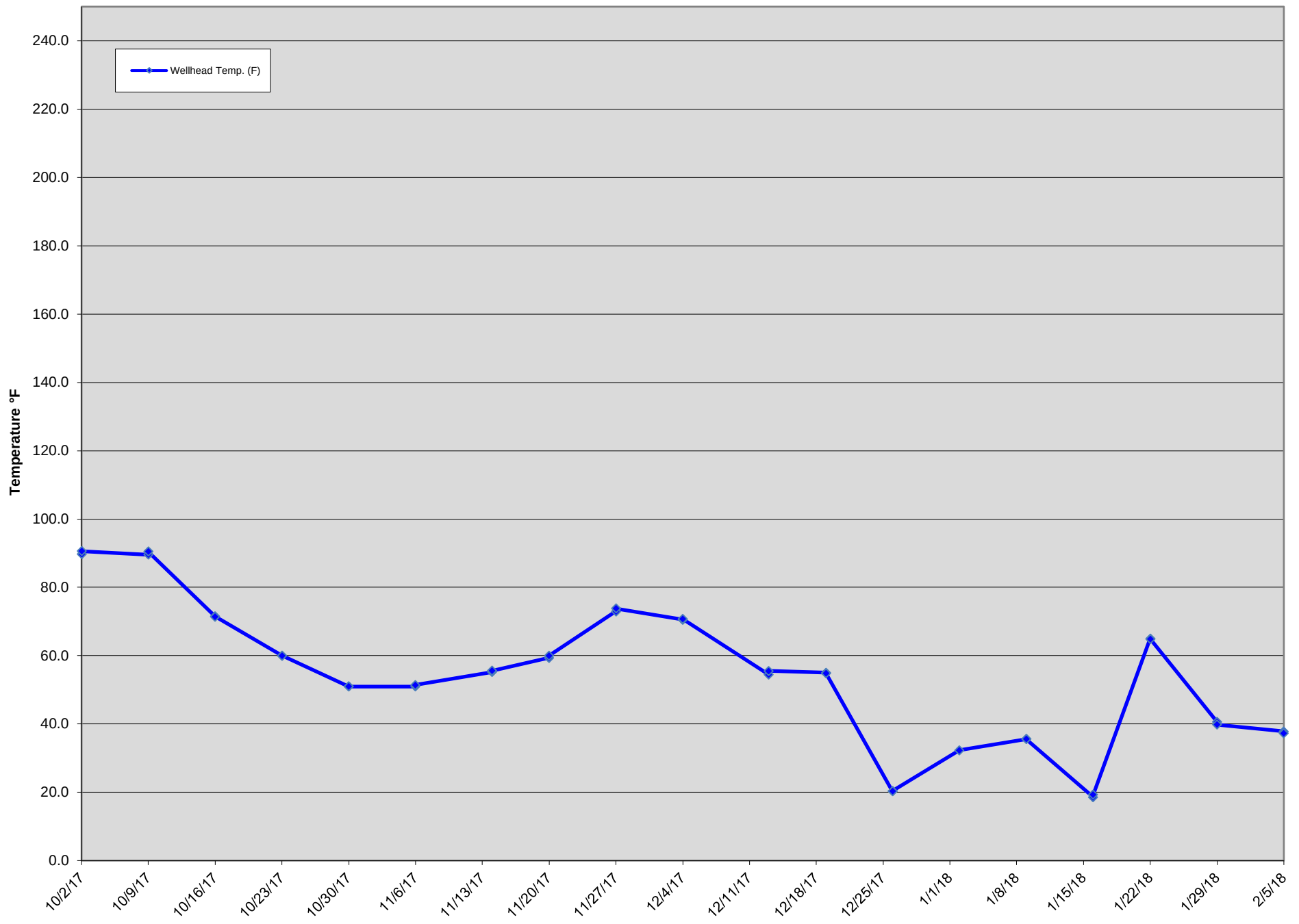
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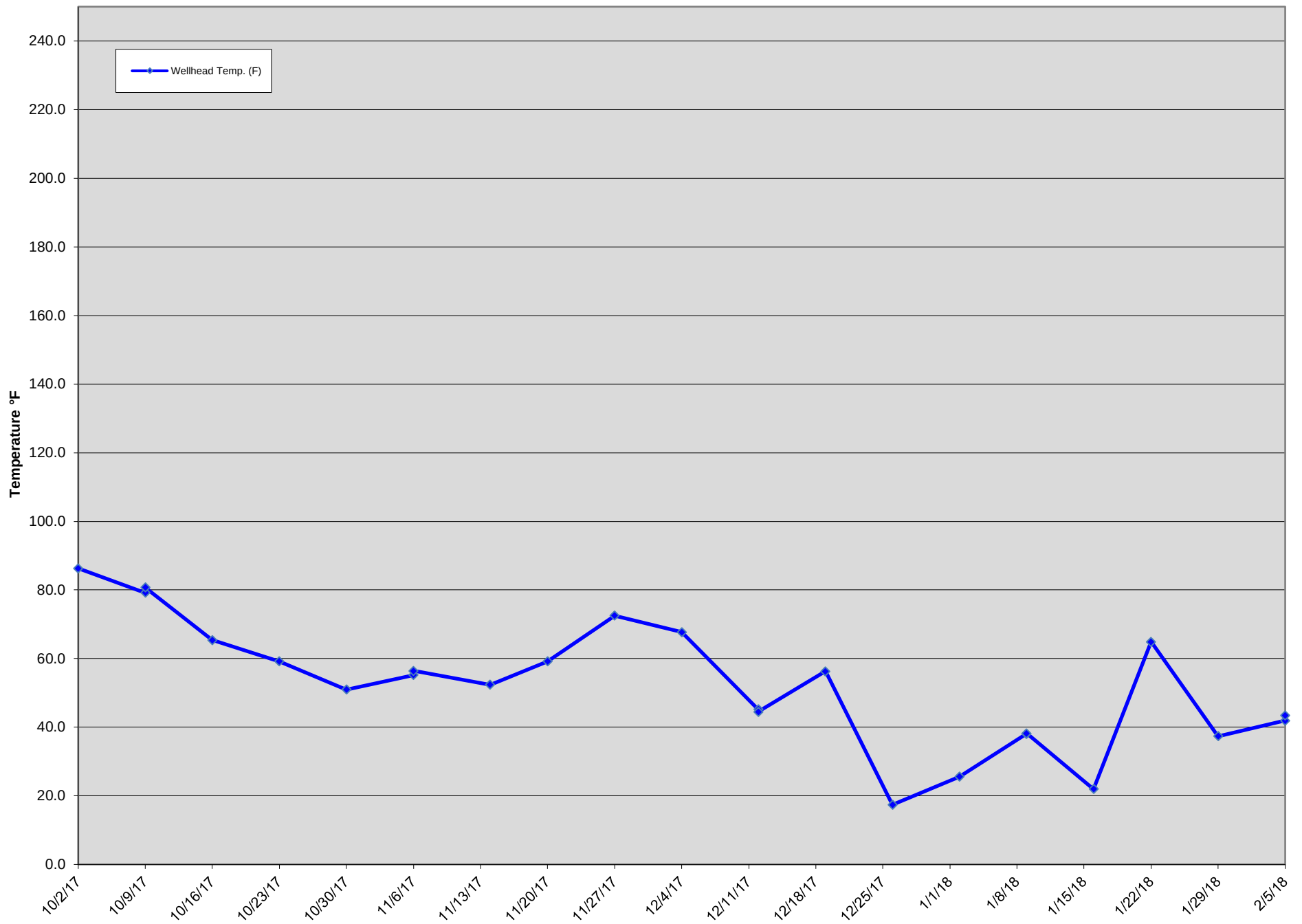
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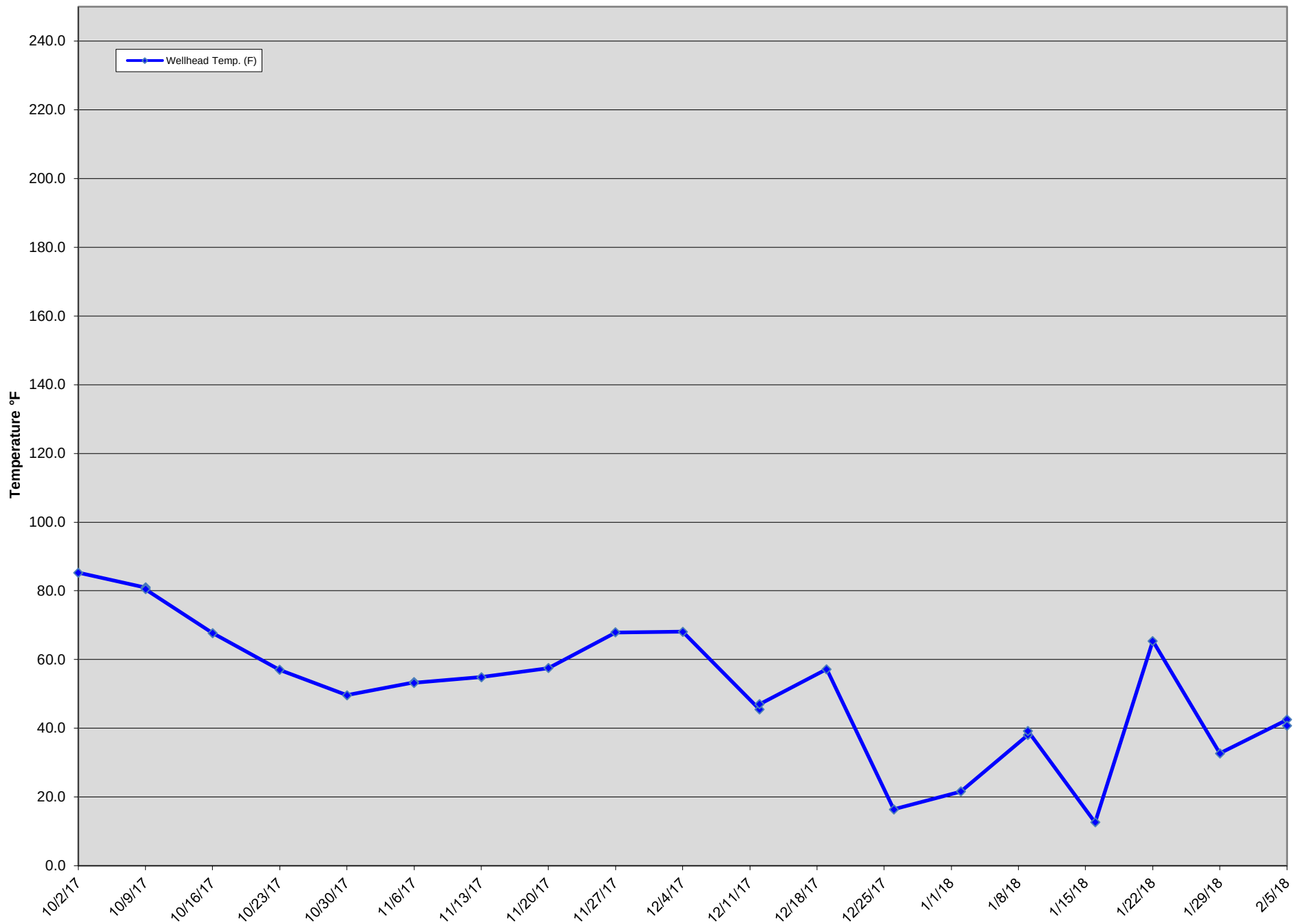
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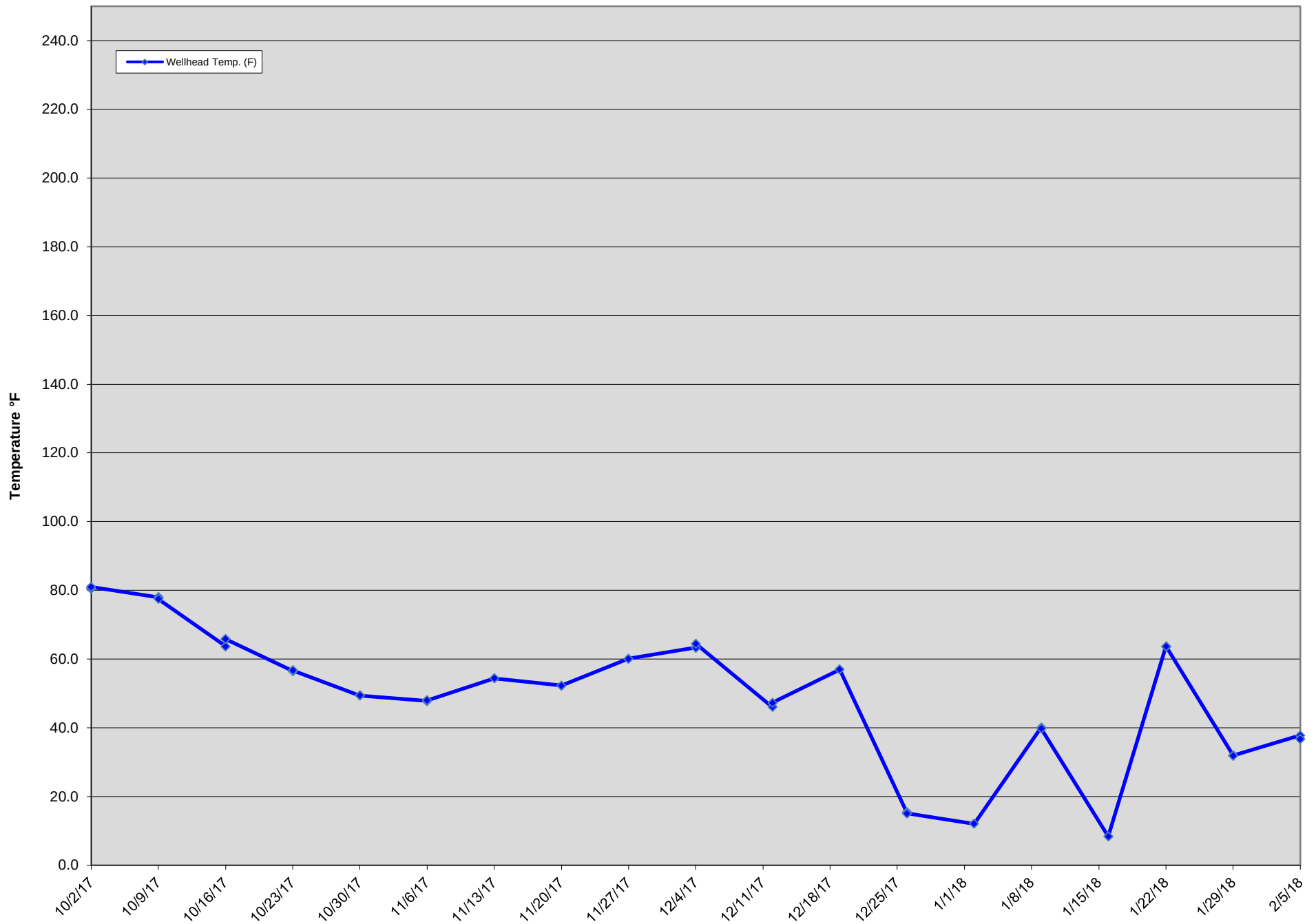
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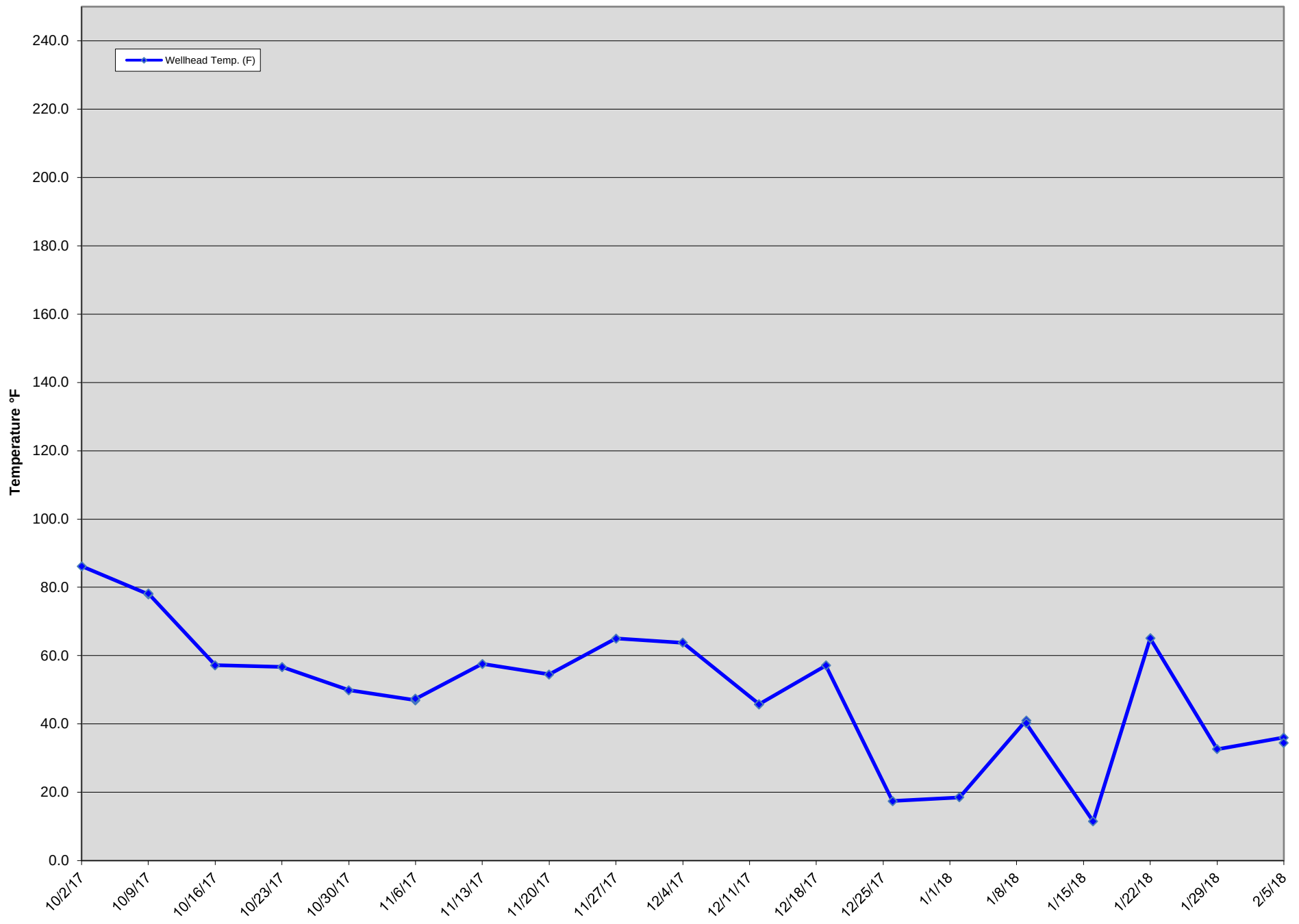
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GIW-12 Wellhead Temperatures



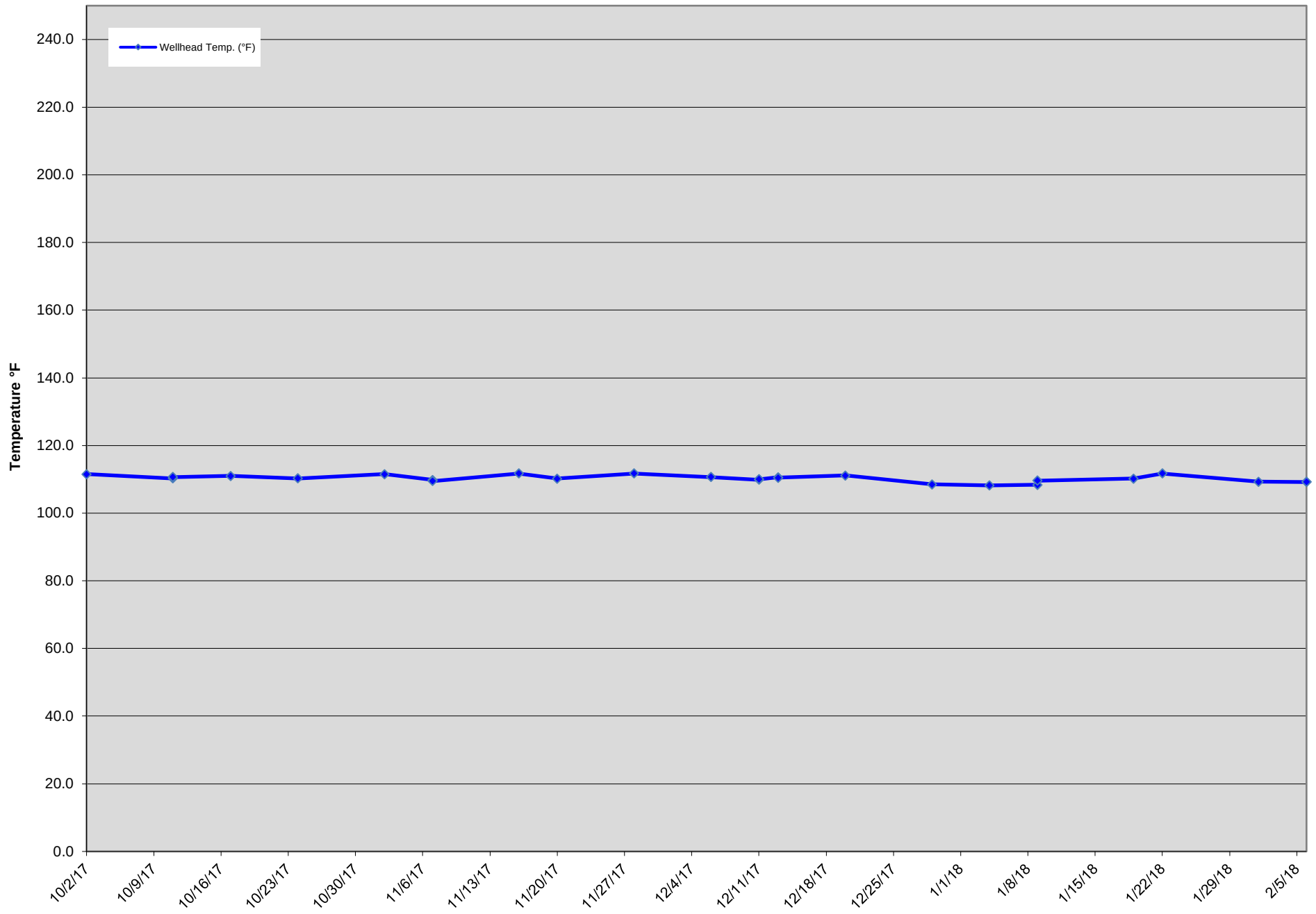
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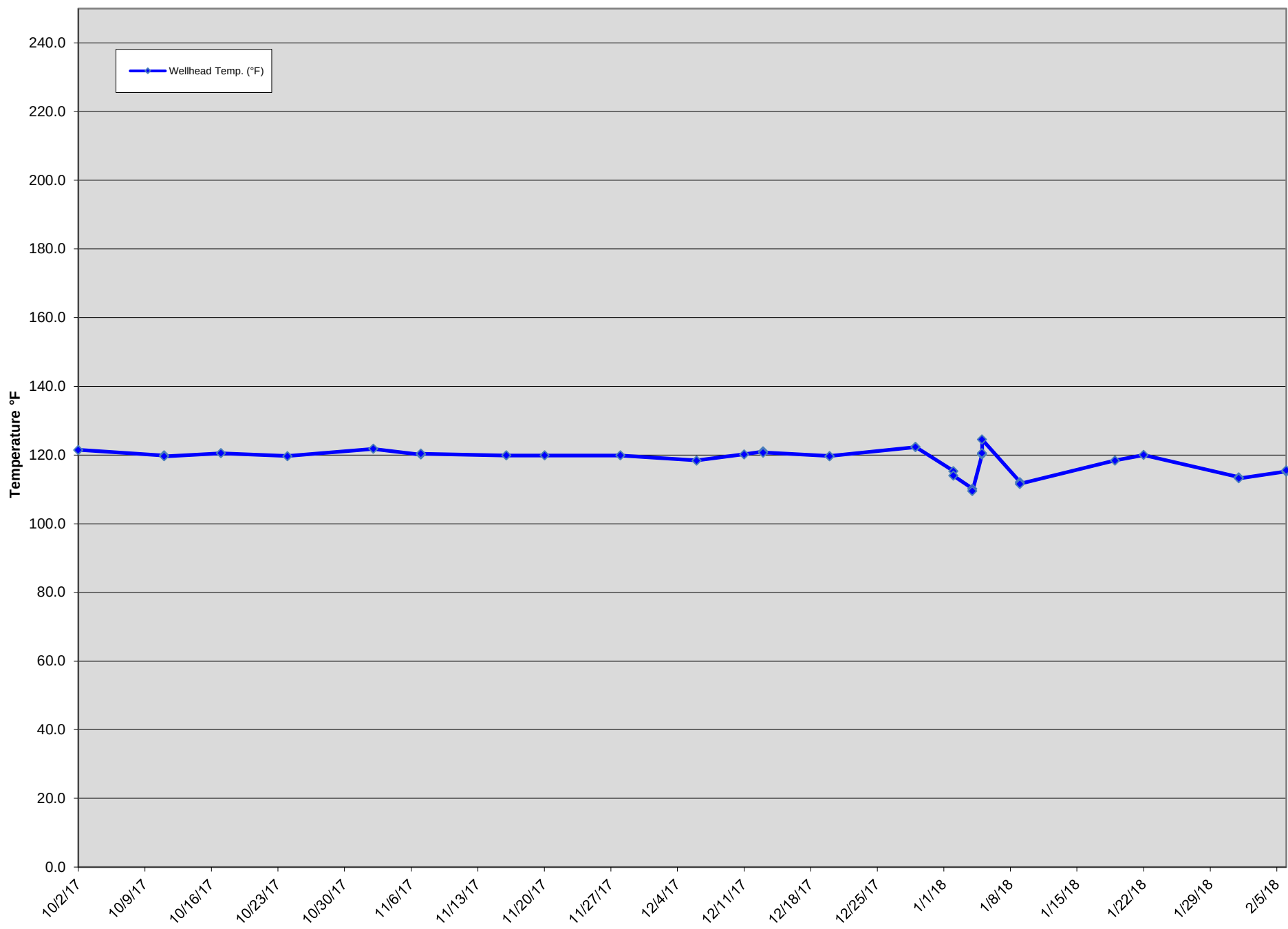
ATTACHMENT D

NECK-AREA GAS EXTRACTION WELL DATA

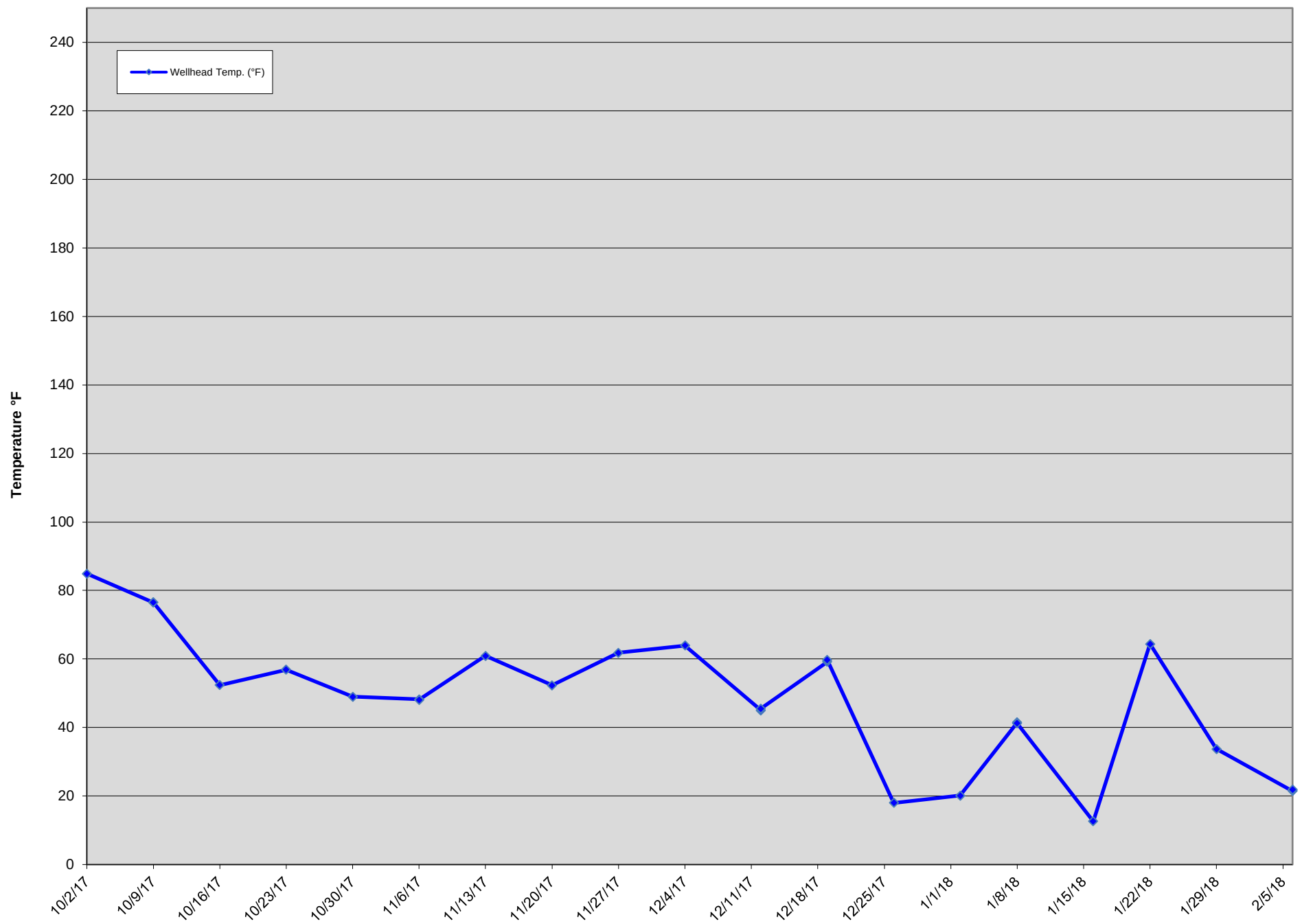
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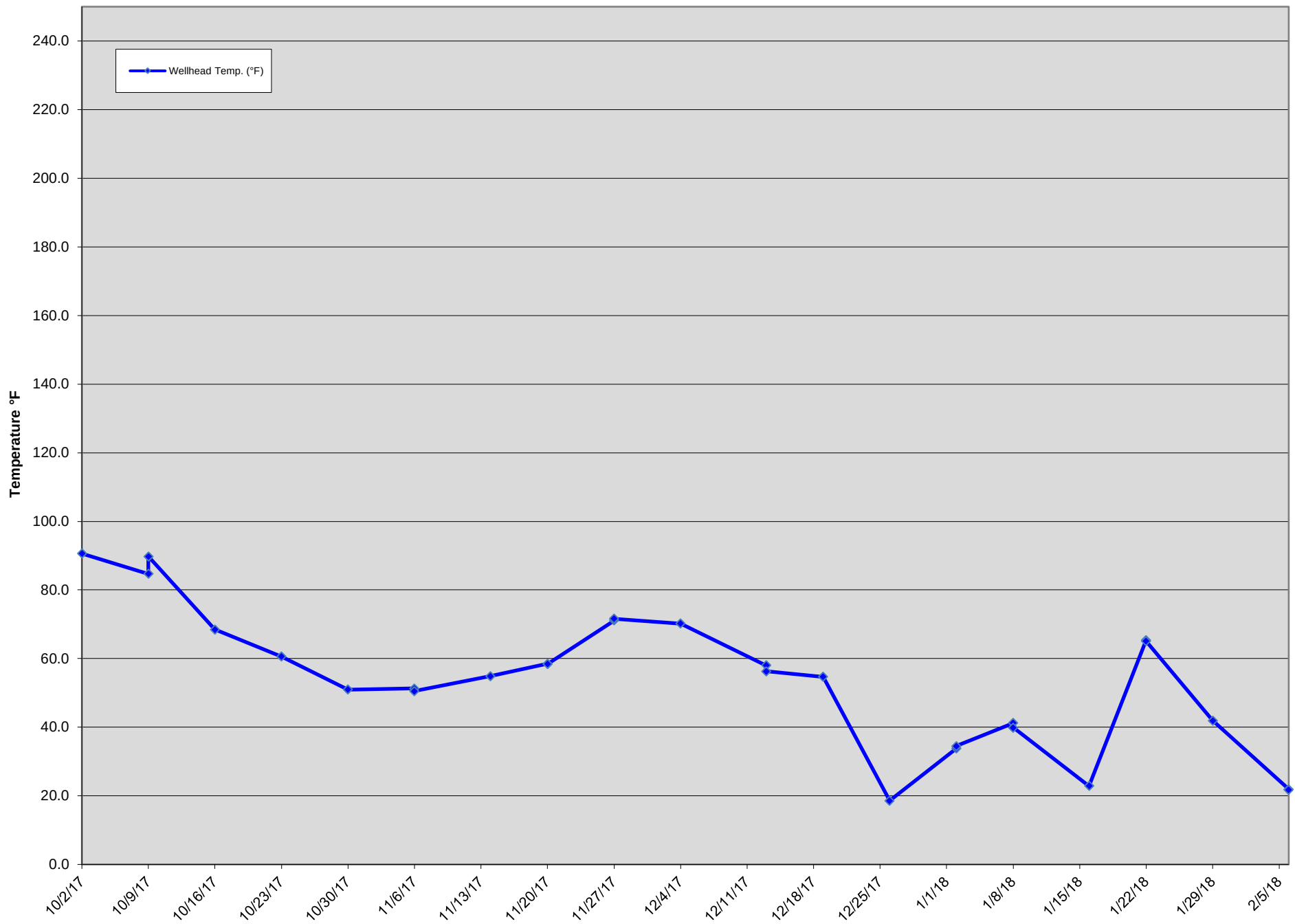
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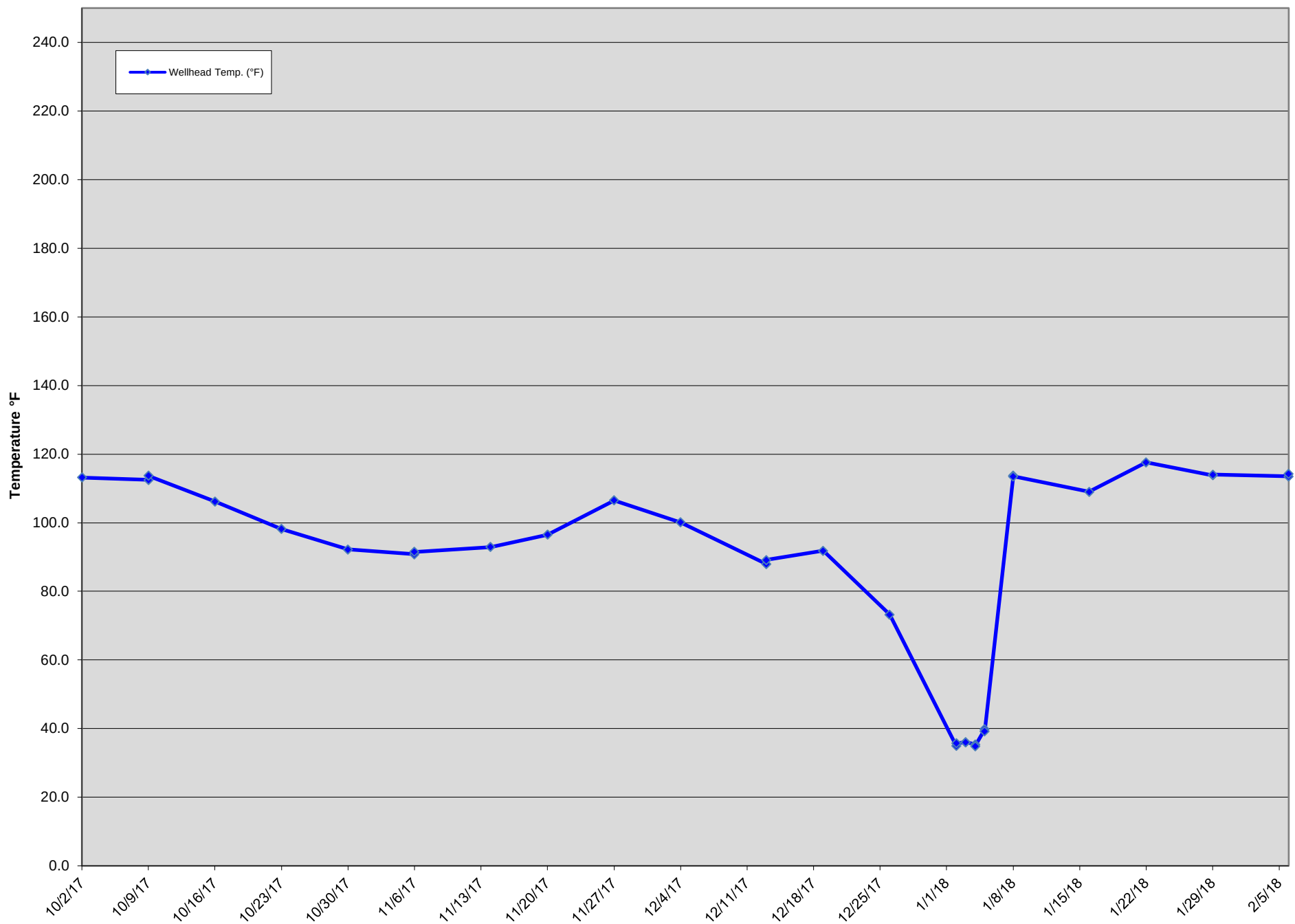
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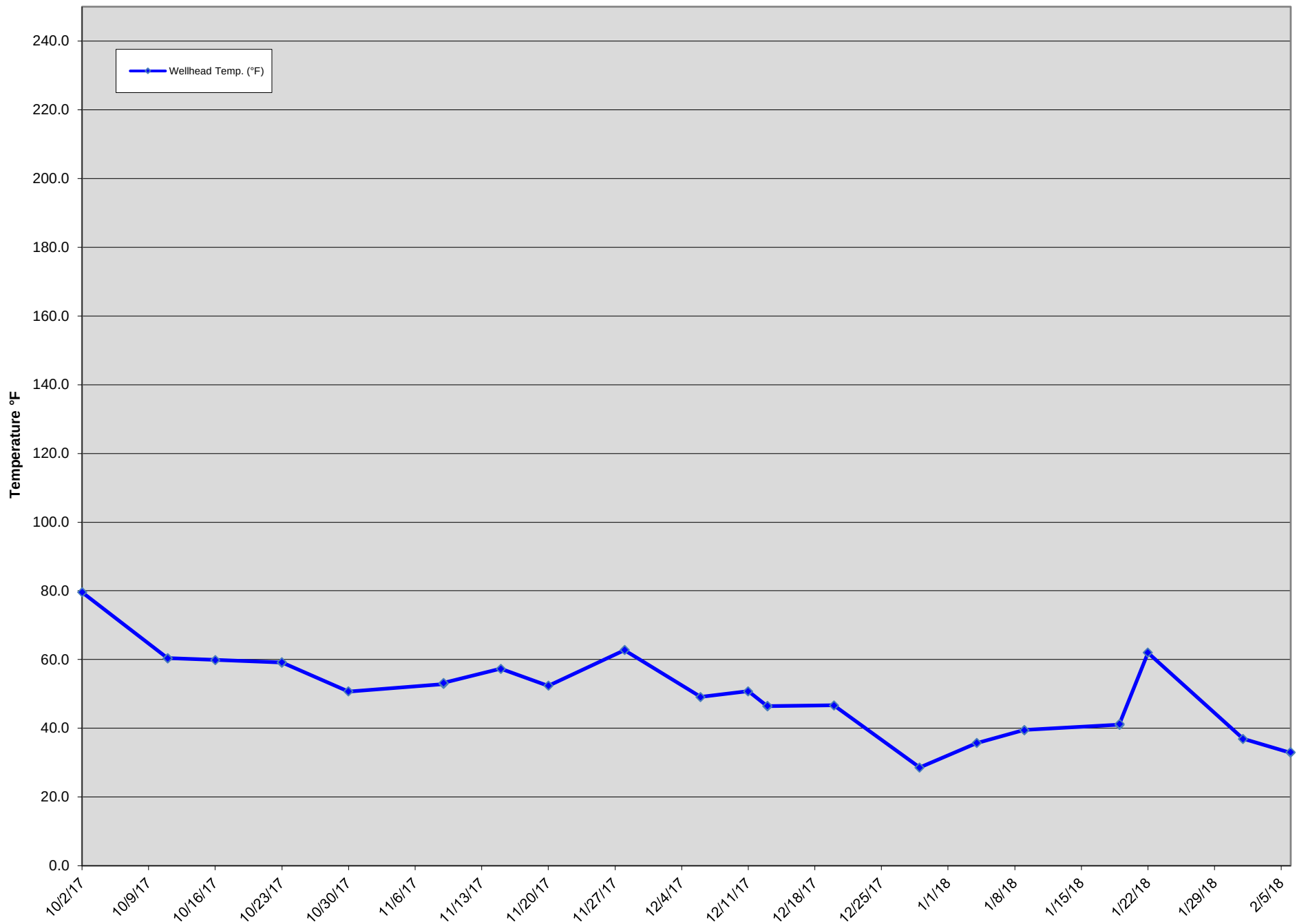
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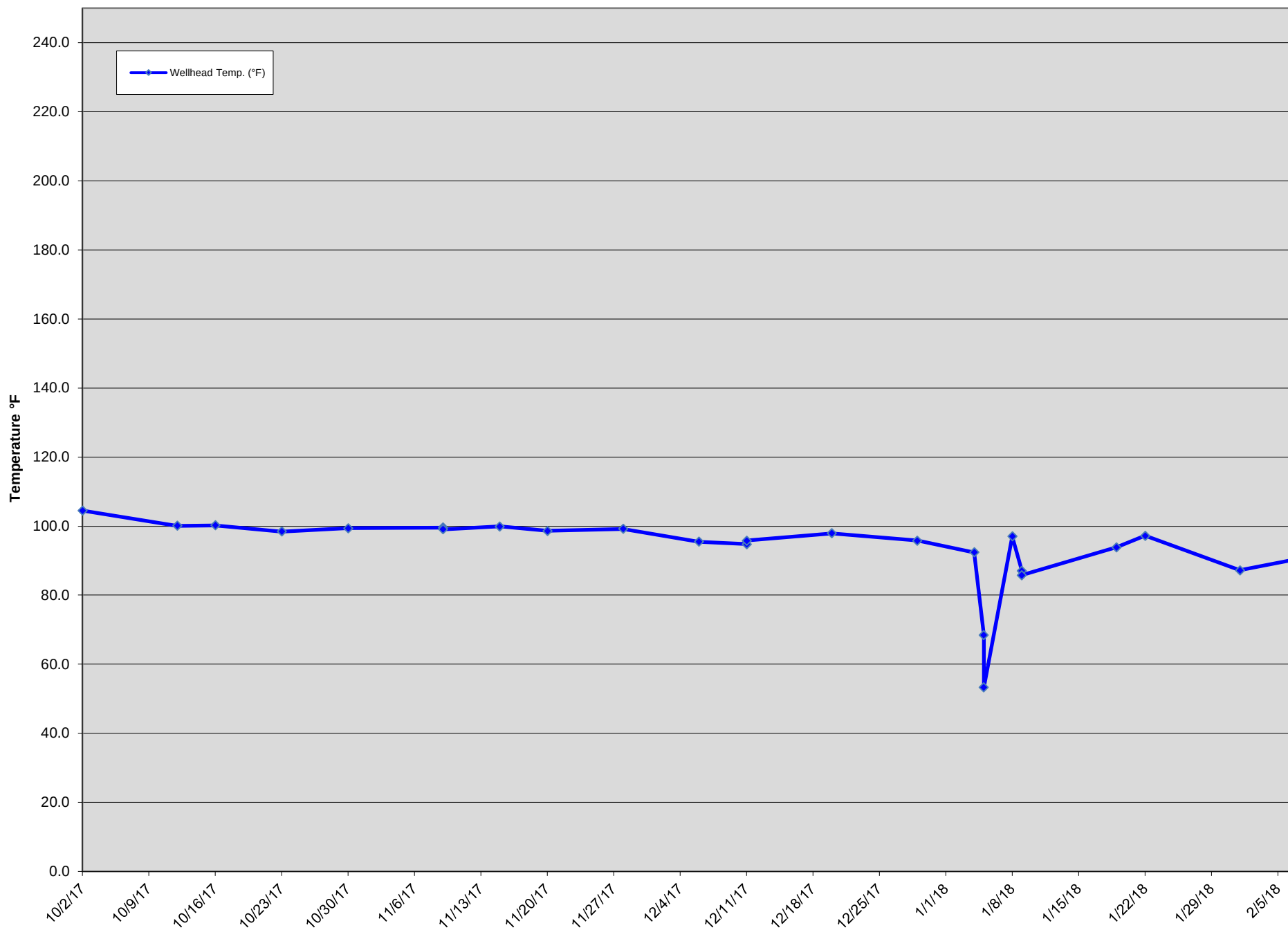
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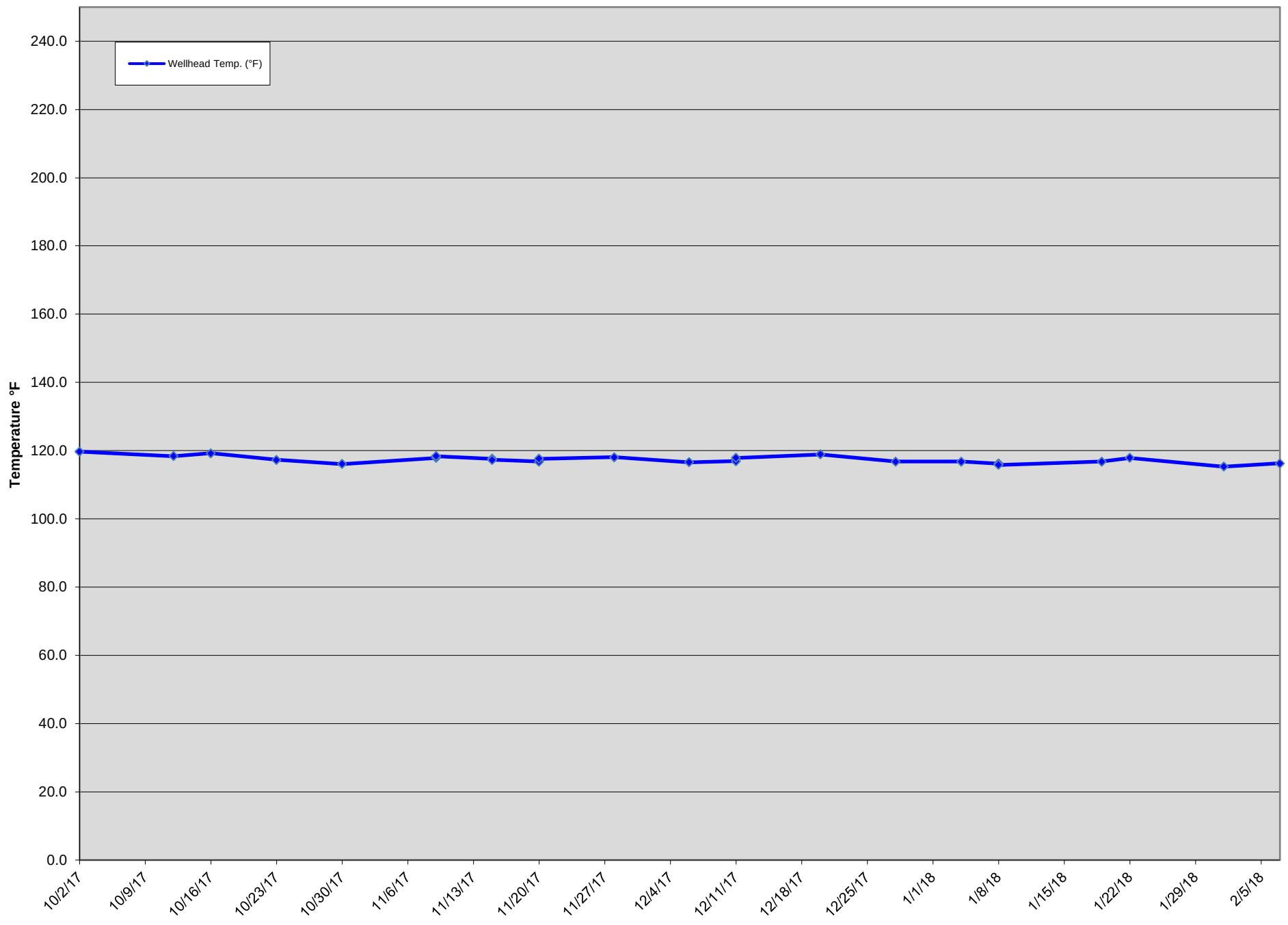
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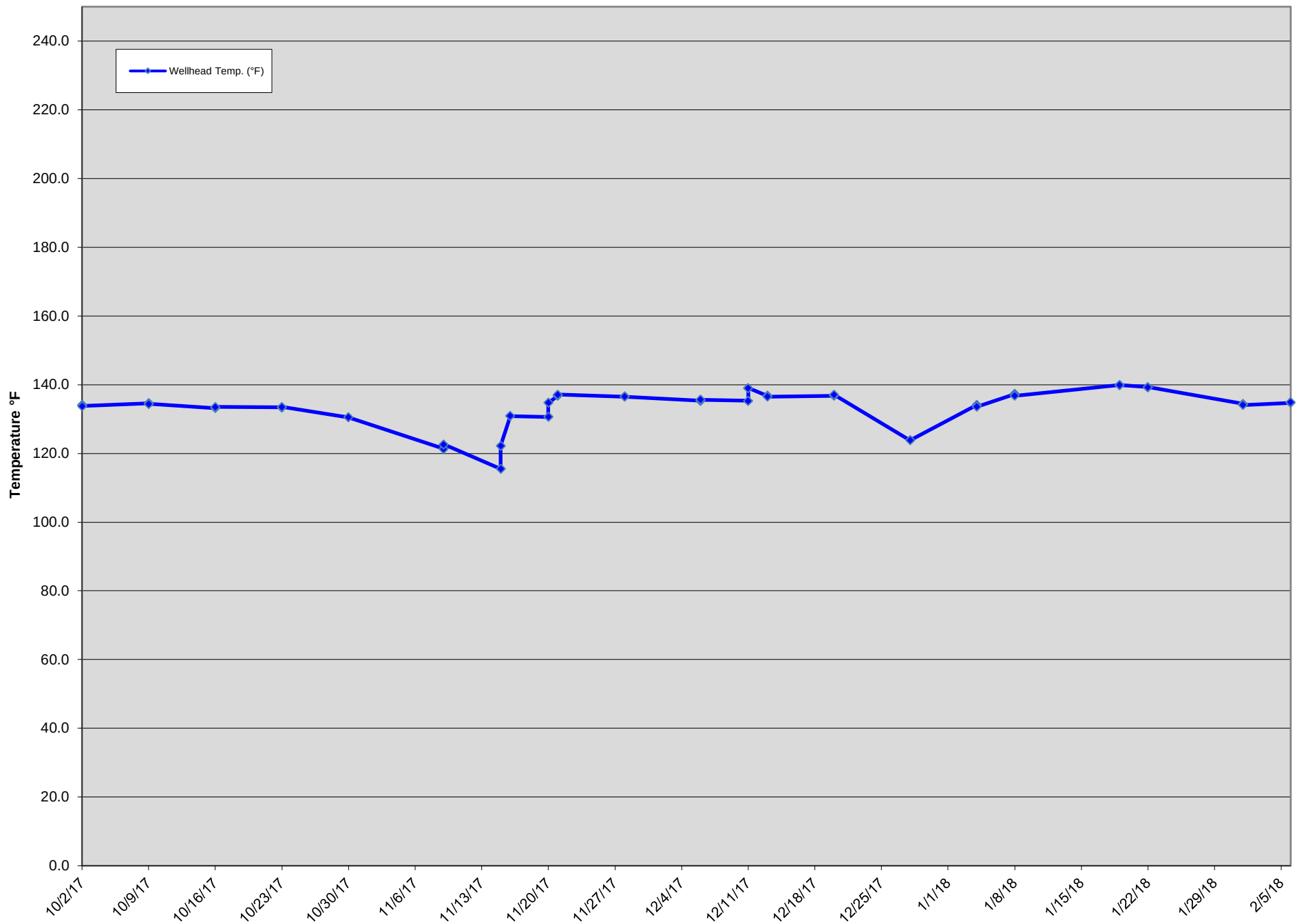
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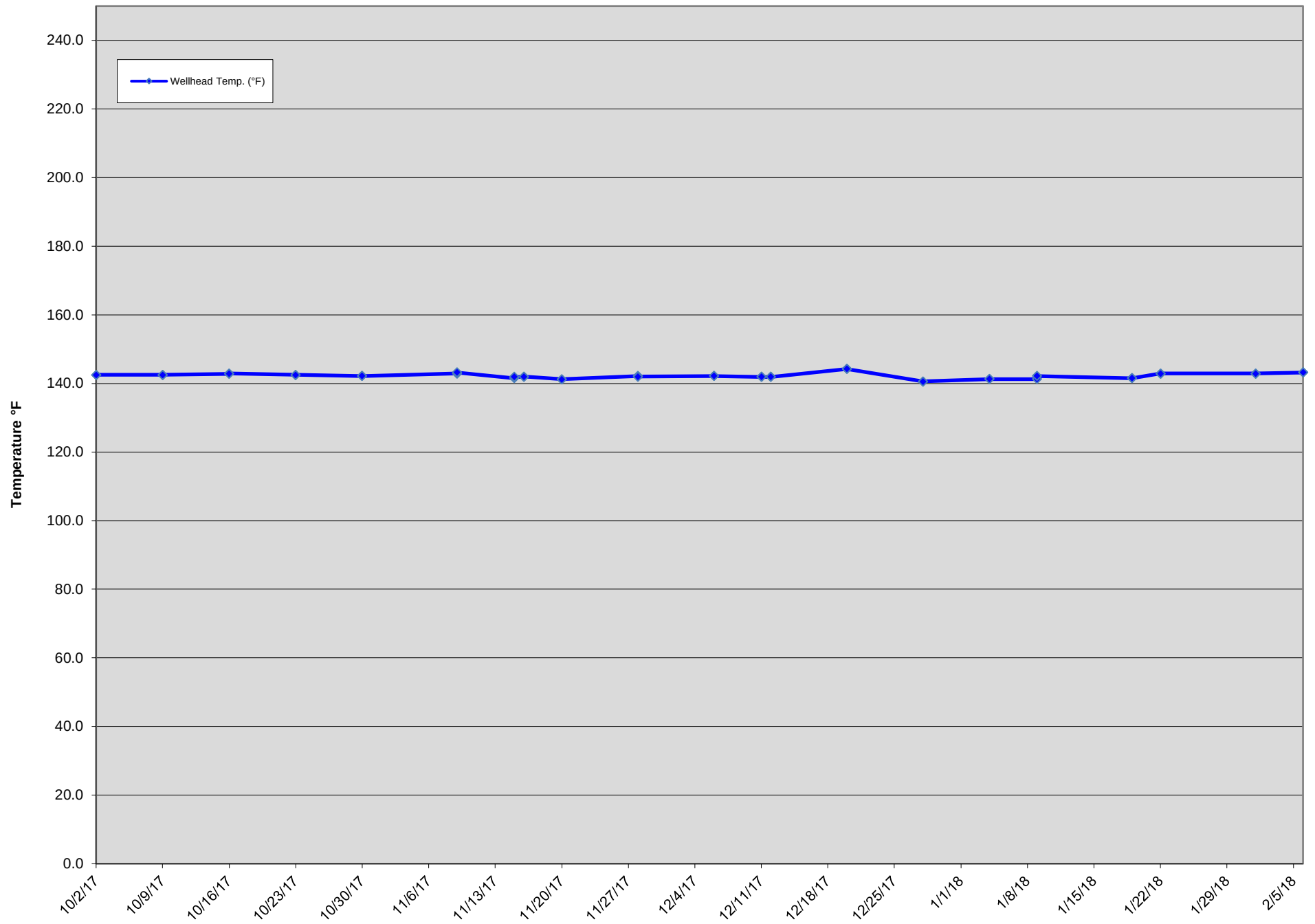
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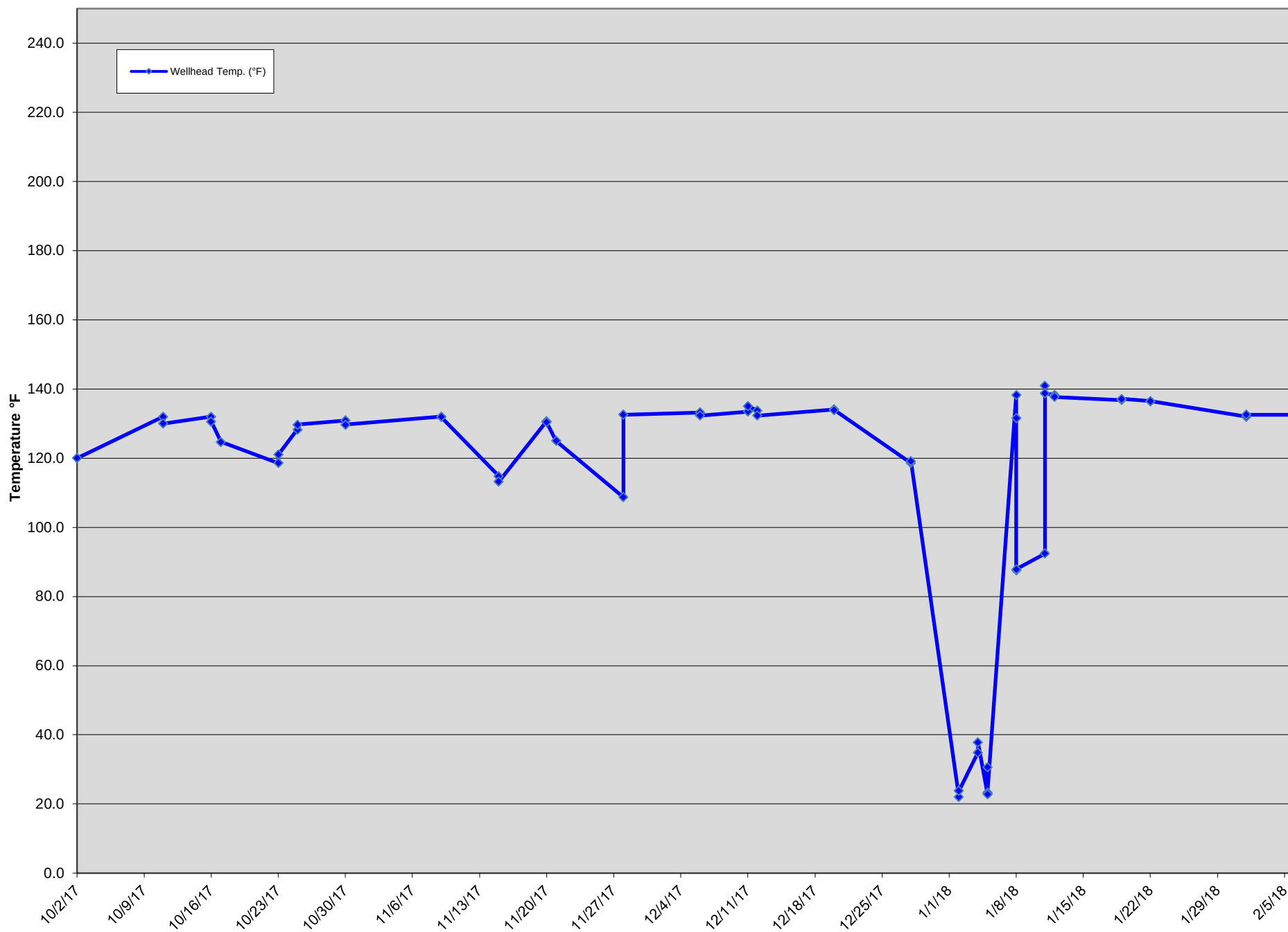
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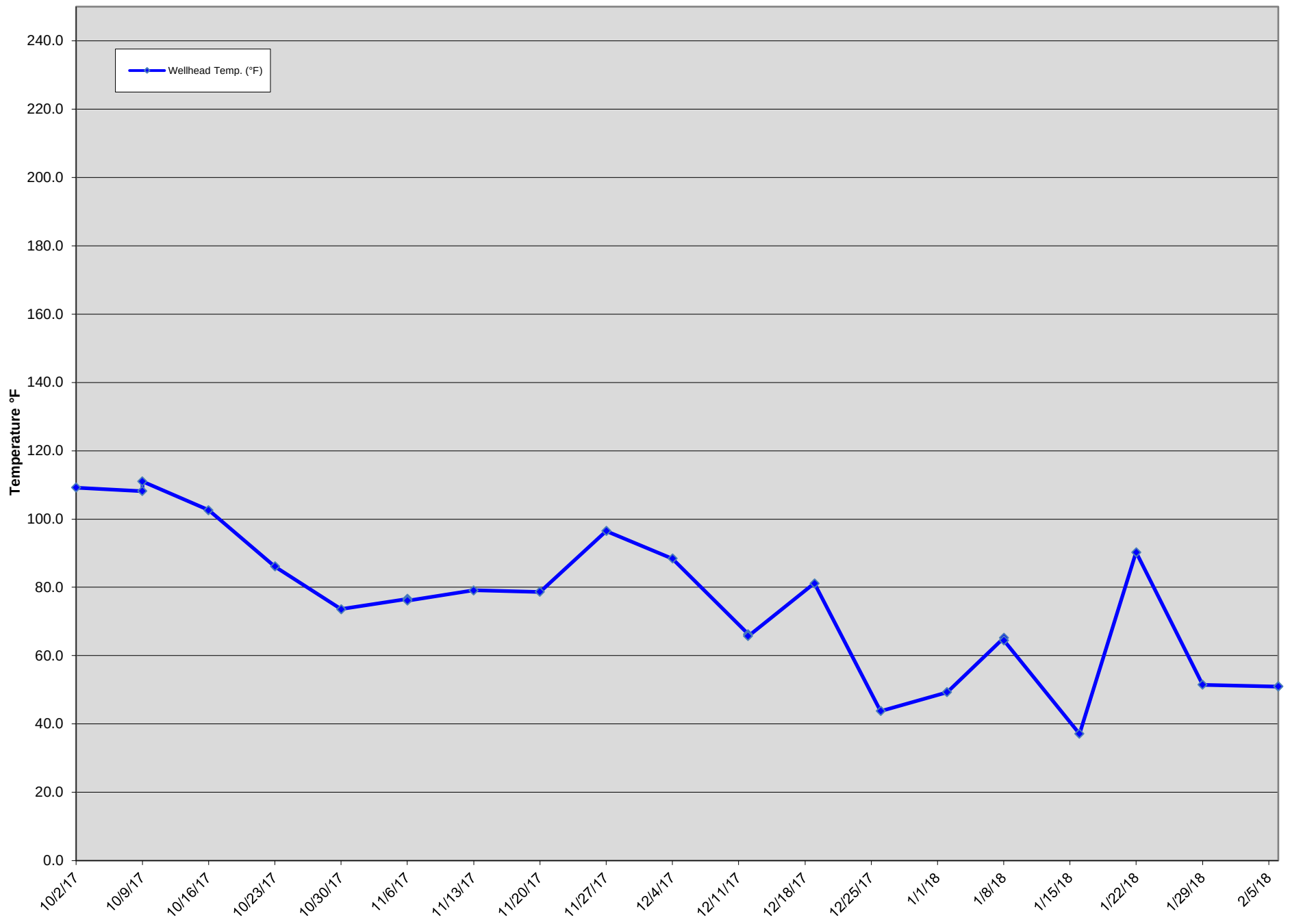
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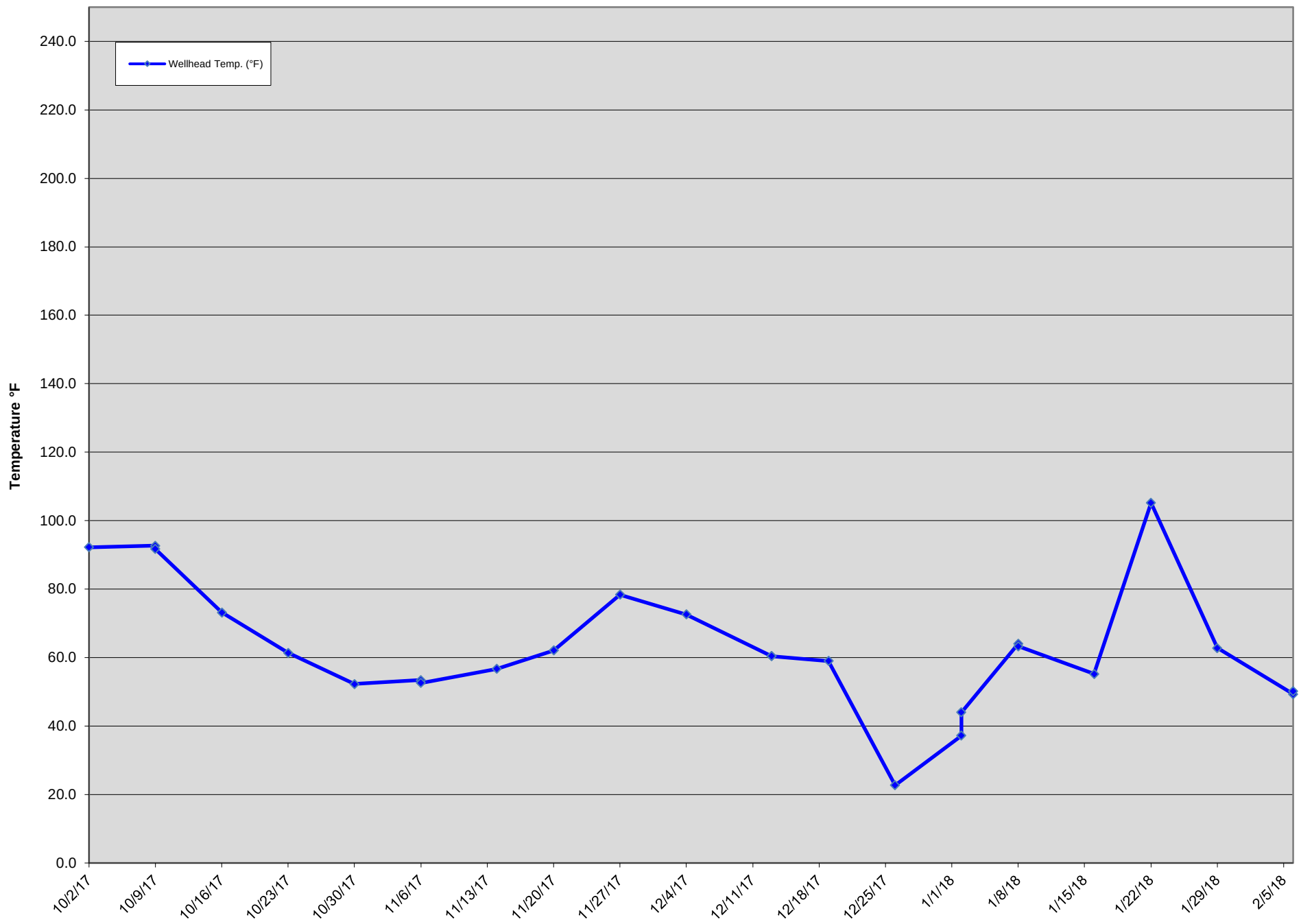
GEW-055 Wellhead Temperatures



GEW-056R Wellhead Temperatures



GEW-109 Wellhead Temperatures



GEW-110 Wellhead Temperatures

