Bridgeton Landfill, LLC

Weekly Data Submittal

Week of September 15, 2019 – September 21, 2019

Required by Section IX.33.g of Final Consent Judgment, Case No. 13SL-CC01088-01
Effective June 29, 2018

Contents:

Attachment A – Temperature Monitoring Probe Analytical Charts
Attachment B – Leachate Levels in Leachate Collection Sumps
Attachment C – Work Completed/Planned

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**

September 27, 2019

Commentary on Data

September 27, 2019

Attachment A - Temperature Monitoring Probe Analytical Charts

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

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

The TMPs listed above (and associated replacement TMPs) except TMP-6, -9, -11R, and -14R constitute the North Quarry TMPs as defined in the August 2017 *North Quarry Subsurface Temperature Monitoring Probes Work Plan*. No temperature in the individual thermocouples of the North Quarry TMPs exceeds the temperature threshold established in this workplan.

Attachment B – Leachate Levels in Leachate Collection Sumps

The pumps in LCS-1D and LCS-2D were non-operational during the weekly reporting period.

A Blackhawk pneumatic pump was installed in LCS-3D on 2/14/19 and was fully operational during the weekly reporting period. Liquid level was measured manually.

The level sensor in LCS-4B is currently operational and responsive. 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.

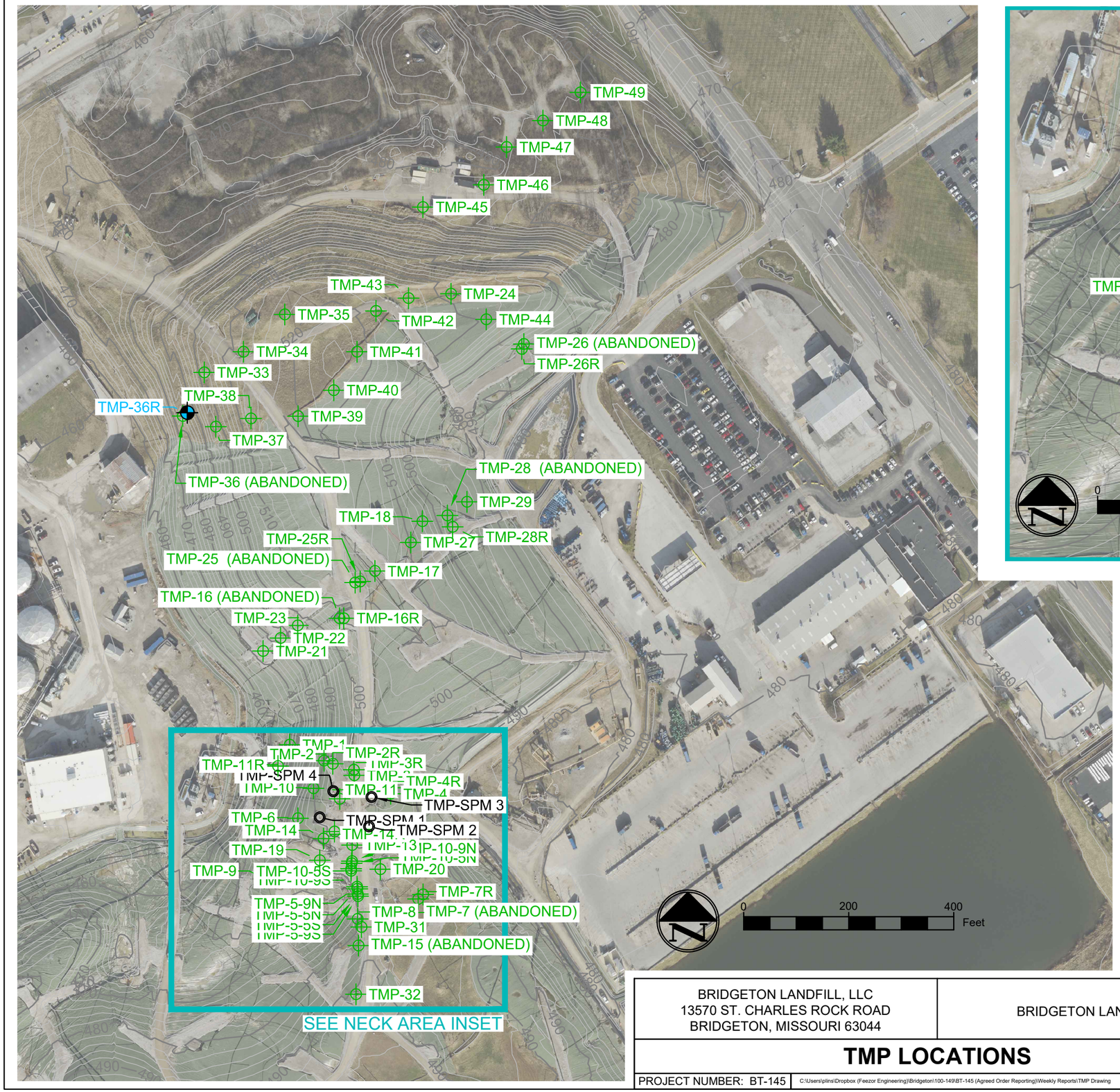
The pumps in LCS-5B and LCS-6B were fully operational during the weekly reporting period.

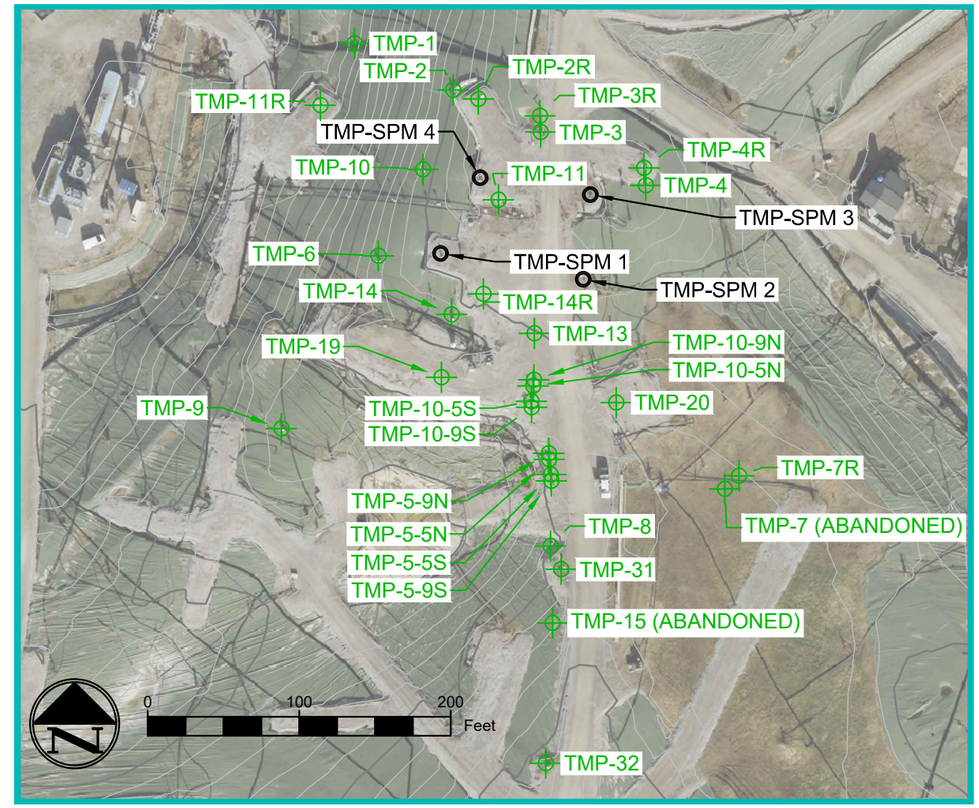
Attachment C – Work Completed / Planned

This attachment presents a list of work completed in the past week and a list of work planned for the upcoming week.

ATTACHMENT A

TEMPERATURE MONITORING PROBE ANALYTICAL CHARTS





NECK AREA INSET

LEGEND

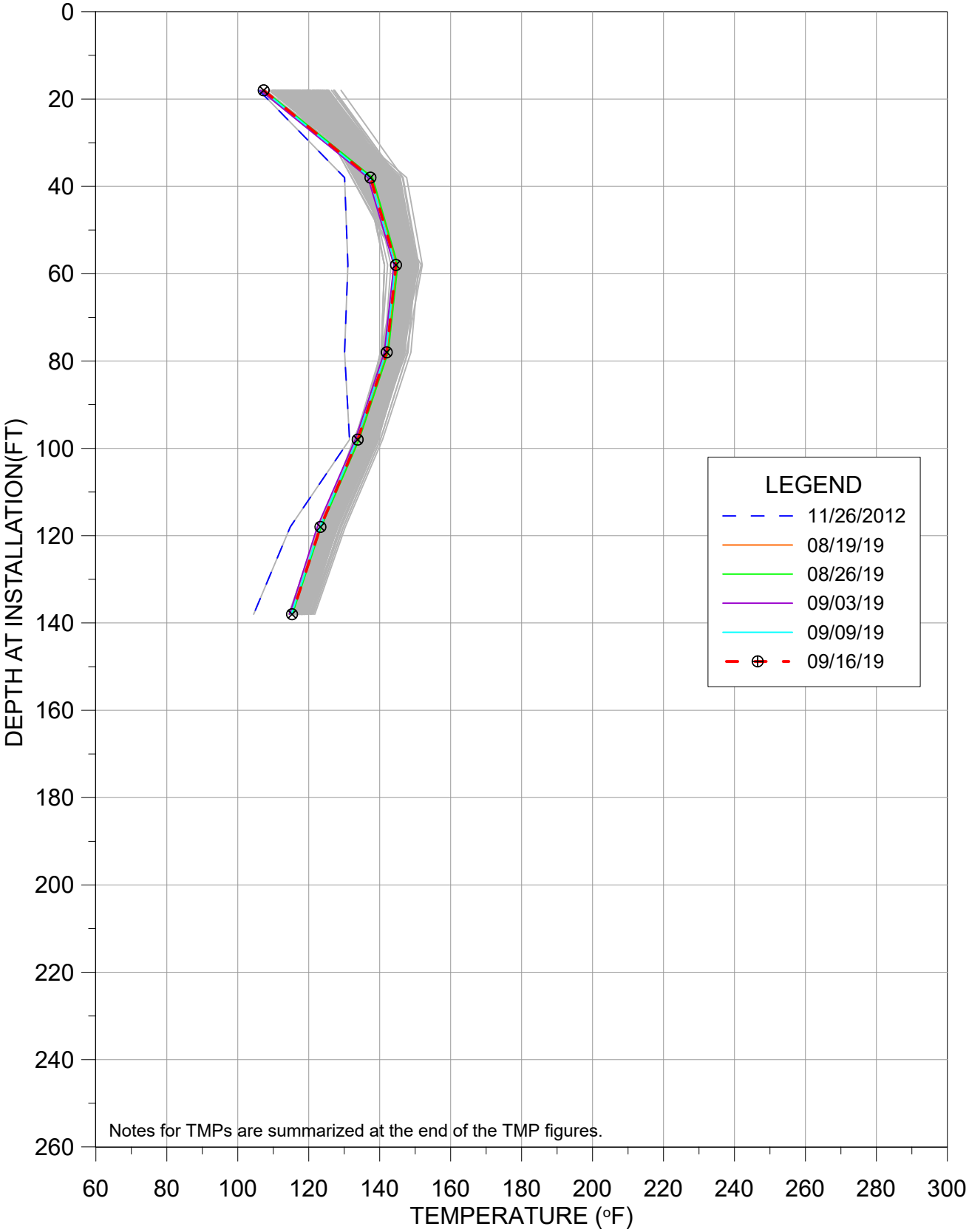
	12-12-2018 AERIAL TOPOGRAPHY (2' CONTOUR)
500	12-12-2018 AERIAL TOPOGRAPHY (10' CONTOUR)
TMP-13	INSTALLED TMP LOCATION
TMP-SPM 1	TMP-SPM (ASBUILT OCTOBER 13, 2016)
TMP-36R	REPLACEMENT TMP INSTALLED IN DECEMBER 2018

NOTE:

1.) AERIAL TOPOGRAPHY PROVIDED BY COOPER AERIAL SURVEYS, INC. AND IS DATED DECEMBER 12, 2018

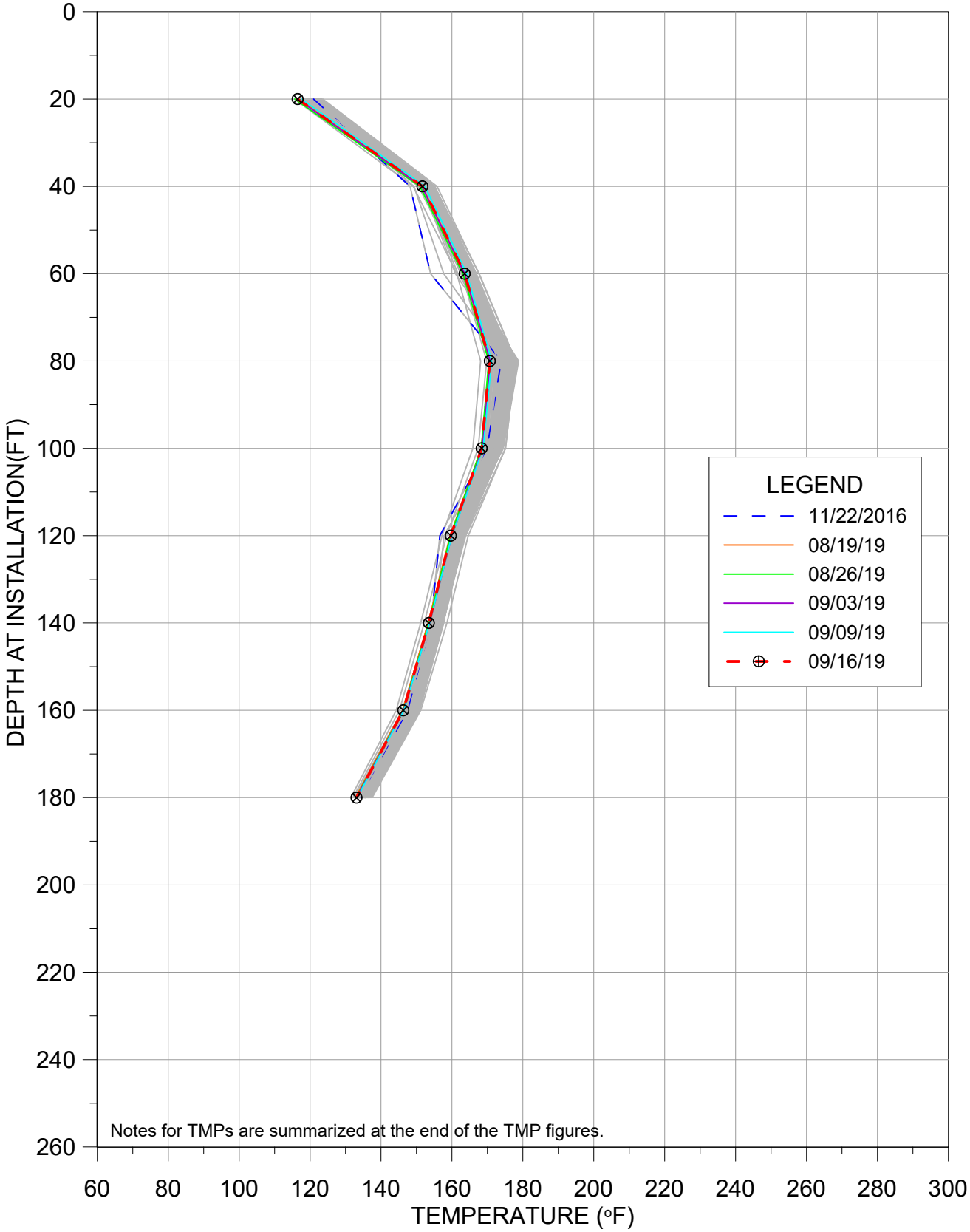
BRIDGETON LANDFILL, LLC 13570 ST. CHARLES ROCK ROAD BRIDGETON, MISSOURI 63044	BRIDGETON LANDFILL	Engineering for a Better World FEEZOR ENGINEERING, INC.	JANUARY 2019 DESIGNED BY: PML APPROVED BY: ---
TMP LOCATIONS			REVISION / DATE
PROJECT NUMBER: BT-145	C:\Users\plins\Dropbox (Feezor Engineering)\Bridgeton\100-149\BT-145 (Agreed Order Reporting)\Weekly Reports\TMP Drawing		DRAWING NO.:

TMP-1



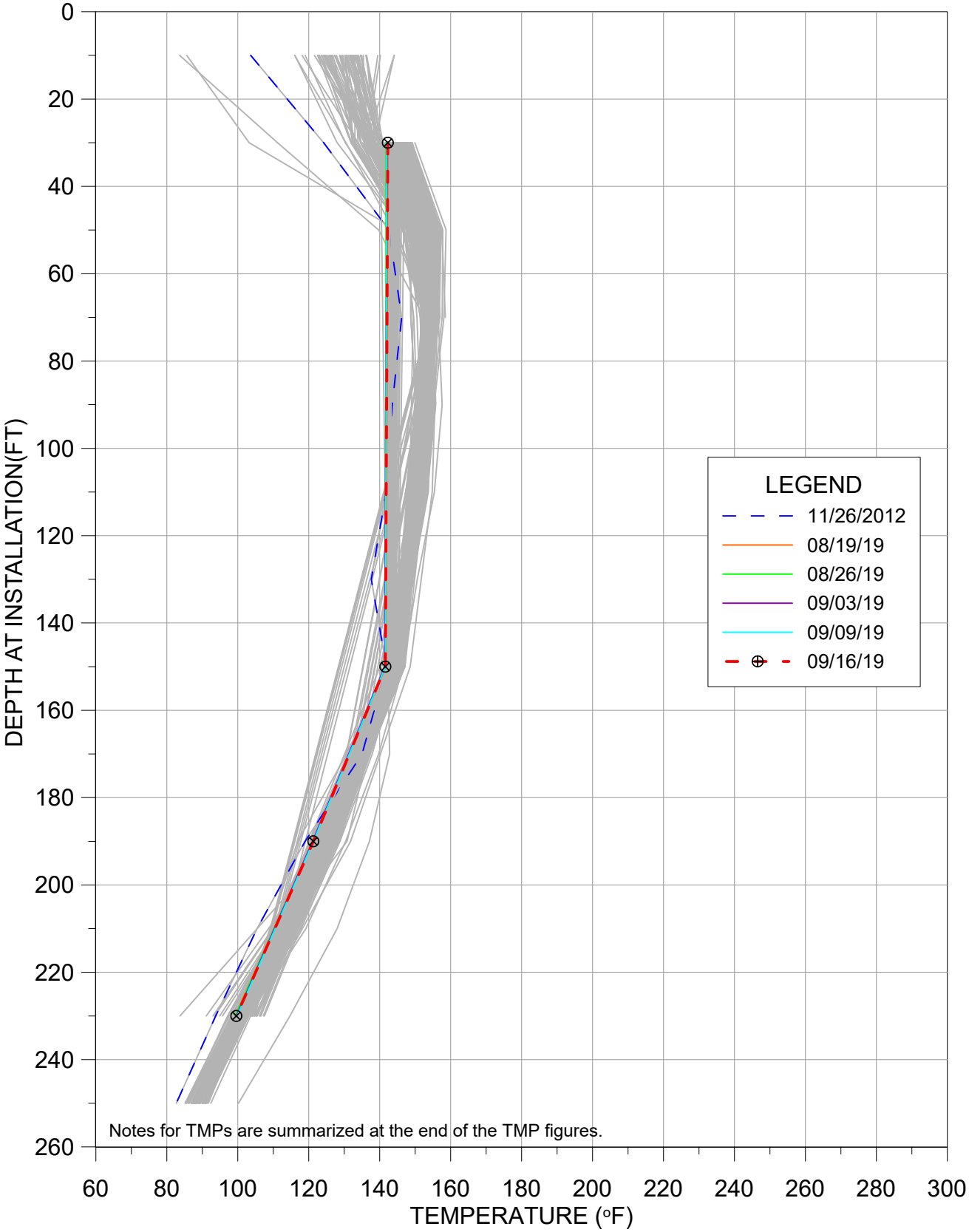
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-2R



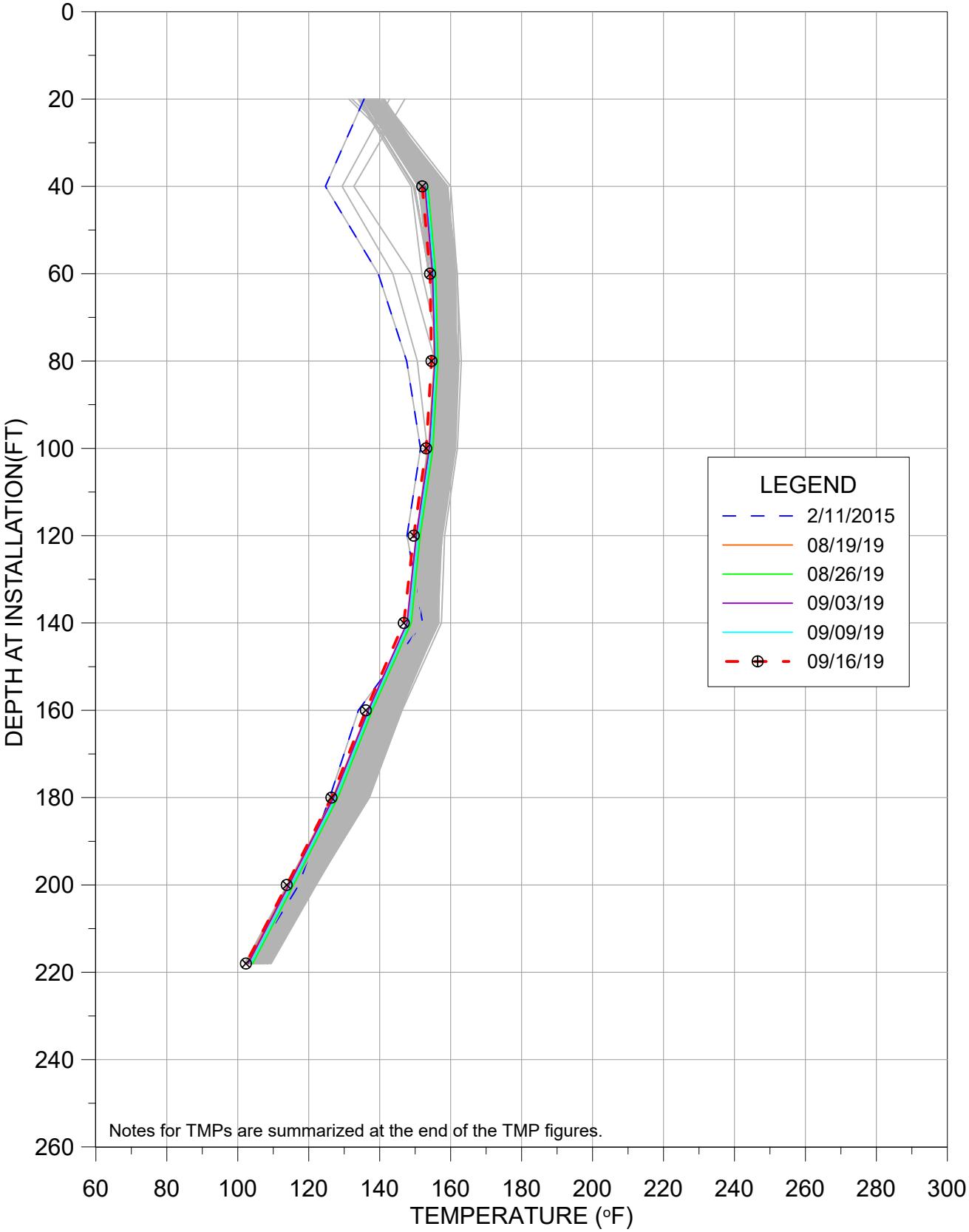
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-3



TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-3R



TEMPERATURE VS DEPTH
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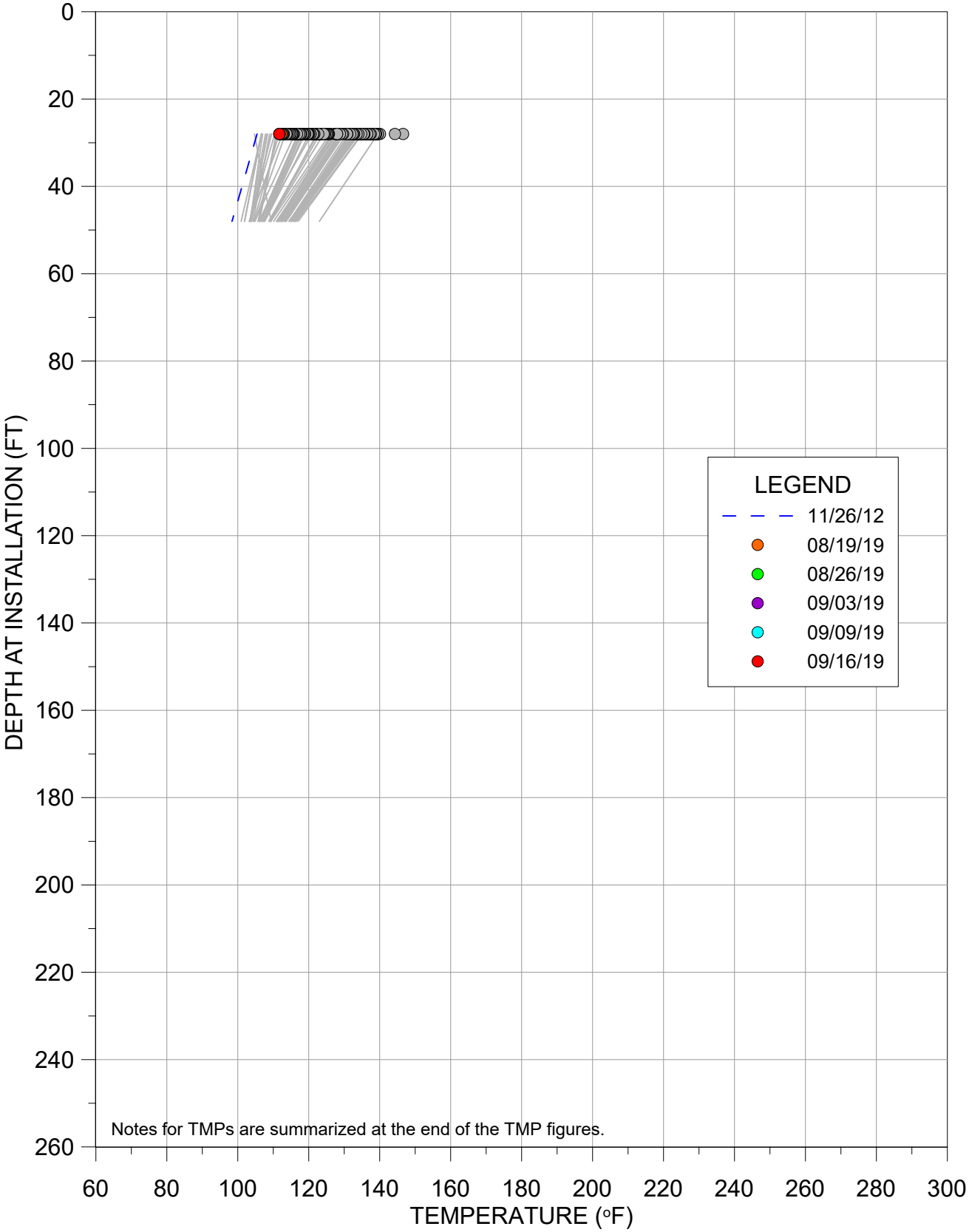
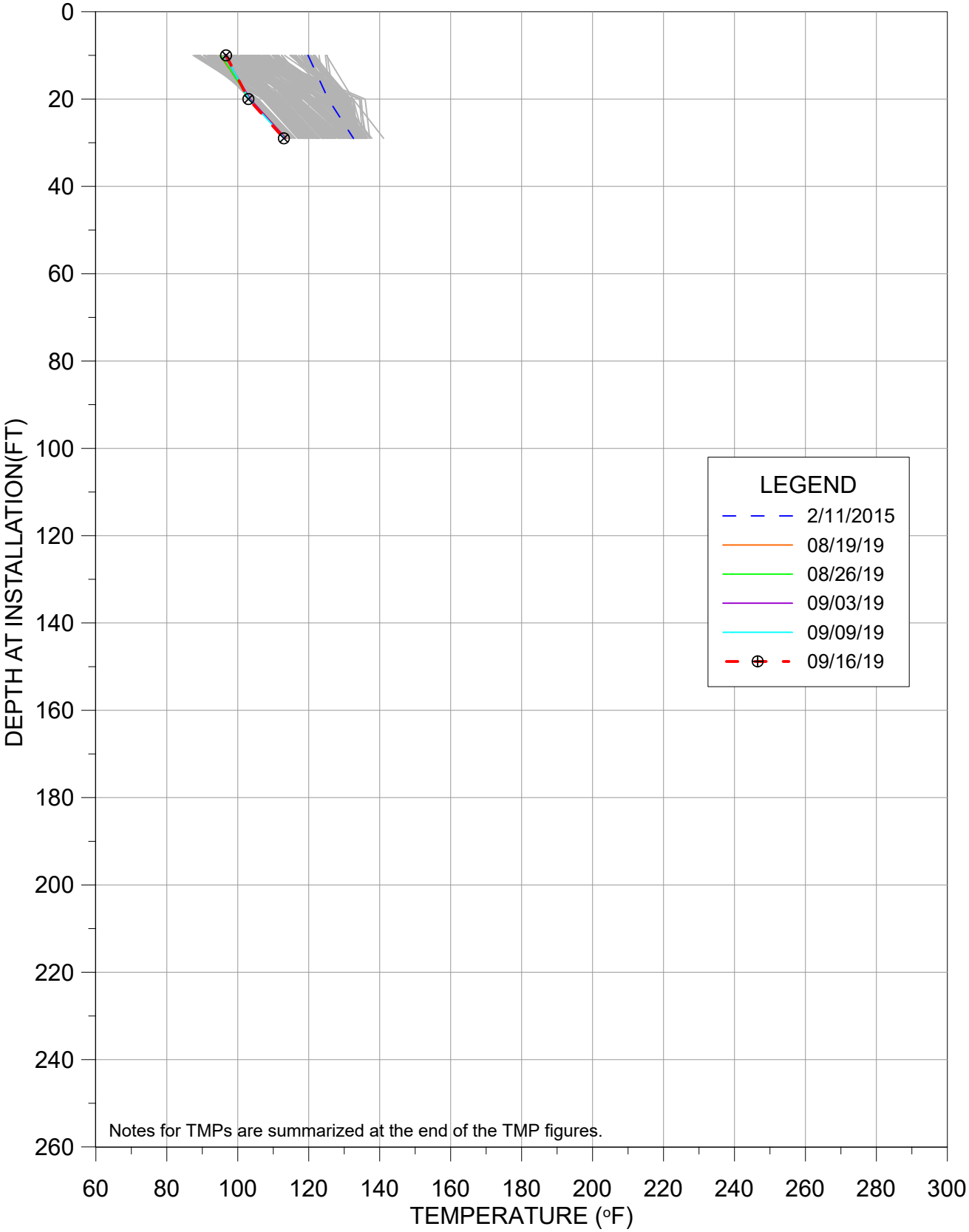
TMP-4



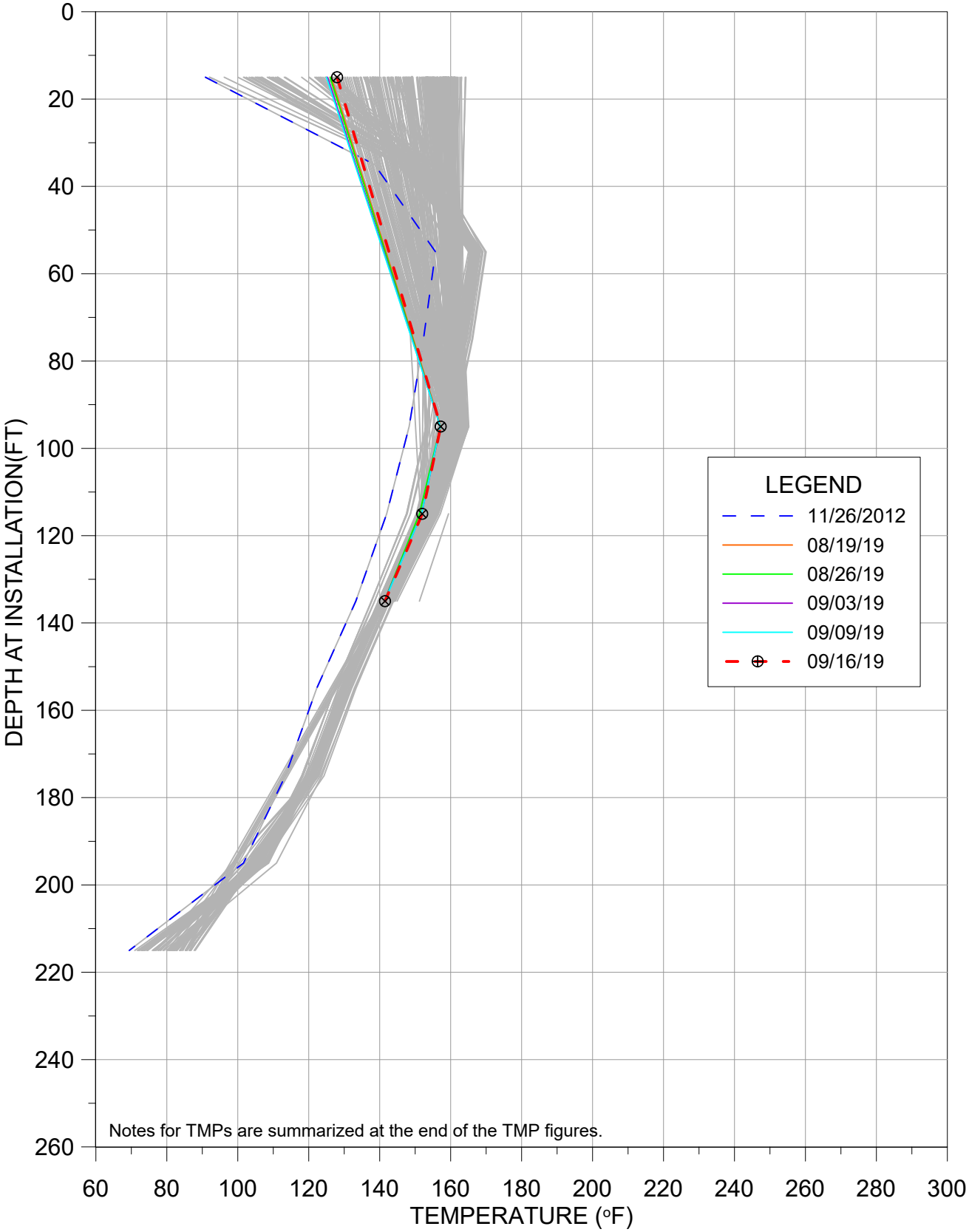
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-4R



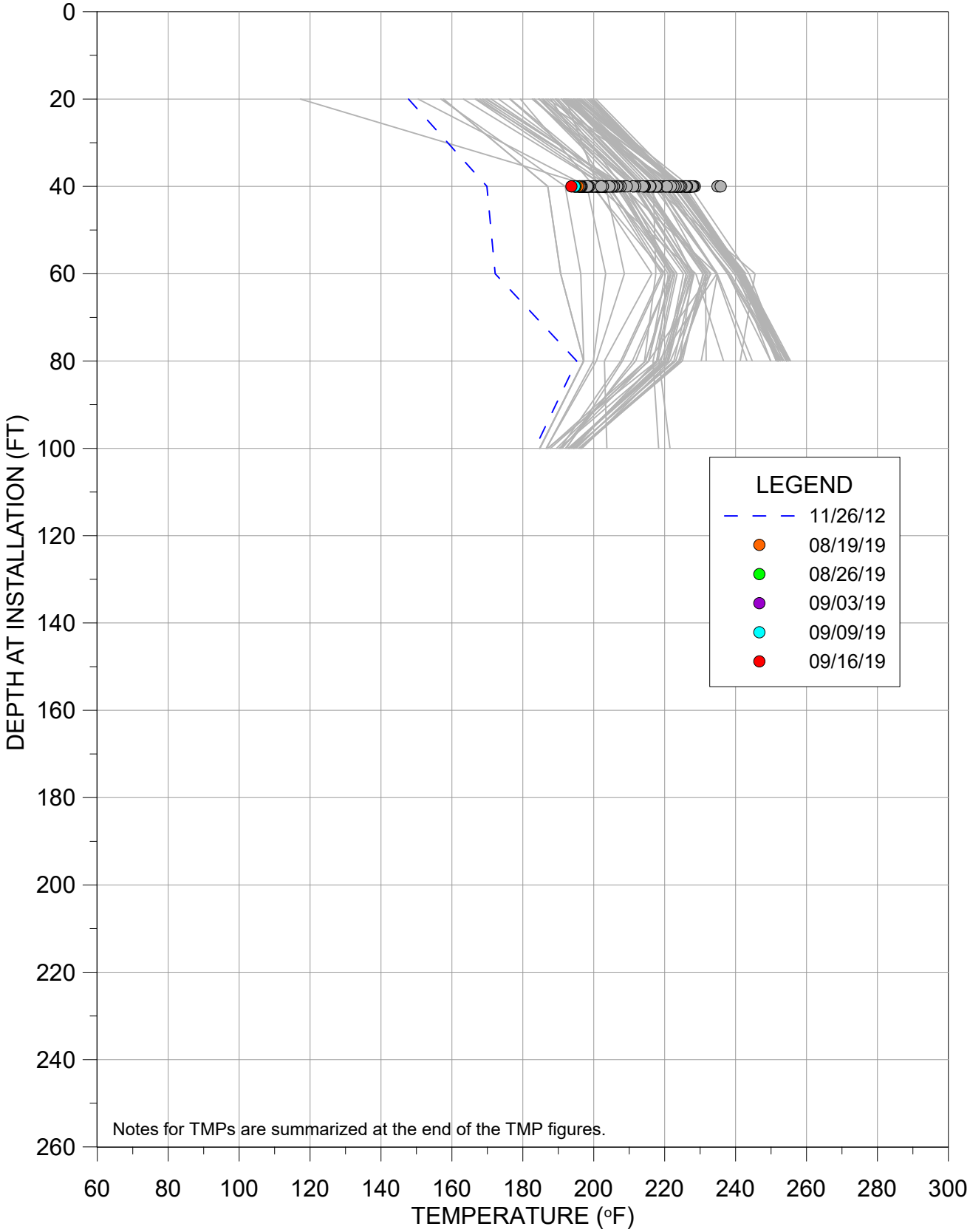
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-6



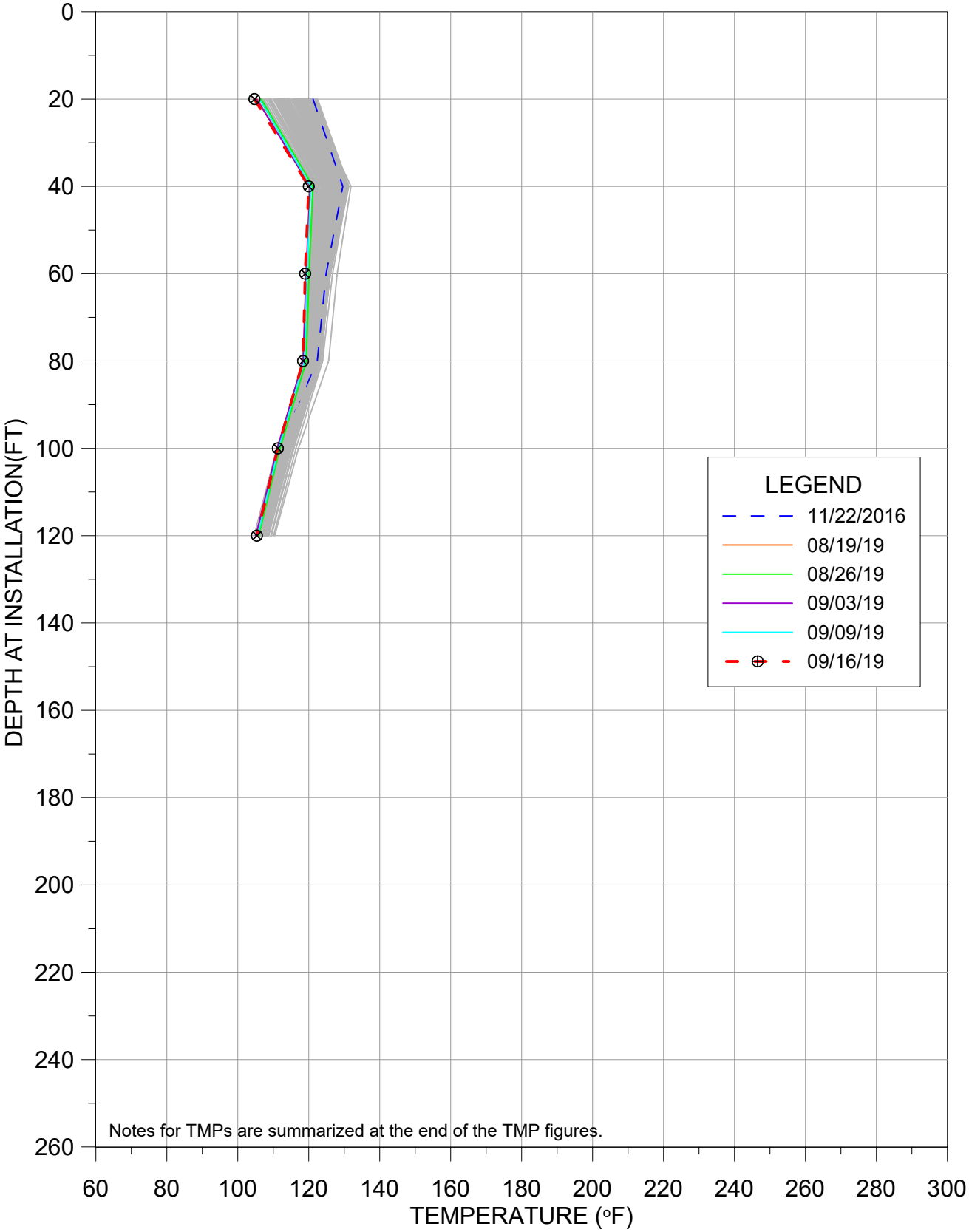
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-9



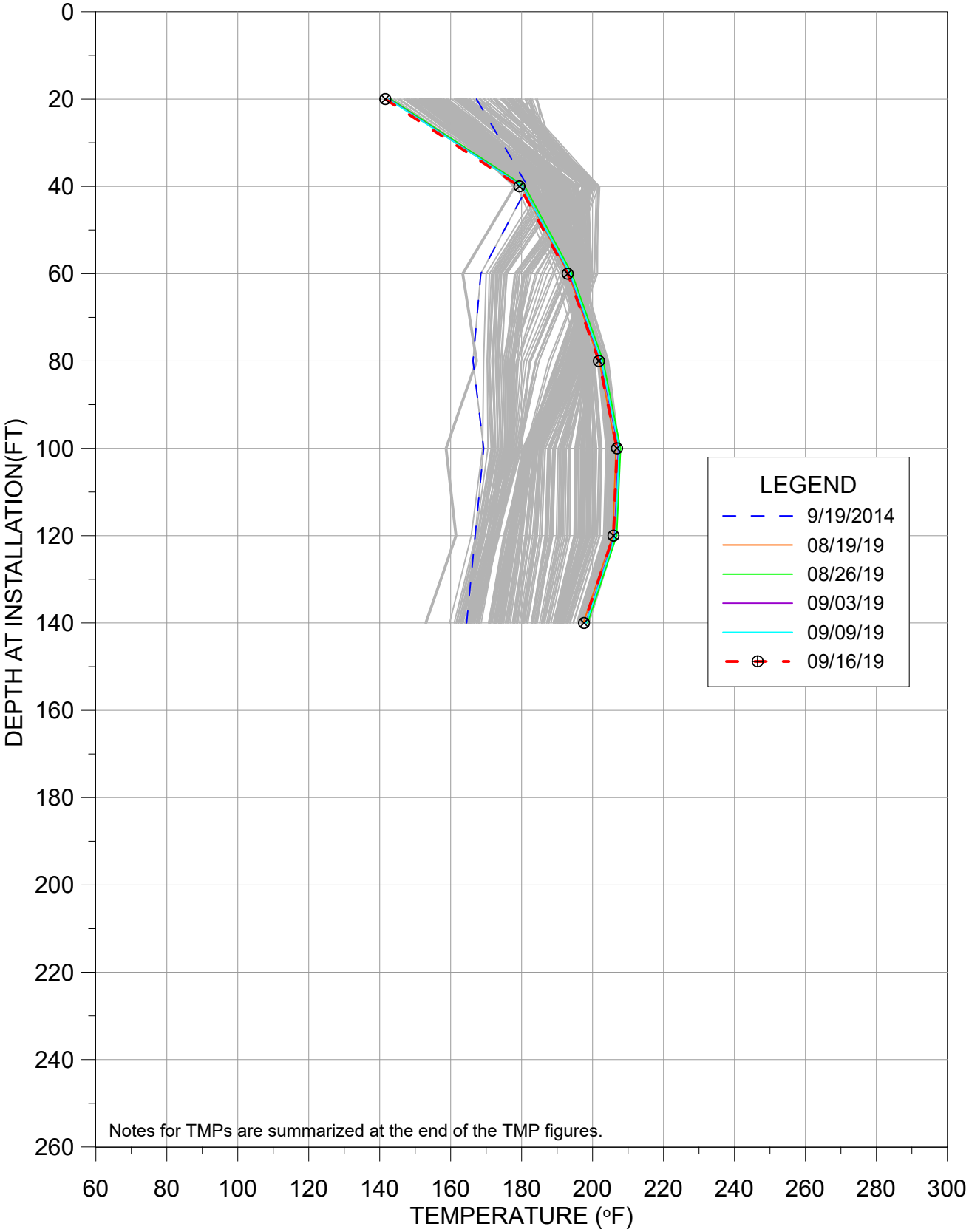
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-11R



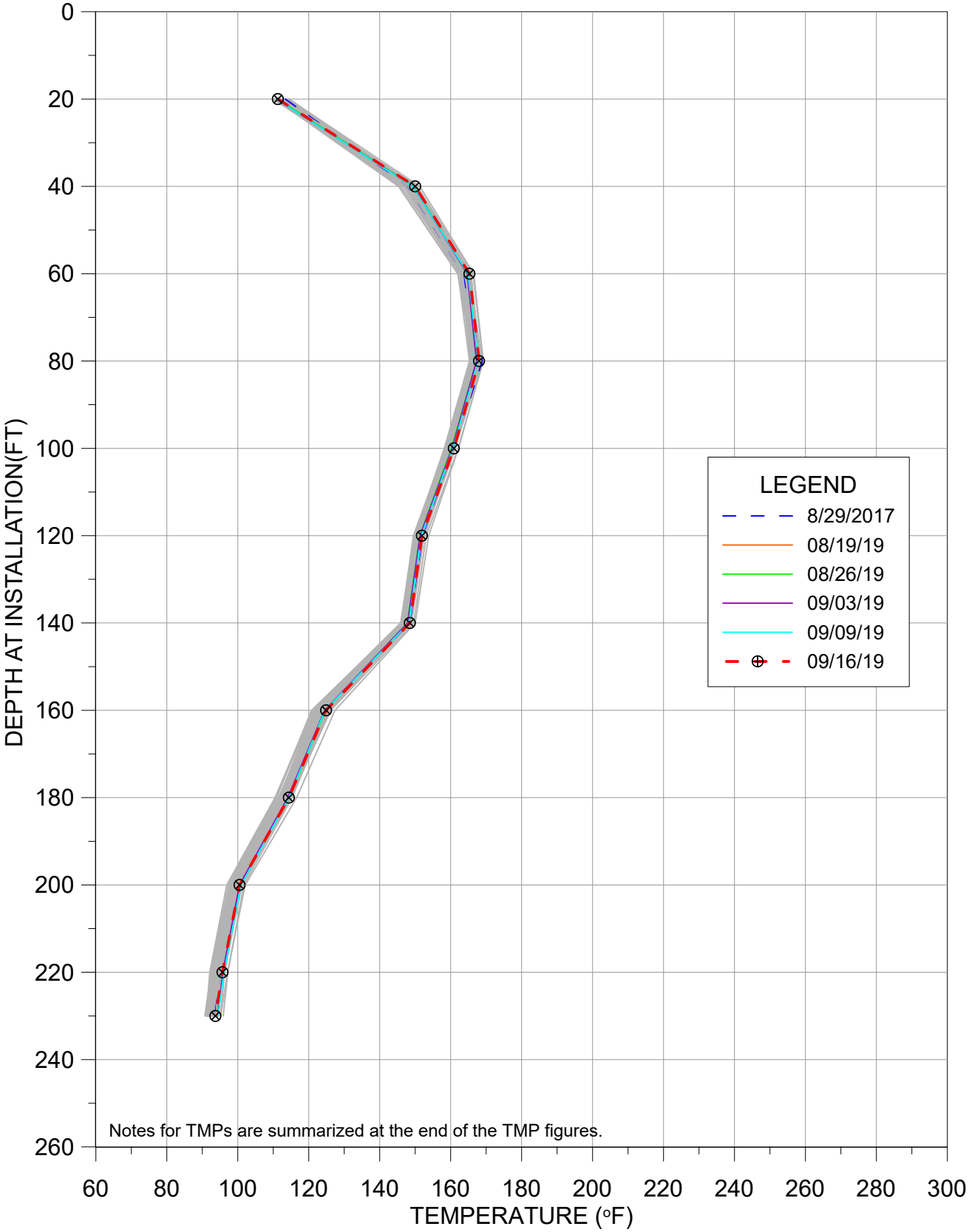
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-14R



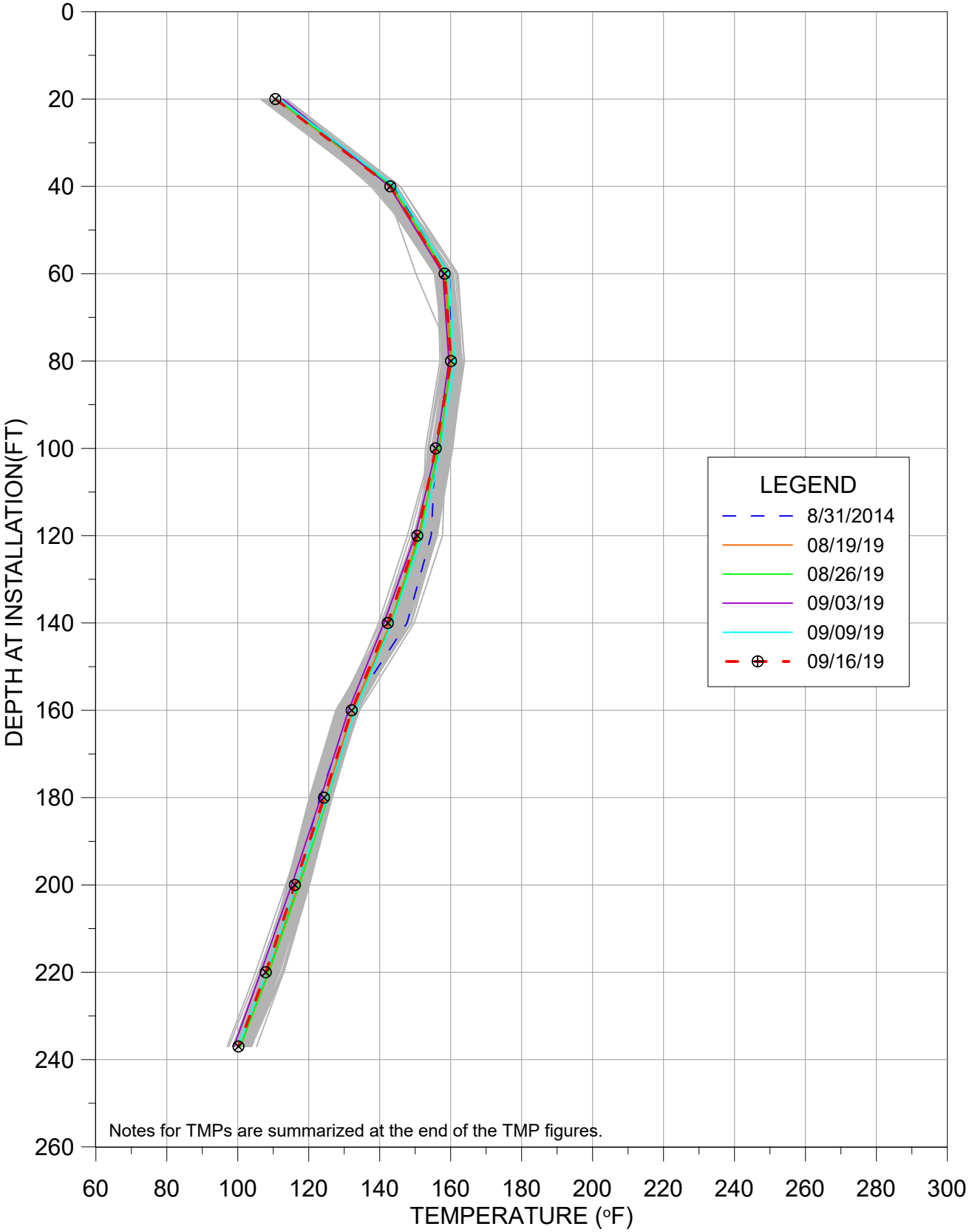
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-16R



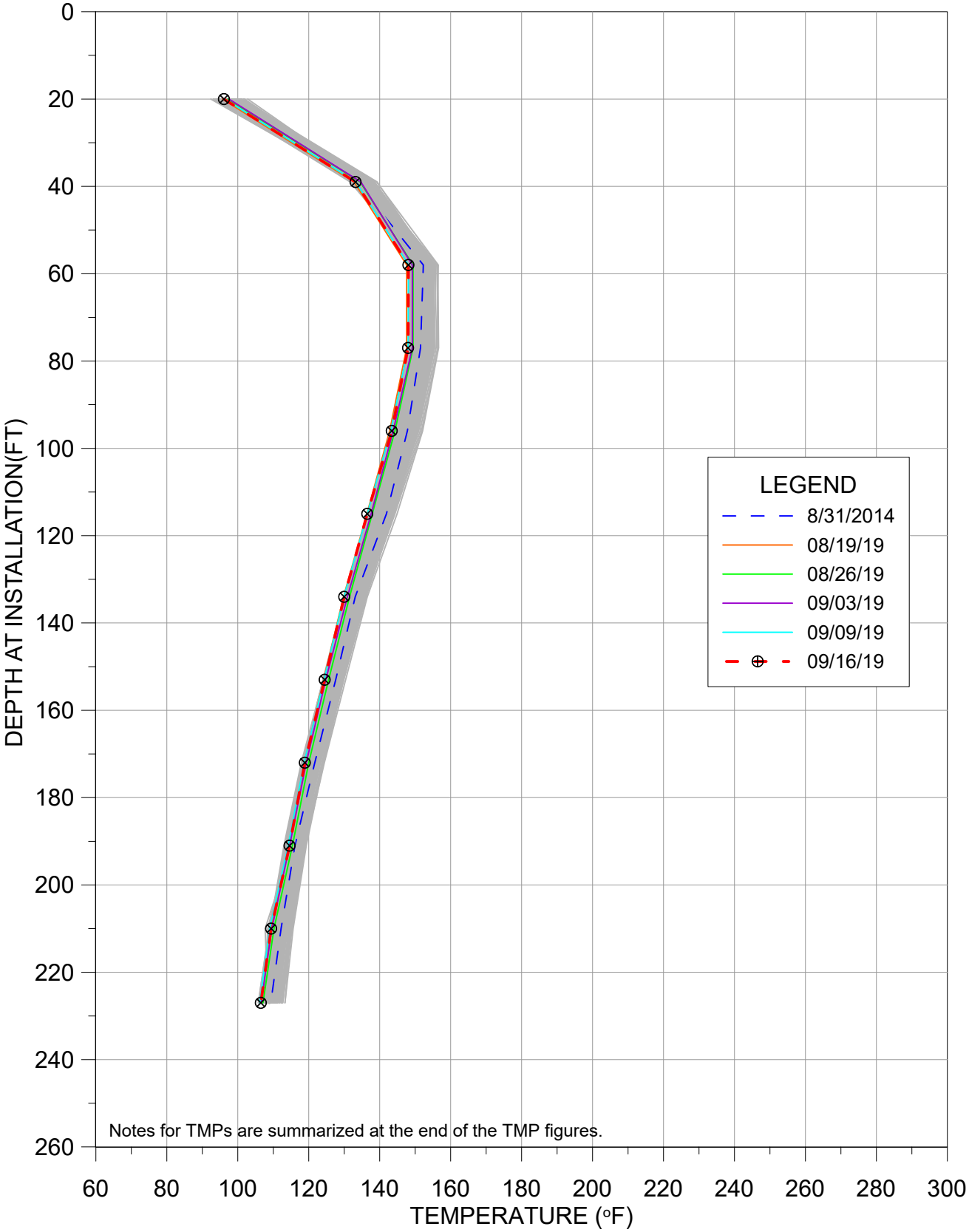
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-17



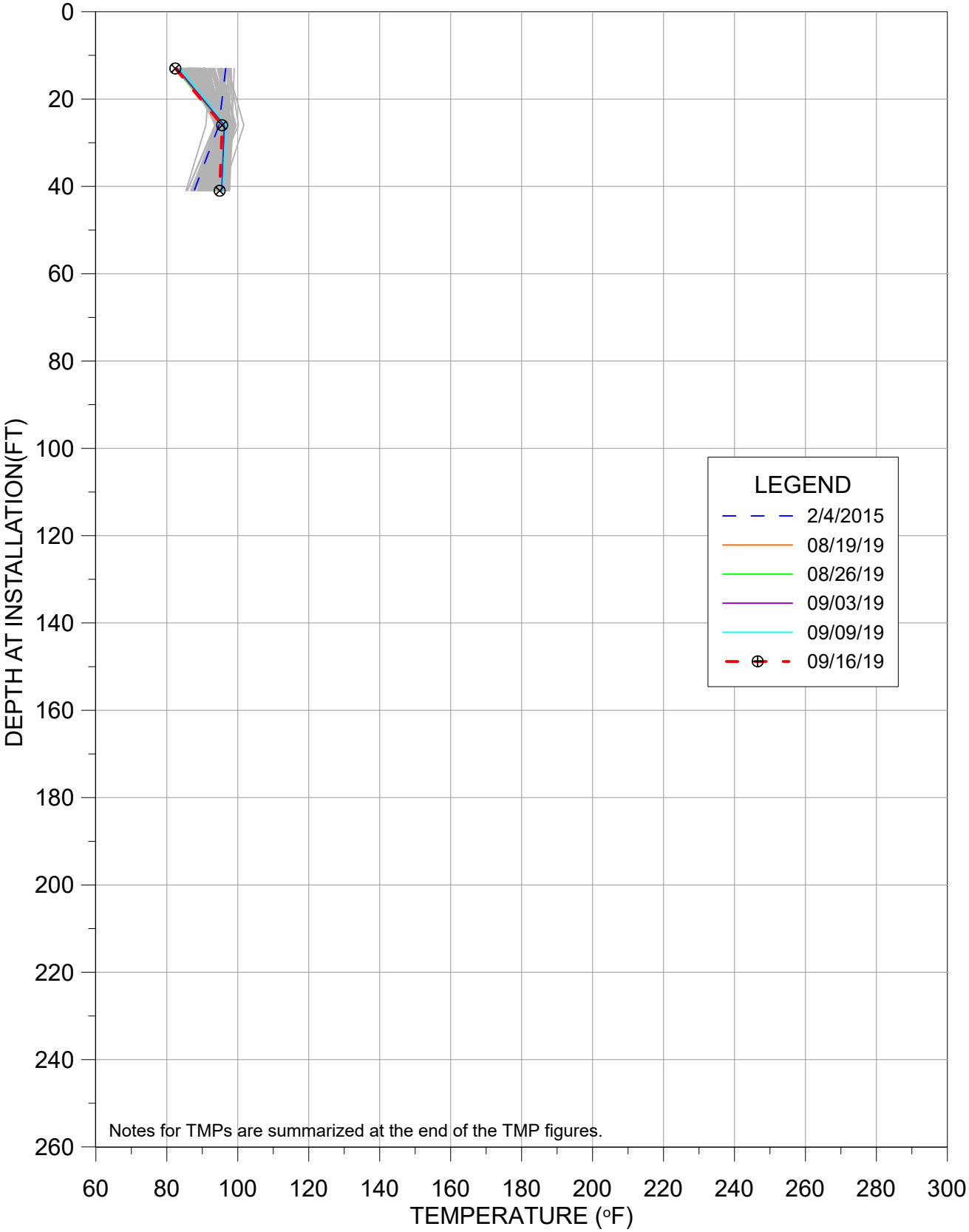
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-18



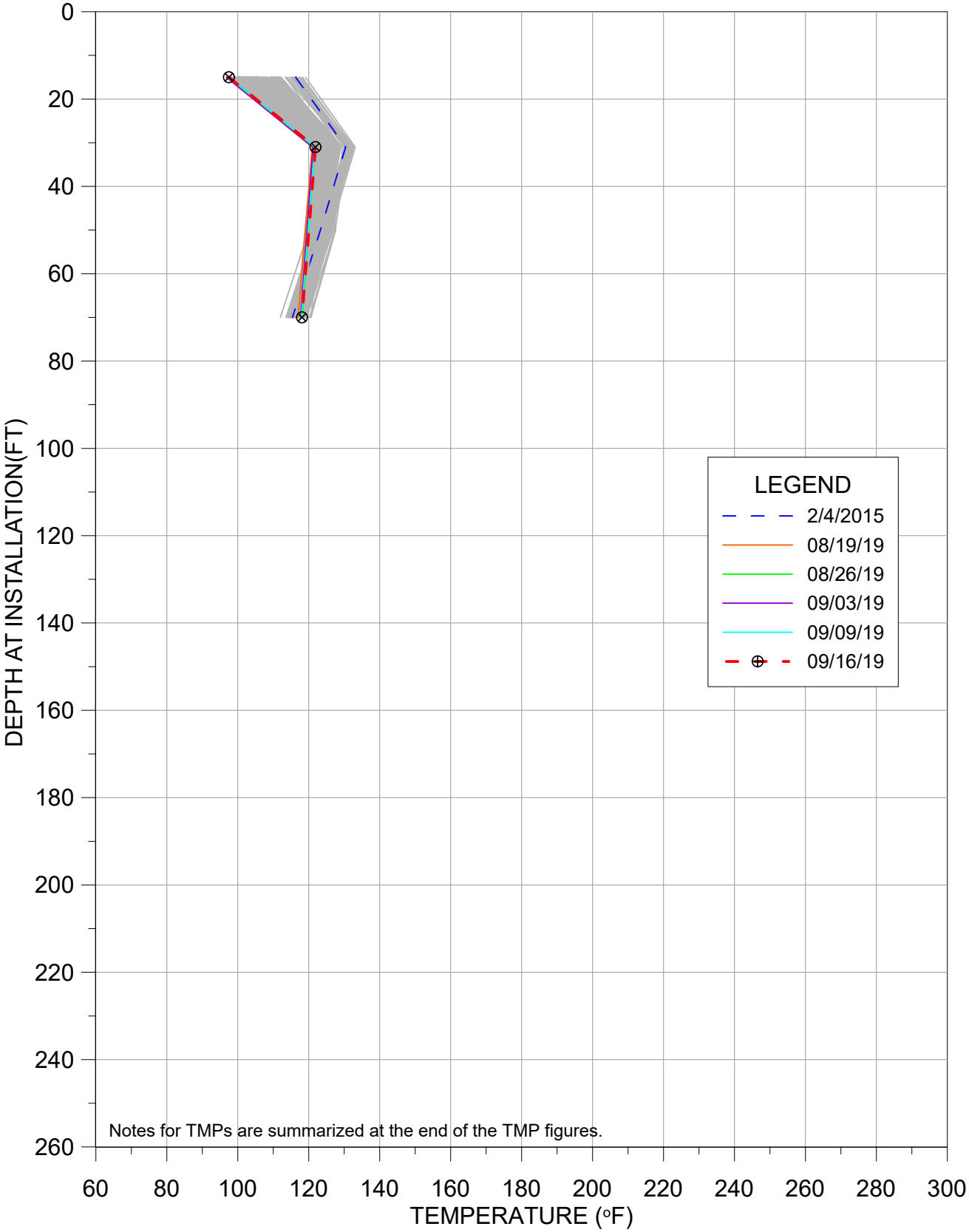
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-21



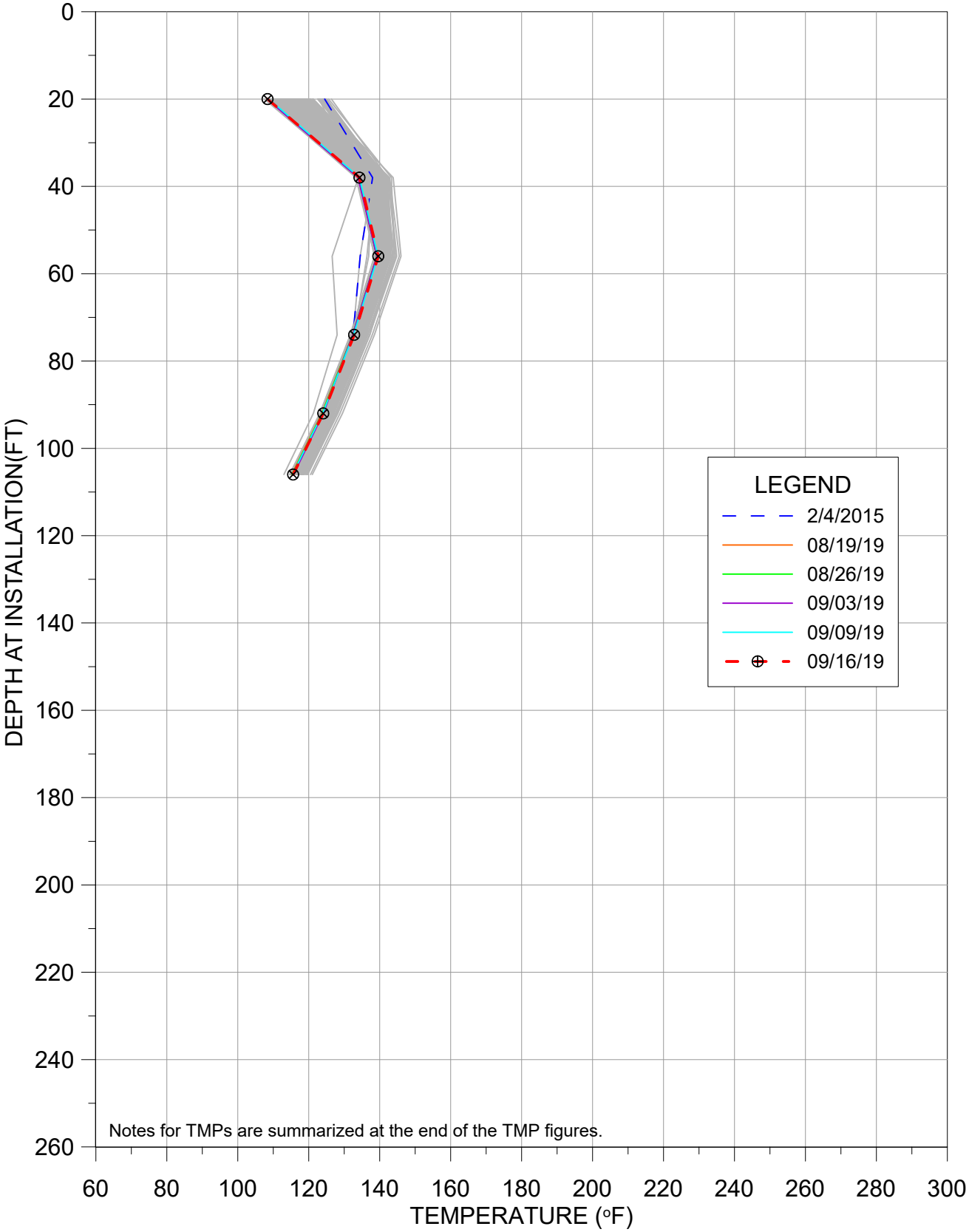
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-22



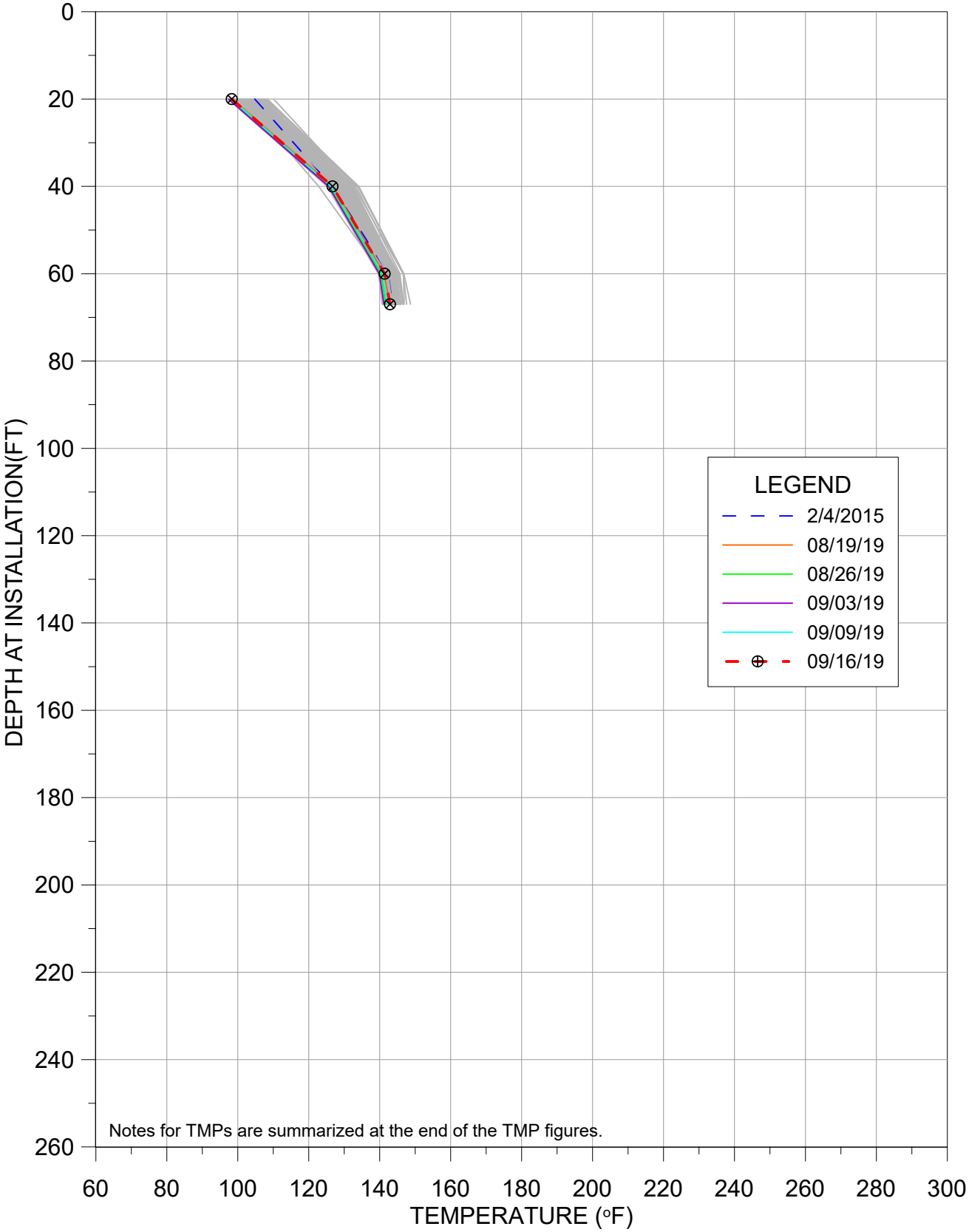
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-23



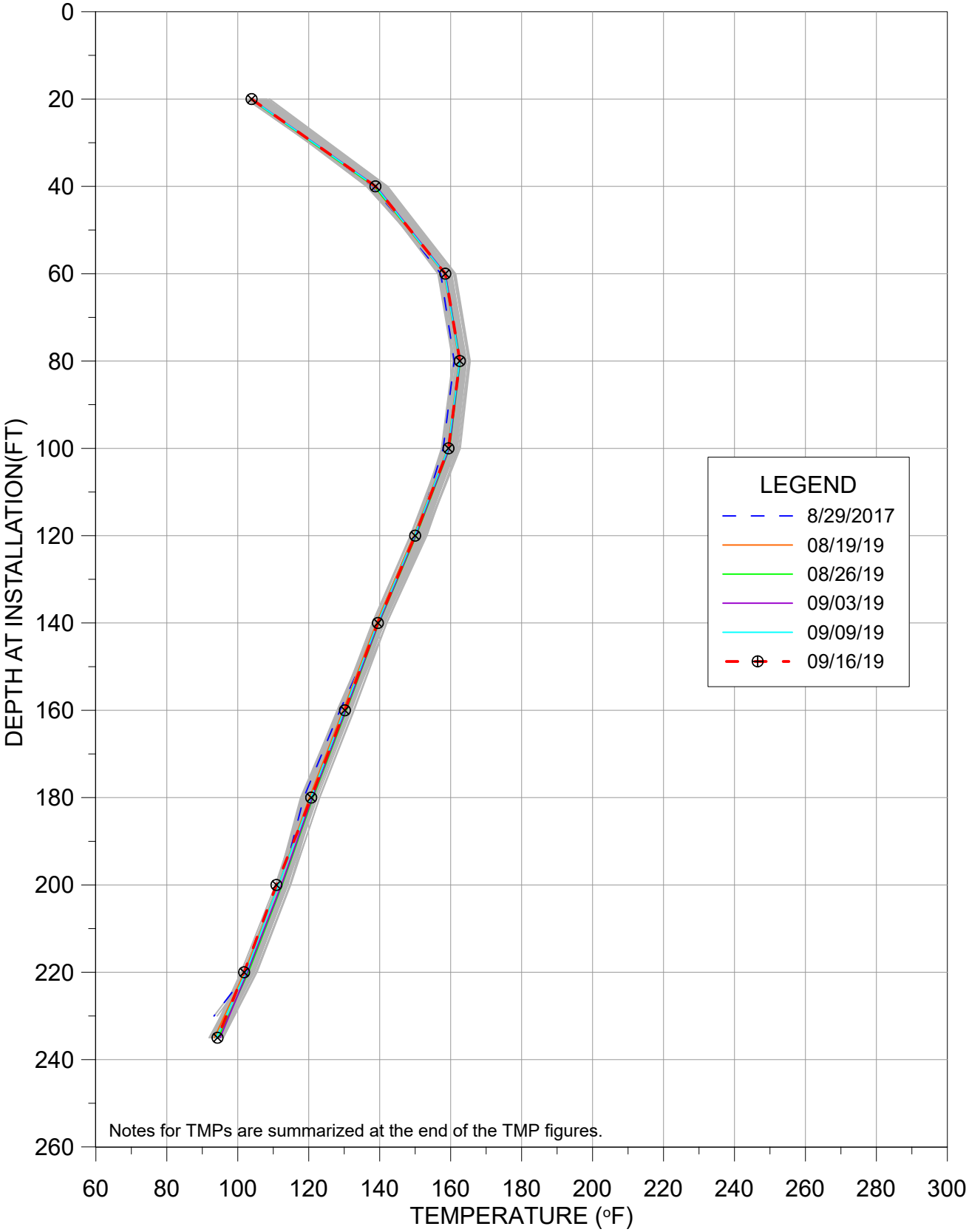
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-24



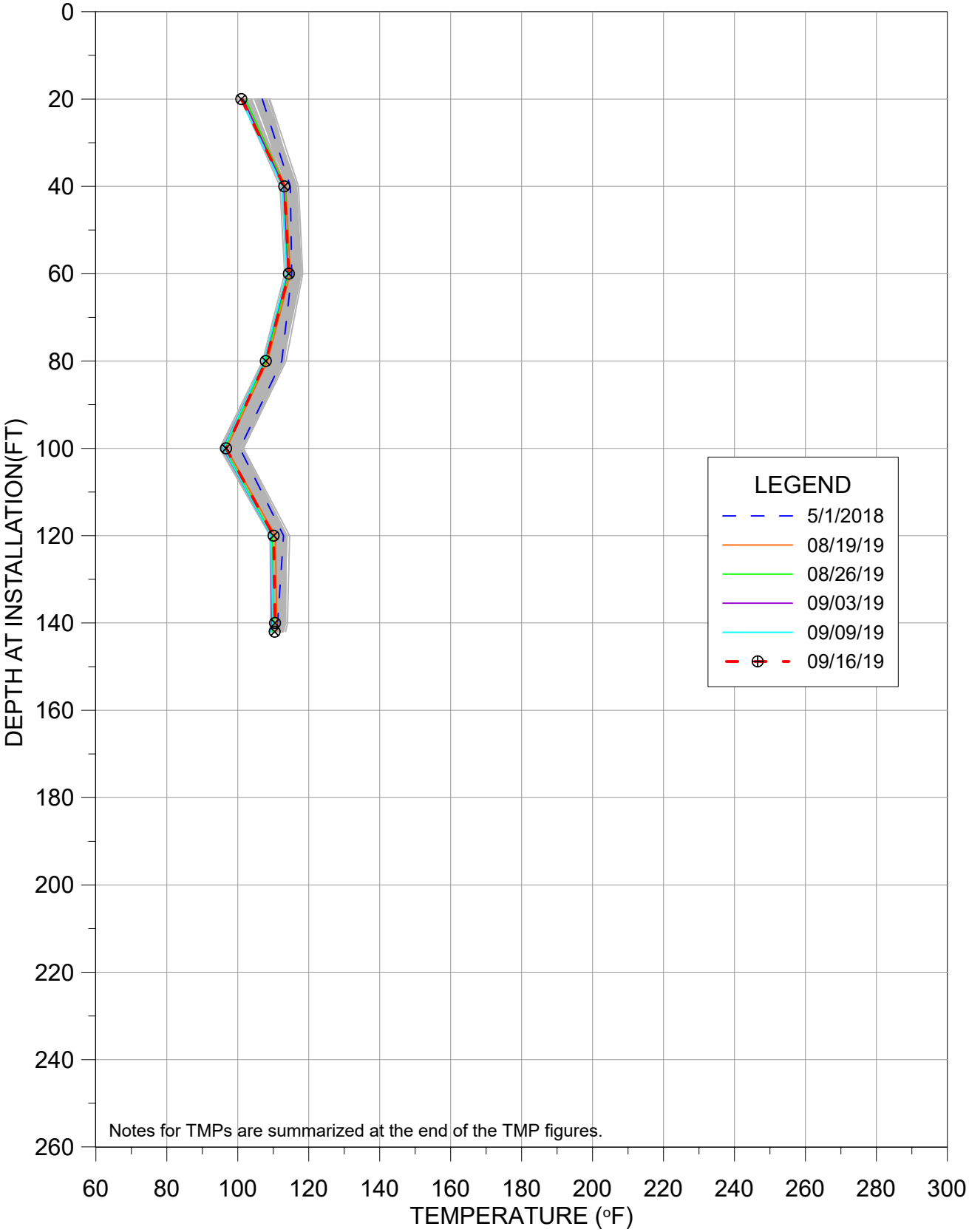
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-25R



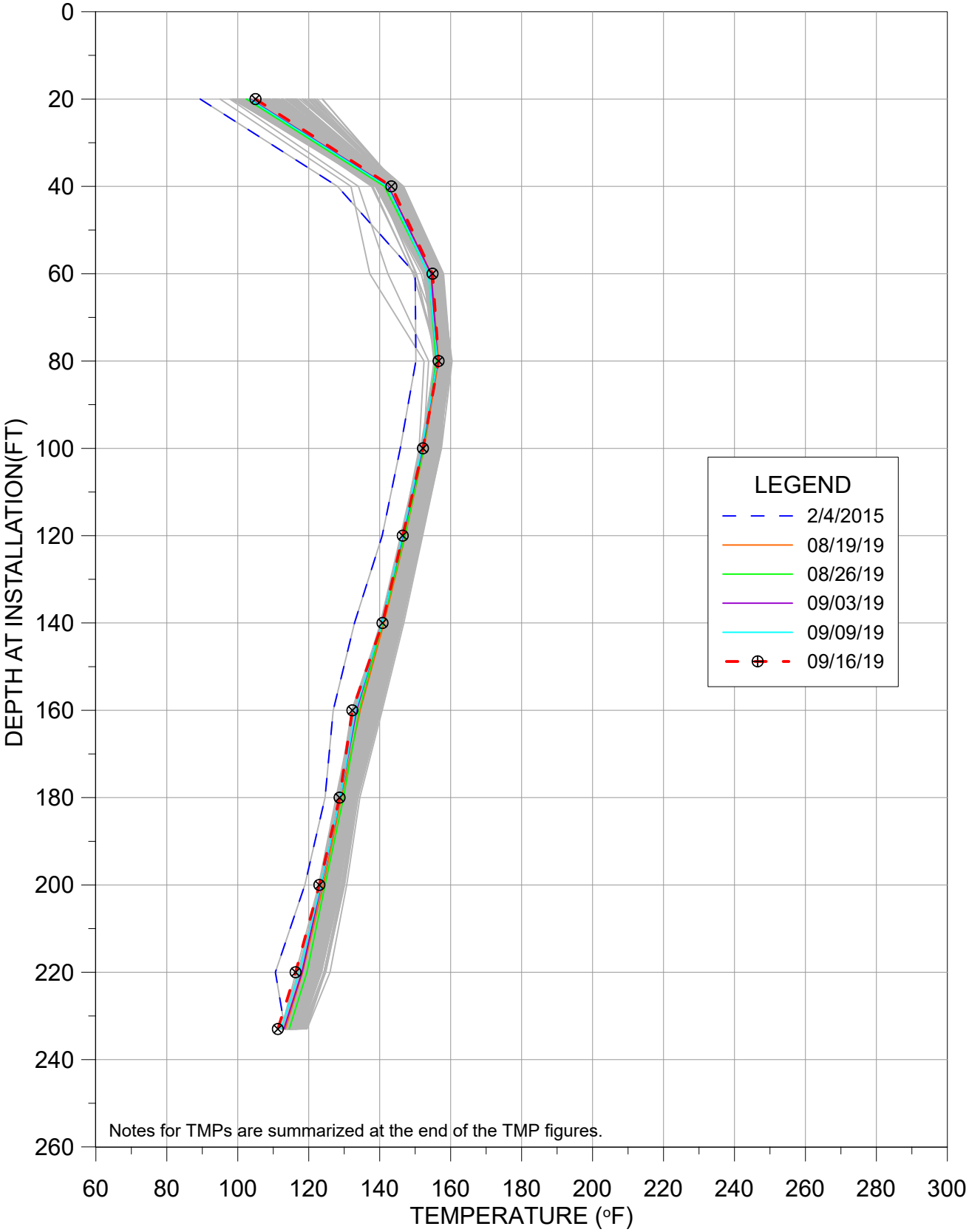
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-26R



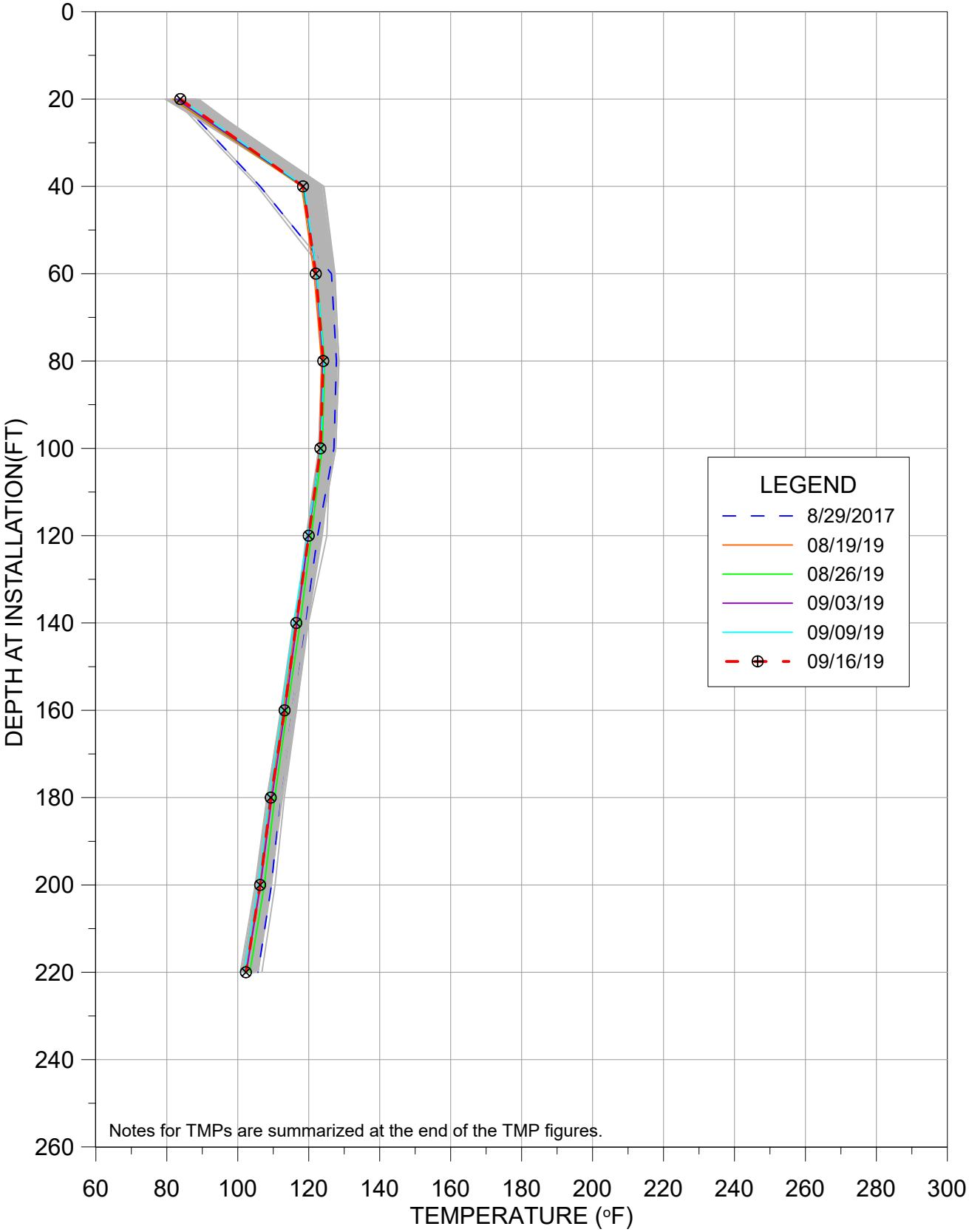
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-27



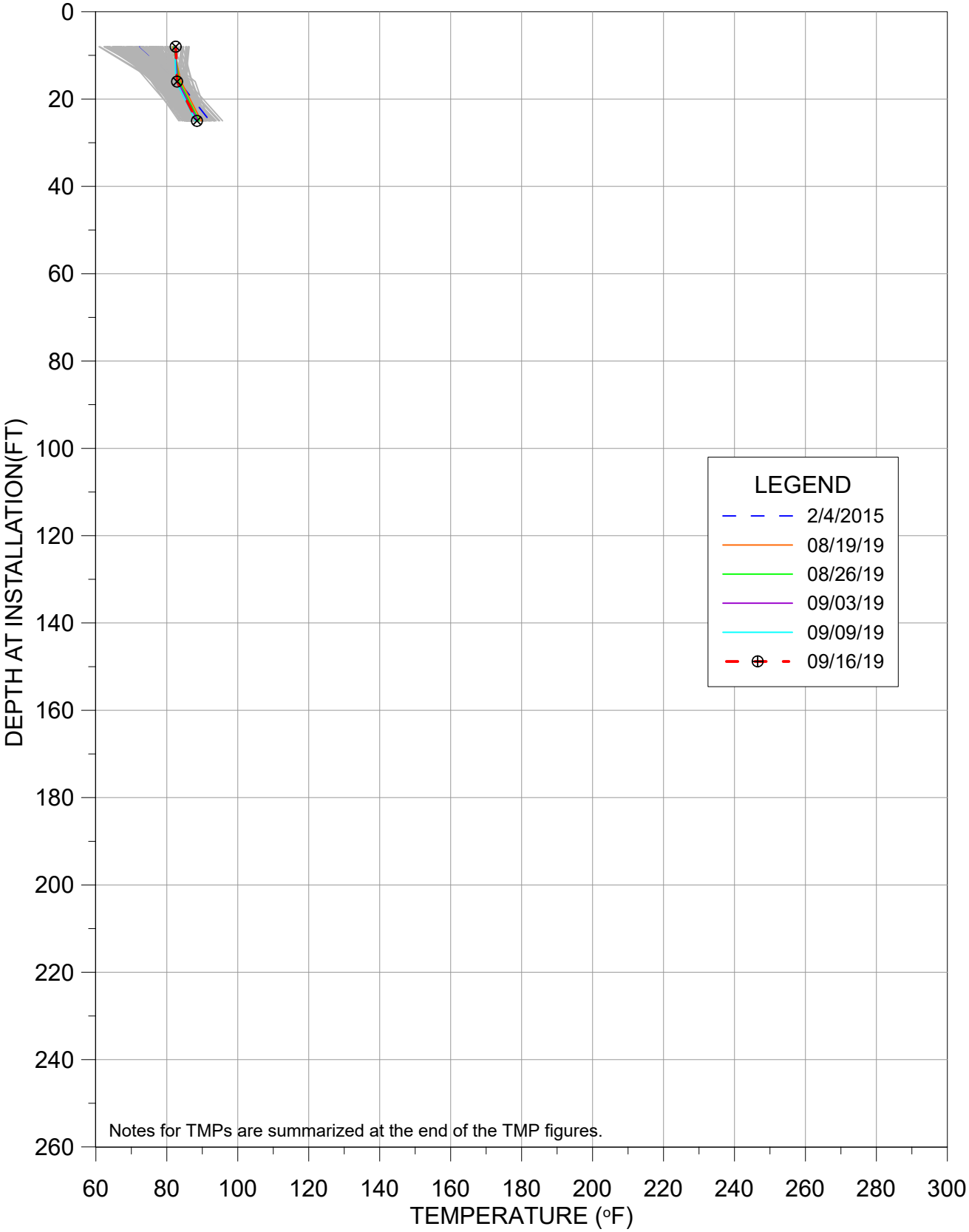
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-28R



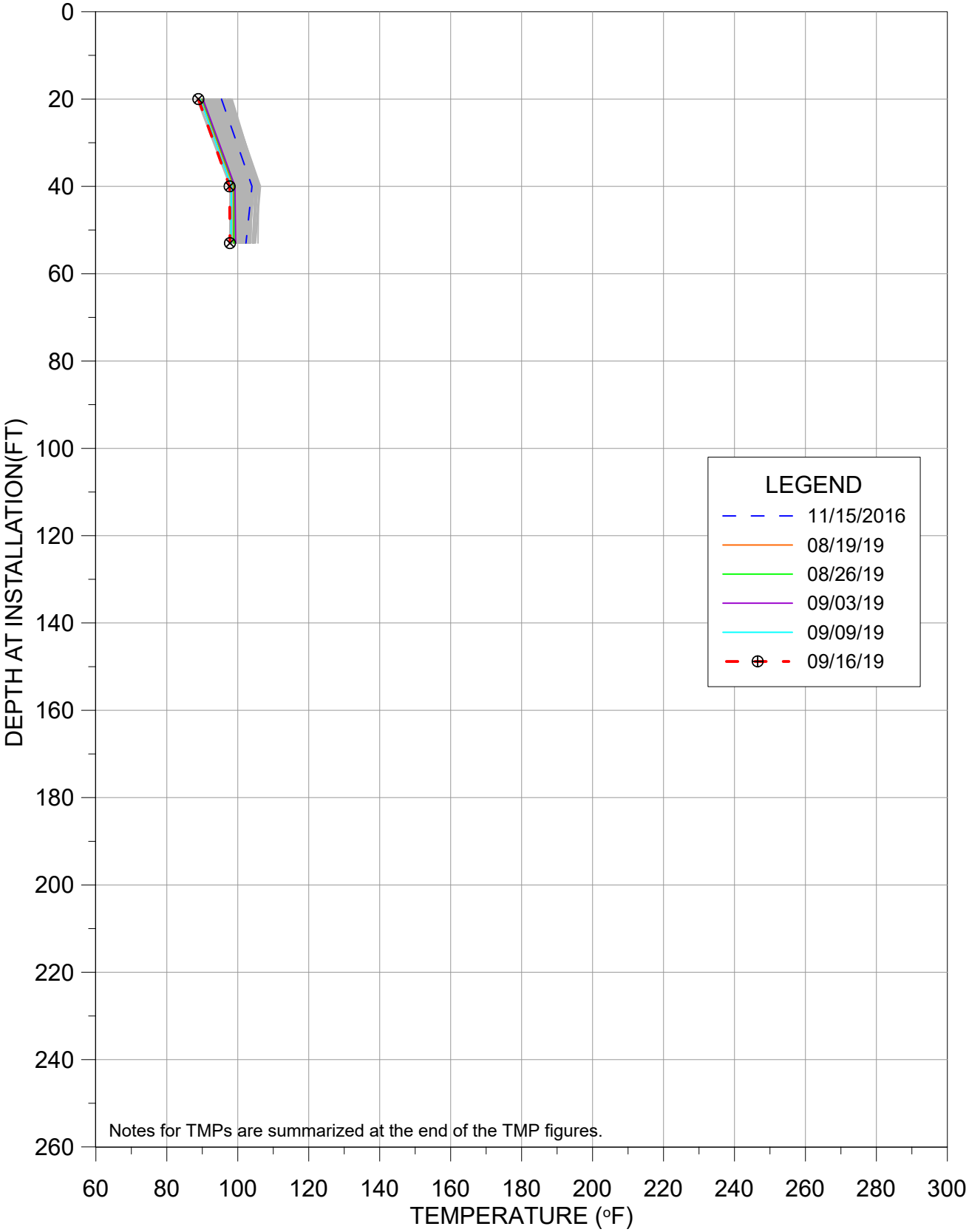
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-29



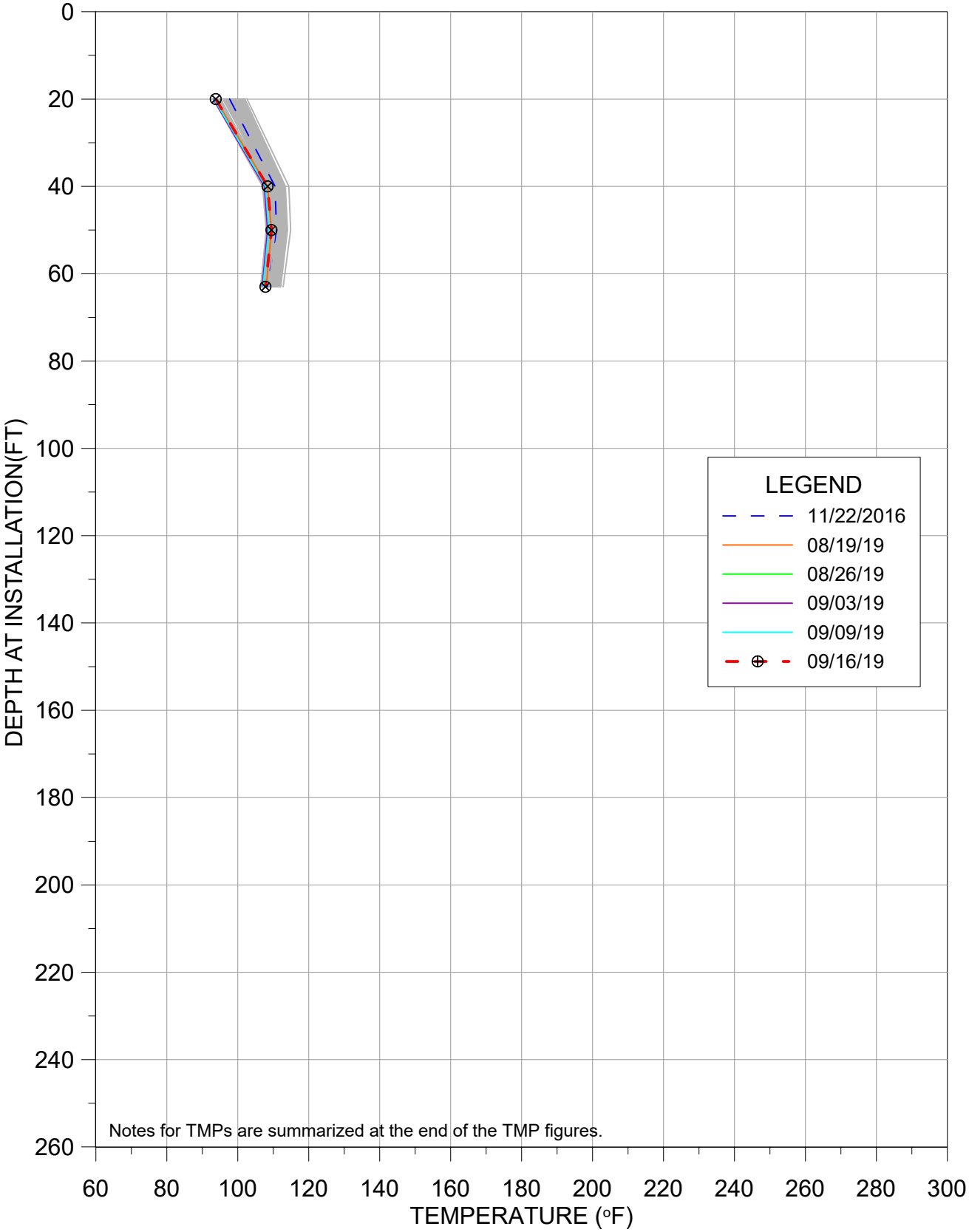
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-33



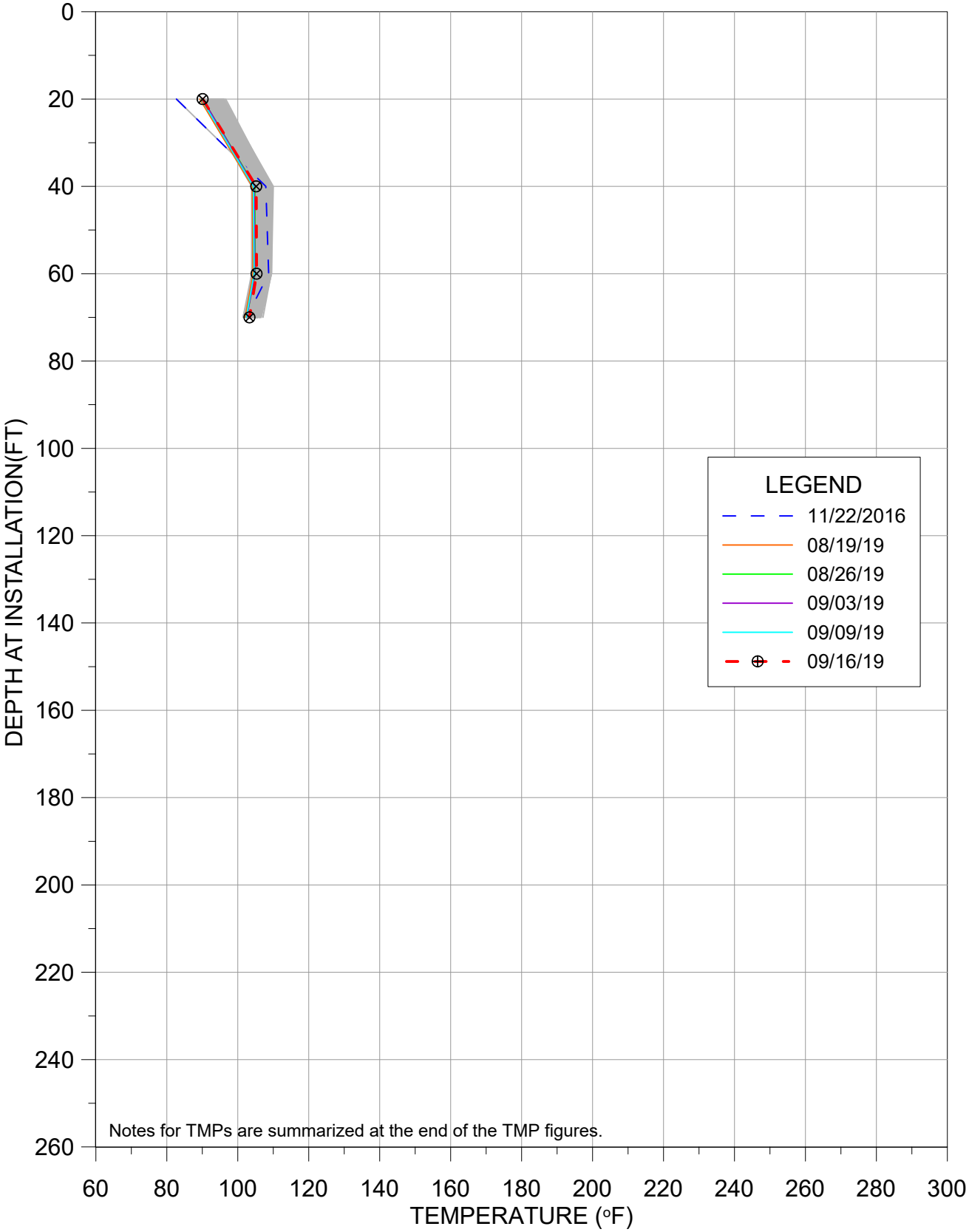
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-34



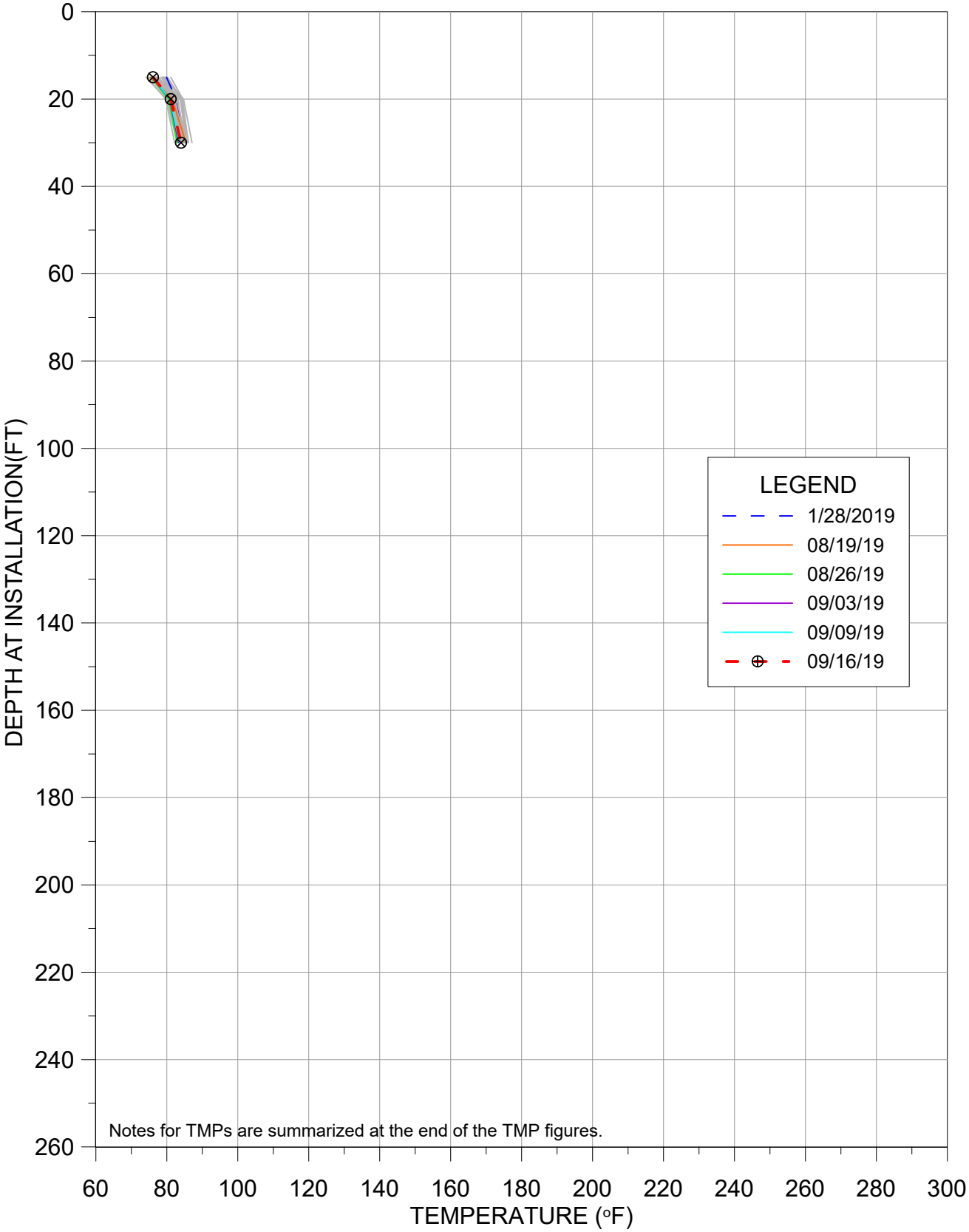
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-35



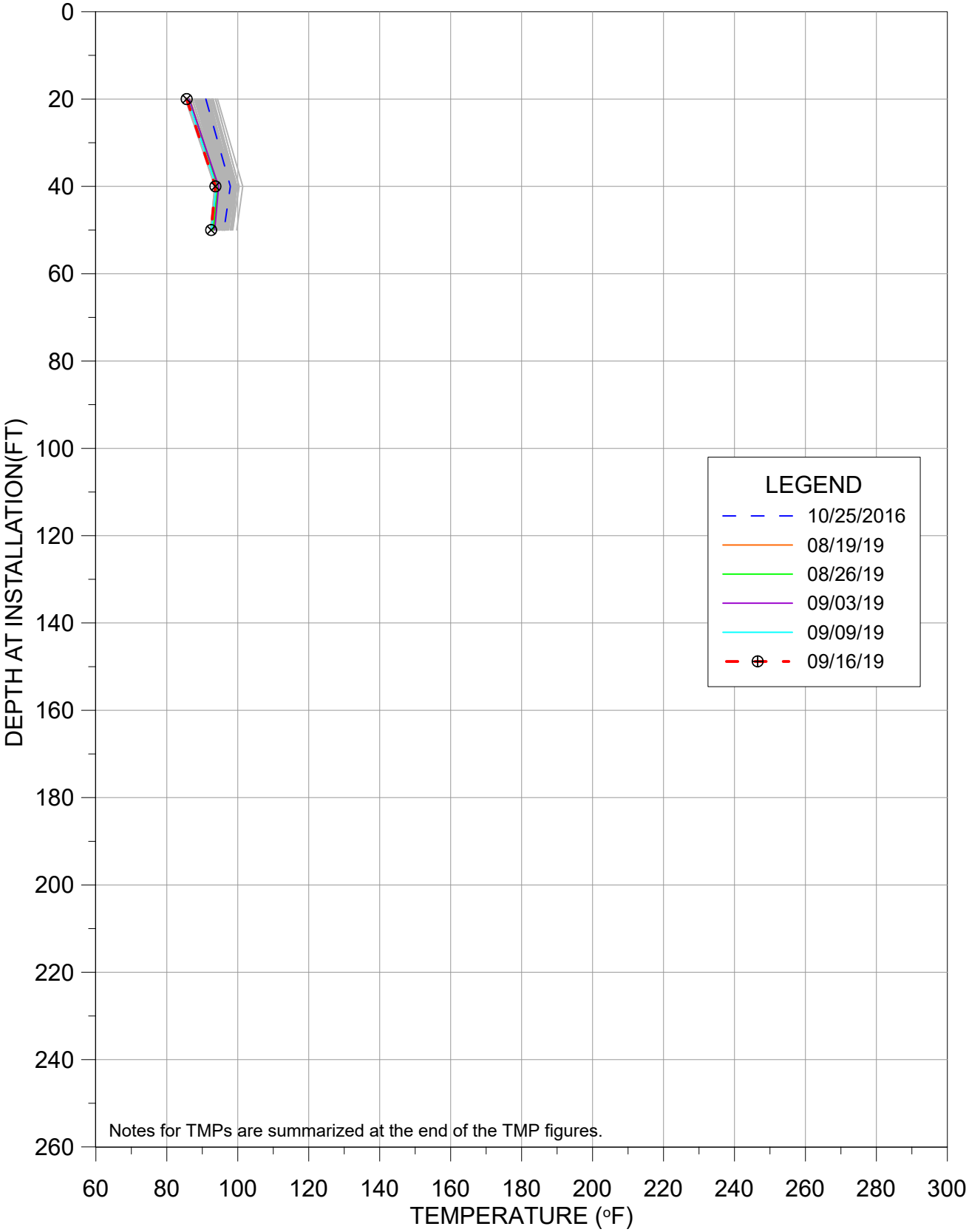
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-36R



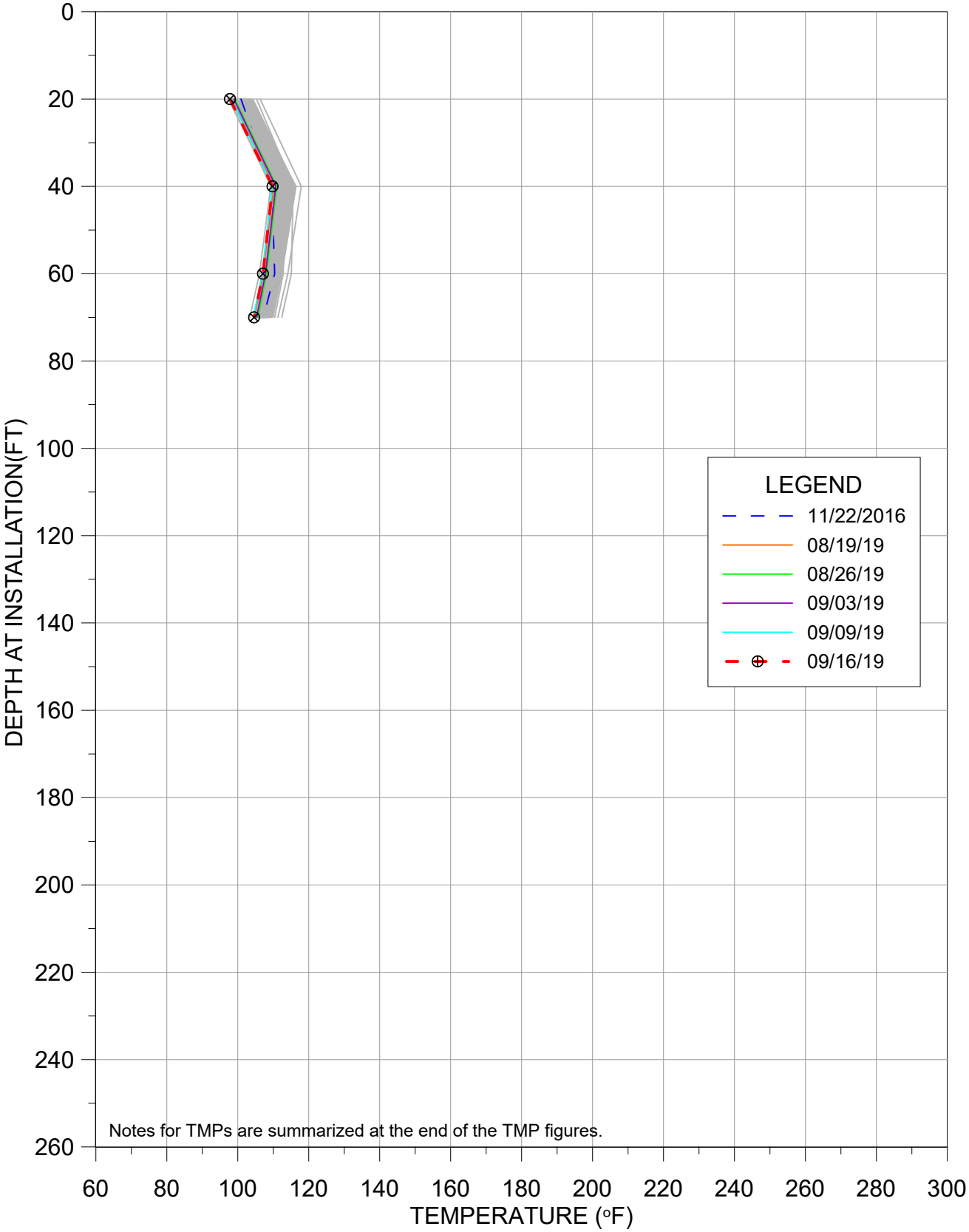
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-37



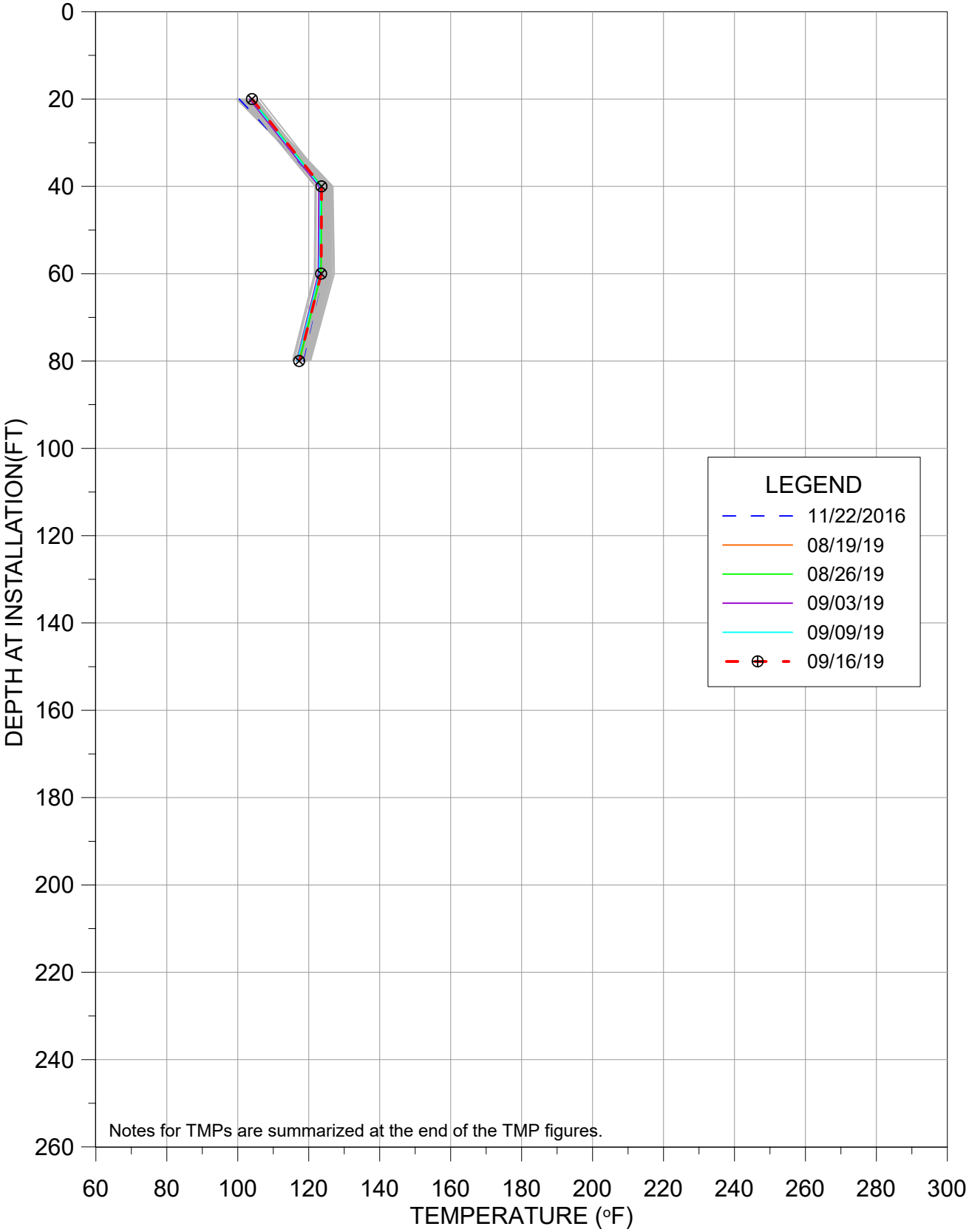
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-38



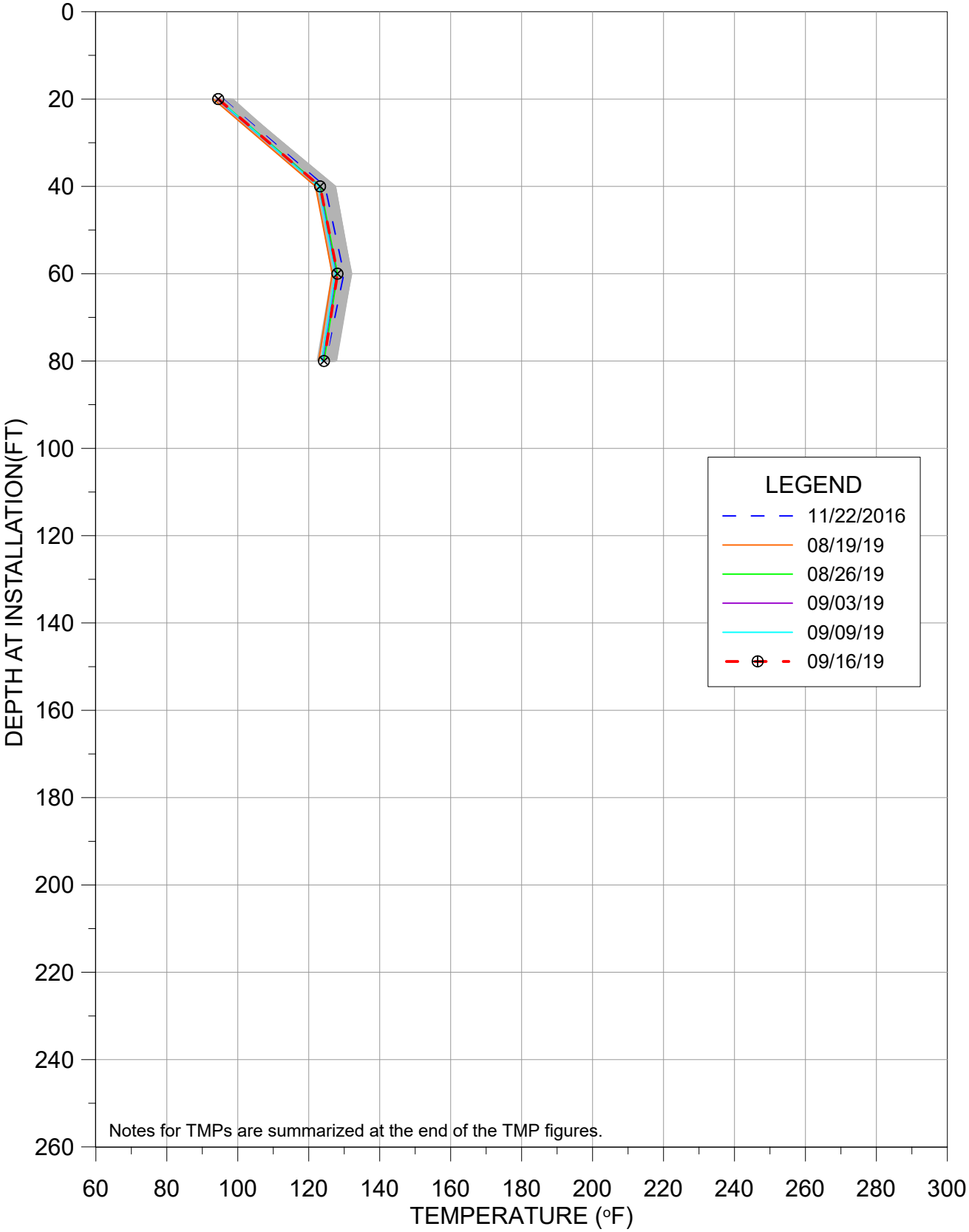
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-39



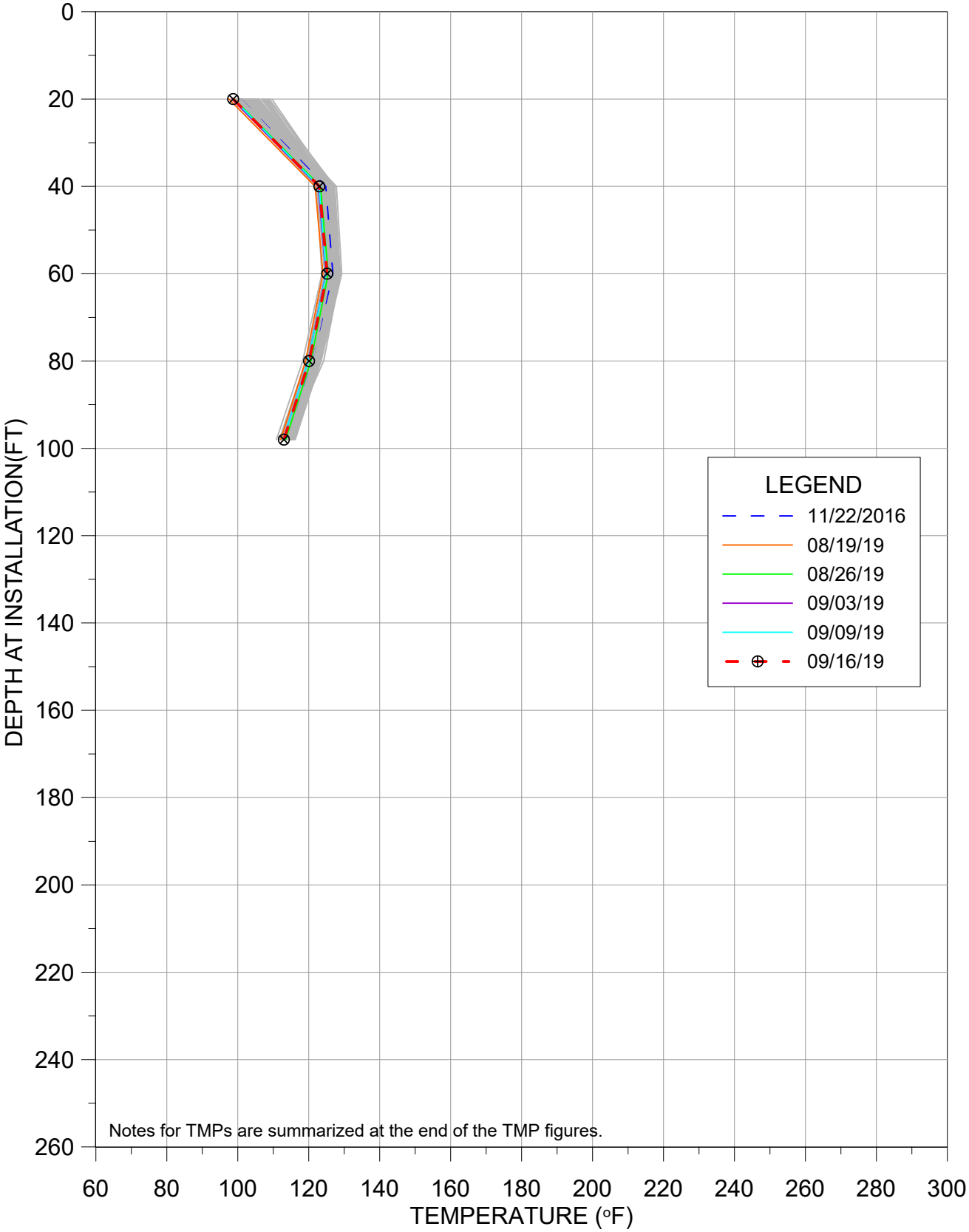
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-40



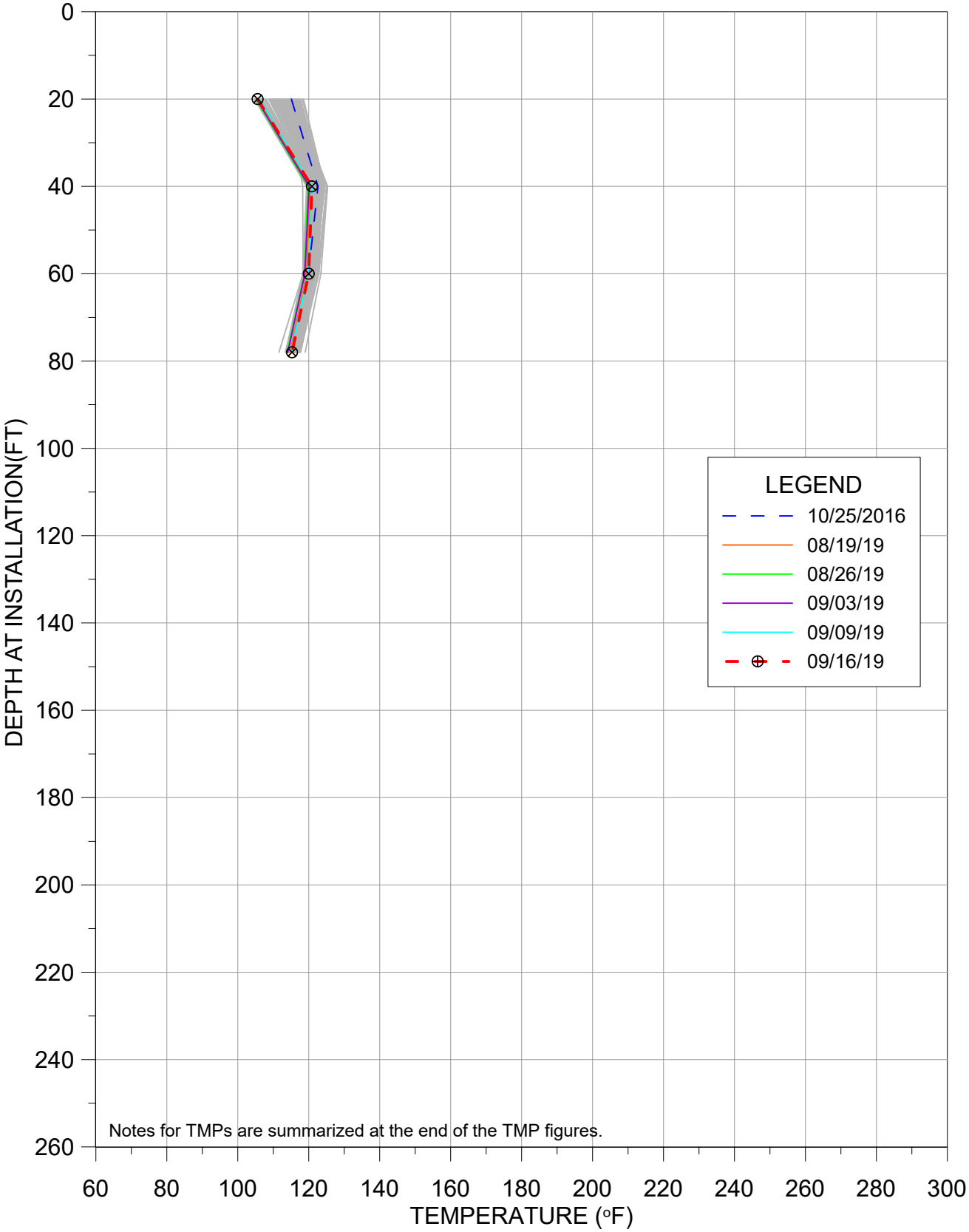
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-41



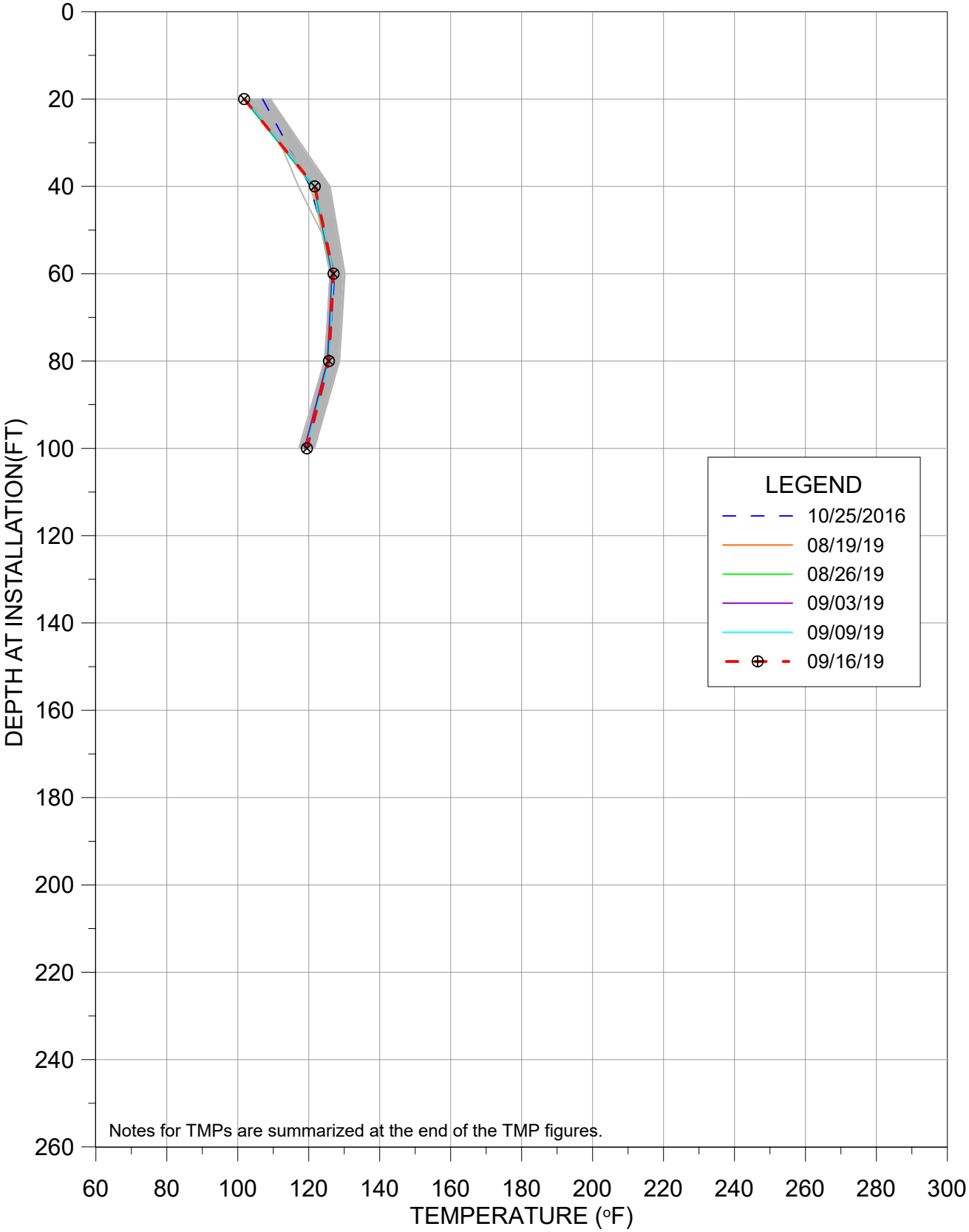
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-42



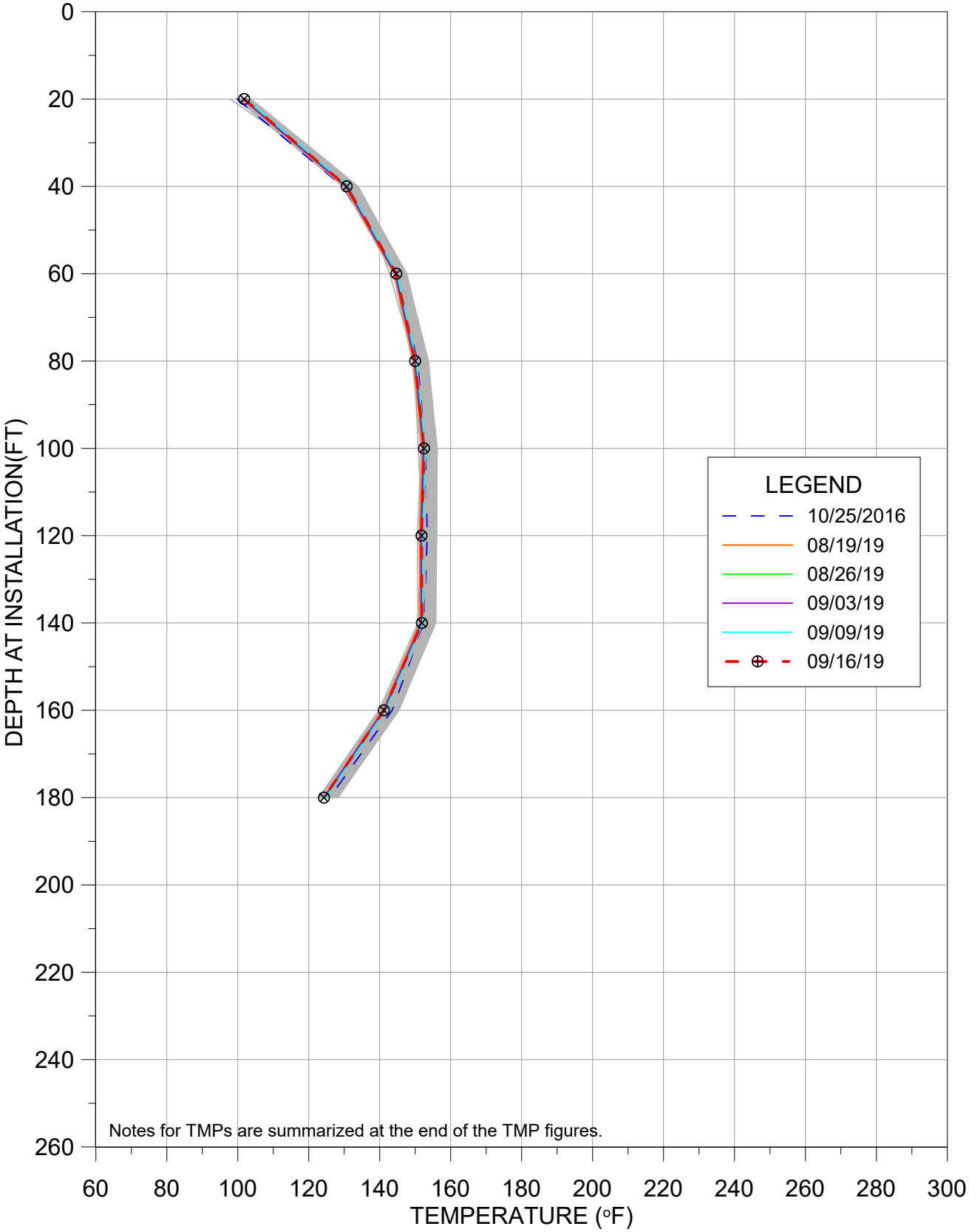
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-43



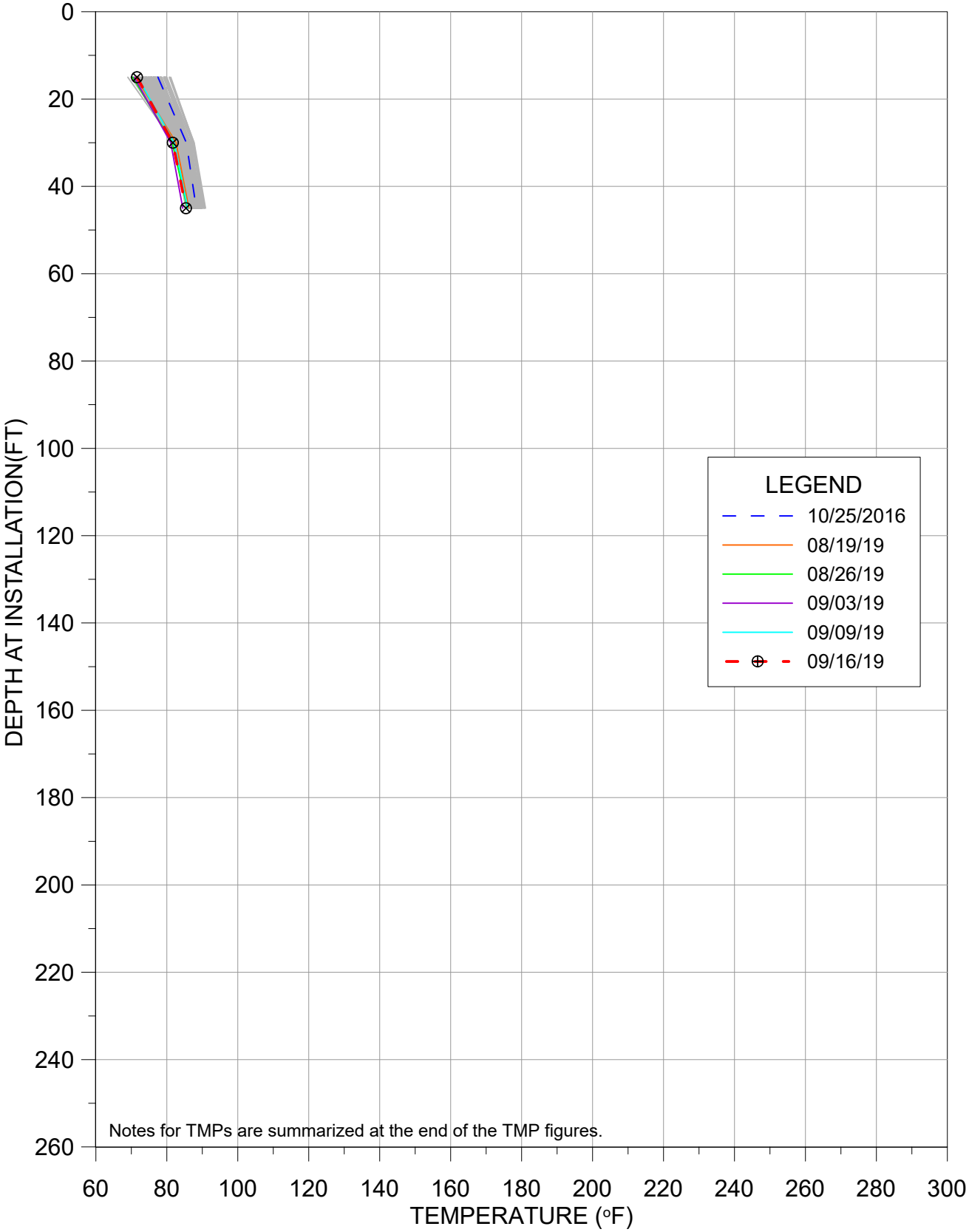
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-44



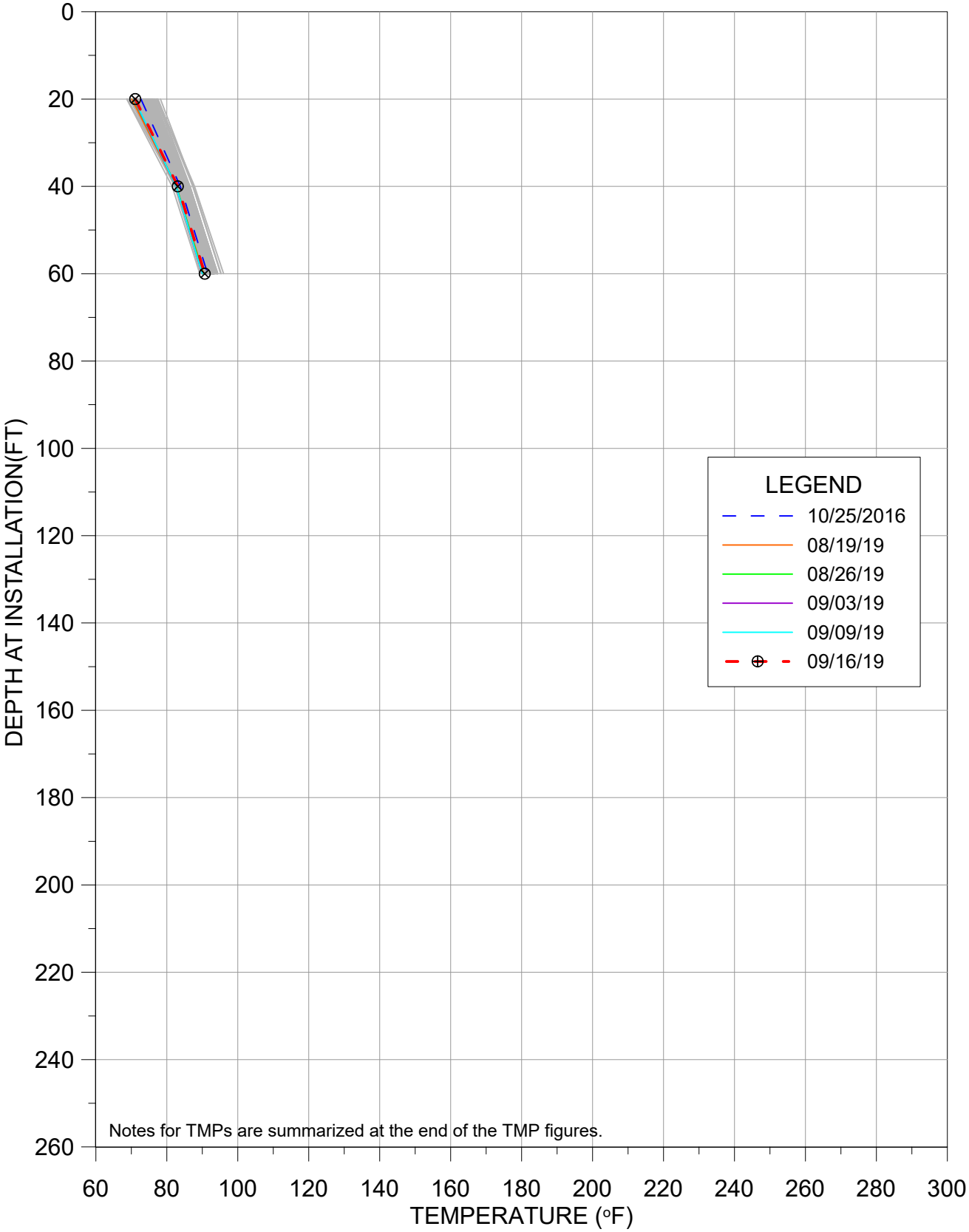
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-45



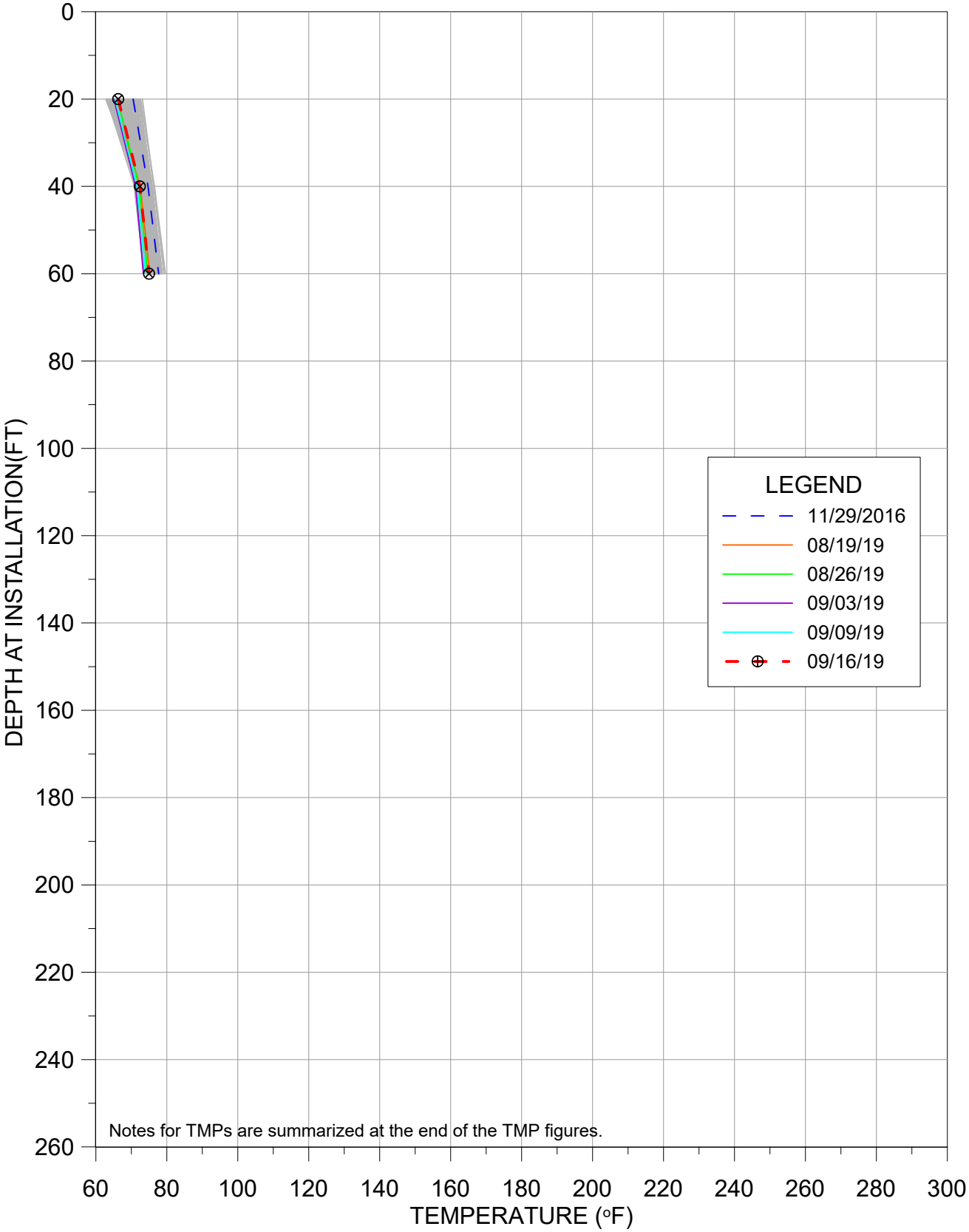
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-46



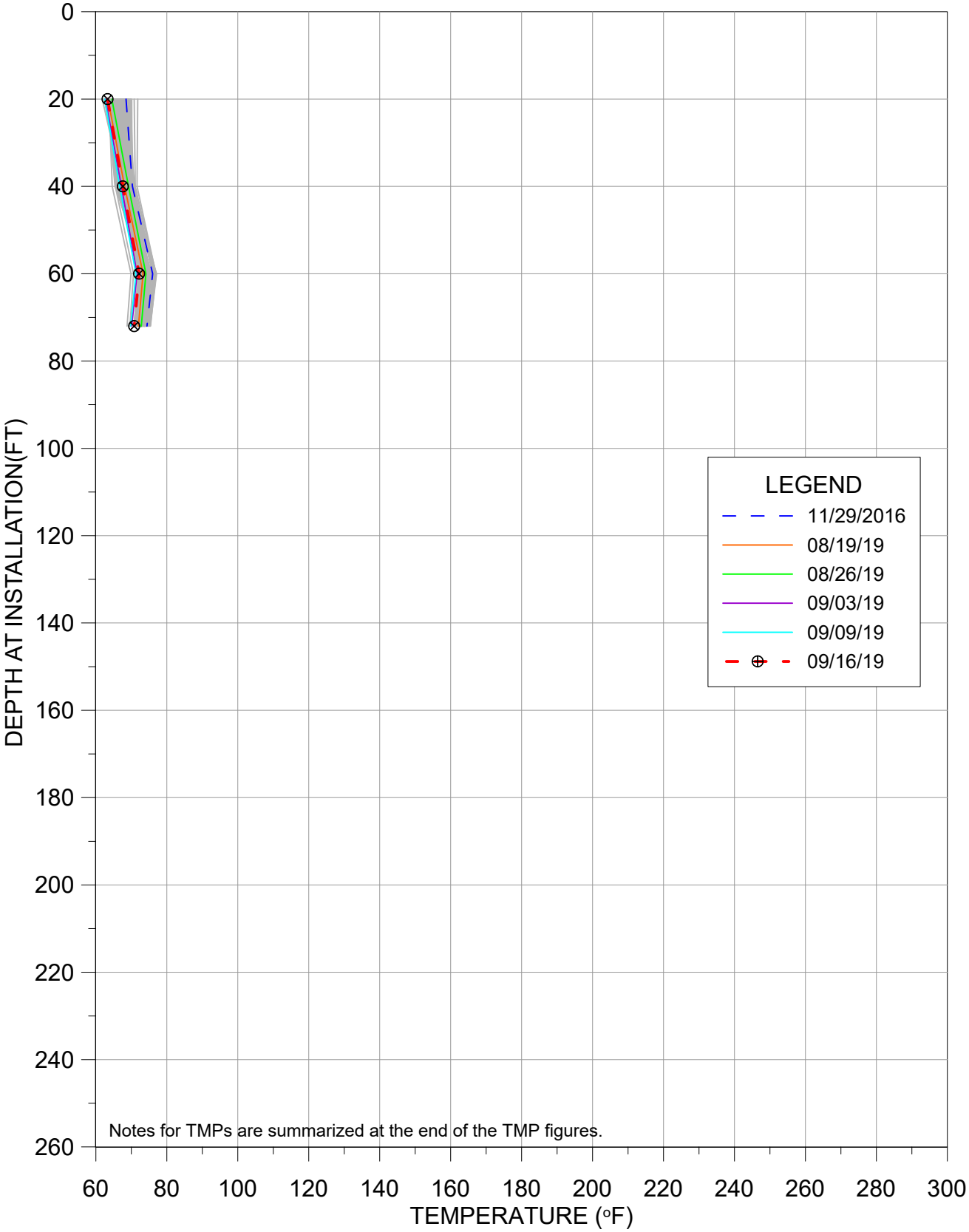
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-47



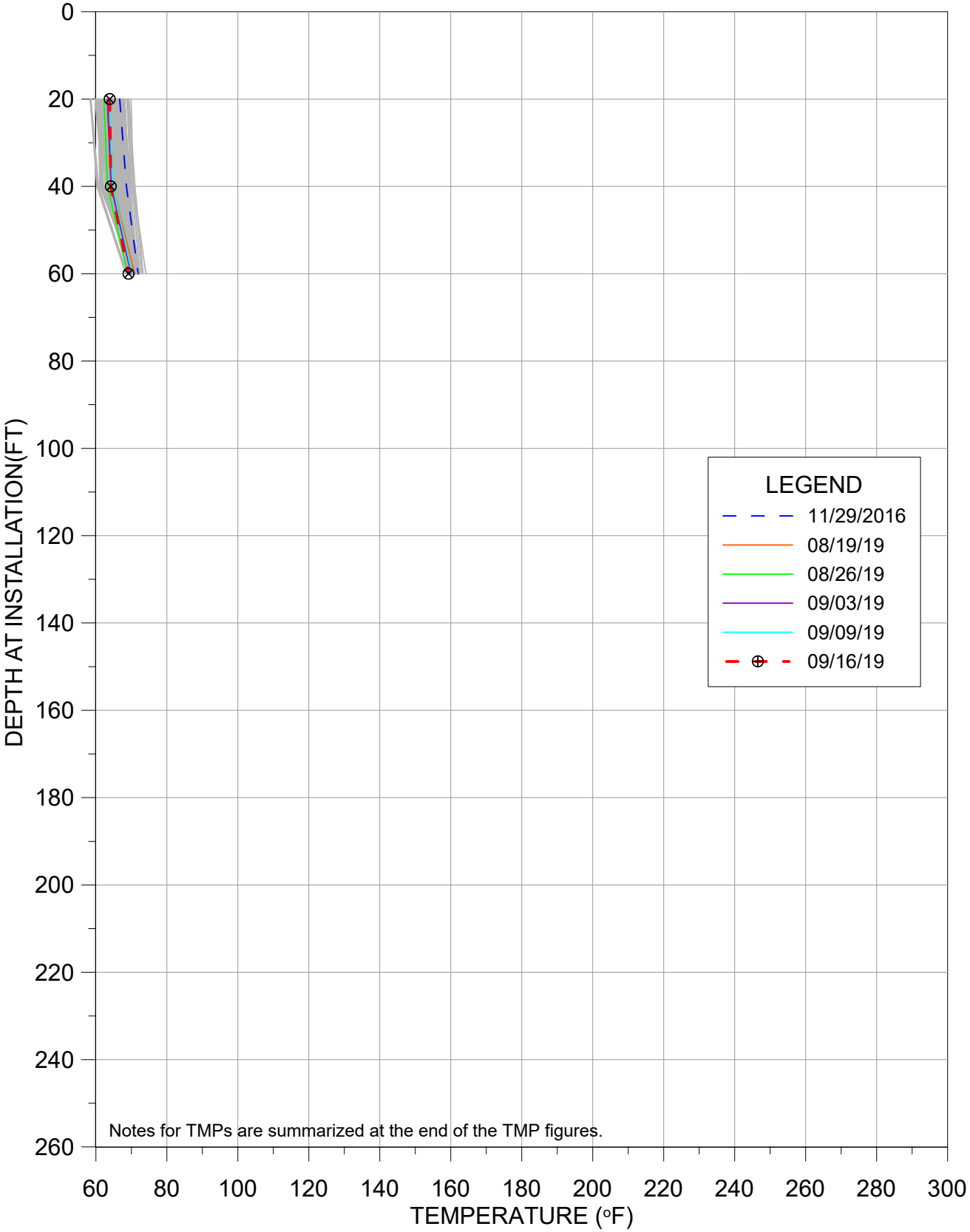
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-48



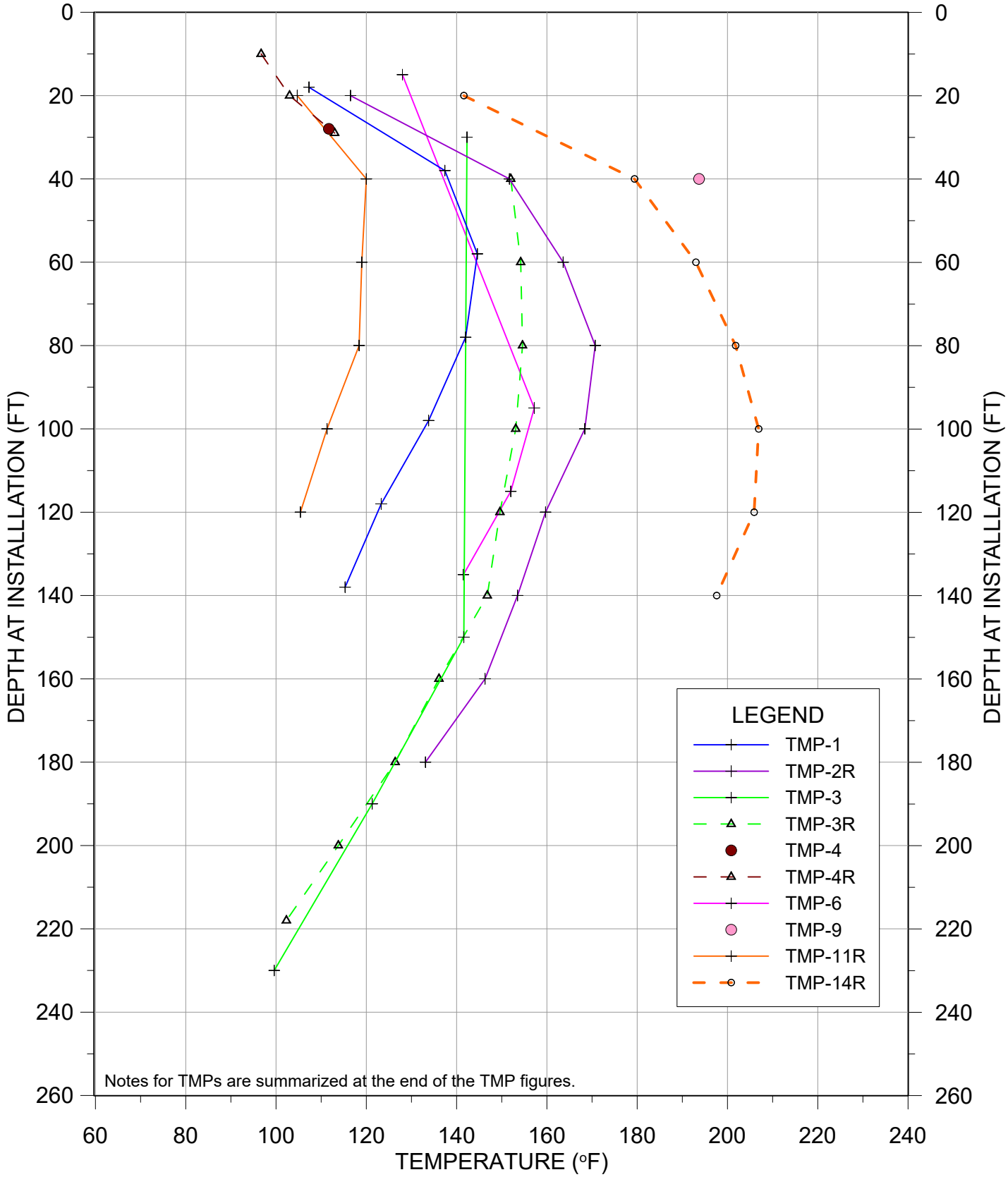
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

TMP-49



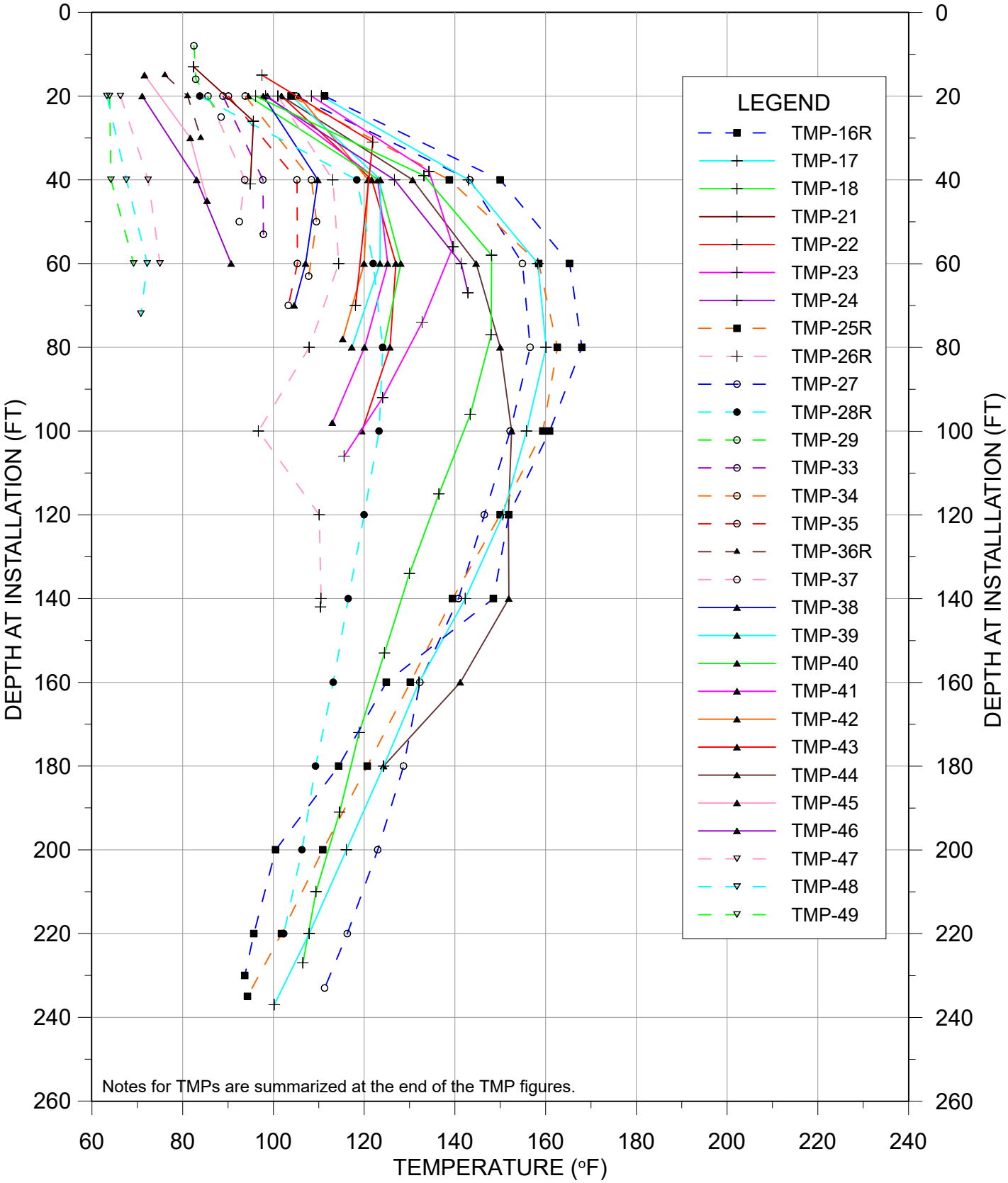
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

9/16/2019



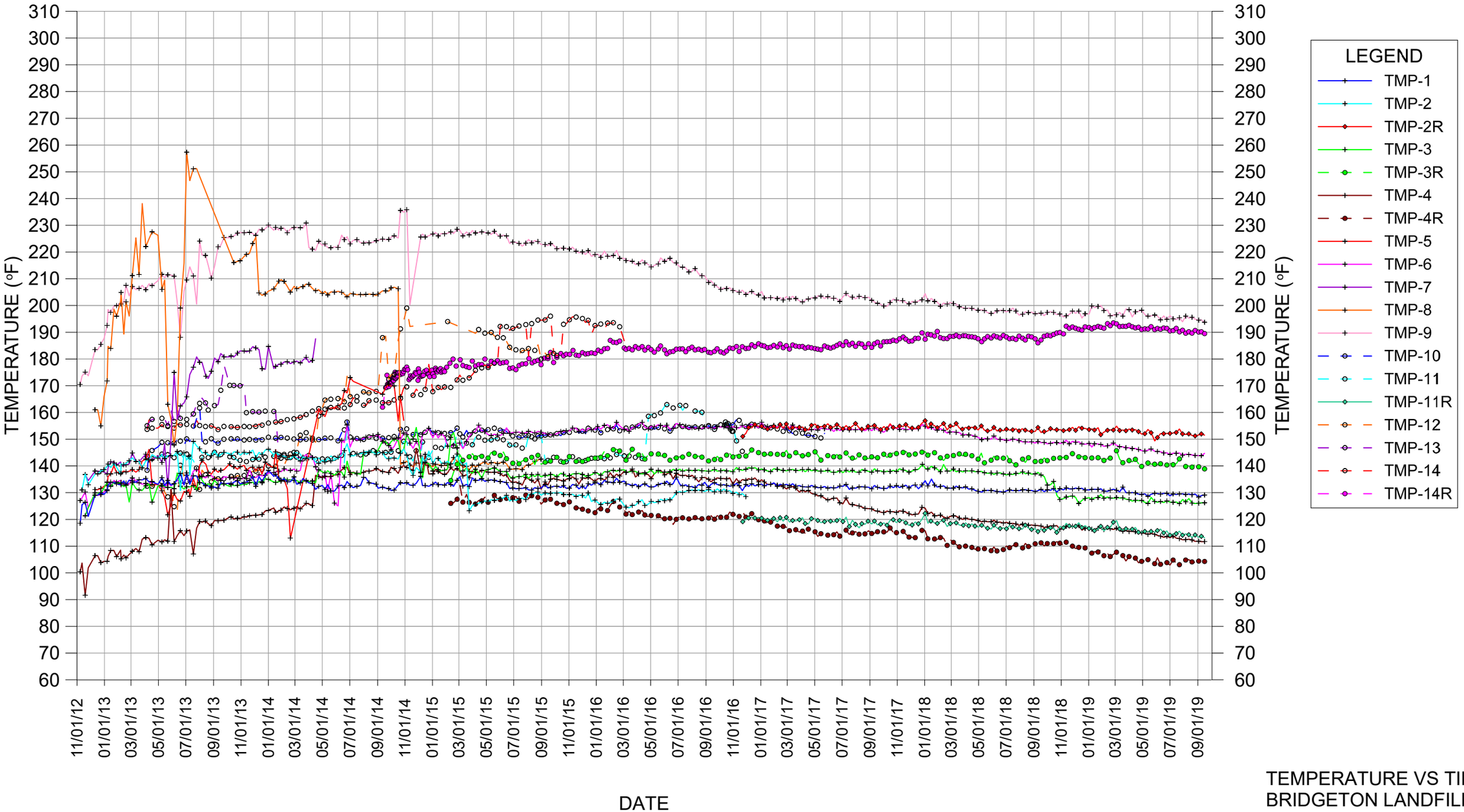
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

9/16/2019 - NORTH QUARRY



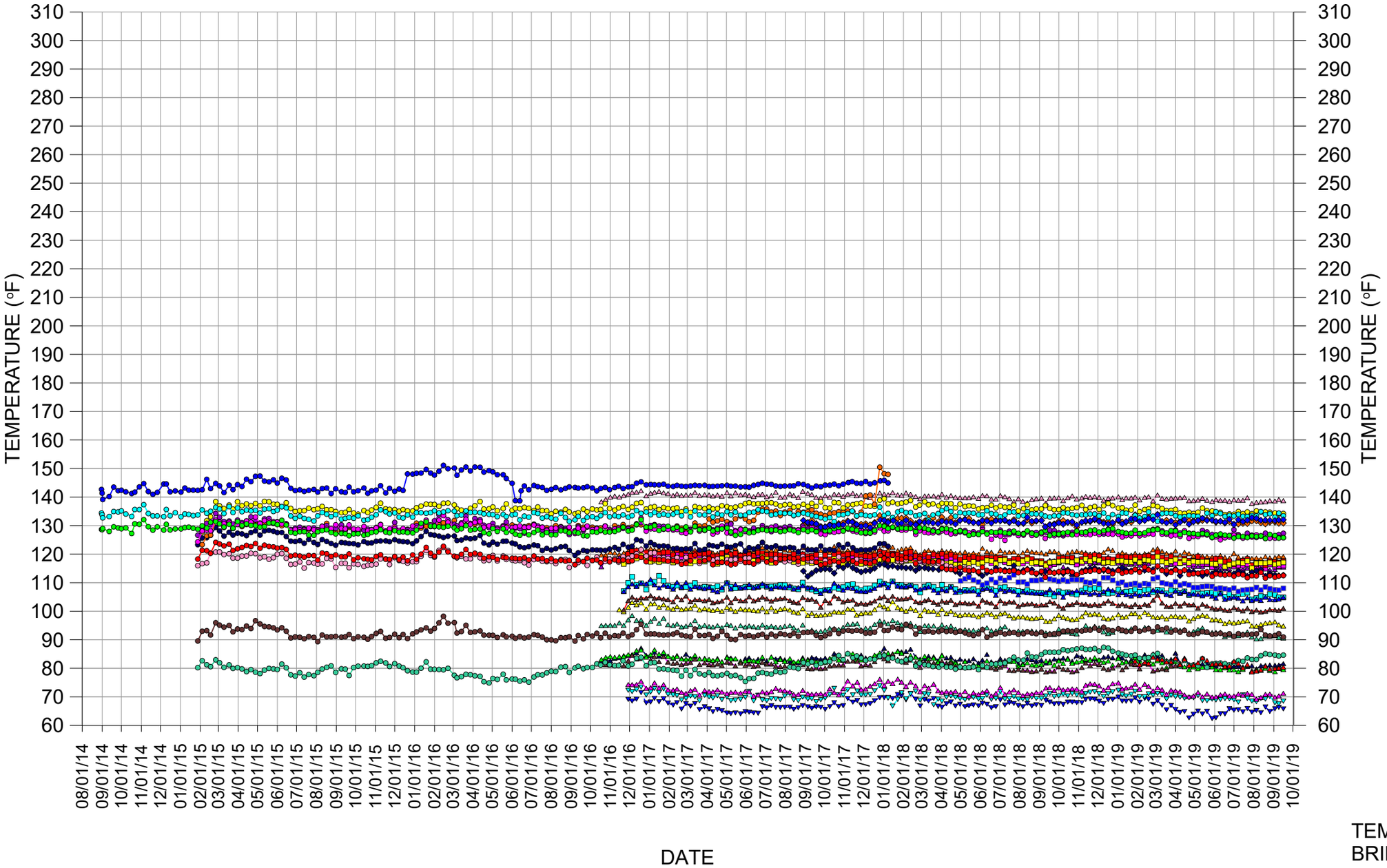
TEMPERATURE VS DEPTH
BRIDGETON LANDFILL

AVERAGE TEMPERATURES



TEMPERATURE VS TIME
BRIDGETON LANDFILL

AVERAGE TEMPERATURES - NORTH QUARRY

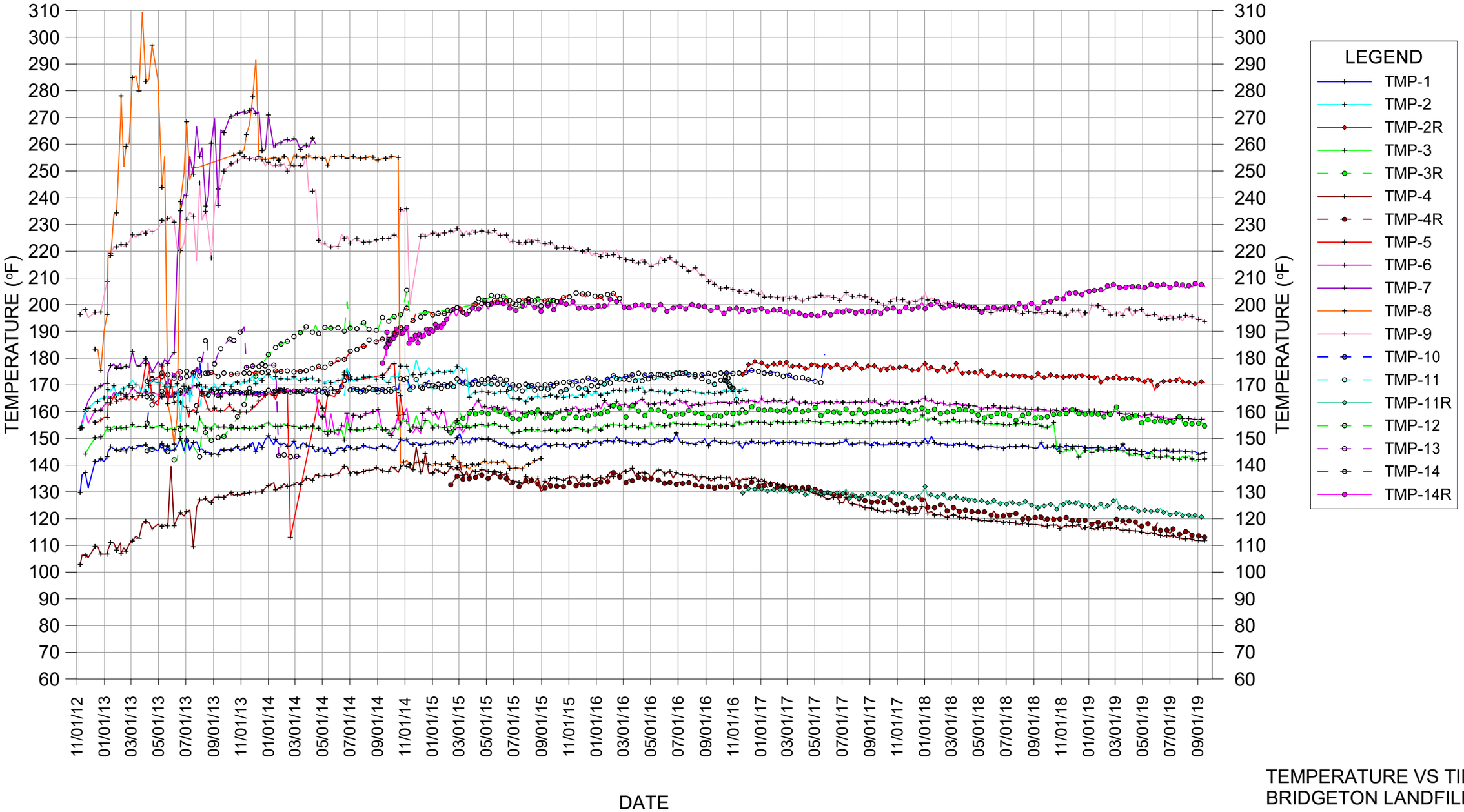


LEGEND

- TMP-16
- TMP-16R
- TMP-17
- TMP-18
- TMP-21
- TMP-22
- TMP-23
- TMP-24
- TMP-25
- TMP-25R
- TMP-26
- TMP-26R
- TMP-27
- TMP-28
- TMP-28R
- TMP-29
- TMP-33
- TMP-34
- TMP-35
- TMP-36
- TMP-36R
- TMP-37
- TMP-38
- TMP-39
- TMP-40
- TMP-41
- TMP-42
- TMP-43
- TMP-44
- TMP-45
- TMP-46
- TMP-47
- TMP-48
- TMP-49

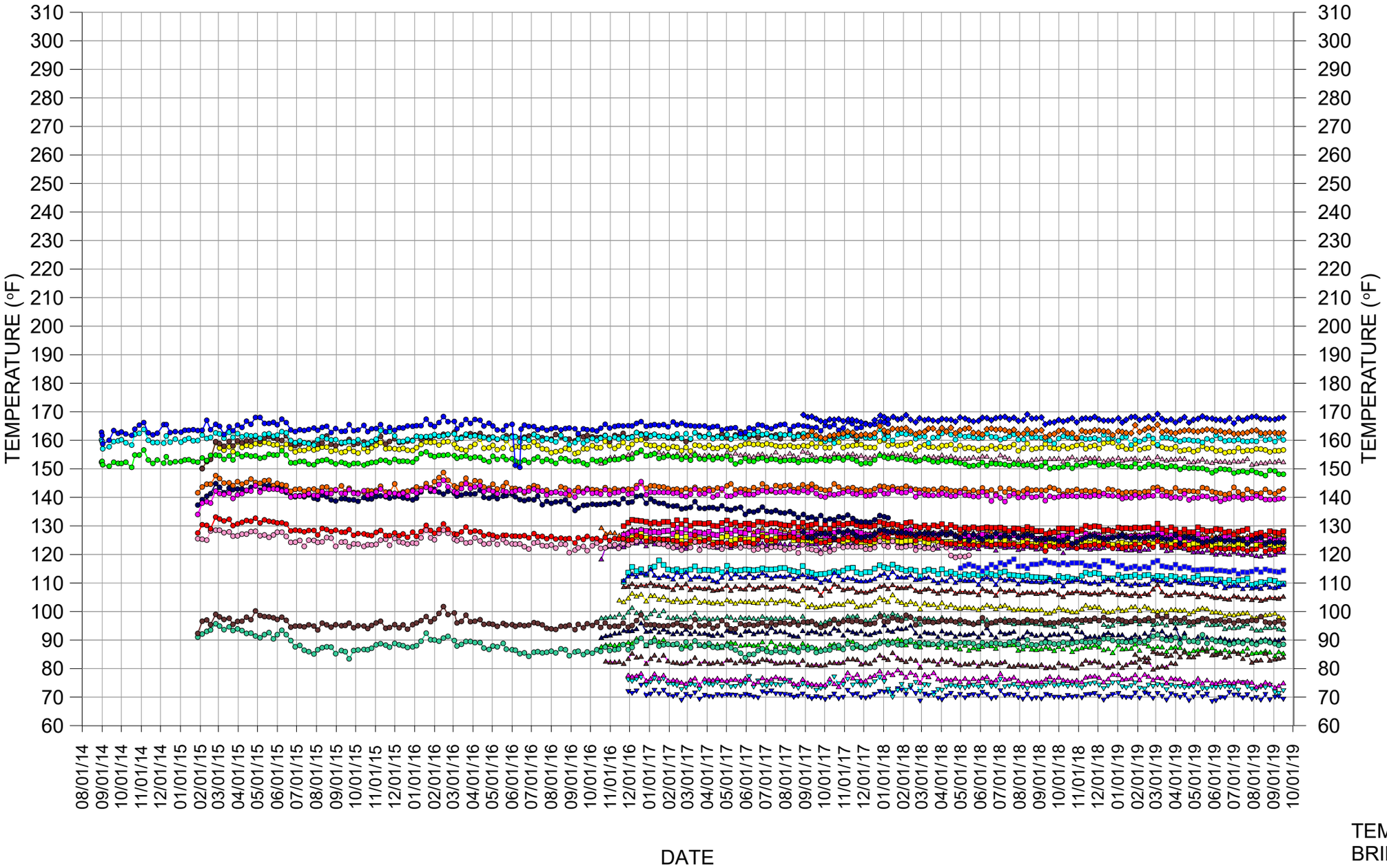
TEMPERATURE VS TIME
BRIDGETON LANDFILL

MAXIMUM TEMPERATURES



TEMPERATURE VS TIME
BRIDGETON LANDFILL

MAXIMUM TEMPERATURES - NORTH QUARRY



LEGEND

- TMP-16
- TMP-16R
- TMP-17
- TMP-18
- TMP-21
- TMP-22
- TMP-23
- TMP-24
- TMP-25
- TMP-25R
- TMP-26
- TMP-26R
- TMP-27
- TMP-28
- TMP-28R
- TMP-29
- TMP-33
- TMP-34
- TMP-35
- TMP-36
- TMP-36R
- TMP-37
- TMP-38
- TMP-39
- TMP-40
- TMP-41
- TMP-42
- TMP-43
- TMP-44
- TMP-45
- TMP-46
- TMP-47
- TMP-48
- TMP-49

TEMPERATURE VS TIME
BRIDGETON LANDFILL

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.
4. The unit at 50 ft depth was fluctuating resistance since 10/1/2018. Therefore the temperature is determined to be unreliable.
5. No temperature reading could be obtained at 70 ft depth since 10/22/2018.

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:

1. No temperature reading could be obtained and resistivity was fluctuating at the unit at 50 ft depth since 4/2/2018.

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. TMP-26 has been replaced by TMP-26R and will no longer be included in the presentation.

TMP-26R: NONE

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: TMP-36 has been replaced by TMP-36R and will no longer be included in the presentation.

TMP-36R: 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

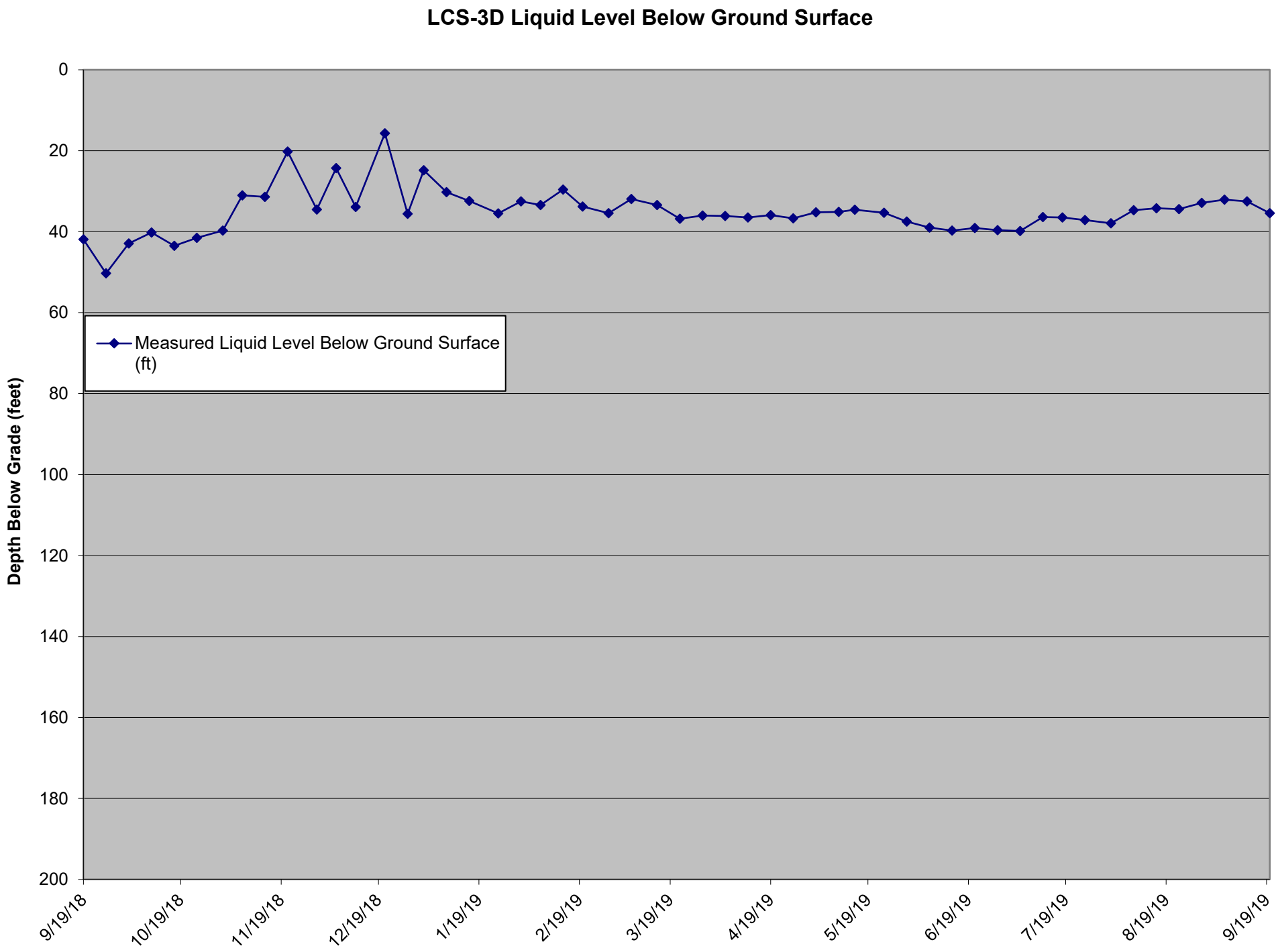
TMP-49: NONE

TMP vs DEPTH and TMP vs ELEVATION (for **09/16/19**):

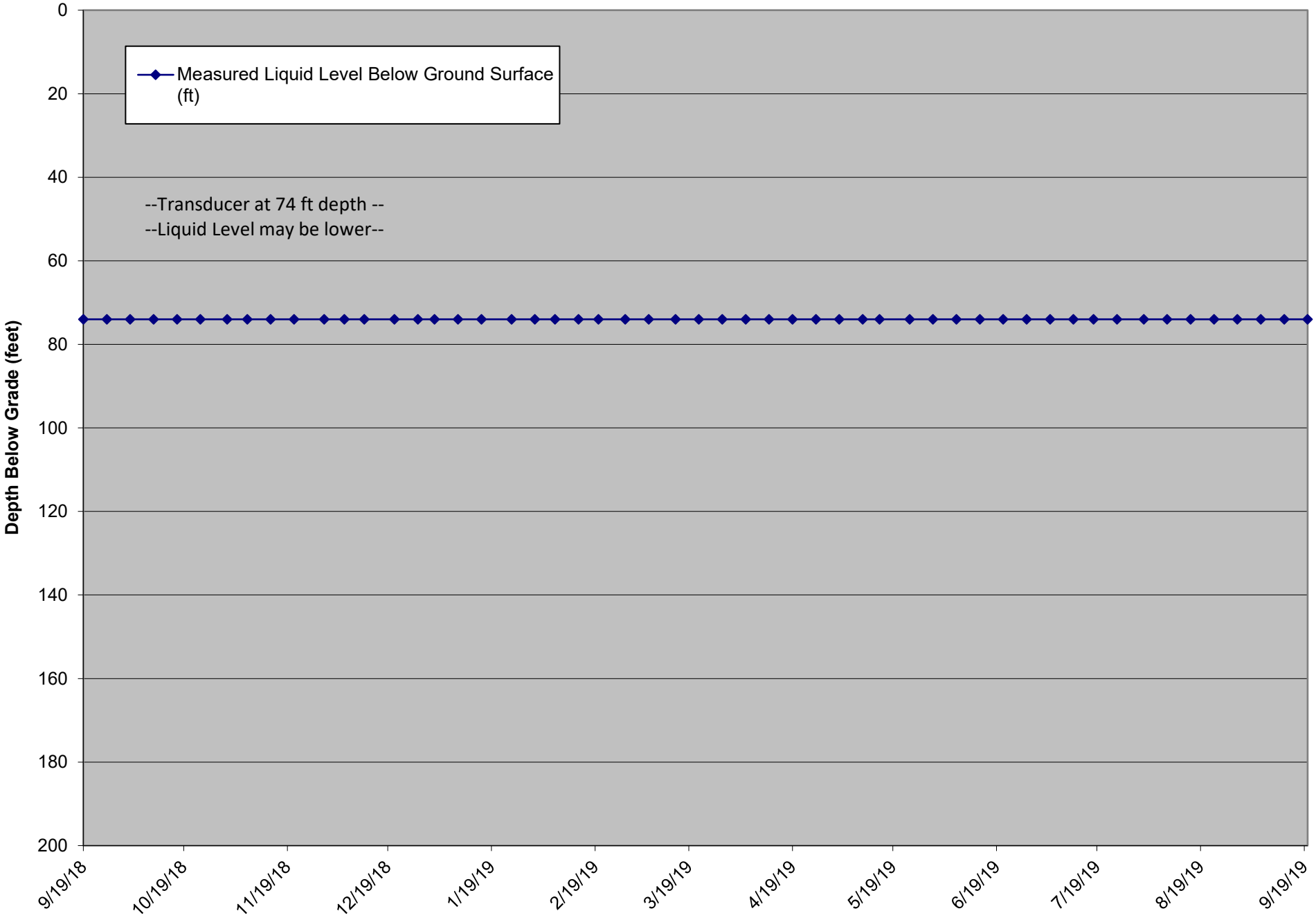
1. There were no reliable temperature readings for TMP-13 since 3/19/2014.
2. There were no reliable temperature readings for TMP-7R, as determined by the connectivity test on 4/11/2014.
3. There were no reliable temperature readings for TMP-5 since 11/5/2014.
4. There were no reliable temperature readings 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.
12. TMP-26 has been replaced by TMP-26R and will be no longer reported since 5/21/2018.
13. TMP-36 has been replaced by TMP-36R and will be no longer reported since 4/1/2018.

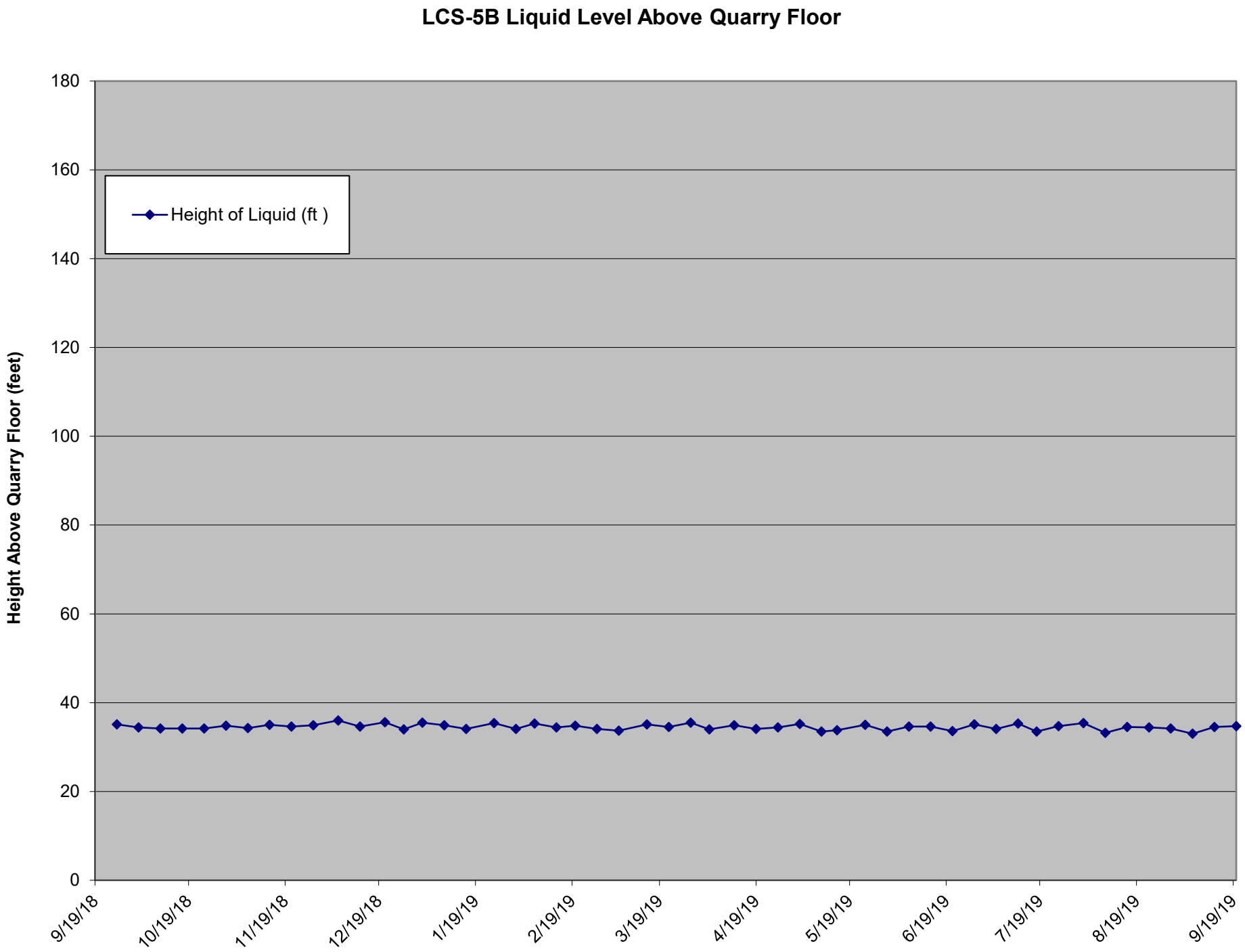
ATTACHMENT B

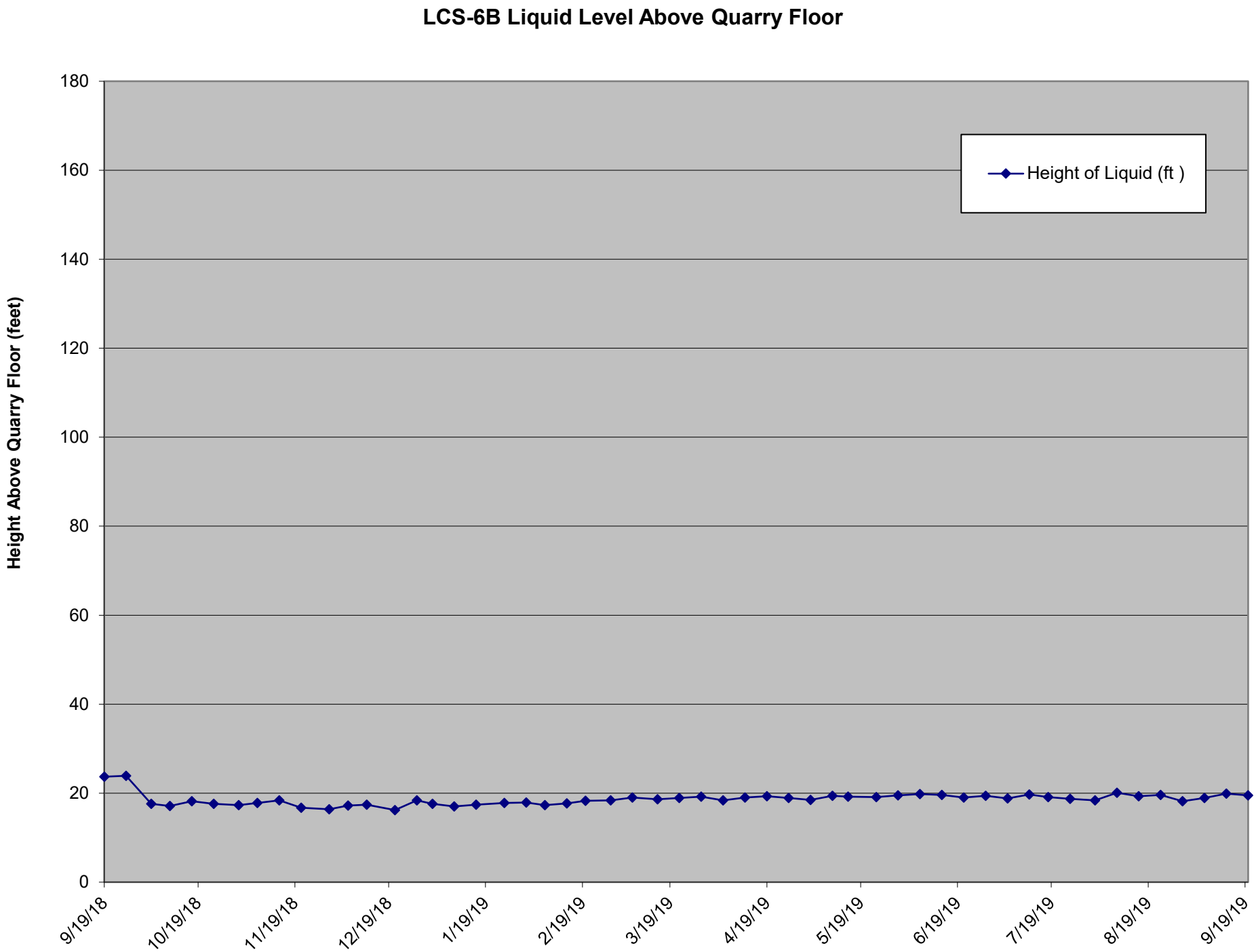
LEACHATE LEVELS IN LEACHATE COLLECTION SUMPS


LCS-3D Liquid Level Below Ground Surface
Depth Below Grade (feet)
0
20
40
60
80
100
120
140
160
180
200
Measured Liquid Level Below Ground Surface (ft)
9/19/18
10/19/18
11/19/18
12/19/18
1/19/19
2/19/19
3/19/19
4/19/19
5/19/19
6/19/19
7/19/19
8/19/19
9/19/19

LCS-4B Liquid Level Below Ground Surface




LCS-5B Liquid Level Above Quarry Floor
Height Above Quarry Floor (feet)
180
160
140
120
100
80
60
40
20
0
Height of Liquid (ft)
9/19/18
10/19/18
11/19/18
12/19/18
1/19/19
2/19/19
3/19/19
4/19/19
5/19/19
6/19/19
7/19/19
8/19/19
9/19/19


LCS-6B Liquid Level Above Quarry Floor
Height Above Quarry Floor (feet)
180
160
140
120
100
80
60
40
20
0
Height of Liquid (ft)
9/19/18
10/19/18
11/19/18
12/19/18
1/19/19
2/19/19
3/19/19
4/19/19
5/19/19
6/19/19
7/19/19
8/19/19
9/19/19

ATTACHMENT C

WORK COMPLETED/PLANNED

Bridgeton Landfill, LLC
Weekly Summary of Work Completed and Planned

Work Completed in Week of September 15, 2019 – September 21, 2019

Gas Collection and Control System (GCCS)

- Continued operation and maintenance of GCCS system.
- Continued upgrades to GCCS system as necessary.

Heat Extraction System (HES)

- Continued operation and maintenance of the HES (pilot and barrier wells).
- Continued installation of HES redundancies.

Bird Management

- Performed bird observations and mitigation twice daily during the work week in accordance with the December 2016 Revised Bird Hazard Monitoring and Mitigation Plan.

Leachate Management System

- Continued routine operation of previously installed and upgraded features.

Pre-Treatment Facility

- Continued ongoing operation of facility.
- Continued to optimize operation efficiency of pre-treatment facility.
- Permeate continued to be discharged directly to St. Louis Metropolitan Sewer District (MSD) – Bissell Point Facility or other approved disposal facilities as determined by MSD.

Other Activities

- Continued fill project in the Amphitheater area of the South Quarry. No trash is expected to be excavated during this project.

Work Planned for Week of September 22, 2019 – September 28, 2019

Gas Collection and Control System (GCCS)

- Continue operation and maintenance of GCCS system.
- Continue upgrades to GCCS system as necessary.

Heat Extraction System (HES)

- Continue operation and maintenance of the HES (pilot and barrier wells).
- Continue installation of HES redundancies.

Bird Management

- Perform bird observations and mitigation twice daily during the work week in accordance with the December 2016 Revised Bird Hazard Monitoring and Mitigation Plan.

Leachate Management System

- Continue routine operation of previously installed and upgraded features.

Pre-Treatment Facility

- Continue ongoing operation of facility.
- Continue to optimize operation efficiency of pre-treatment facility.
- Continue to discharge permeate directly to St. Louis Metropolitan Sewer District (MSD) – Bissell Point Facility or other approved disposal facilities as determined by MSD.

Other Activities

- Continue fill project in the Amphitheater area of the South Quarry. No trash is expected to be excavated during this project.
- Begin geoprobe drilling in borrow area. This drilling will be in native soil; therefore, no trash will be excavated during this project.