

September 10, 2025
File No. 01204123.21-13

Mr. Baitong Chen
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, California 91765

Subject: Monthly Reaction Committee Determination on Reaction Area Boundary
Chiquita Canyon Landfill – Castaic, California

Dear Mr. Chen:

In accordance with Condition Nos. 9a and 9b of the Modified Stipulated Order for Abatement (SOFA) pertaining to the Chiquita Canyon Landfill (Landfill or Facility) (Case No. 6177-4), the Reaction Committee has reviewed newly acquired applicable data recorded during the month of August 2025, considered revisions of the estimated extent of elevated temperature landfill (ETLF) conditions exhibited at the subject Facility (referred to as the “Reaction Area” limits), and has prepared this determination on potentially revising the Reaction Area map.

Attachment A presents the Drawing, titled “Reaction Area Map”, prepared by SCS Engineers (SCS) and dated September 8, 2025. The Drawing depicts the Reaction Area boundary as prescribed in Condition No. 9a, which corresponds to the limits of Cells 1/2A, 2B/3, 4, and Module 2B/3/4 P2, as a solid black line. The Drawing also depicts the estimated extent of ETLF conditions being experienced at the site based on the Reaction Committee’s review of scientific data as a dashed magenta line. The rationale that serves as the basis for considering adjustments and modifications to the Reaction Area boundary (or the determination to maintain the decreed boundary), include the following:

- Landfill Gas (LFG) wellhead temperatures in excess of approximately 160 degrees Fahrenheit.
- Poor gas quality (defined as methane levels of less than 30 percent) in conjunction with methane-to-carbon dioxide (CH₄:CO₂) ratios less than 1.0.
- The concentration of hydrogen (H₂) in the LFG measured greater than 2 percent by volume.
- The concentration of carbon monoxide (CO) in the LFG measured greater than 2,000 ppm.
- Accelerated settlement of the landfill surface, defined as approximately 18 inches or greater within a 60-day period, and cracks in landfill cover. This corresponds to a strain value (i.e., settlement rate) rate of 3 percent per year for areas with a 300-foot waste column depth, which we believe is a reasonable average depth in the subject area of interest.
- First-hand observations of Landfill and/or SCS engineering, construction, and operations and maintenance (O&M) field personnel who are on-site related to: 1) atypical excess leachate quantities (presence and quantity of liquids); 2) instances of pressurized liquids emitting from the landfill surface, from boreholes during drilling, and from LFG wells; and, 3) the



characteristics of the odors originating from the select areas of the waste footprint (often described as “chemical-like” and distinctly different from typical LFG or landfill working face odors).

- Observations of subsurface waste conditions and characteristics as noted on borehole drilling logs for recently installed new wells and/or probes.
- Subsurface temperatures recorded at the in-situ waste temperature probes during August 2025.
- Temperature of gas or liquids measured at depth within the LFG well riser pipe (using an automated transmitter or manual field instrumentation).
- Subsurface temperature and pressures associated with drilling activities for new LFG extraction wells during August 2025.

CONSIDERATIONS FOR POTENTIAL ADJUSTMENTS TO THE ESTIMATED EXTENT OF ETLF CONDITIONS (DASHED MAGENTA LINE)

In making its monthly determinations, the Reaction Committee evaluates the above set of data parameters, in conjunction with one another, to identify meaningful trends indicating ETLF conditions, as opposed to fluctuations exhibited in isolated datapoints.

Each month, the Reaction Committee scrutinizes particular areas of the Landfill that have previously exhibited abnormal or fluctuating data, when applicable. As discussed below, the Committee has determined there to be sufficient data to adjust the boundary to incorporate one small, distinct area immediately adjacent (north) to the boundary as determined in the previous monthly exercise. This adjustment includes one LFG extraction well (CV-24011) based on trends demonstrated within the August 2025 data and the past several months of data.

Near CV-24011

Well CV-24011 is positioned within 25 feet or so of the boundary as delineated in the previous monthly exercise. This well recorded LFG wellhead temperatures in the range of 160 to 162 degrees F during June and July, and the average LFG wellhead temperature measured during August was 165 degrees F. This increase was attributed to one measurement of 180 degrees F on August 19th, and the well exhibited a substantially reduced temperature of 160 degrees F during a subsequent monitoring event on August 25th.

The LFG quality at CV-24011 is rather poor, with an average methane concentration of only 15 percent during the past 3-month period (June through August), and the average methane-to-carbon dioxide (CH₄:CO₂) ratio during this period was 0.2. The average carbon monoxide (CO) concentration at CV-24011 measured during this period was approximately 4,100 ppm. The average hydrogen (H₂) concentration measured during this period was 11.1 percent.

The well is in close proximity to a legacy deep horizontal collector (H-59 at an elevation of 1280 feet) that extends from the south (within the previously delineated Reaction Area) to the north, which signals the potential that these ETLF characteristics being observed at well CV-24011 may be

attributable to migration of heat, gas, and leachate from within the existing Reaction Area, as delineated during the prior month, through these horizontal collectors. However, recognizing that ETLF conditions may be present in the waste materials surrounding this well, which are a relatively short distance to the north, the Reaction Committee believes it is prudent to institute a 25-foot adjustment to the estimated extent of ETLF conditions in this discrete location. The Reaction Committee does not believe this slight adjustment necessarily signals a substantial expansion of the subsurface reaction being experienced in the northwest portion of the Landfill, since the area being incorporated measures less than a half-acre. Although adjacent well CV-24007 exhibited H₂ concentrations in the 2 to 5 percent range during June through August, the average LFG wellhead temperature measured during this period is only 125 degrees F. Also, adjacent well CV-24008 exhibited an average wellhead temperature of 119 degrees F during this three-month period, which is not representative of ETLF conditions. Another well positioned further east along this northern boundary, CV-24009, exhibited an H₂ concentration of only 4 percent during August and the average LFG wellhead temperature was approximately 151 degrees F. Thus, the Reaction Area is unchanged along other segments of this northern boundary.

Despite minor variances in discrete areas of the landfill, the Reaction Committee has not discerned any meaningful trends with respect to the August 2025 data that would indicate the reaction has expanded into the areas discussed below.

Near CV-2333 and CV-24126

Well CV-24126 is positioned within 100 feet or so of the delineated boundary. Well CV-24126 recorded LFG wellhead temperatures in the range of 162 to 168 degrees F during June and July, however the LFG wellhead temperatures measured during August at this well were between 140 and 145 degrees F. The average LFG wellhead temperature at adjacent well CV-2333 measured during August was 135 degrees F. Although the LFG quality at CV-2333 and CV-24126 is poor, with an average CH₄ concentration of only 3 and 6 percent during June through August, respectively, the temperatures recorded at these wells are inconsistent with reaction conditions.

Near CV-2541

Well CV-2541 is a new well that was installed on June 19, 2025, that is positioned within about 25 feet of the delineated boundary line. It is positioned immediately adjacent to horizontal collectors H-54 (at an elevation of 1225 feet) and H-1564 (at an elevation of 1245 feet), both of which extend hundreds of feet into the Reaction Area. During August, Well CV-2541 recorded a significantly wide range of temperatures, which is typical since its installation, but the average temperature during August was only 129 degrees F. The average LFG wellhead temperature measured in the adjacent well CV-24068 during August was 149 degrees F.

Considering the most recent temperatures are relatively low for ETLF conditions, along with the proximity to horizontal collectors and the fact that CV-2541 has only been operational for approximately 70 days or so, the Reaction Committee does not believe an adjustment to the boundary of the Reaction Area to include the portions of the waste footprint inclusive of CV-2541 is warranted at this time.

TEMPERATURE MONITORING PROBE DATA

The Reaction Committee reviewed the temperature measurements recorded during August 2025 by the in-situ temperature monitoring probes. As of August 2025, six of the 32 probes (TP-2, TP-3, TP-9, TP-11, TP-15, and TP-21) are located within the current estimated extent of ETLF conditions (dashed magenta line). Of the remaining twenty-six (26) probes positioned outside of the boundary, twelve probes are positioned within relatively close proximity (within 200 feet) of this boundary. It is the Reaction Committee's opinion that the temperatures recorded by the 26 probes outside of the boundary during August 2025 are not indicative of a subsurface reaction and do not substantiate a decision to adjust the boundary of the Reaction Area at this time.

The Reaction Committee continues to closely observe the subtle increases in temperatures in TP-13, to assess whether these constitute trends consistent with ETLF conditions at this location. However, the LFG temperatures recorded at the co-located LFG wellhead (CV-24073) remained less than 140 degrees F during August.

The Reaction Committee evaluated the 30-day maximum temperatures recorded in TP-24, TP-26, TP-29, TP-30, and TP-31, which have remained relatively consistent over the previous 6-week period of July 15 through August 31, 2025 (except for a short-term fluctuation at the 240-foot interval in TP-29 for 3 days in mid-August). One observation is that the abrupt increase at the 240-foot thermocouple in TP-29, from 183 degrees F to 193 degrees F and then back down to 183 degrees F over a 6-day period in mid-August, is somewhat irregular at that depth. The Reaction Committee noted there is less differentiation between the 30-day maximum temperatures in these five probes compared to the 30-day maximum temperatures measured at the three probes within the current estimated extent of ETLF conditions (dashed magenta line), specifically TP-3, TP-9, and TP-21. However, the wells surrounding these probes do not exhibit evidence of atypical heat or the LFG composition associated with ETLF conditions. Accordingly, the Reaction Committee does not believe an adjustment to the boundary of the Reaction Area to include the portions of the waste footprint inclusive of TP-24, TP-26, TP-29, TP-30, and TP-31 is warranted at this time.

HYDROGEN CONCENTRATIONS

The Reaction Committee also evaluated the concentration of hydrogen in LFG during August 2025. Recall that certain wells positioned to the south and east of the Reaction Area boundary (where dewatering pumping was reactivated) have periodically demonstrated some increased hydrogen content in the LFG during the Reaction Committee's review of the data in previous months, which similarly was the case for the August 2025 data. The Reaction Committee noted in its review of the data that, other than wells CV-24011 and CV-2541, these wells did not exhibit elevated temperatures. There was no evidence of the increased heat that is typical with ETLF conditions at the wells exhibiting atypical hydrogen concentrations (except wells CV-24011 and CV-2541). As noted previously, the Reaction Committee suspects this increased hydrogen content may be attributable to substantial dewatering being accomplished throughout the Reaction Area and may be associated with gas movement from within the Reaction Area by existing horizontal collectors in close proximity. Thus, the presence of elevated hydrogen in these isolated locations does not suggest that ETLF conditions are expanding south and east of the delineated boundary. Accordingly, the Reaction Committee does not believe an adjustment to the boundary of the Reaction Area, other than the adjustment noted above, is warranted at this time.

CONCLUSION

As presented on the Drawing included as **Attachment A**, the estimated extent of ETLF conditions (dashed magenta line) is fully contained within the Reaction Area boundary decreed in the SOFA (solid black line). Because the ETLF conditions are fully contained within the Reaction Area boundary and have not expanded into a new cell, the Reaction Committee finds no basis to modify the Reaction Area boundary as prescribed in Condition 9a at this time.

There was no dissenting opinion among the Reaction Committee members regarding this monthly determination. Supporting data is presented on the Drawing included as **Attachment A**. The maximum temperature measurements recorded at the 32 in-situ waste temperature monitoring probes (both 7-Day and 30-Day values) during August are presented in **Attachment B** in graphical format. The LFG wellhead temperatures recorded at the extraction wells for the entire Landfill footprint are reflected on the isothermal gradient range map presented as **Attachment C**. The CH₄:CO₂ ratios measured at the LFG wellheads in the vicinity of the data-driven Reaction Area boundary are depicted on the range map presented as **Attachment D**. The H₂ concentrations measured at the LFG wellheads in the vicinity of the data-driven Reaction Area boundary are depicted on the range map presented as **Attachment E**. The CO concentrations measured at the LFG wellheads in the vicinity of the data-driven Reaction Area boundary are depicted on the range map presented as **Attachment F**. The landfill surface settlement isopach values measured on a quarterly basis (April 2, 2025 compared to July 2, 2025) in the vicinity of the data-driven Reaction Area boundary are depicted on the range map presented as **Attachment G**. The electronic database and recordkeeping platform enables these measurements to be downloaded into a tabular spreadsheet format, which can be submitted to the South Coast Air Quality Management District under separate cover, if requested.

Please contact either of the undersigned if you have questions or require additional information.

Sincerely,



Robert E. Dick, PE, BCEE
Senior Vice President
SCS Engineers



Patrick S. Sullivan, BCES, CCP
Senior Vice President
SCS Engineers

RED/PSS

cc: Nathaniel Dickel, SCAQMD
Christina Ojeda, SCAQMD
Patrick S. Sullivan, REPA, CPP, BCES, SCS Engineers
Pablo Sanchez Soria, PhD, CIH, CTEH
Neal Bolton, PE, Blue Ridge Services, Inc.
Richard Pleus, PhD, Intertox
Srividhya Viswanathan, PE, SCS Engineers

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Enclosures:

- Attachment A – Reaction Area Map
- Attachment B – In-Situ Waste Temperature Monitoring Probe Data
- Attachment C – Isothermal Gradient Range Map
- Attachment D – Wellhead Methane-to-Carbon Dioxide Range Map
- Attachment E – Wellhead Hydrogen Range Map
- Attachment F – Wellhead Carbon Monoxide Range Map
- Attachment G – Settlement Isopach Range Map

Solid Waste Borehole Maximum Temperature Profiles Over 6 Weeks for 7/24/2025 to 9/3/2025

From August 28, 2025, through September 3, 2025, there were two recorded temperature decreases and one recorded temperature increase that triggered the notification limits set forth in the LEA's October 4, 2024 letter.

Additionally, as of April 4, 2025, twelve new TMPs (TMP-21, TMP-24, TMP-25, TMP-26, TMP-27, TMP-28, TMP-29, TMP-30, TMP-31, TMP-32, TMP-34, and TMP-35) have been installed and are online. None of these twelve new TMPs indicate reaction temperatures occurring outside of the currently delineated data-driven reaction area boundary, and the four TMPs that were able to be drilled to within 25 feet of the liner (TMP-24, TMP-27, TMP-31, and TMP-32) show significantly cooler temperatures at the deepest thermocouple, as expected due to the cooling from the underlying earth.

Chiquita provides the following updates:

- TP-07
 - The 60-foot thermocouple showed an anomalous reading on August 21st of 198°F for a single one-hour reading; however, subsequent readings were consistent with previous recorded temperatures and no other thermocouples at TP-07 showed any such changes in temperatures, indicating that this recorded temperature increase was most likely erroneous.
- TP-08
 - The 30-foot thermocouple showed an increase in maximum temperature of 10°F from 149°F to 159°F from September 1st to September 3rd.
- TP-13
 - The 30-foot thermocouple showed a decrease in maximum temperature of 10°F from 152°F to 142°F from August 25th to September 1st.
- TP-15
 - The 30-foot thermocouple showed a decrease in maximum temperature of 10°F from 186°F to 176°F from August 21st to August 28th.
- TP-35
 - All thermocouples were temporarily offline on September 2nd for the repair of the thermocouple casing. As a result, all maximum readings on September 2nd are erroneous.

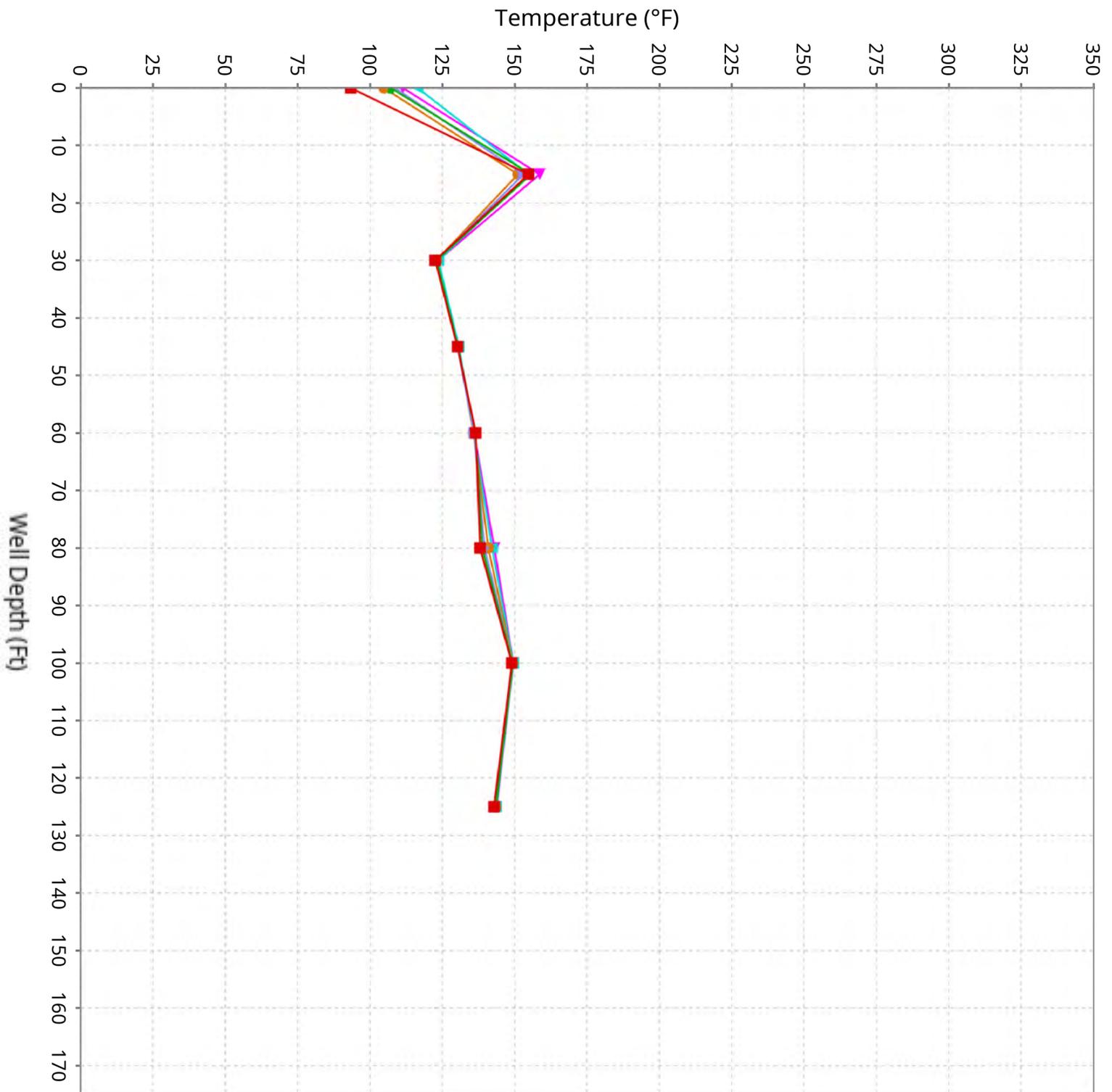
SCS ENGINEERS

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274 Granite Run Drive
Lancaster, PA 17601
717-550-6330

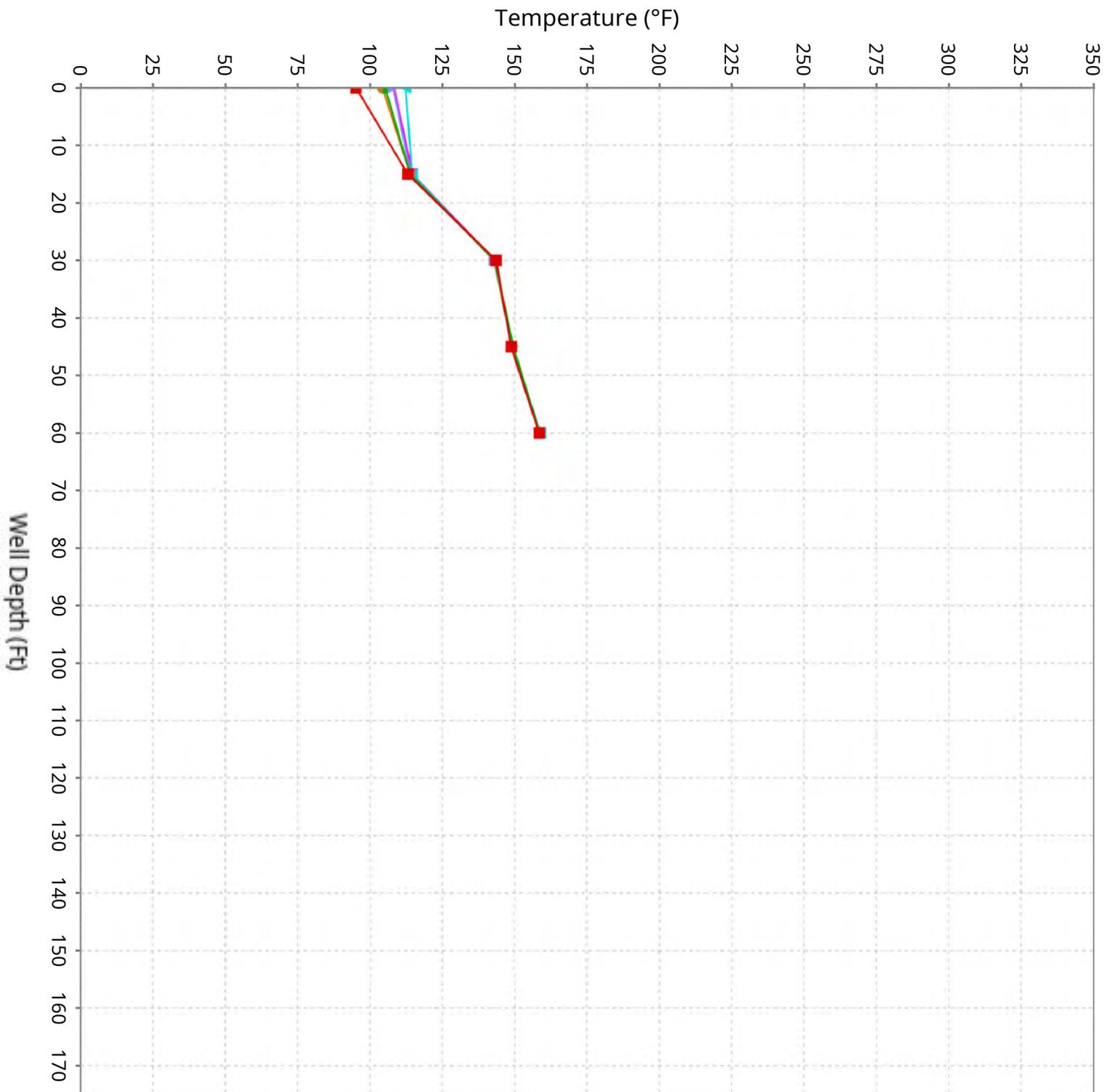
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-1

Maximum data for 7/24/2025 to 9/3/2025



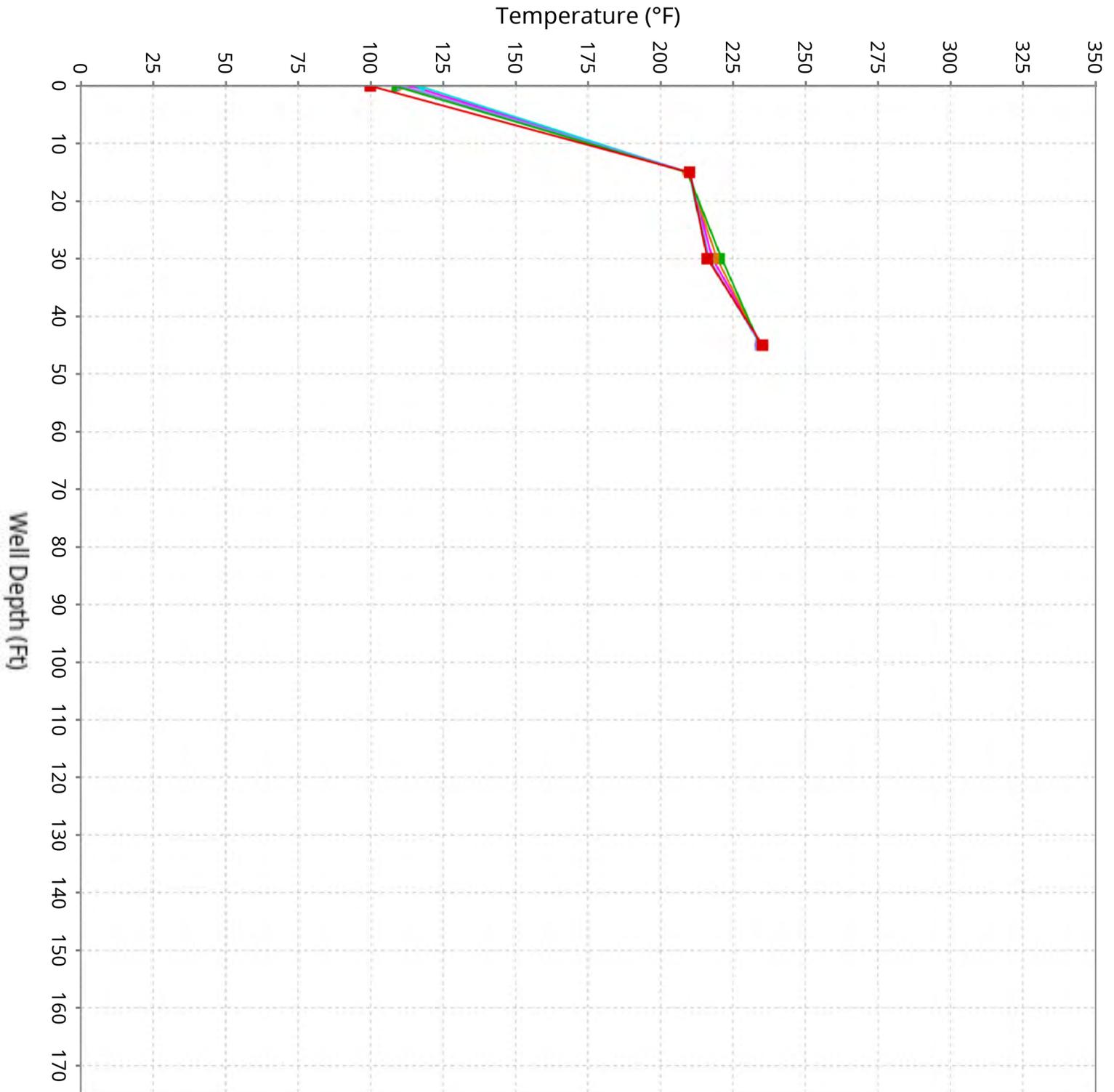
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-2

Maximum data for 7/24/2025 to 9/3/2025



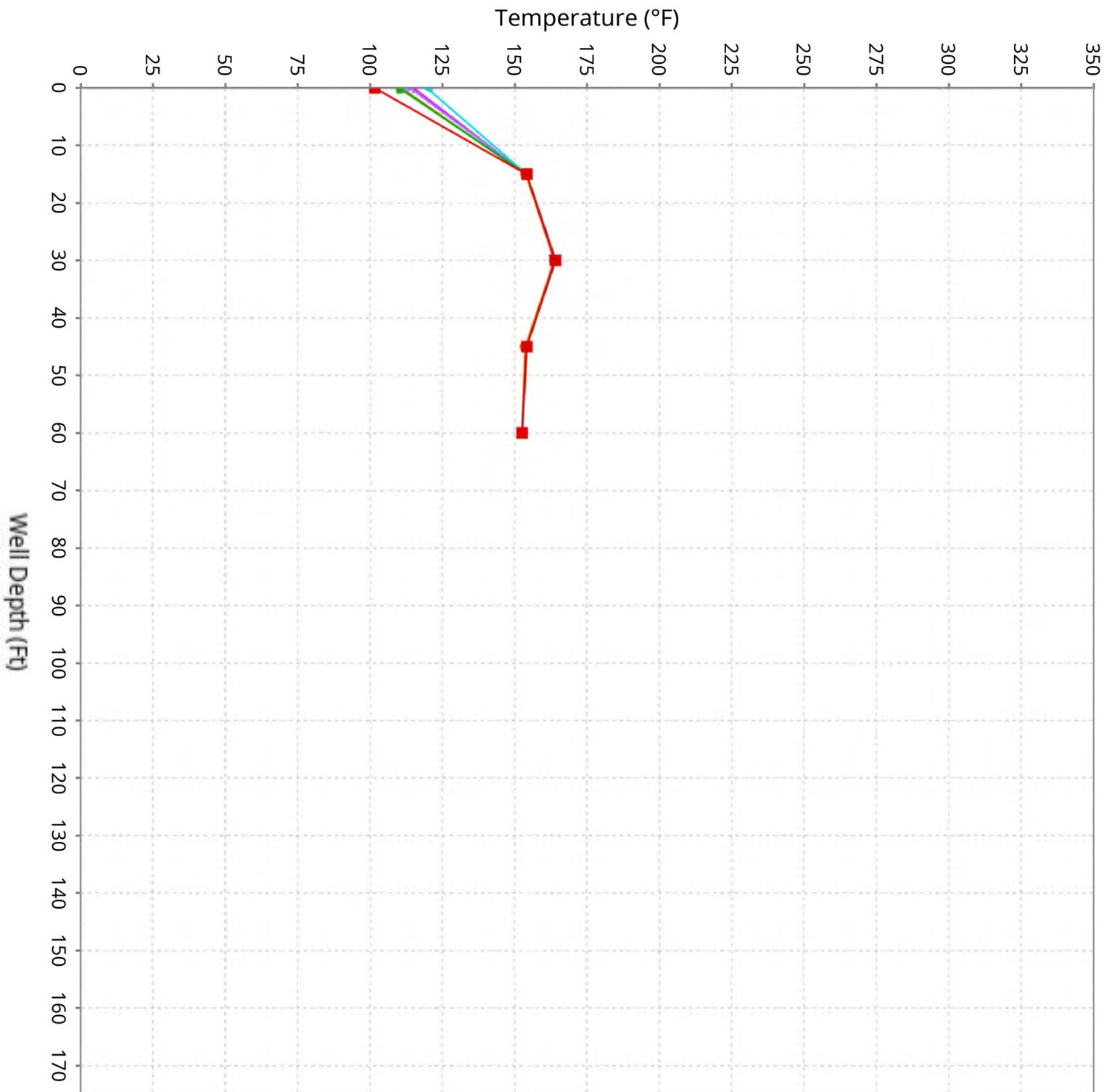
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-3

Maximum data for 7/24/2025 to 9/3/2025



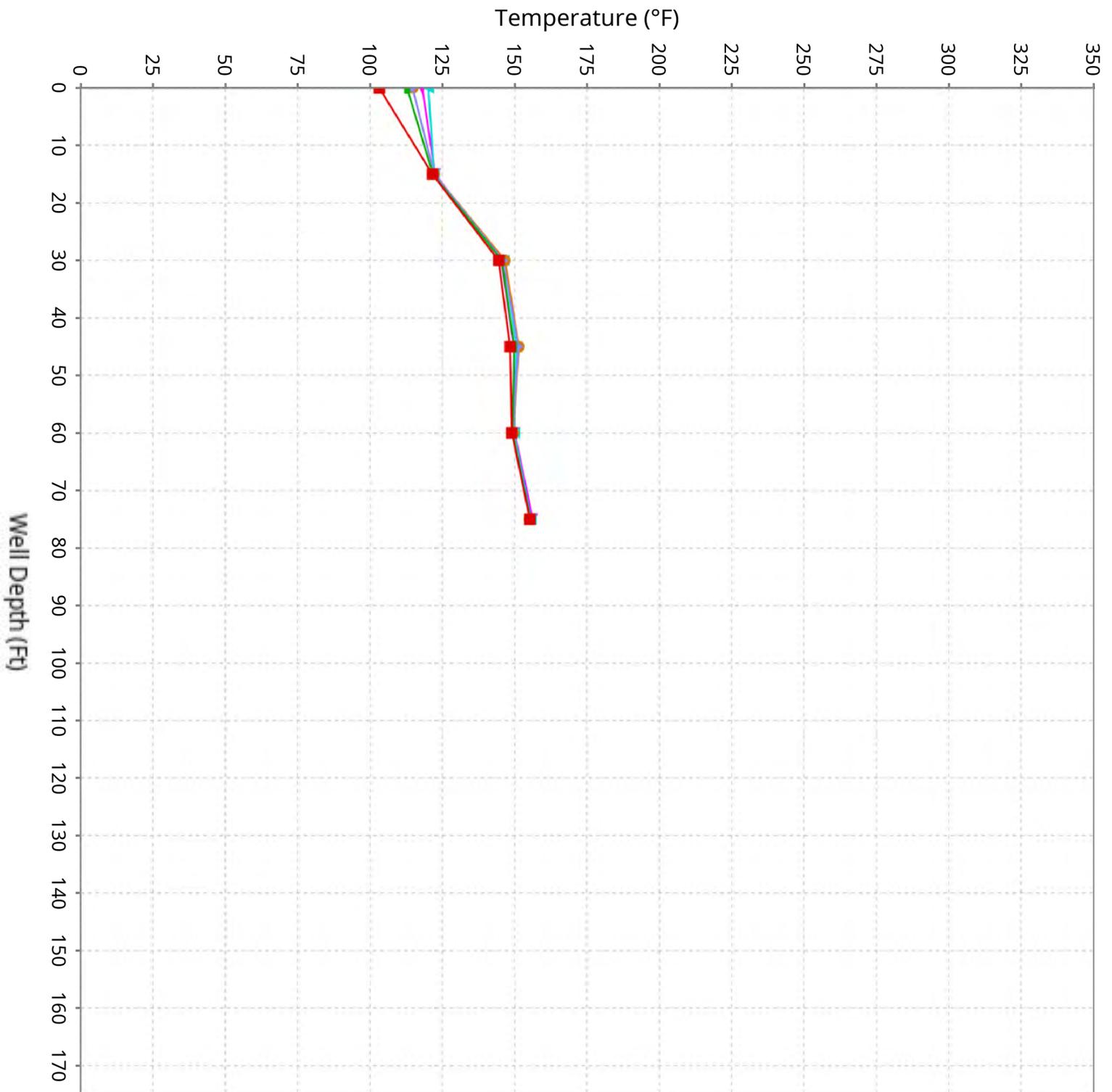
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-4

Maximum data for 7/24/2025 to 9/3/2025



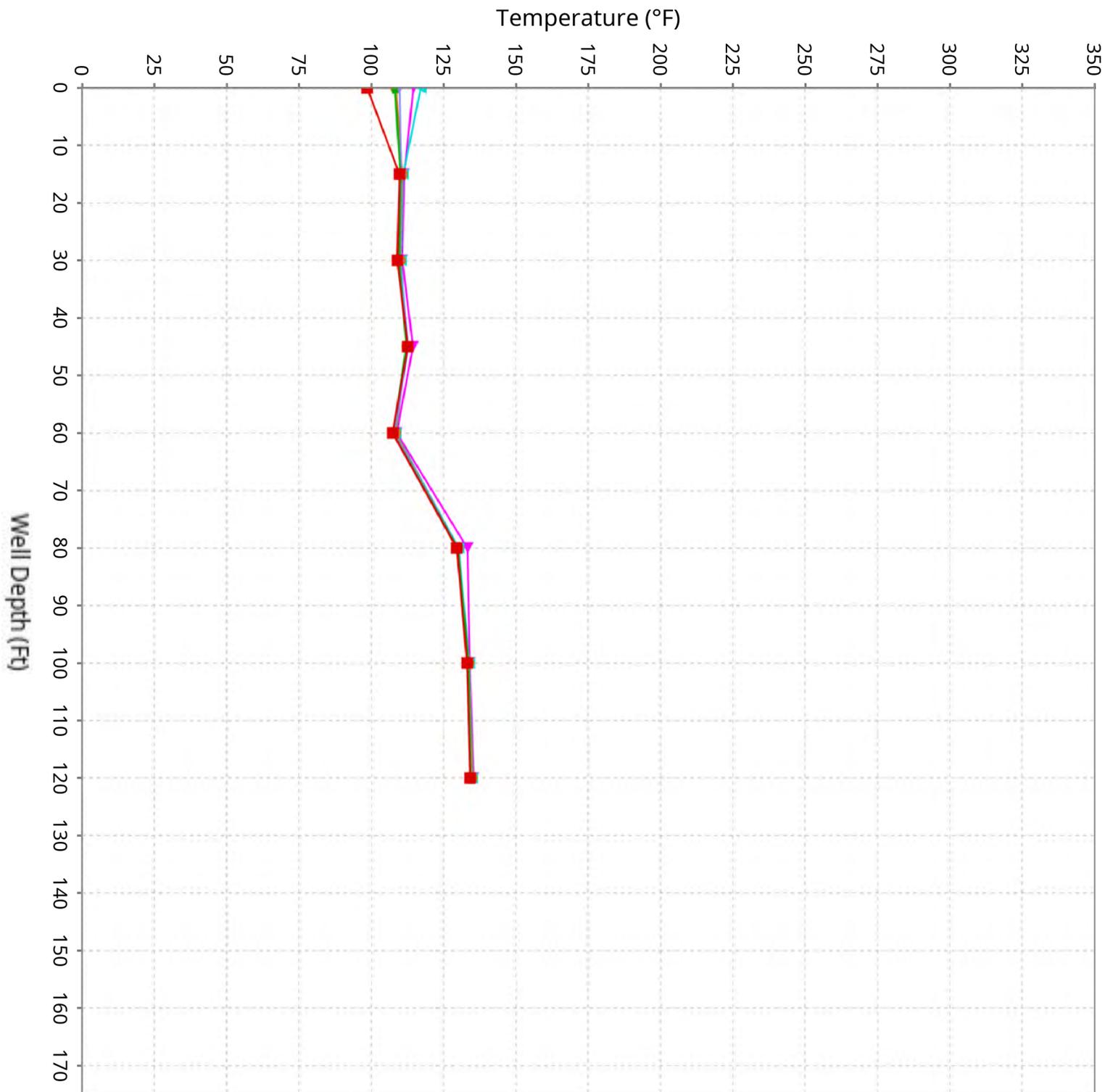
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-5

Maximum data for 7/24/2025 to 9/3/2025



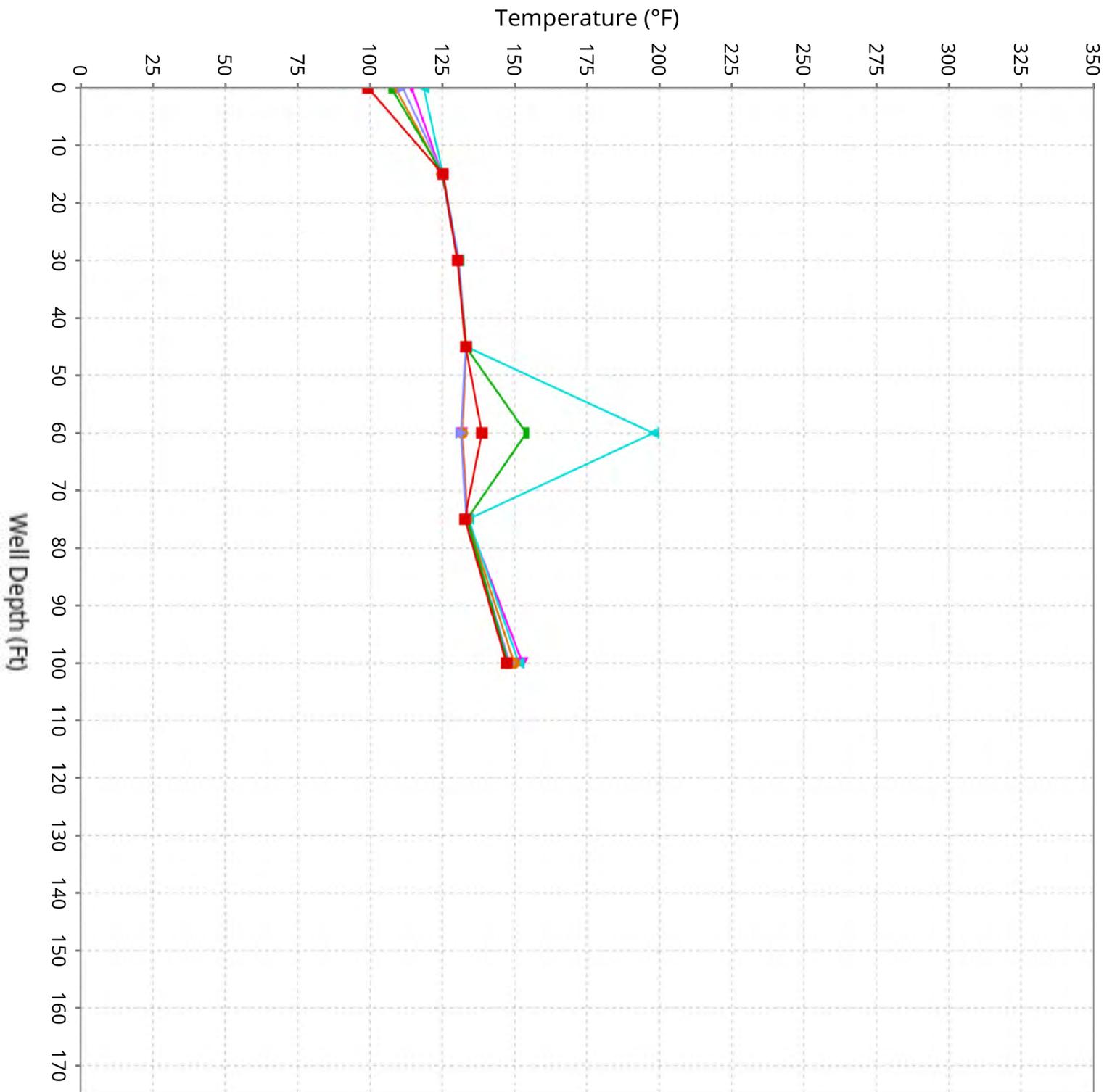
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-6

Maximum data for 7/24/2025 to 9/3/2025



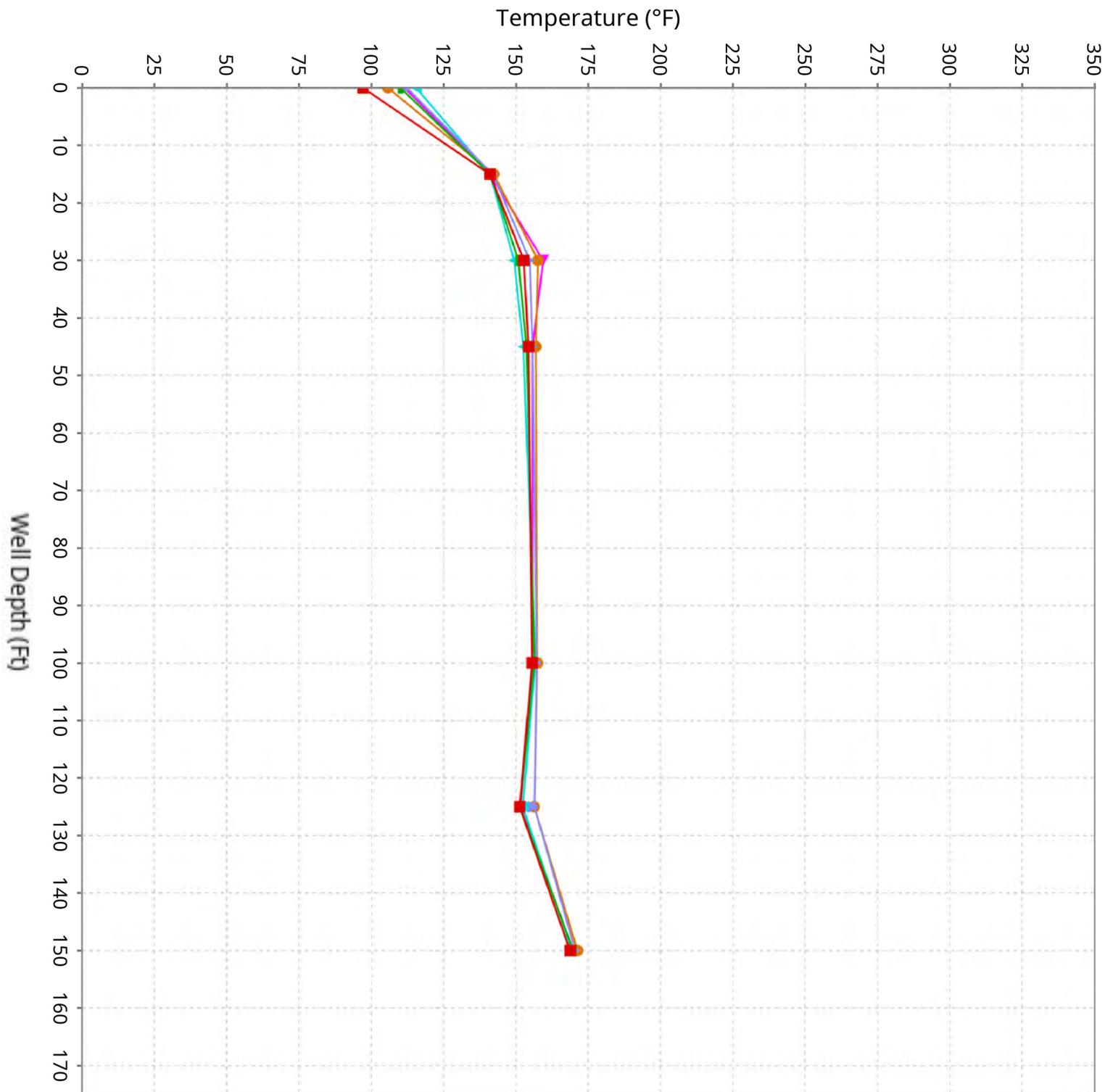
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-7

Maximum data for 7/24/2025 to 9/3/2025



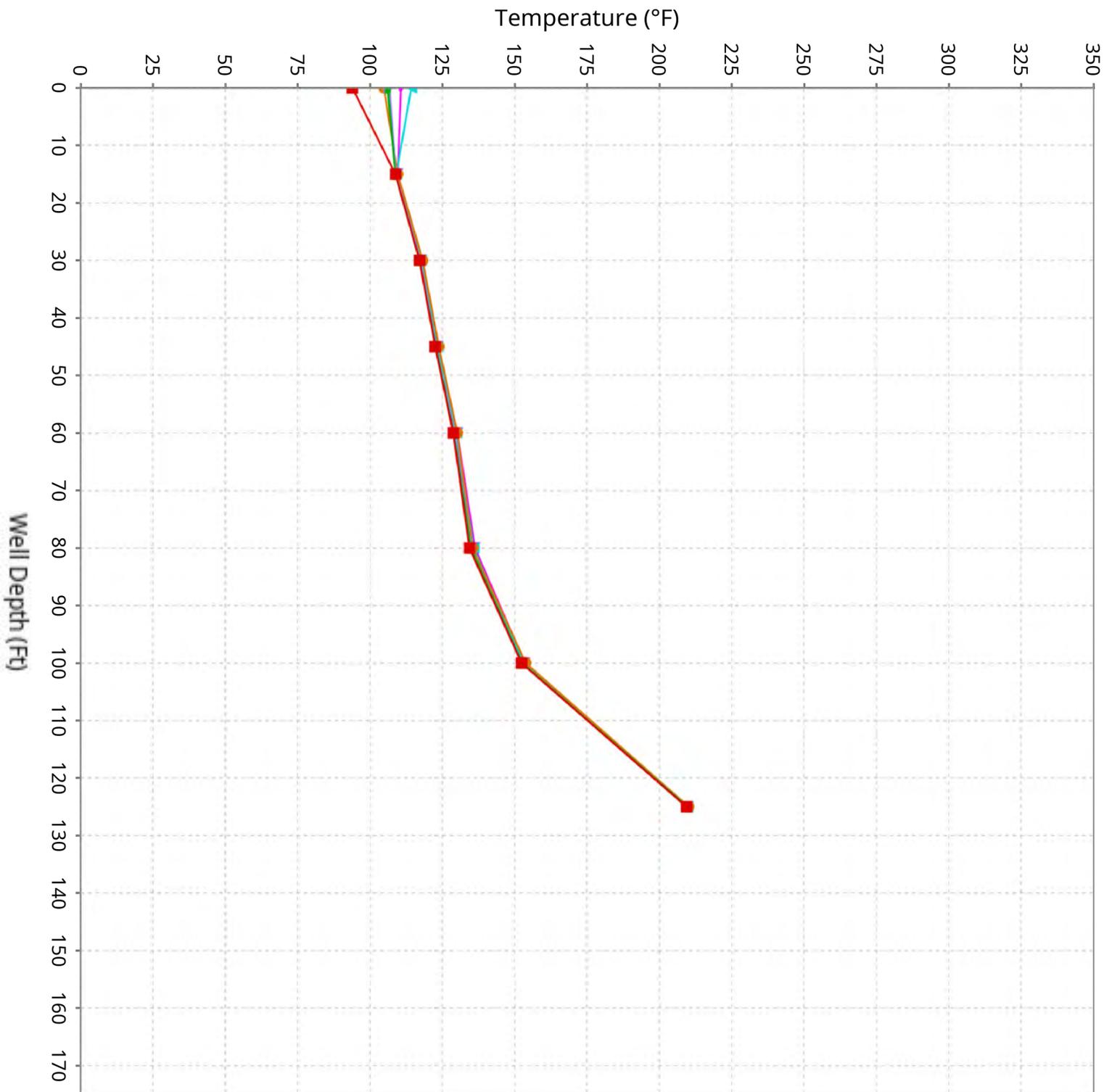
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-8

Maximum data for 7/24/2025 to 9/3/2025



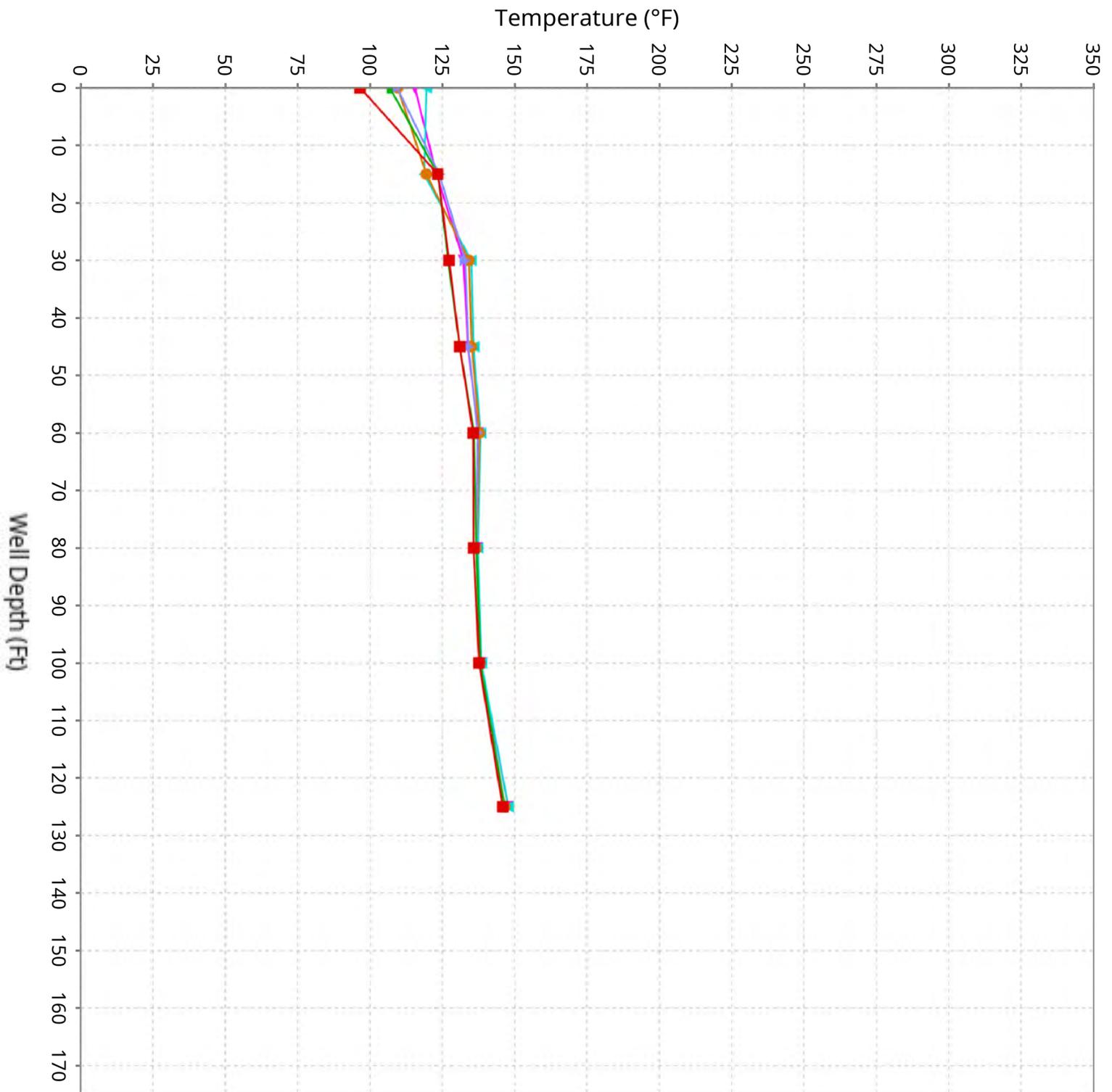
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-9

Maximum data for 7/24/2025 to 9/3/2025



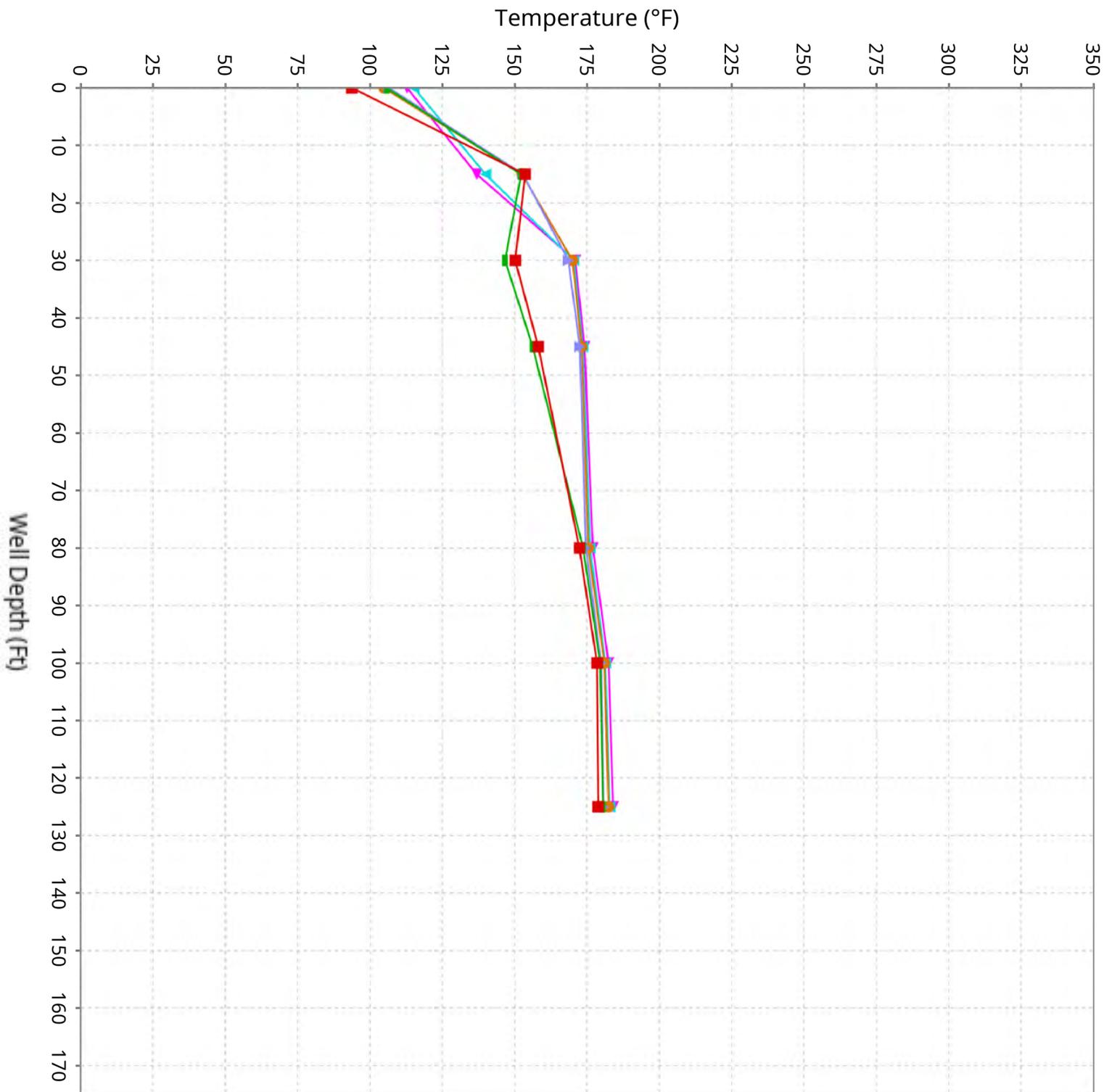
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-10

Maximum data for 7/24/2025 to 9/3/2025



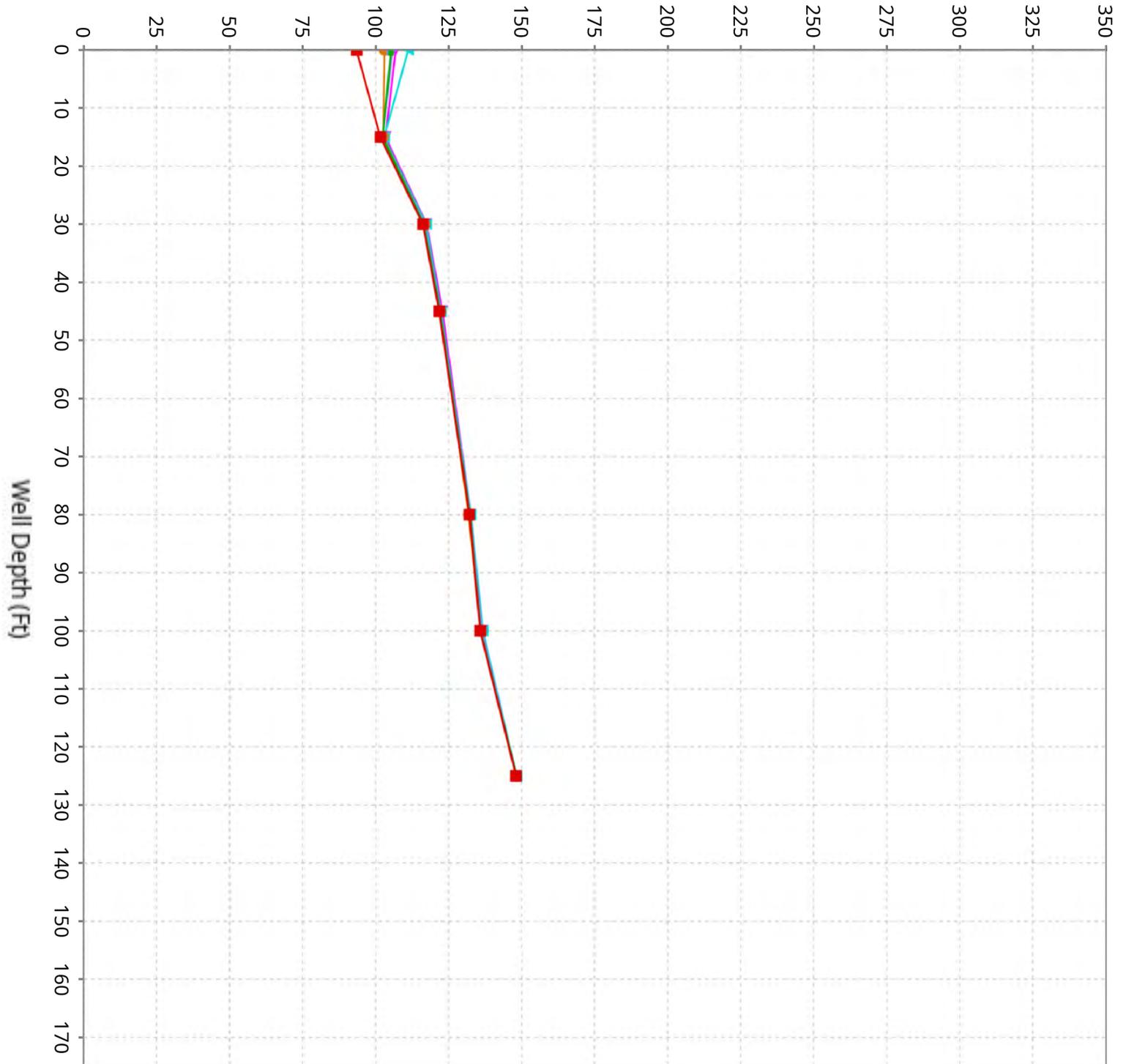
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-11

Maximum data for 7/24/2025 to 9/3/2025



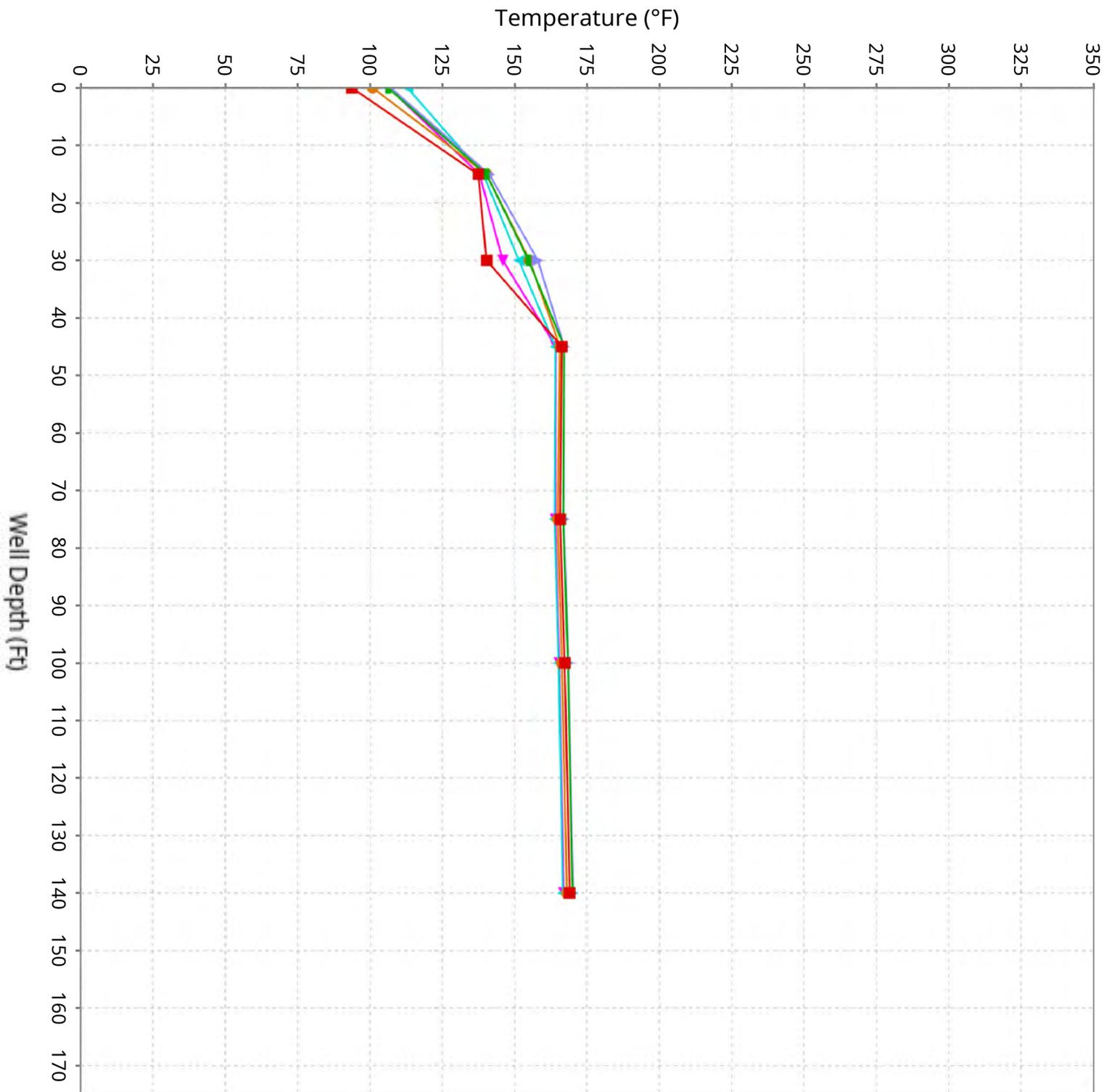
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-12

Maximum data for 7/24/2025 to 9/3/2025
Temperature (°F)



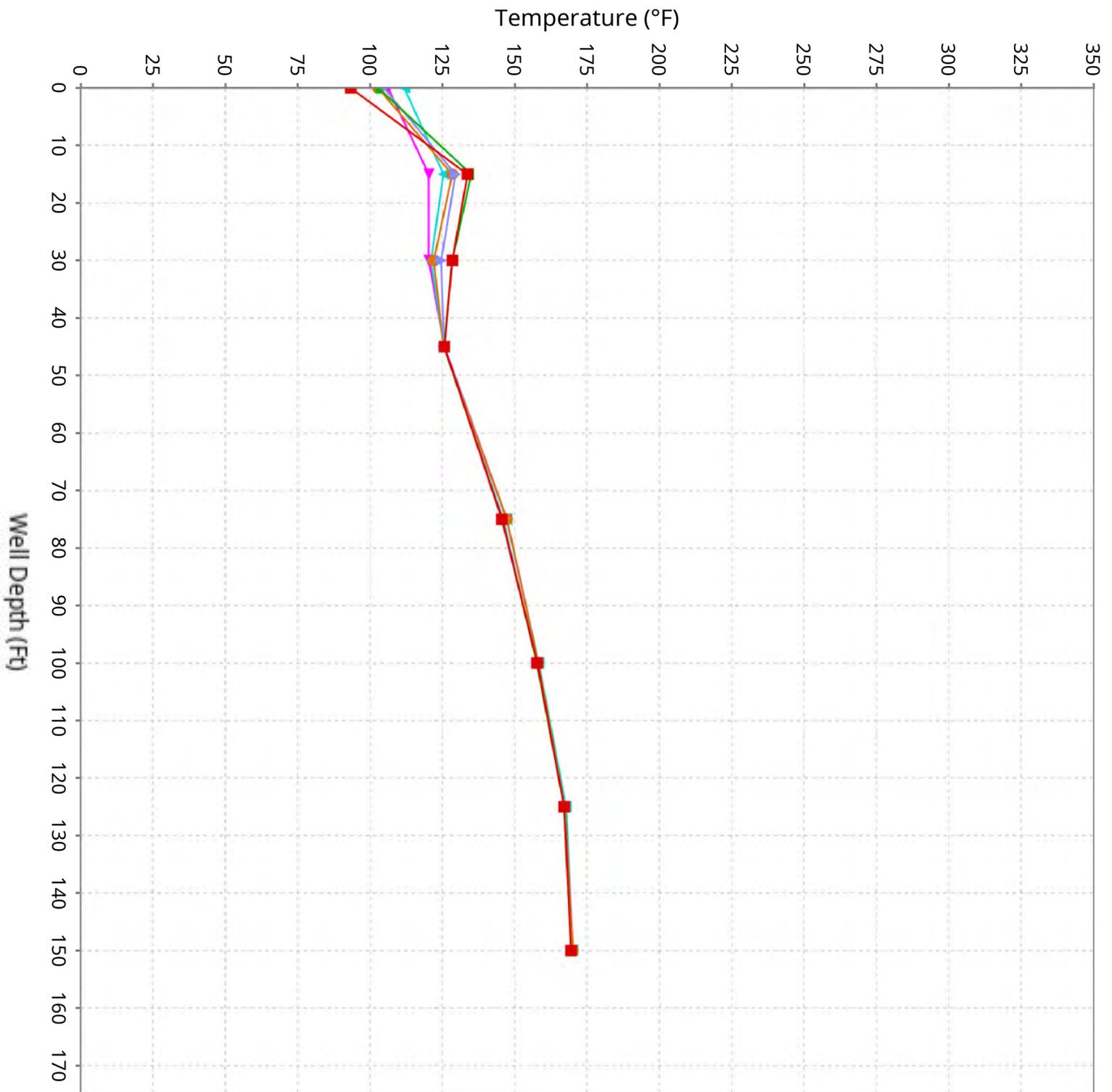
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-13

Maximum data for 7/24/2025 to 9/3/2025



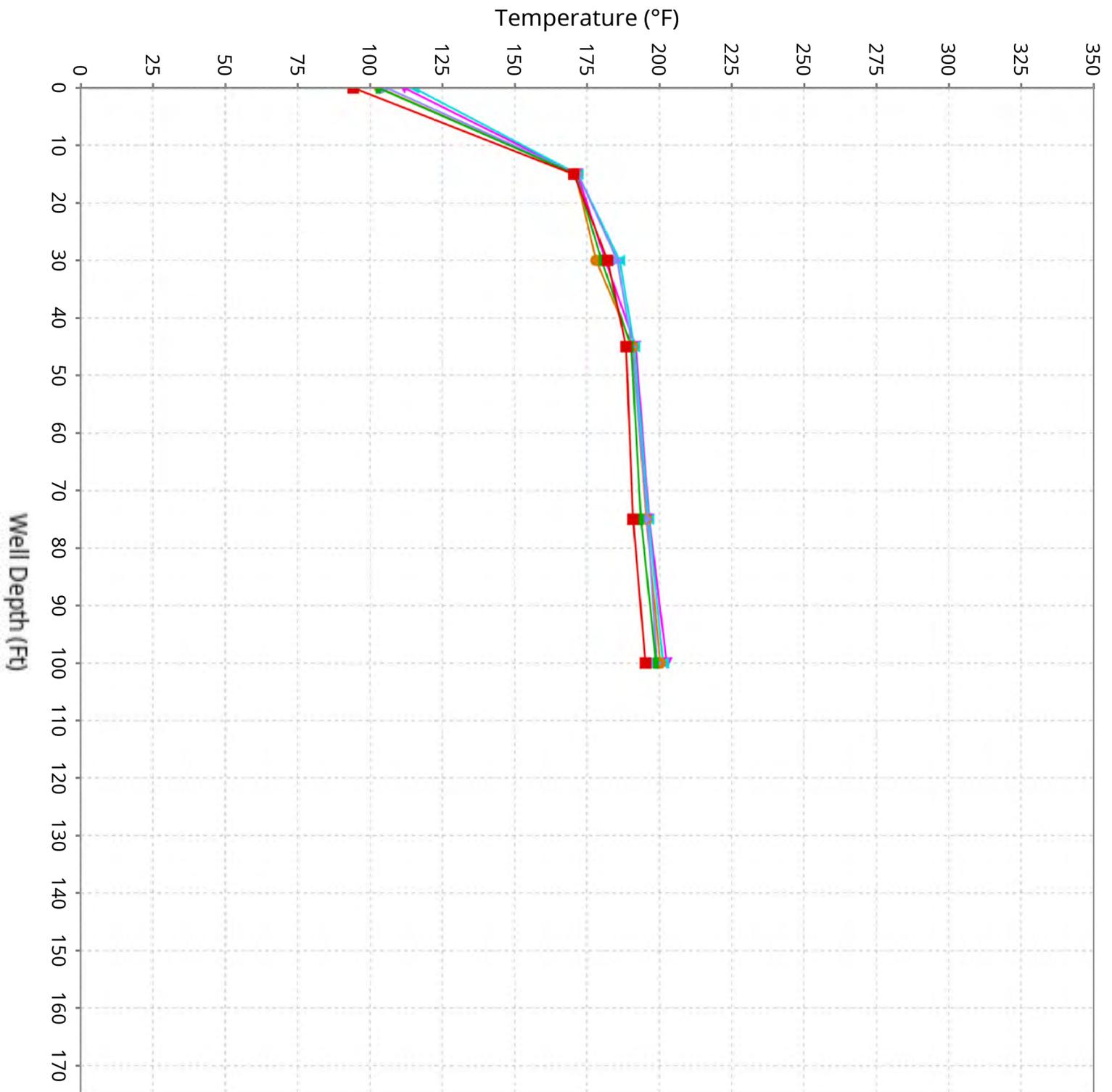
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-14

Maximum data for 7/24/2025 to 9/3/2025



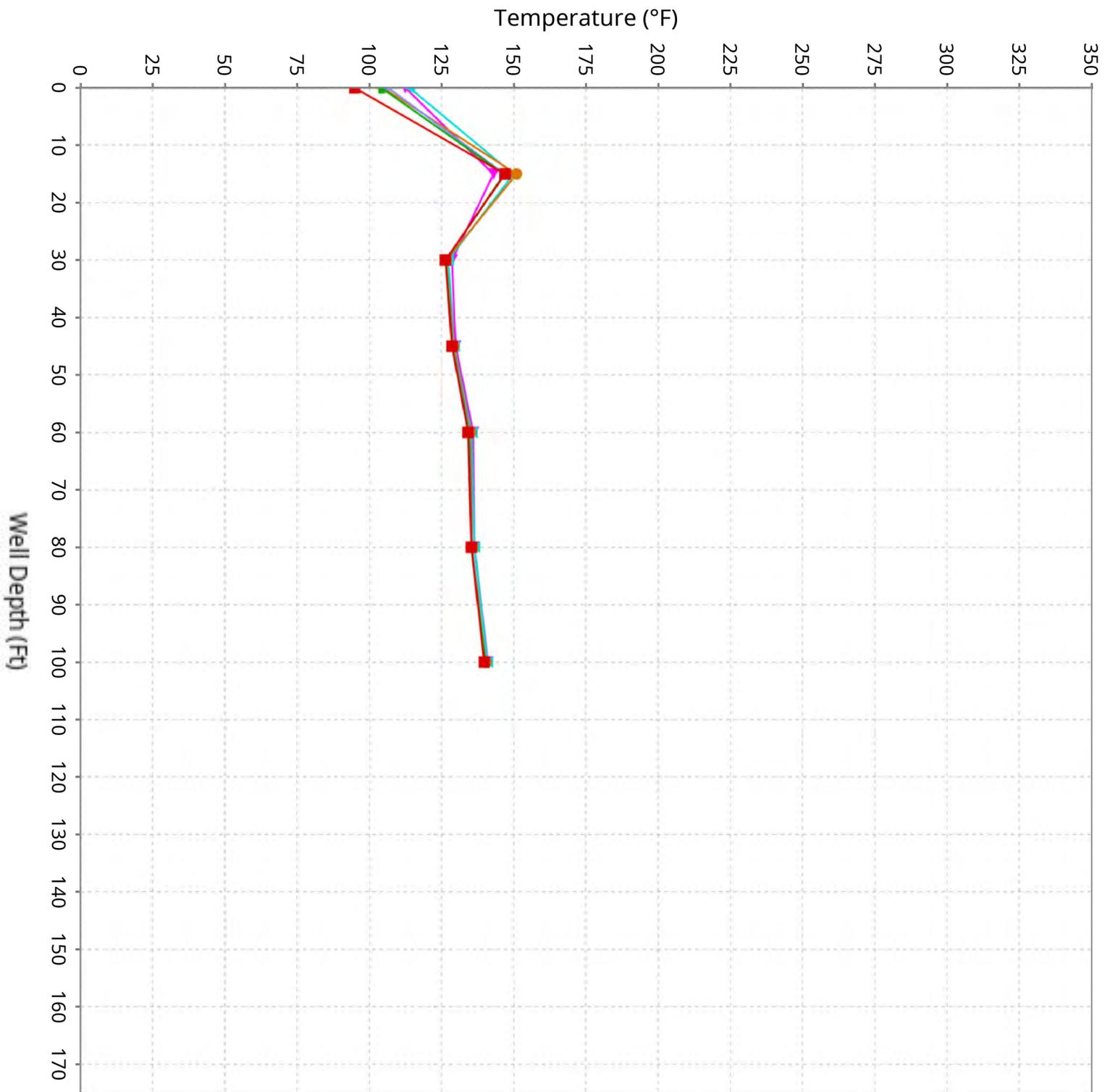
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-15

Maximum data for 7/24/2025 to 9/3/2025



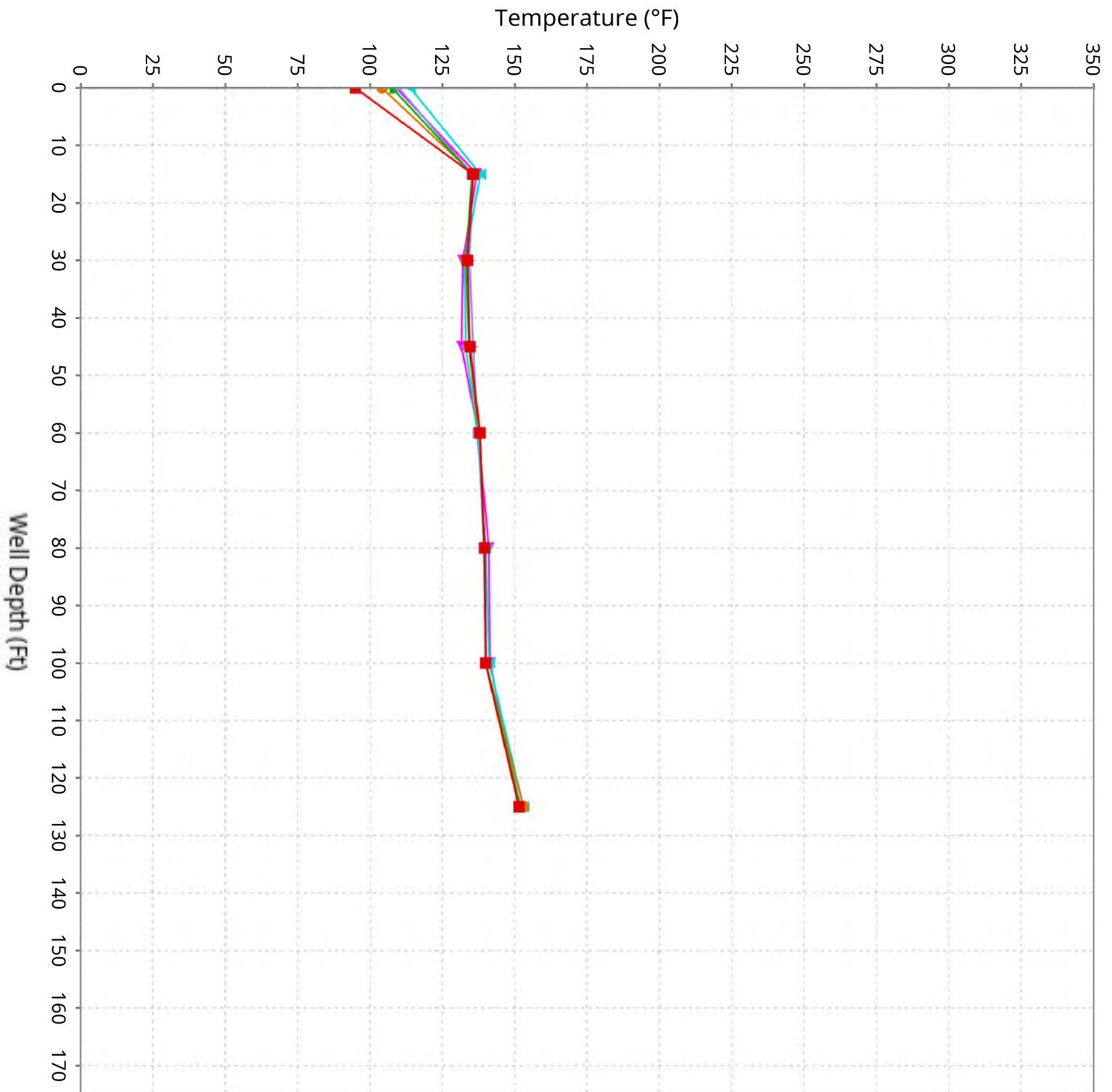
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-16

Maximum data for 7/24/2025 to 9/3/2025



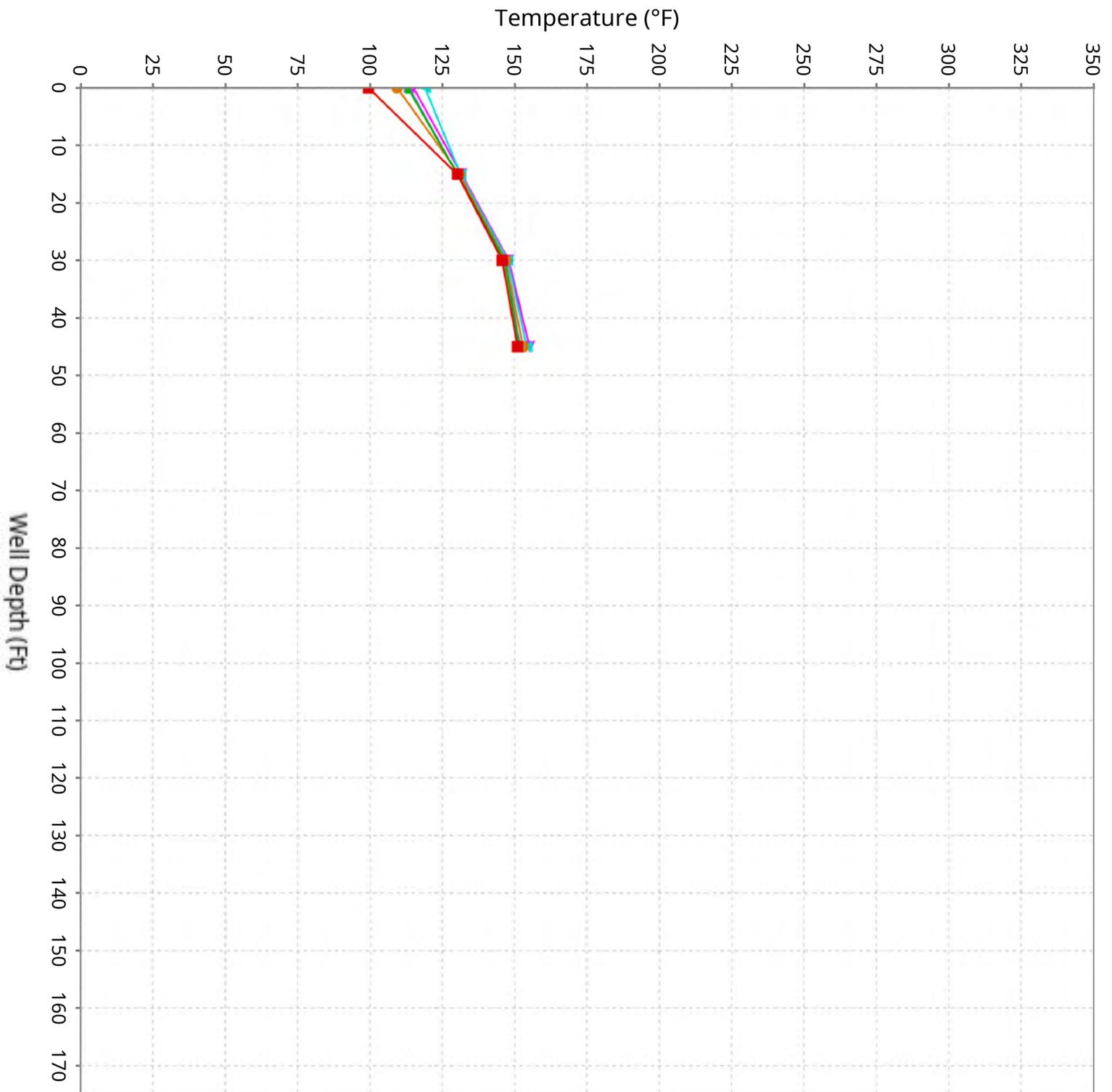
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-17

Maximum data for 7/24/2025 to 9/3/2025M



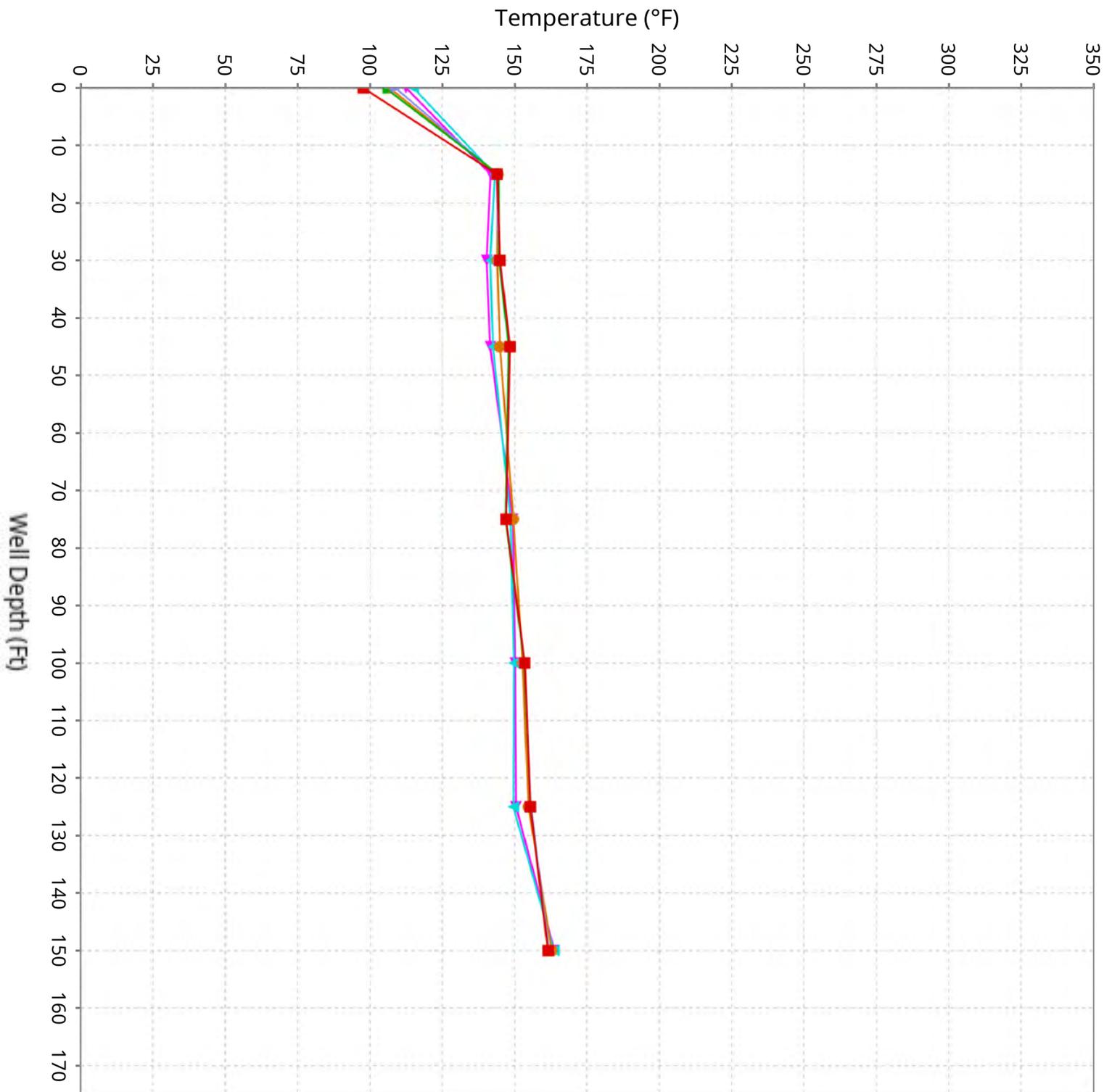
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-18

Maximum data for 7/24/2025 to 9/3/2025



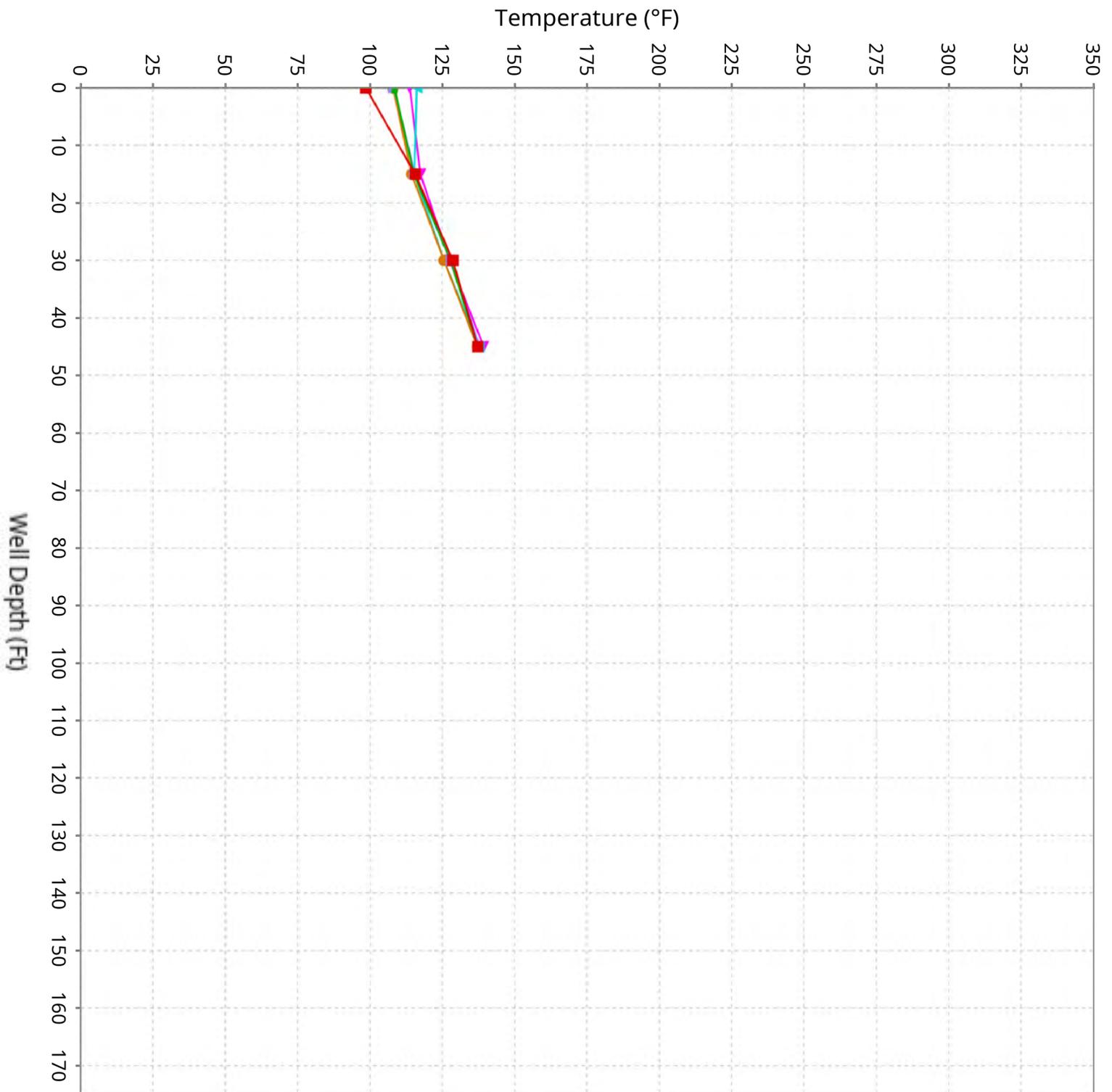
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-19

Maximum data for 7/24/2025 to 9/3/2025



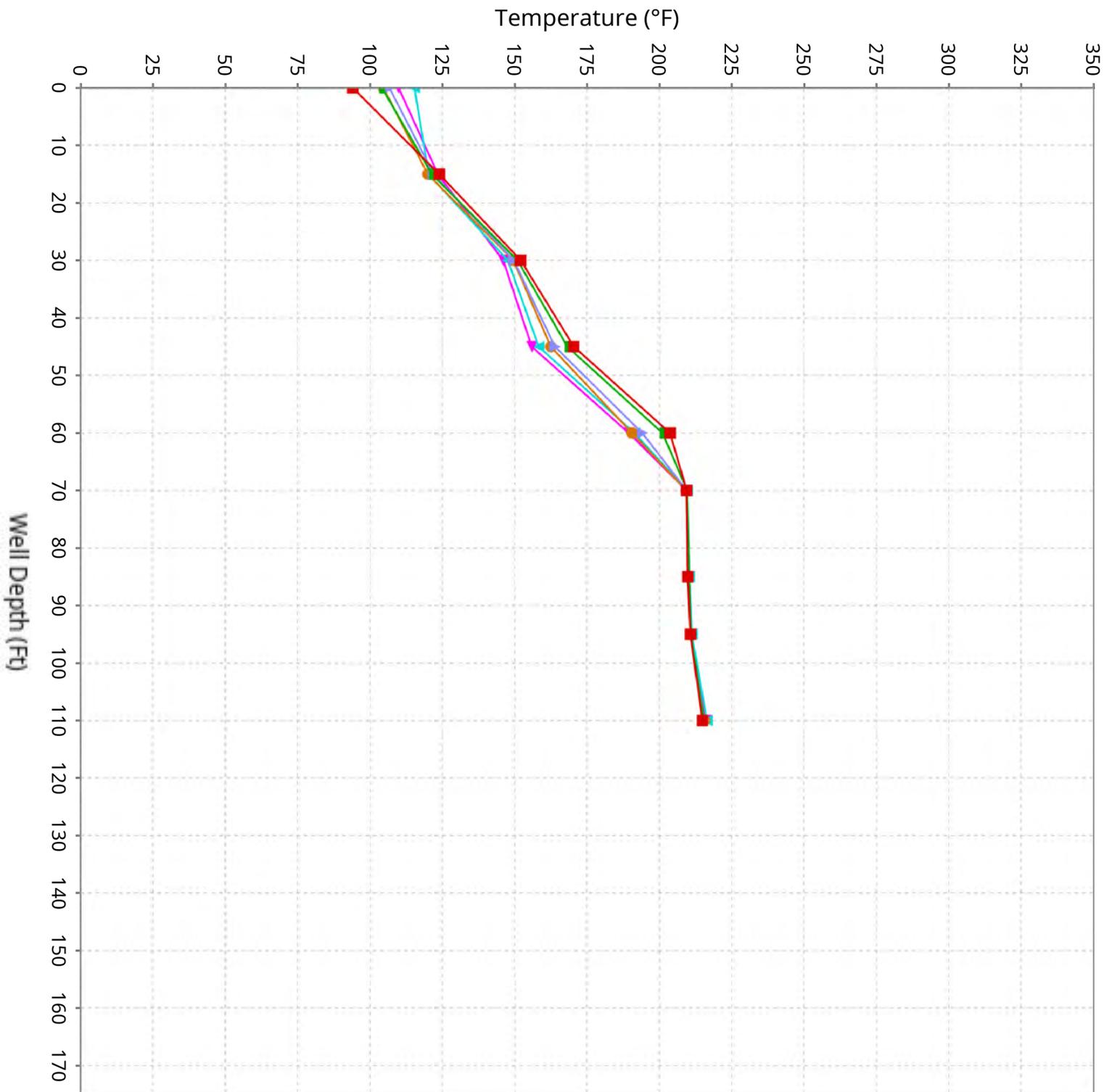
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-20

Maximum data for 7/24/2025 to 9/3/2025



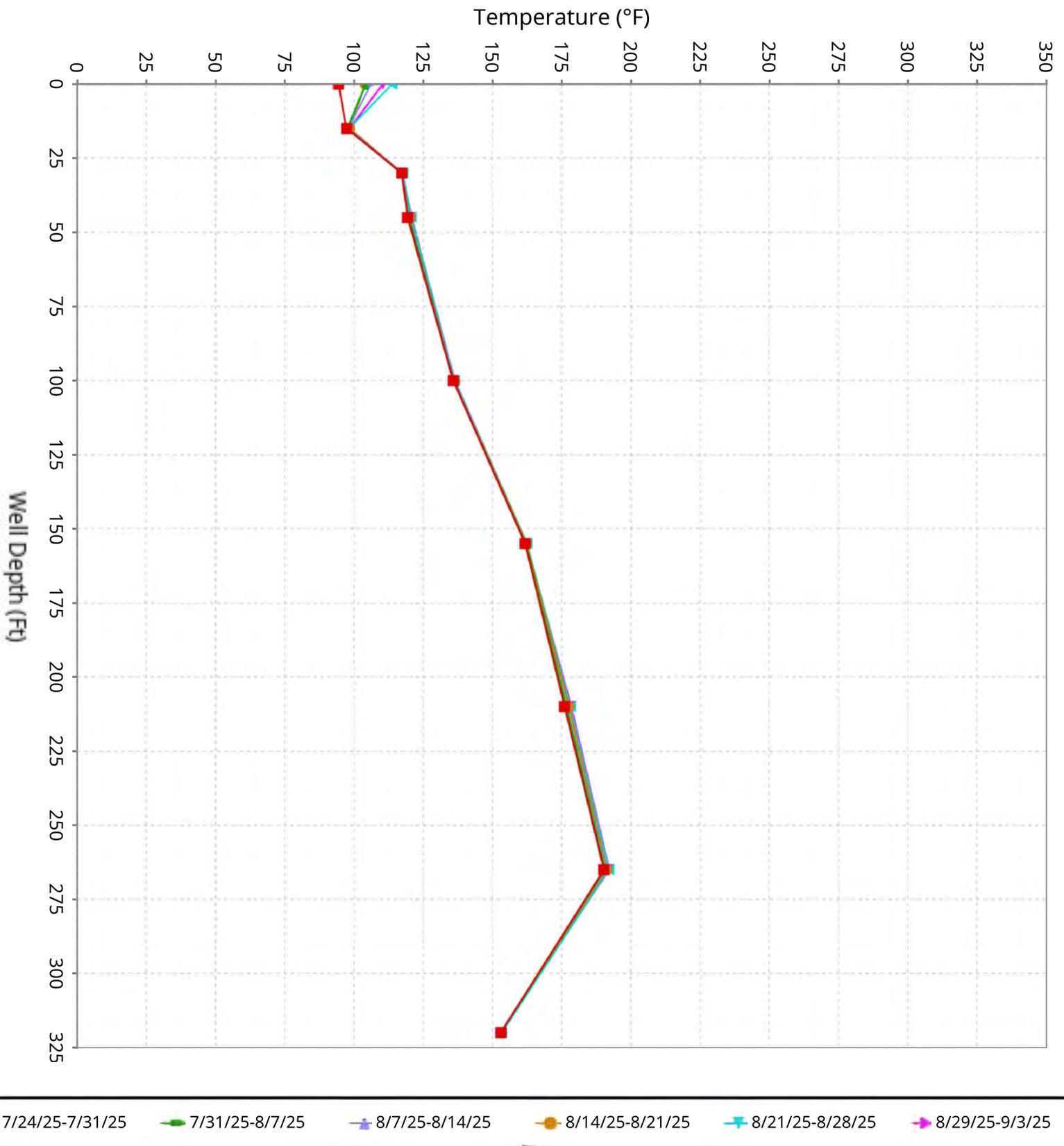
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-21

Maximum data for 7/24/2025 to 9/3/2025



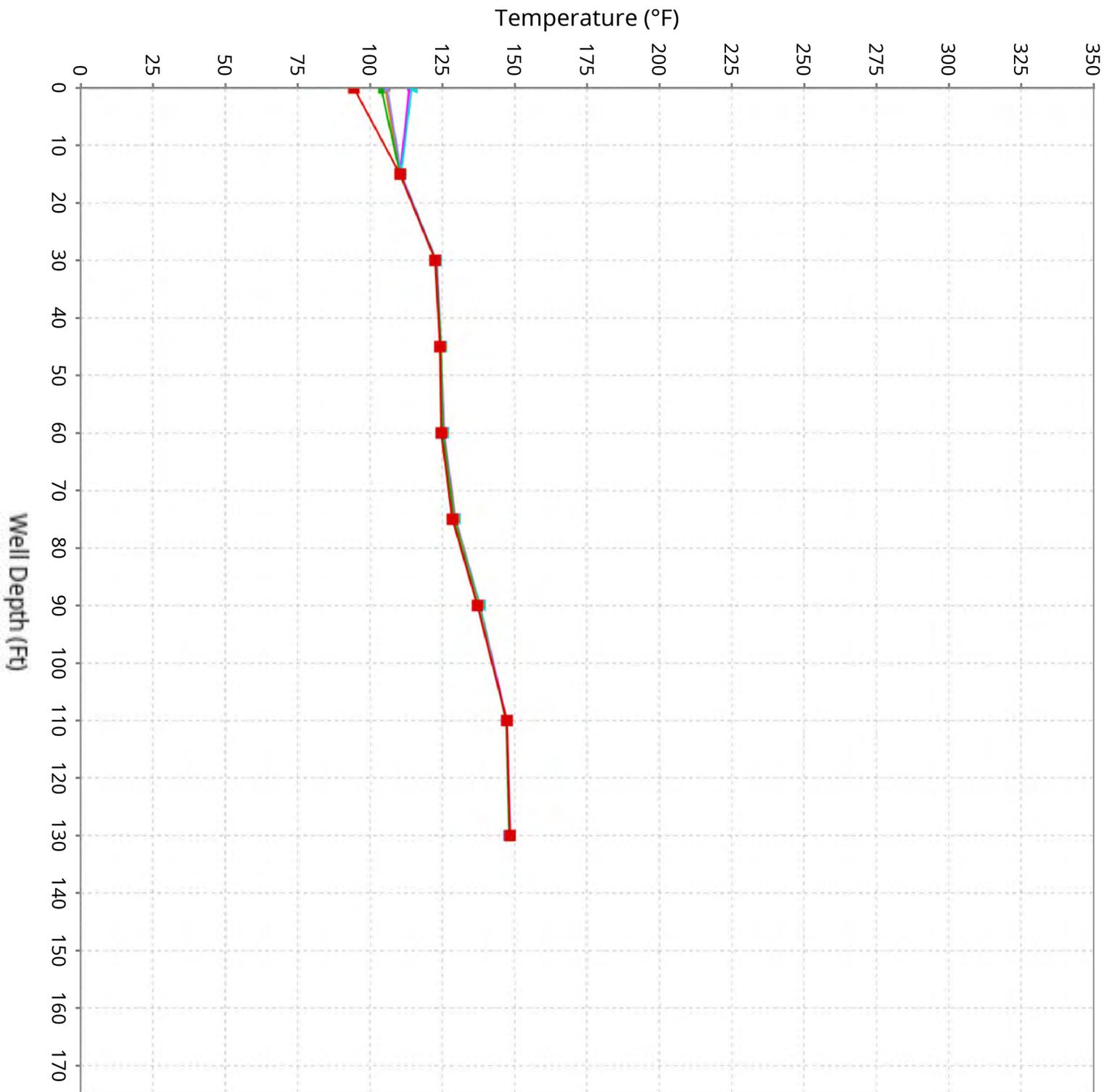
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-24

Maximum data for 7/24/2025 to 9/3/2025



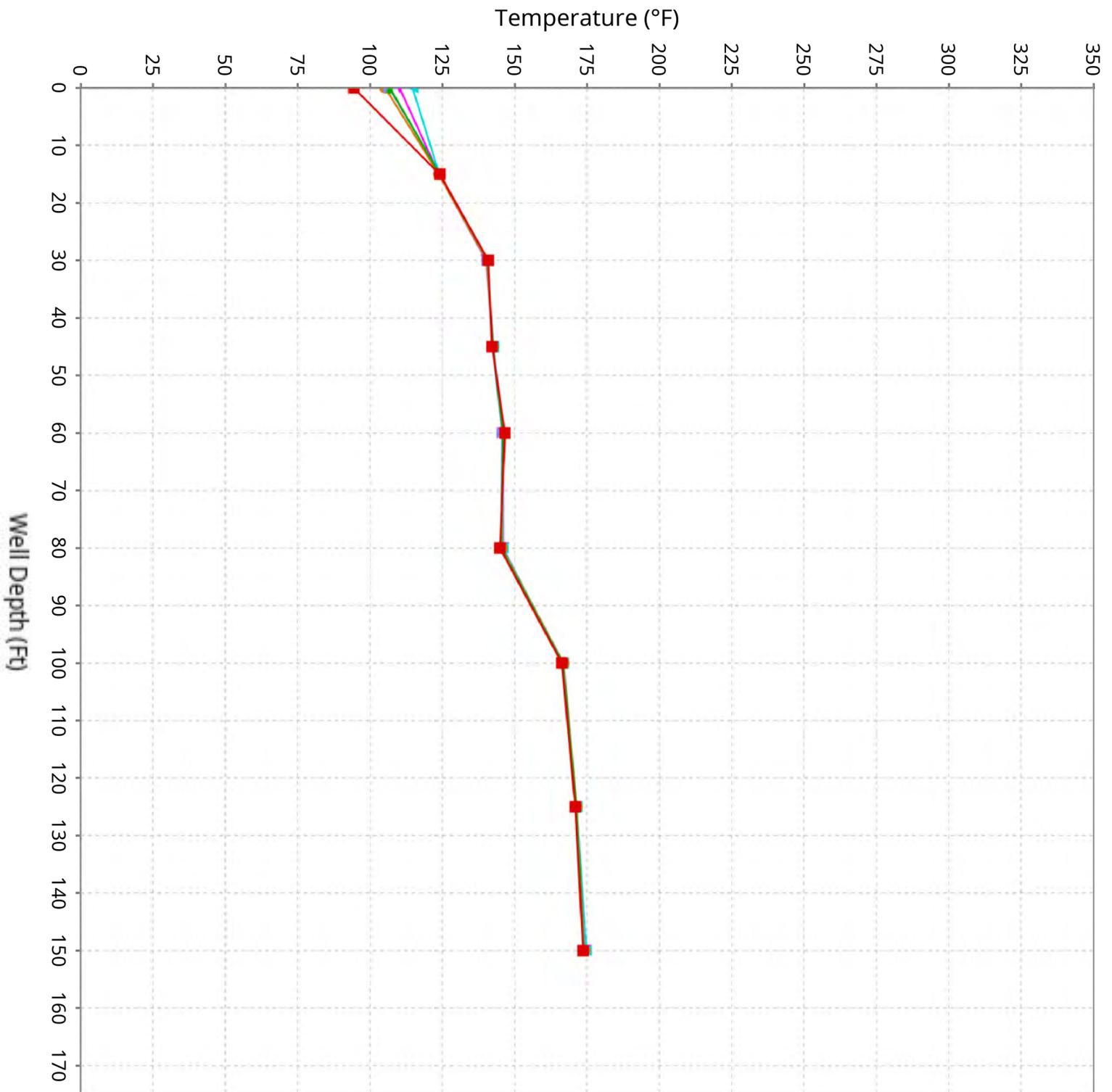
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-25

Maximum data for 7/24/2025 to 9/3/2025



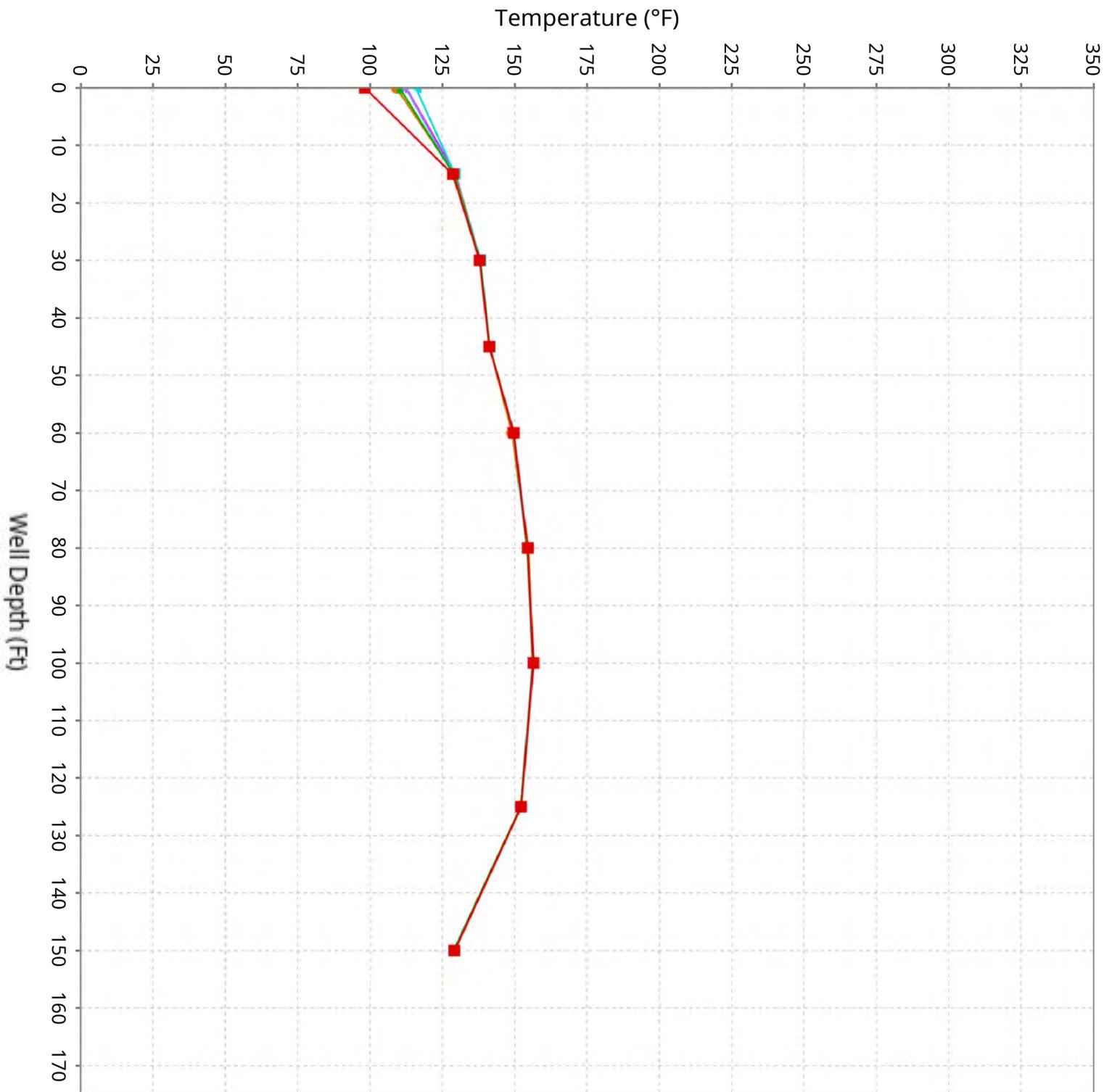
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-26

Maximum data for 7/24/2025 to 9/3/2025



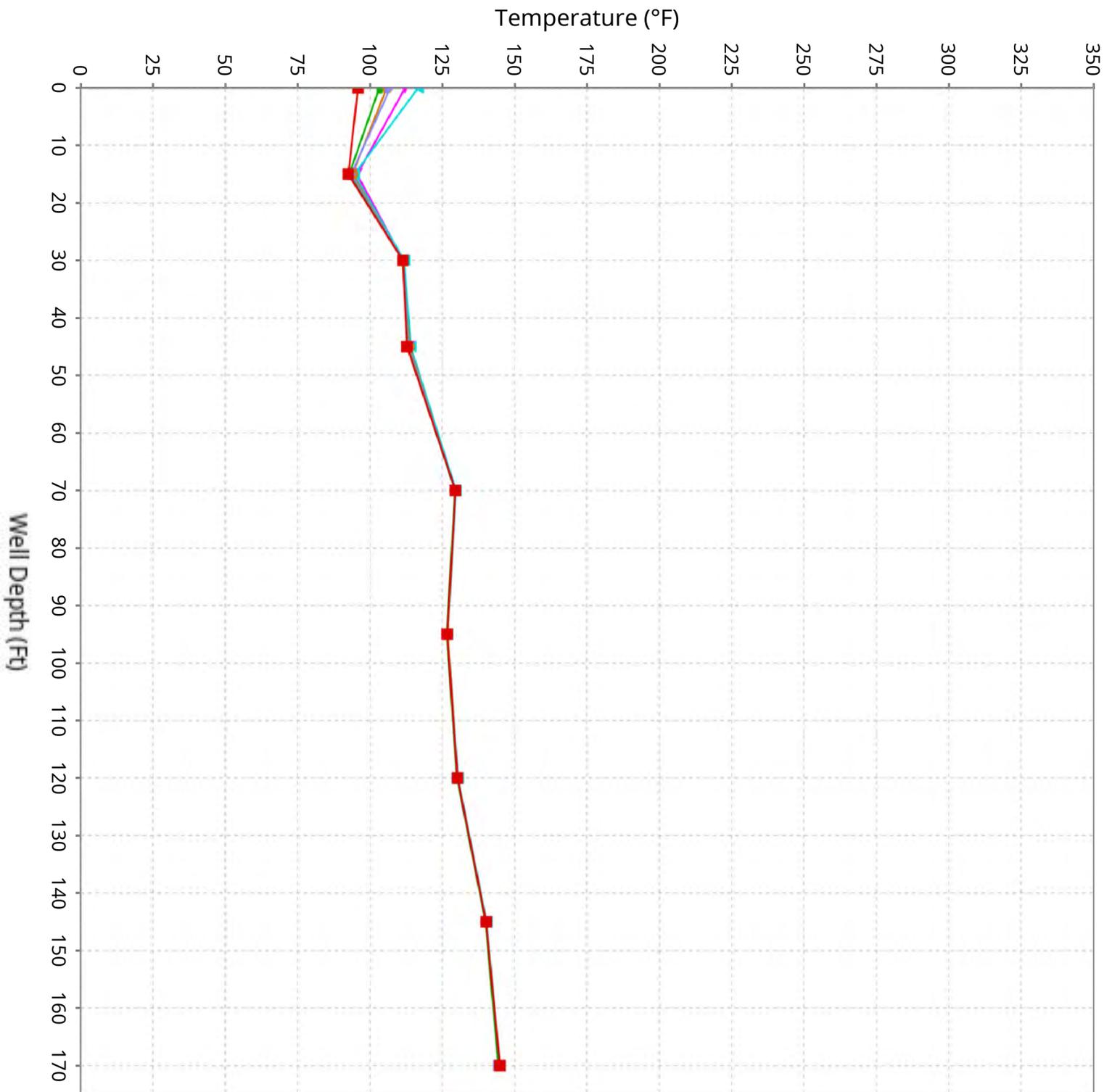
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-27

Maximum data for 7/24/2025 to 9/3/2025



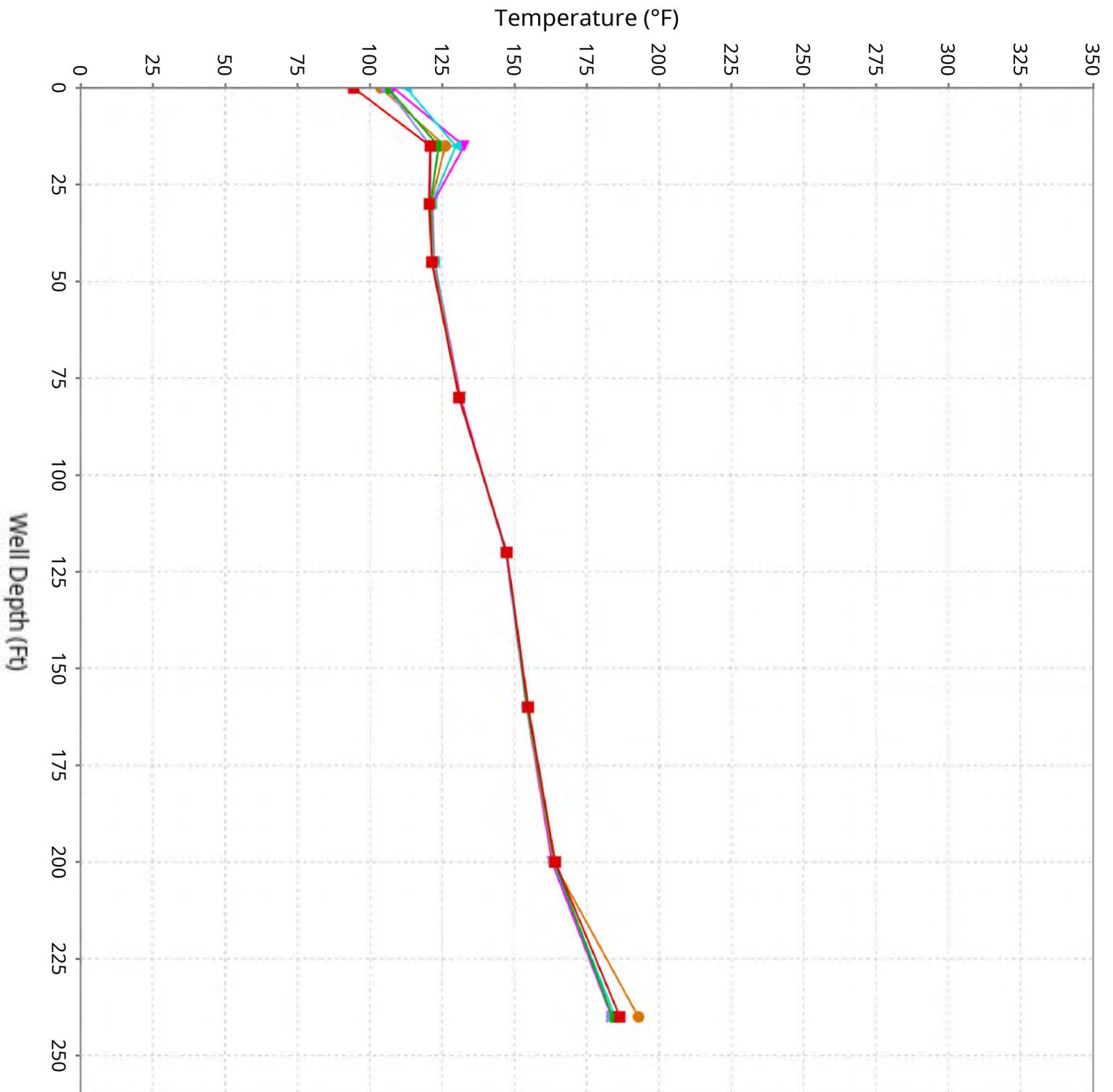
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-28

Maximum data for 7/24/2025 to 9/3/2025



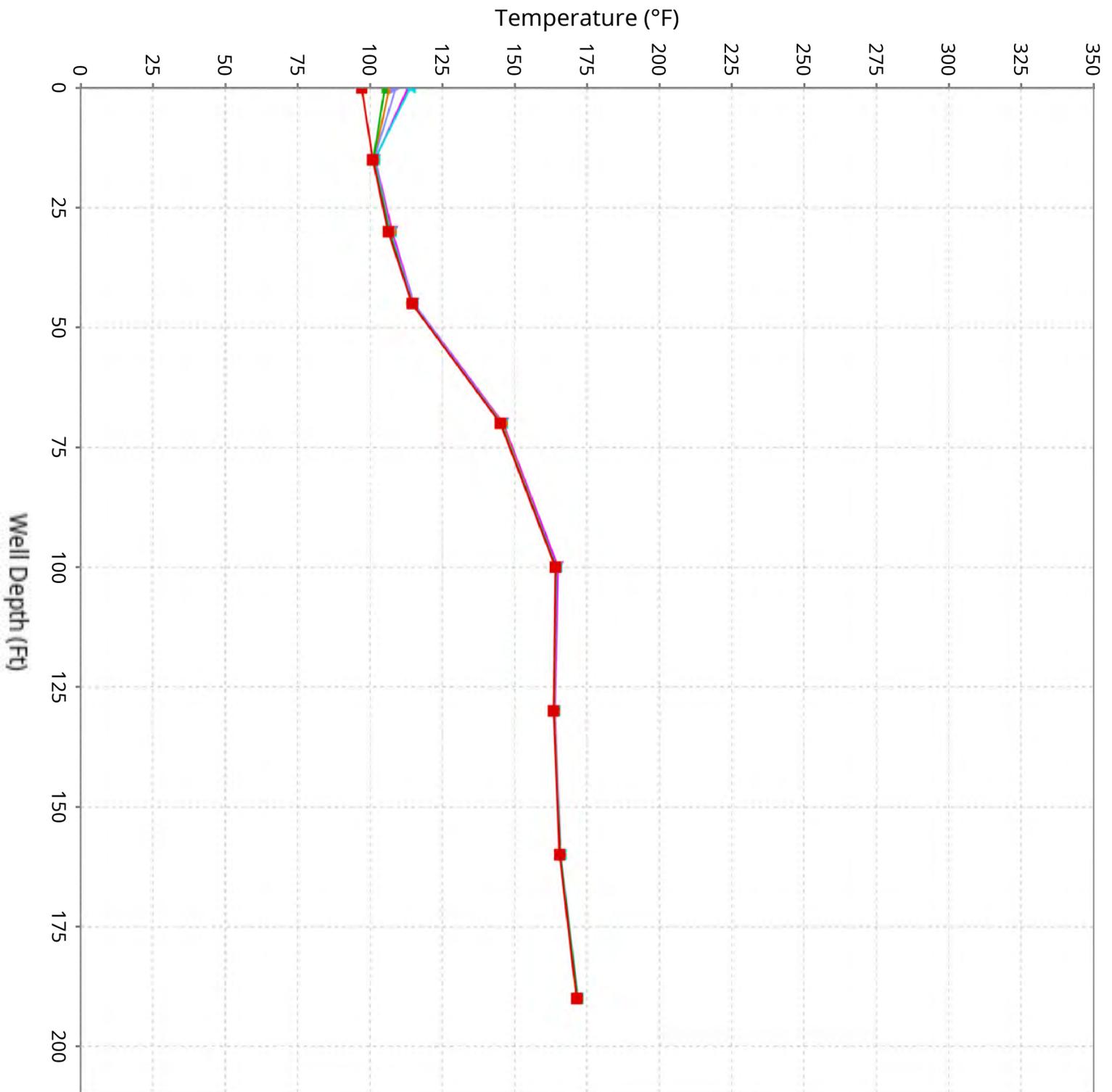
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-29

Maximum data for 7/24/2025 to 9/3/2025



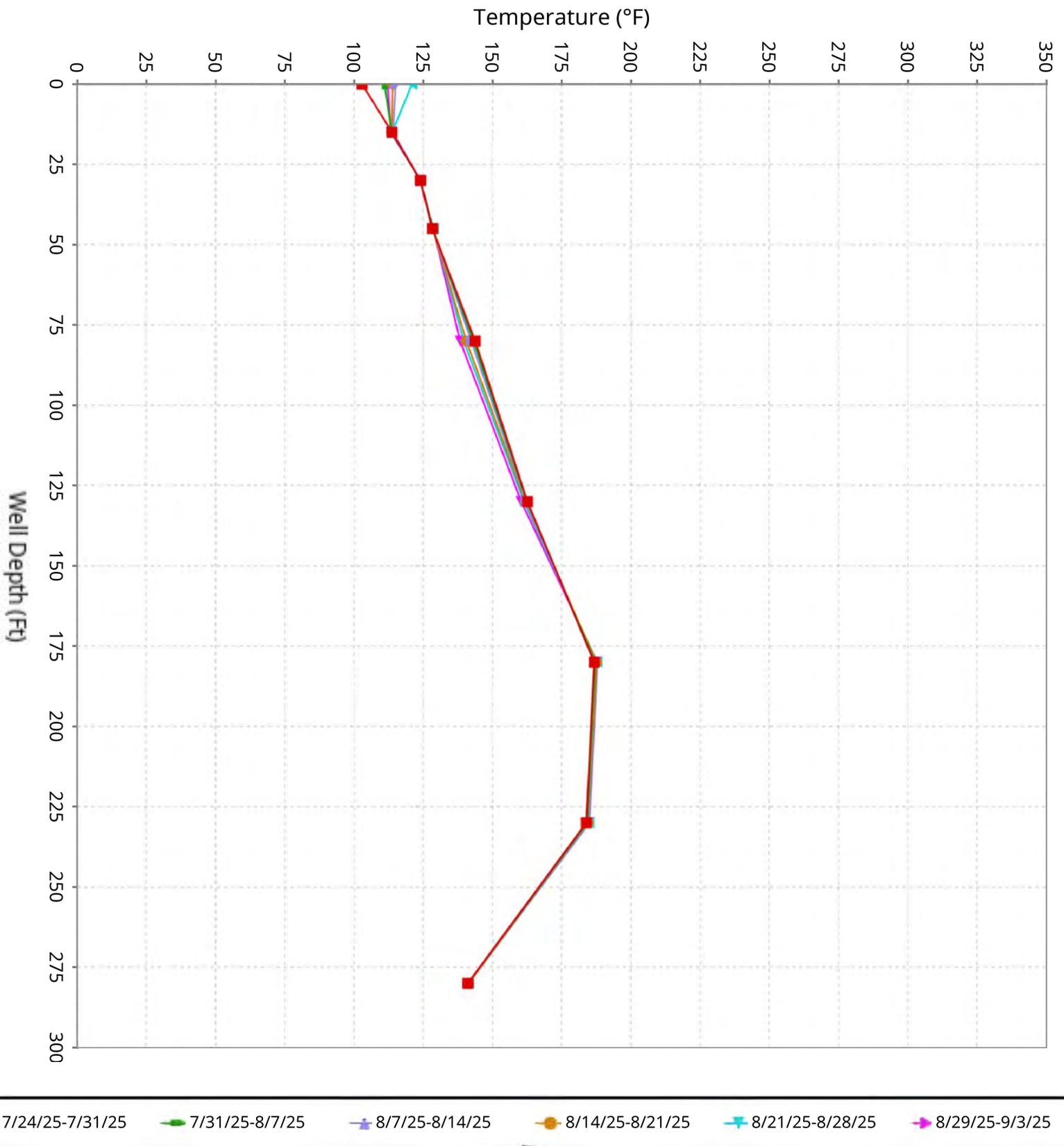
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-30

Maximum data for 7/24/2025 to 9/3/2025



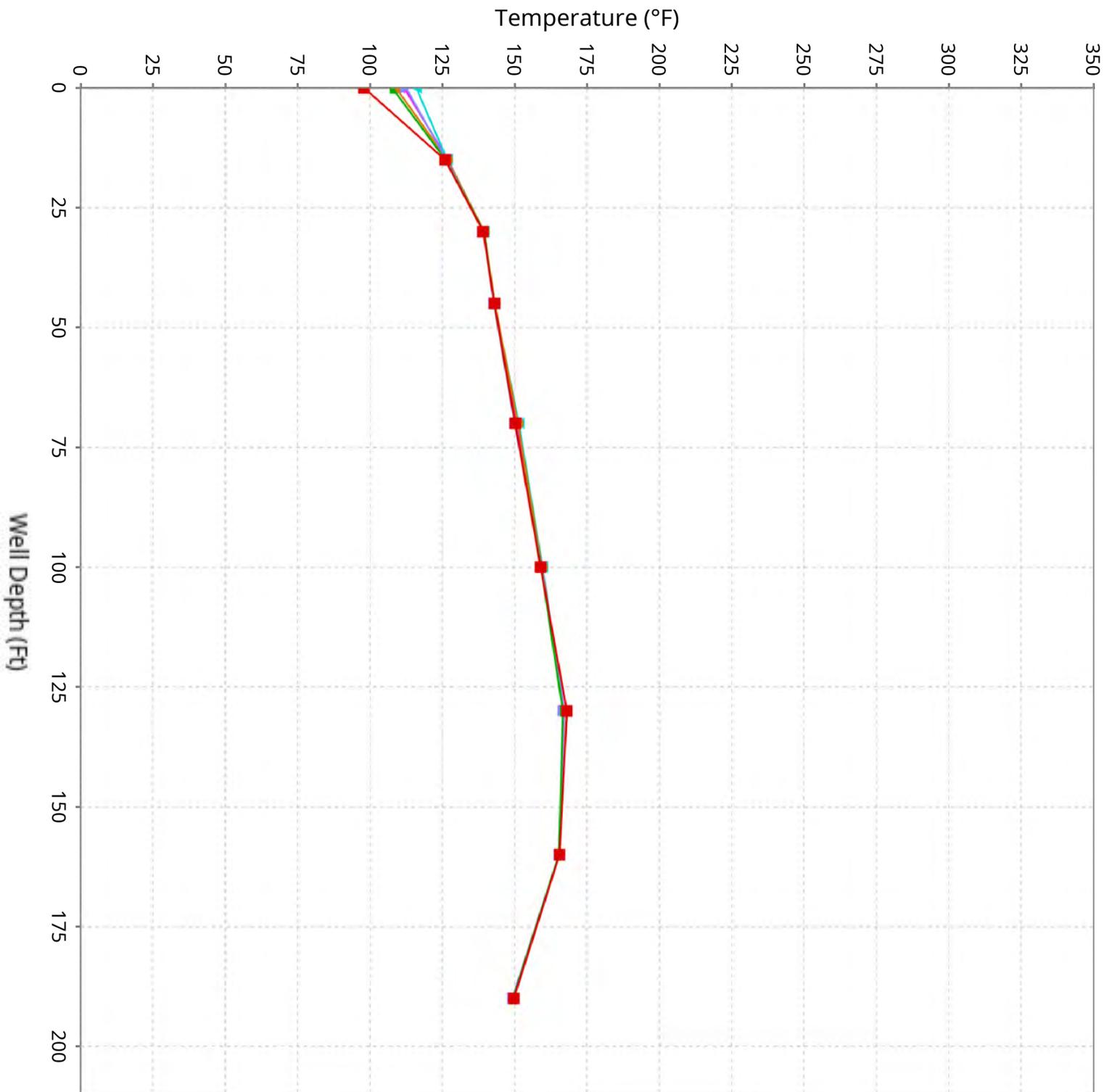
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-31

Maximum data for 7/24/2025 to 9/3/2025



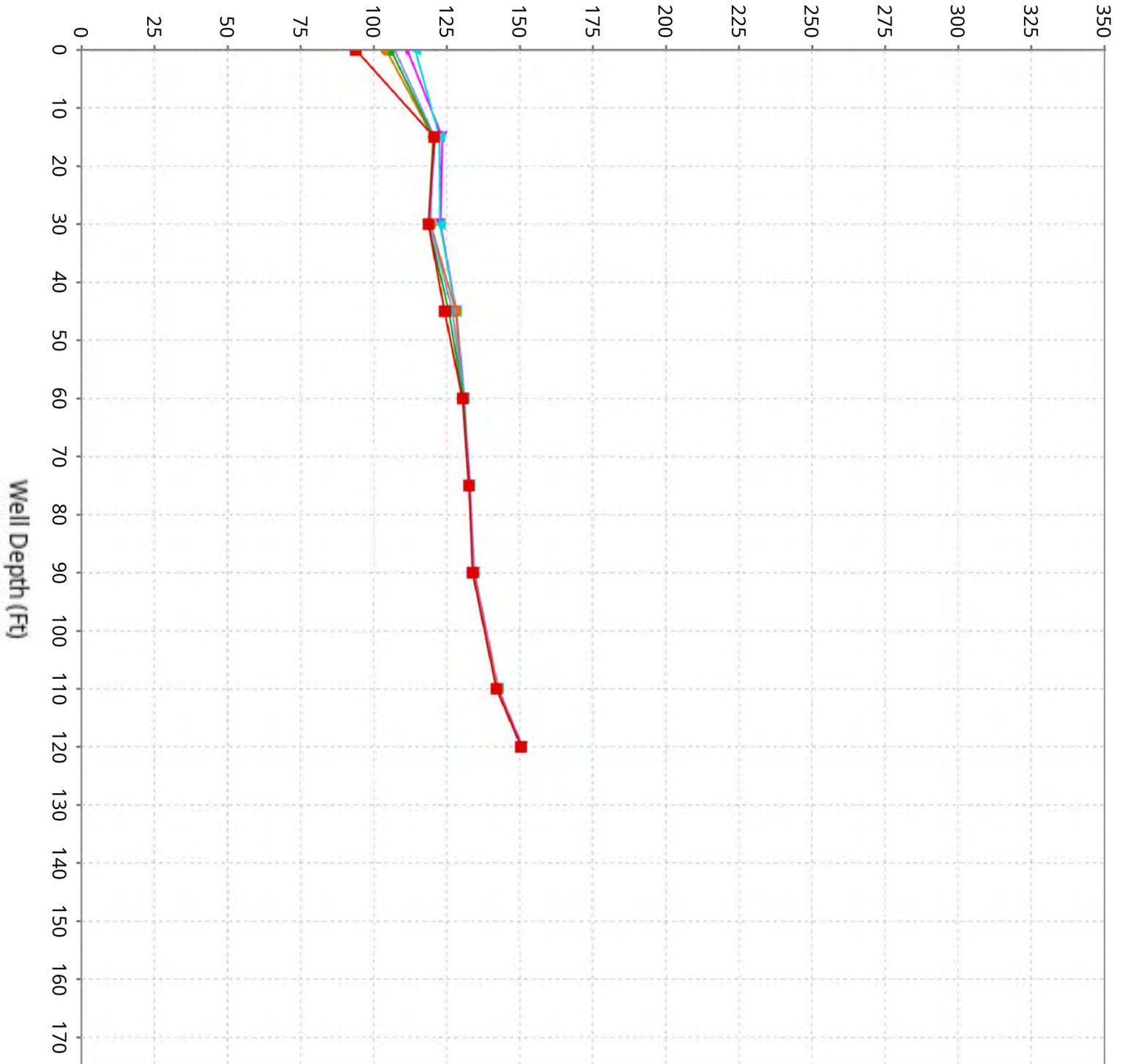
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-32

Maximum data for 7/24/2025 to 9/3/2025



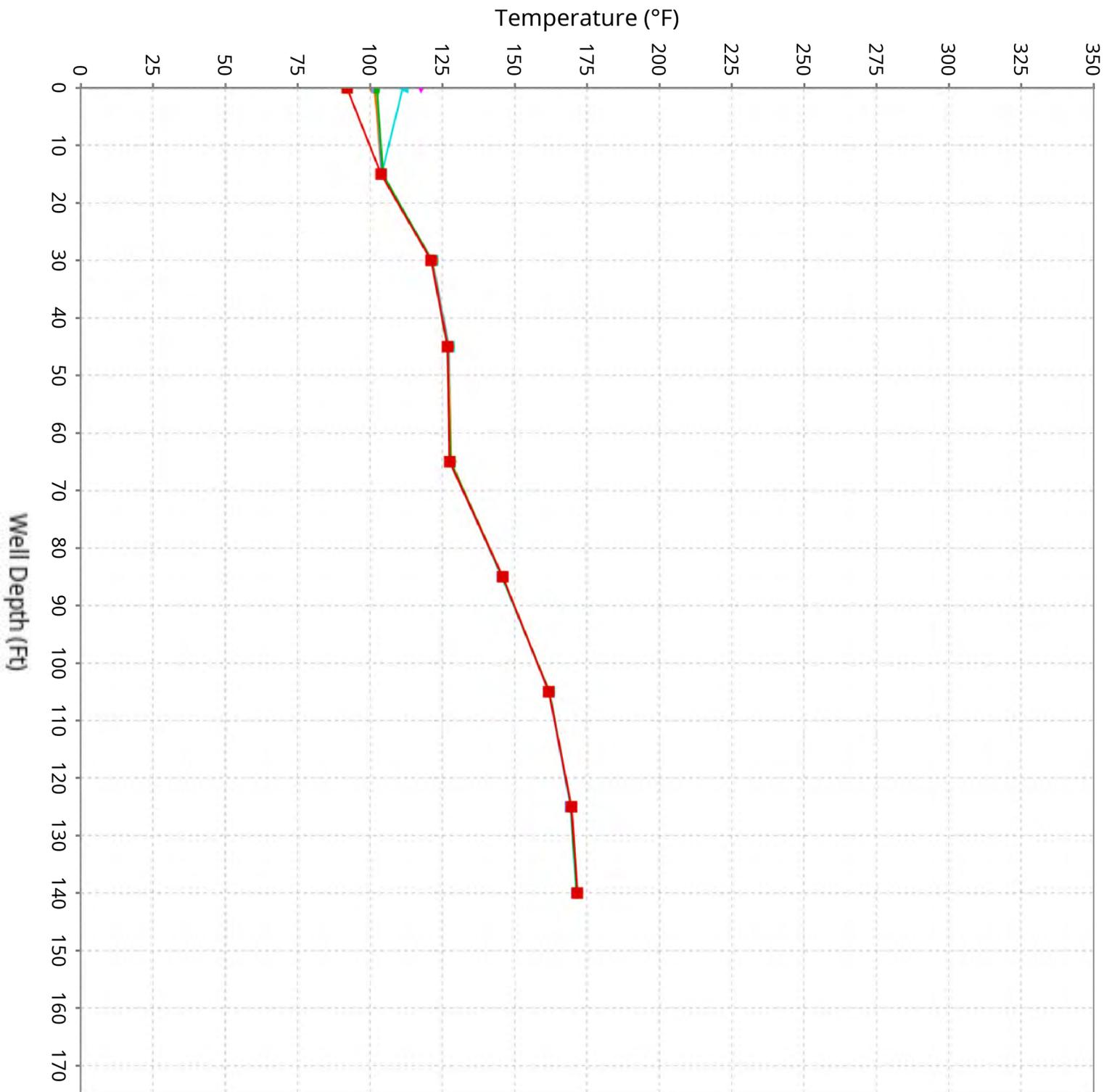
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-34

Maximum data for 7/24/2025 to 9/3/2025
Temperature (°F)

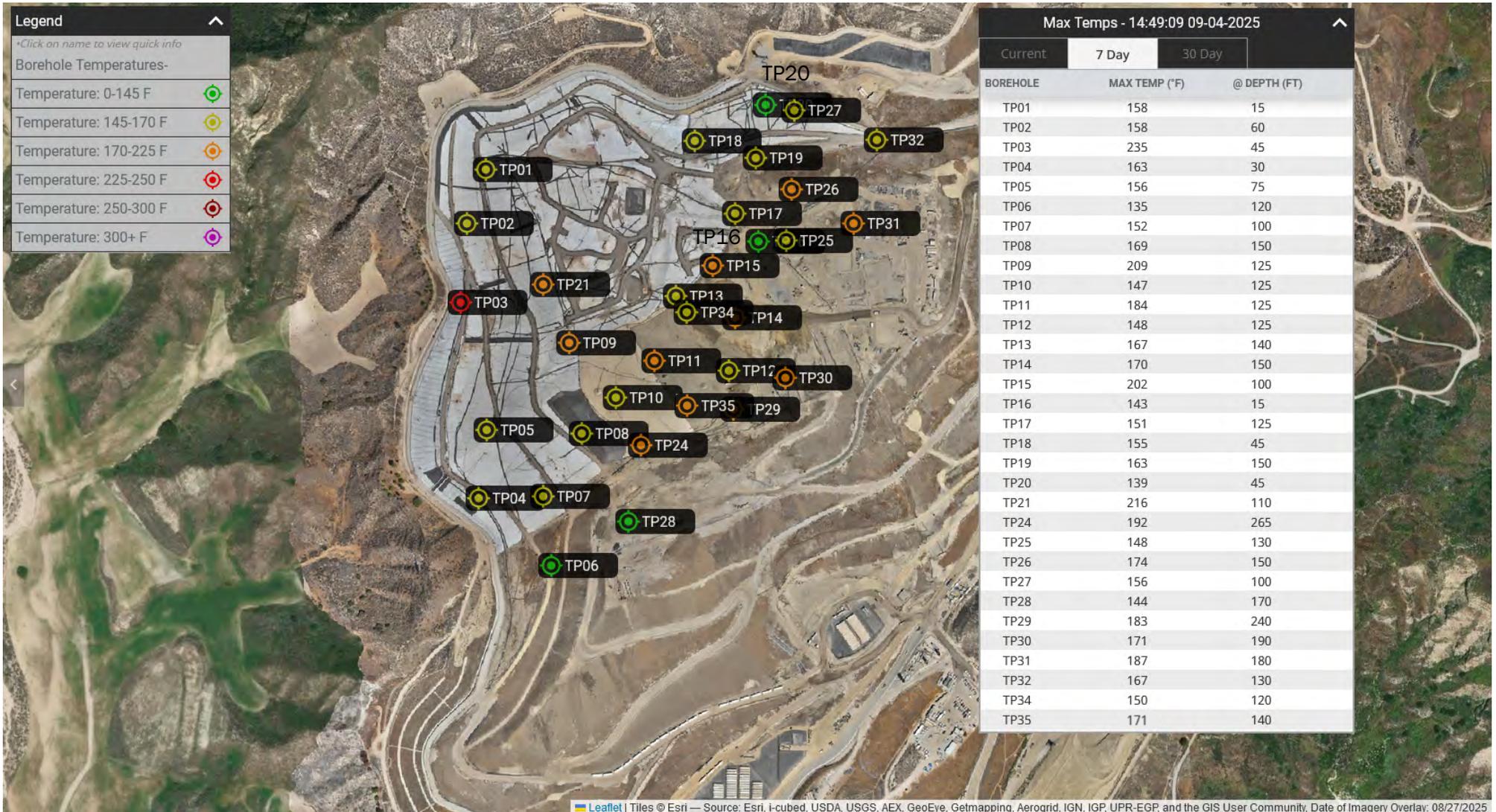


Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-35

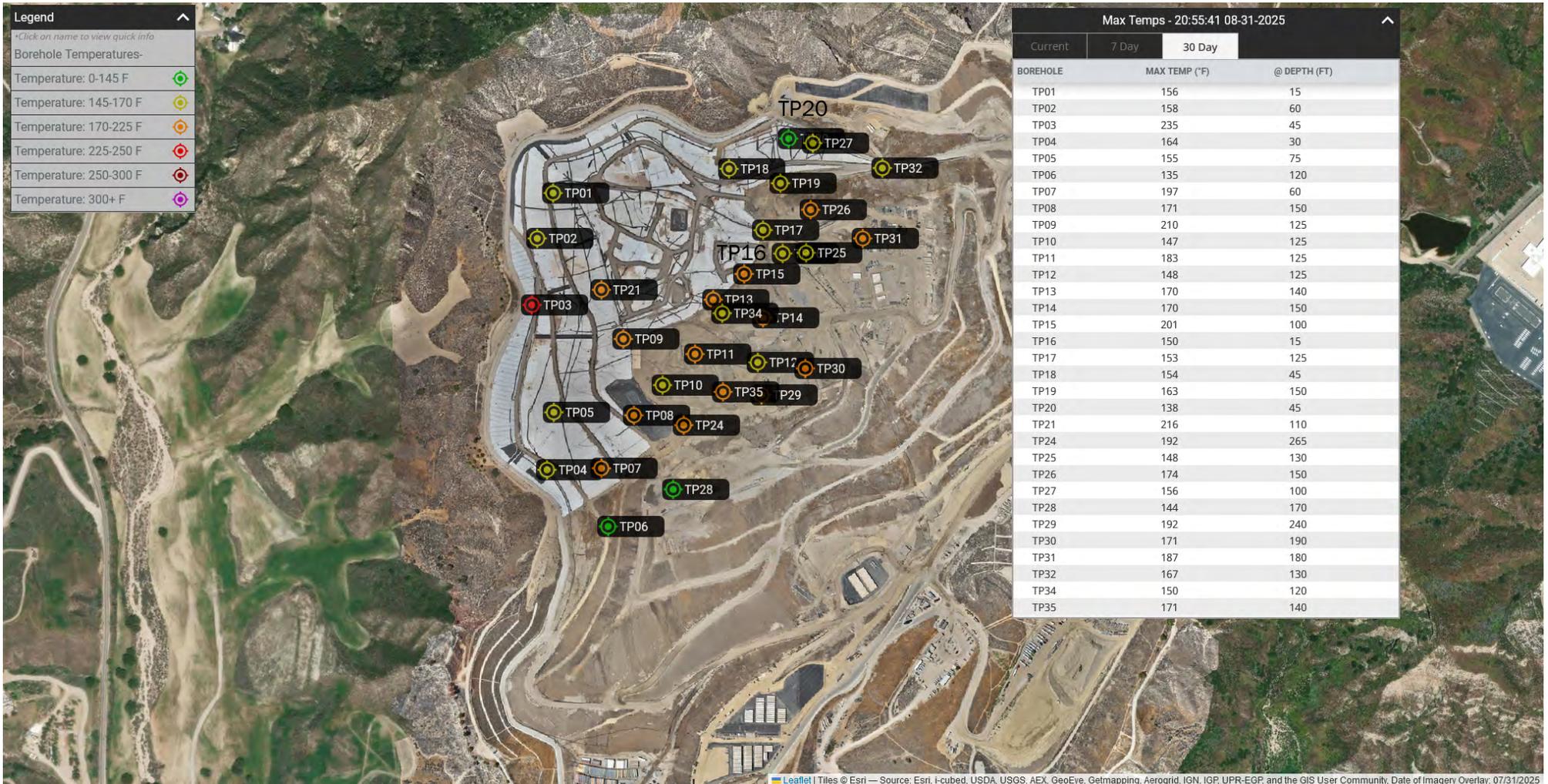
Maximum data for 7/24/2025 to 9/3/2025



Maximum Vertical Temperature Map from Temperature Probes at Chiquita Landfill

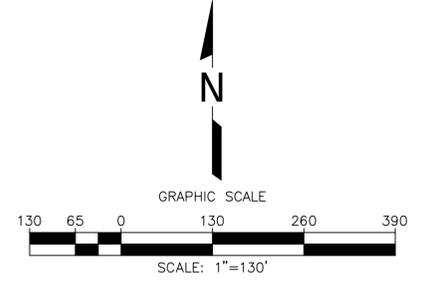
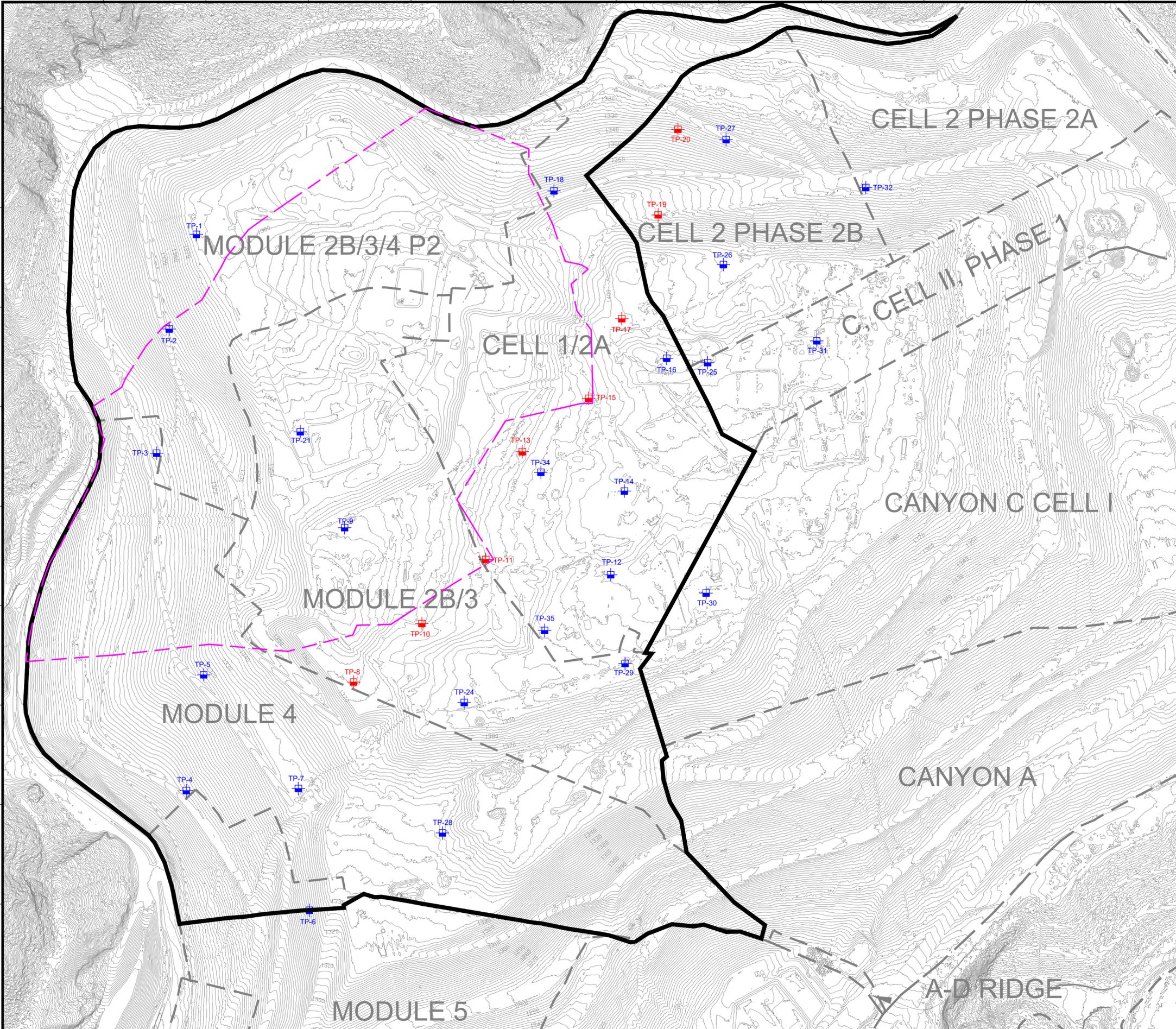


Thirty Day Maximum Vertical Temperature Map from Temperature Probes at Chiquita Landfill



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A
B
C
D
E
F
F
G
H
I
J



LEGEND

	EXISTING TOPOGRAPHIC CONTOUR
	EXISTING CELL LIMITS (APPROXIMATE)
	INSTALLED TEMPERATURE PROBES - STANDALONE
	INSTALLED TEMPERATURE PROBES - INSTALLED WITHIN WELL CASING
	REACTION AREA BOUNDARY (APPROXIMATE) - BASED ON DATA REVIEW
	REACTION AREA BOUNDARY - CONDITION 9A

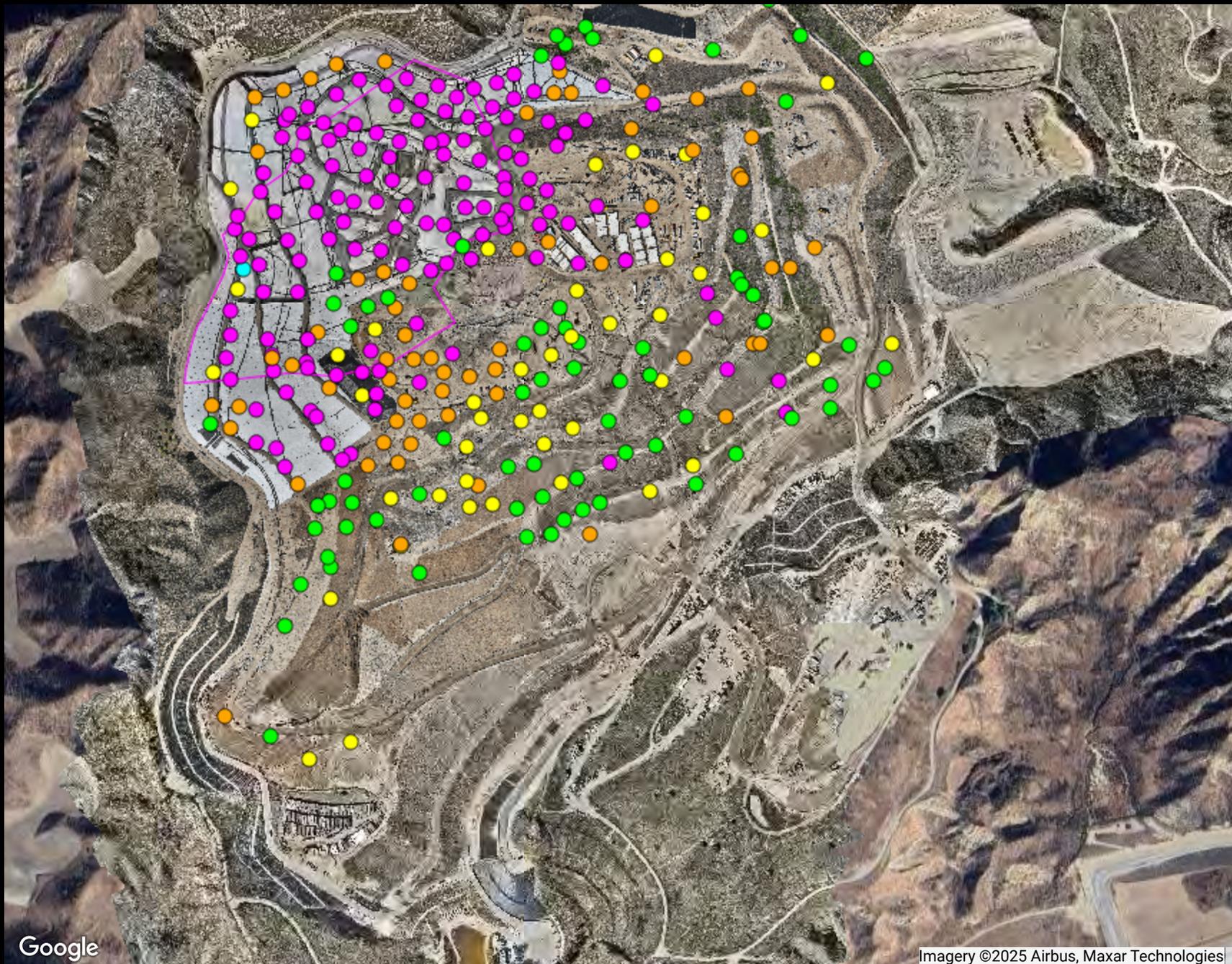
NO.	REVISION	DATE

SHEET TITLE: EXISTING TEMPERATURE PROBE MAP
 PROJECT TITLE: CHIQUITA CANYON LANDFILL
 CASTAIC, CALIFORNIA



DATE: 05/28/2025
 SCALE: AS SHOWN
 SHEET: 1

- GENERAL DRAWING NOTES:**
- EXISTING TOPOGRAPHIC SURVEY INFORMATION SHOWN WAS PROVIDED BY PROPELLER. AERIAL PHOTOGRAPHY DATED MAY 14, 2025.
 - NORTH ARROW SHOWN HERE IS REFERENCE TO THE CALIFORNIA STATE PLANE ZONE V COORDINATE SYSTEM, NAD 83.



Ranges Mapped

Range	# Points
>= 0 and < 0.5	137
>= 0.5 and < 0.9	65
>= 0.9 and < 1.1	45
>= 1.1 and < 1.5	71
>= 1.5 and < 101	1

Point Type Legend

- ▽ calibration record
- ◇ flare-engine-ghg
- △ monitoring probe
- sample port
- well

Google

Imagery ©2025 Airbus, Maxar Technologies

ATTACHMENT D

**Chiquita Canyon Landfill
Range Map**

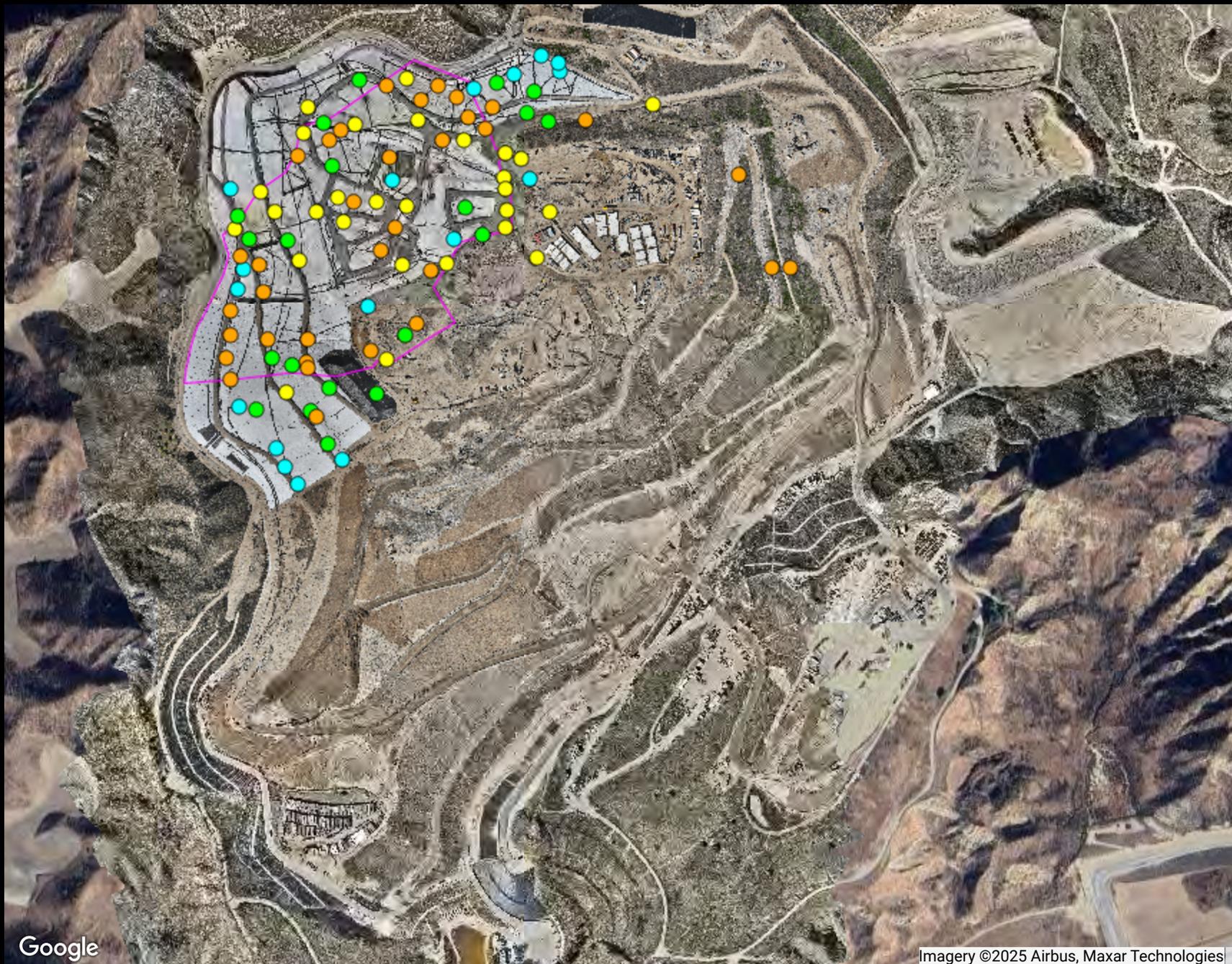
Parameter: CH4/CO2 Ratio (high range)

Analysis Method: Average

Date Range: 08/01/2025 - 08/31/2025

Map generation date : 09/10/2025





Ranges Mapped

Color	Range (ppm)	# Points
Cyan	>= 0 and < 20000	17
Green	>= 20000 and < 50000	20
Yellow	>= 50000 and < 100000	28
Orange	>= 100000 and < 999999	34

The range values noted above are in units of parts per million (ppm). Divide by 10,000 to convert these values to units of percent by volume.

Point Type Legend

- ▽ calibration record
- ◇ flare-engine-ghg
- △ monitoring probe
- sample port
- well

Google

Imagery ©2025 Airbus, Maxar Technologies

ATTACHMENT E

**Chiquita Canyon Landfill
Range Map**

Parameter: H2 (mid range)

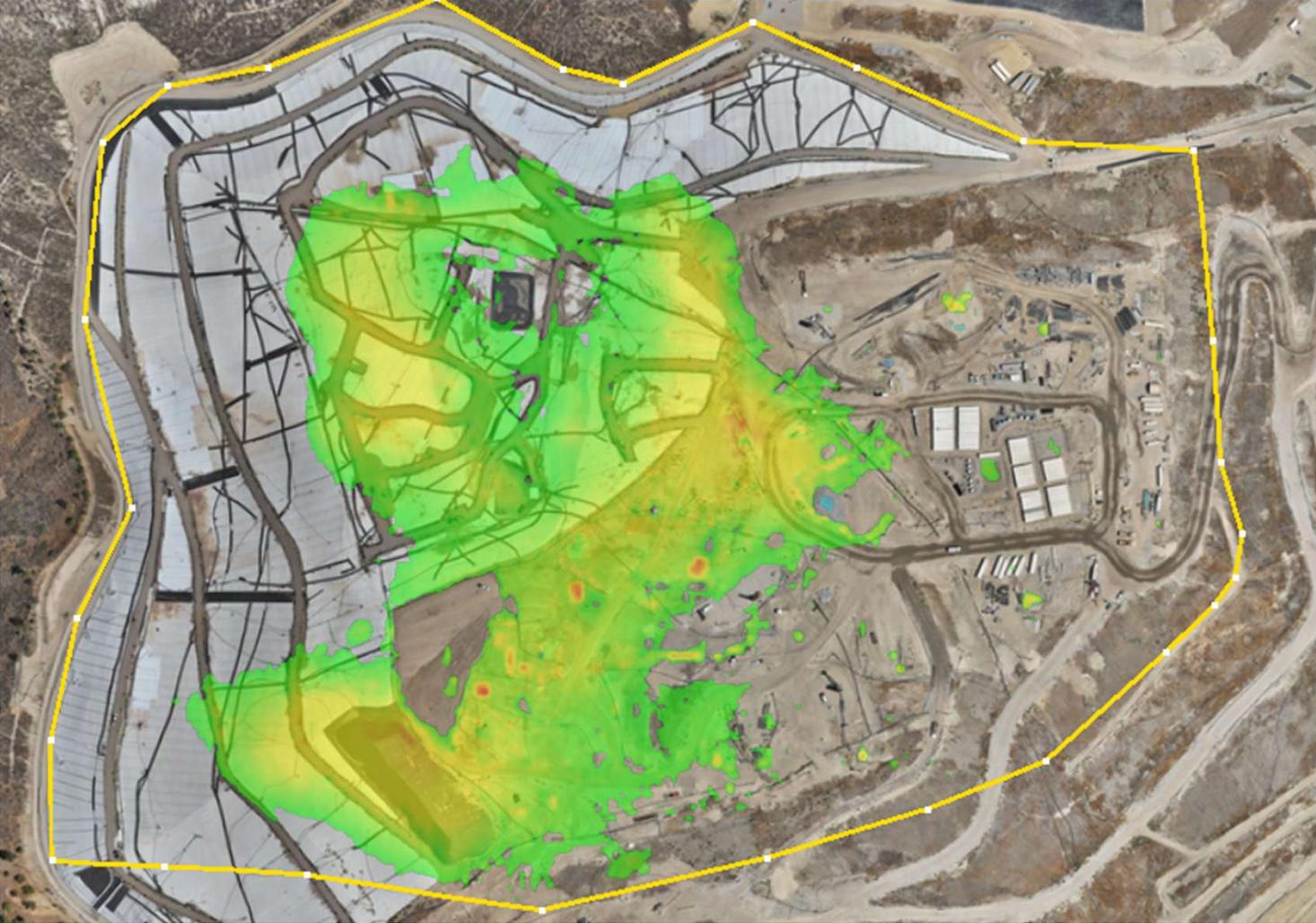
Analysis Method: Average

Date Range: 08/01/2025 - 08/31/2025

Map generation date : 09/10/2025



Chiquita Canyon Landfill - Isopach



MIN MAX

Use deadband in calculations

-8	ft	
-6	ft	
-4	ft	×
-2	ft	×
2	ft	×
4	ft	×
6	ft	
8	ft	

July 2, 2025 Survey Image. April 2, 2025 vs July 2, 2025