February 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 January 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 2/10/25. 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:

- 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 (CH_4:CO_2) ratios less than 1.0.
- The concentration of hydrogen (H_2) in the LFG measured greater than 2 percent by volume.
- 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 January 2025.

- Subsurface temperatures and pressures noted during the sonic drilling of new waste temperature probes during January 2025.

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

Near CV-24079 & TP-8

Recall that well CV-24079 and temperature monitoring probe no. 8 ("TP-8") were temporarily decommissioned on October 3, 2024 to facilitate the construction activities associated with the western slope toe drain and capping project. Upon completion of the construction activities, well CV-24079 and Probe TP-8 were reactivated on January 10, 2025. Upon recommissioning, the initial temperatures recorded at the deeper intervals within TP-8 were significantly greater than previous data recorded prior to October 3rd. Similarly, the initial LFG temperatures recorded at the wellhead in CV-24079 were substantially greater than LFG temperatures recorded prior to October 3rd. Also, the methane content during the first three weeks fluctuated but remained suppressed below 20 percent. However, during the first week of February, these three parameters (in-situ waste temperature, gas temperature, and methane content) all exhibited a definitive return to more typical conditions associated with normal methanogenesis, with substantial temperature decreases measured in the probe and wellhead, and methane concentration increasing to 35 percent. Furthermore, the operational data recorded at adjacent wells CV-24078 and CV-24080 does not exhibit evidence of elevated temperature conditions. Accordingly, the Reaction Committee does not believe that any adjustment to the estimated extent of ETLF conditions in this discrete location is warranted at this time, since the data recorded during this relatively short period is variable and does not appear to consistently signal a potential expansion of the subsurface reaction.

CONCLUSION

The Reaction Committee reviewed the temperature measurements recorded during January 2025 by the in-situ temperature monitoring probes. As of January 2025, four (4) of the twenty (20) probes (TP-2, 3, 9, and 15) are located within the estimated extent of ETLF conditions (dashed magenta line), and twelve (12) probes are positioned adjacent to (within 200 feet) of this boundary. It is the Committee's opinion that the temperatures recorded by the 12 probes outside of the boundary during January 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. However, we continue to observe the measurements being recorded by TP-8 and the corresponding co-located well CV-24079 to evaluate whether a clear trend in temperature (either increasing or decreasing) develops over the next several weeks.

The Reaction Committee also evaluated the concentration of hydrogen in landfill gas (LFG) during January 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 January data. The Reaction Committee noted in its review of the data that these wells did not exhibit elevated temperatures, such that there was no evidence of the increased heat that is typical with ETLF conditions present at these wells. The 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 is merited at this time.

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 20 in-situ waste temperature monitoring probes during January are presented in **Attachment B** in graphical format. The landfill gas wellhead temperatures recorded at the extraction wells in the vicinity of the data-driven reaction area boundary are reflected on the isothermal gradient range map present as **Attachment C**. The carbon monoxide (CO) concentrations measured at the landfill gas wellheads are depicted on the range map presented as **Attachment D**. 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

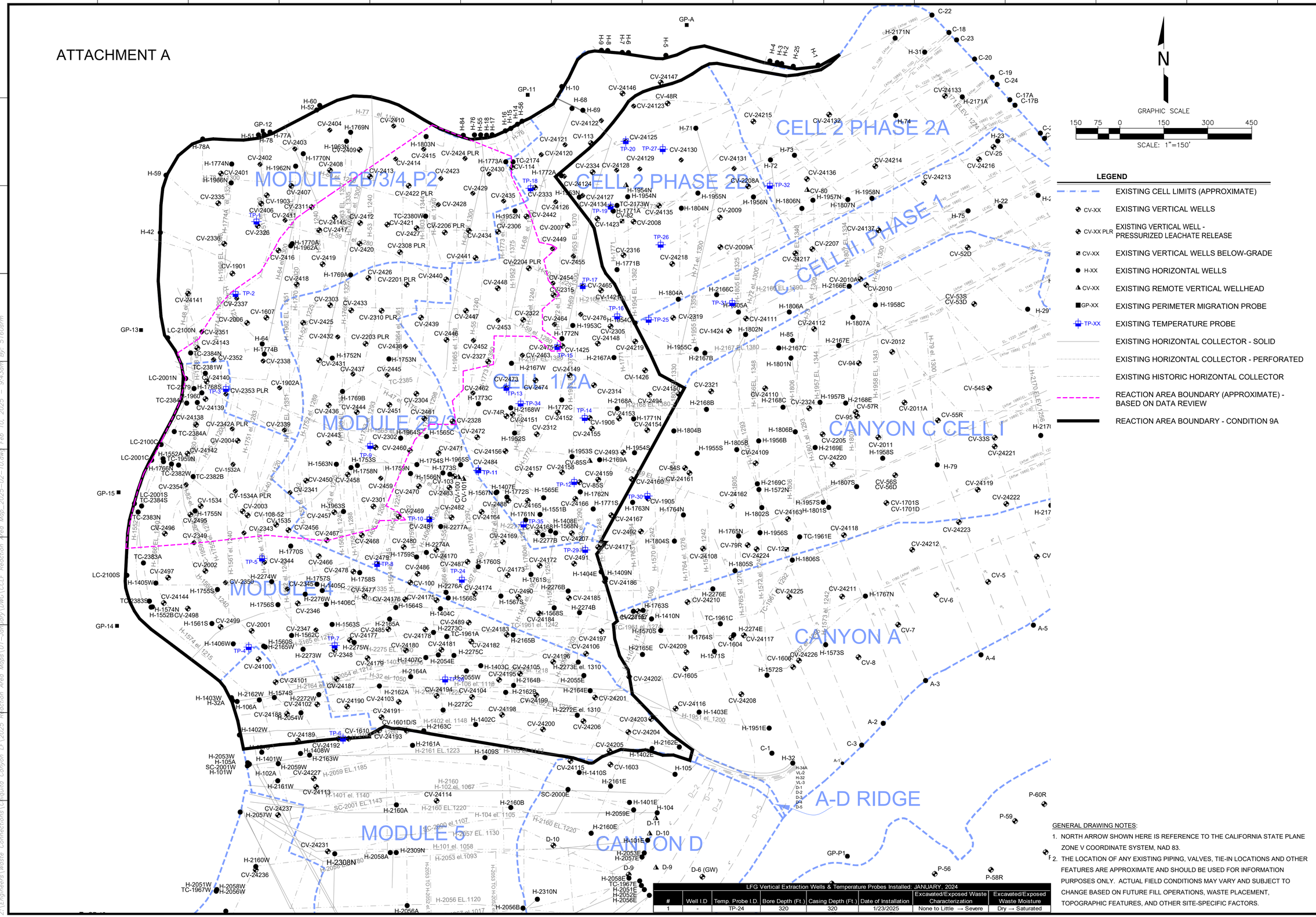
cc: Nathaniel Dickel, SCAQMD
Christina Ojeda, SCAQMD
Pablo Sanchez Soria, PhD, CIH, CTEH
Neal Bolton, PE, Blue Ridge Services, Inc.
Richard Pleus, PhD, Intertox

Srividhya Viswanathan, PE, SCS Engineers

Enclosures:

Attachment A – Reaction Area Map
Attachment B – In-Situ Waste Temperature Monitoring Probe Data
Attachment C – Isothermal Gradient Range Map
Attachment D – Wellhead Carbon Monoxide Range Map

ATTACHMENT A



LEGEND

- EXISTING CELL LIMITS (APPROXIMATE)
- CV-XX EXISTING VERTICAL WELLS
- CV-XX PLR EXISTING VERTICAL WELL - PRESSURIZED LEACHATE RELEASE
- CV-XX EXISTING VERTICAL WELLS BELOW-GRADE
- H-XX EXISTING HORIZONTAL WELLS
- CV-XX EXISTING REMOTE VERTICAL WELLHEAD
- GP-XX EXISTING PERIMETER MIGRATION PROBE
- TP-XX EXISTING TEMPERATURE PROBE
- EXISTING HORIZONTAL COLLECTOR - SOLID
- EXISTING HORIZONTAL COLLECTOR - PERFORATED
- EXISTING HISTORIC HORIZONTAL COLLECTOR
- REACTION AREA BOUNDARY (APPROXIMATE) - BASED ON DATA REVIEW
- REACTION AREA BOUNDARY - CONDITION 9A

LFG Vertical Extraction Wells & Temperature Probes Installed: JANUARY, 2024

#	Well I.D	Temp. Probe I.D.	Bore Depth (Ft.)	Casing Depth (Ft.)	Date of Installation	Excavated/Exposed Waste Characterization	Excavated/Exposed Waste Moisture
1	-	TP-24	320	320	1/23/2025	None to Little → Severe	Dry → Saturated

GENERAL DRAWING NOTES:

1. NORTH ARROW SHOWN HERE IS REFERENCE TO THE CALIFORNIA STATE PLANE ZONE V COORDINATE SYSTEM, NAD 83.
2. THE LOCATION OF ANY EXISTING PIPING, VALVES, TIE-IN LOCATIONS AND OTHER FEATURES ARE APPROXIMATE AND SHOULD BE USED FOR INFORMATION PURPOSES ONLY. ACTUAL FIELD CONDITIONS MAY VARY AND SUBJECT TO CHANGE BASED ON FUTURE FILL OPERATIONS, WASTE PLACEMENT, TOPOGRAPHIC FEATURES, AND OTHER SITE-SPECIFIC FACTORS.

DATE | REVISION | NO.

SHEET TITLE: REACTION AREA MAP JANUARY, 2025

PROJECT TITLE: CHIQUITA CANYON LANDFILL CASTAIC, CALIFORNIA

CLIENT: CHIQUITA CANYON LANDFILL CASTAIC, CALIFORNIA

SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS
8799 BALBOA AVENUE SUITE 290
SAN DIEGO, CA 92123
(858) 571-5500 FAX: (562) 427-0805

PROJ. NO. 01204123.41 | DSN. BY: - | DWN. BY: SRM | CHK. BY: WCH | ACAD FILE: | APP. BY: WCH

DATE: 02/10/2025

SCALE: AS SHOWN

SHEET: 1

ATTACHMENT B

Solid Waste Borehole Maximum Temperature Profiles Over 6 Weeks

for 12/19/2024 to 1/29/2025

From January 23, 2025, through January 29, 2025, there was two recorded temperature increase and four recorded decreases that triggered the notification limits set forth in the LEA's October 4, 2024 letter. Additionally, as noted previously and discussed further below, TP-08 was brought back online earlier this month and has registered elevated temperatures.

Chiquita provides the following updates:

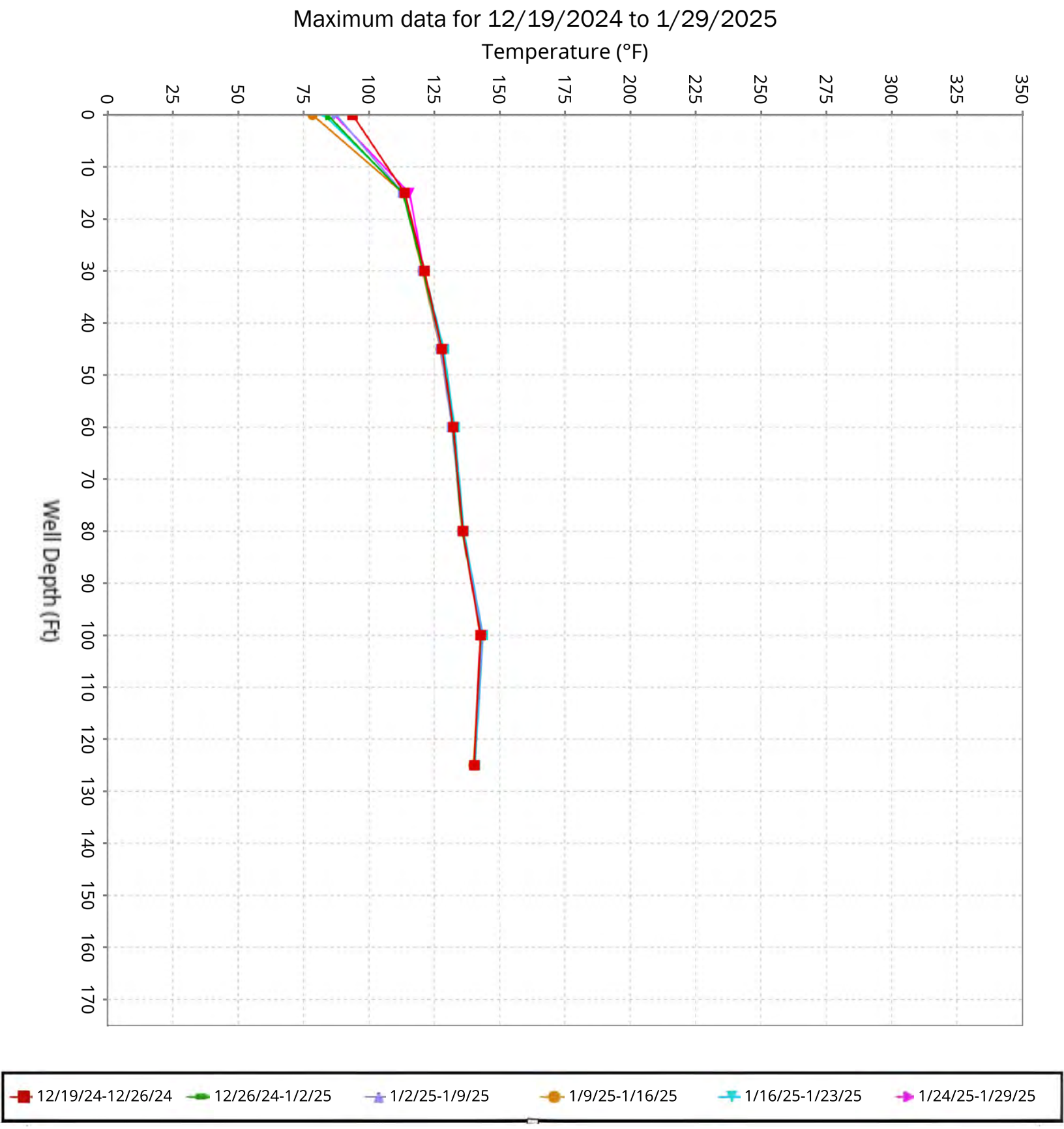
- TP-06
  - 45-foot thermocouple showed a decrease in maximum temperature of 10°F from 138°F to 128°F from January 19th to January 25th, an increase in maximum temperature of 11°F from 128°F to 139°F from January 25th to January 28th, and then a decrease in maximum temperature of 8°F from 139°F to 131°F from January 28th to January 29th.
  - 60-foot thermocouple showed a decrease in maximum temperature of 14°F from 147°F to 133°F from January 18th to January 26th, an increase in maximum temperature of 15°F from 133°F to 148°F from January 26th to January 28th, and then a decrease in maximum temperature of 12°F from 148°F to 136°F from January 28th to January 29th.
- TP-08
  - TP-08 was taken offline on October 3rd for filling operations related to the west toe excavation.
  - TP-08 was brought back online on January 10th. The gas and liquid collection infrastructure was also offline in the same area, and the nearby gas wells and pumps were also brought back online on January 10th. Initial temperature readings of TP-08 were higher than the historical average before TP-08 was taken offline.
  - As noted in last week's update, filling operations occurred over the prior several months, in which time Chiquita noticed other areas of the reaction area continuing to experience accelerated settlement. It is likely that the accelerated settlement pushed leachate into the TP-08/CV-2479 borehole, which because it was offline, did not allow for the removal of this leachate and landfill gas. With the TMP and well back online, gas and liquids extraction has resumed.
  - As also noted in last week's update, drilling activities for TP-24, geographically nearby, achieved a depth of 297 feet without encountering significantly elevated temperatures, further supporting that the increased temperature readings are due to the presence of localized leachate accumulation limited to the TP-08 borehole.
  - A continued reduction in temperatures has been recorded in the 15-foot, 30-foot, 45-foot, 100-foot, 125-foot, and 150-foot thermocouples since the previous week:
    - 15-foot thermocouple showed a decrease of 7°F degrees from 177°F to 170°F from January 16th to January 29th.
    - 30-foot thermocouple showed a decrease of 9°F degrees from 190°F to 181°F from January 10th to January 29th.
    - 45-foot thermocouple showed a decrease of 7°F degrees from 192°F to 185°F from January 10th to January 29th.
    - 100-foot thermocouple showed a decrease of 24°F degrees from 215°F to 191°F from January 10th to January 29th.
    - 125-foot thermocouple showed a decrease of 29°F degrees from 232°F to 203°F from January 10th to January 29th.
    - 150-foot thermocouple showed a decrease of 12°F degrees from 230°F to 218°F from January 10th to January 29th.
- TP-15
  - 30-foot thermocouple remained consistent with previous temperature decreases.

SCS ENGINEERS

07224053.00 | January 30, 2025

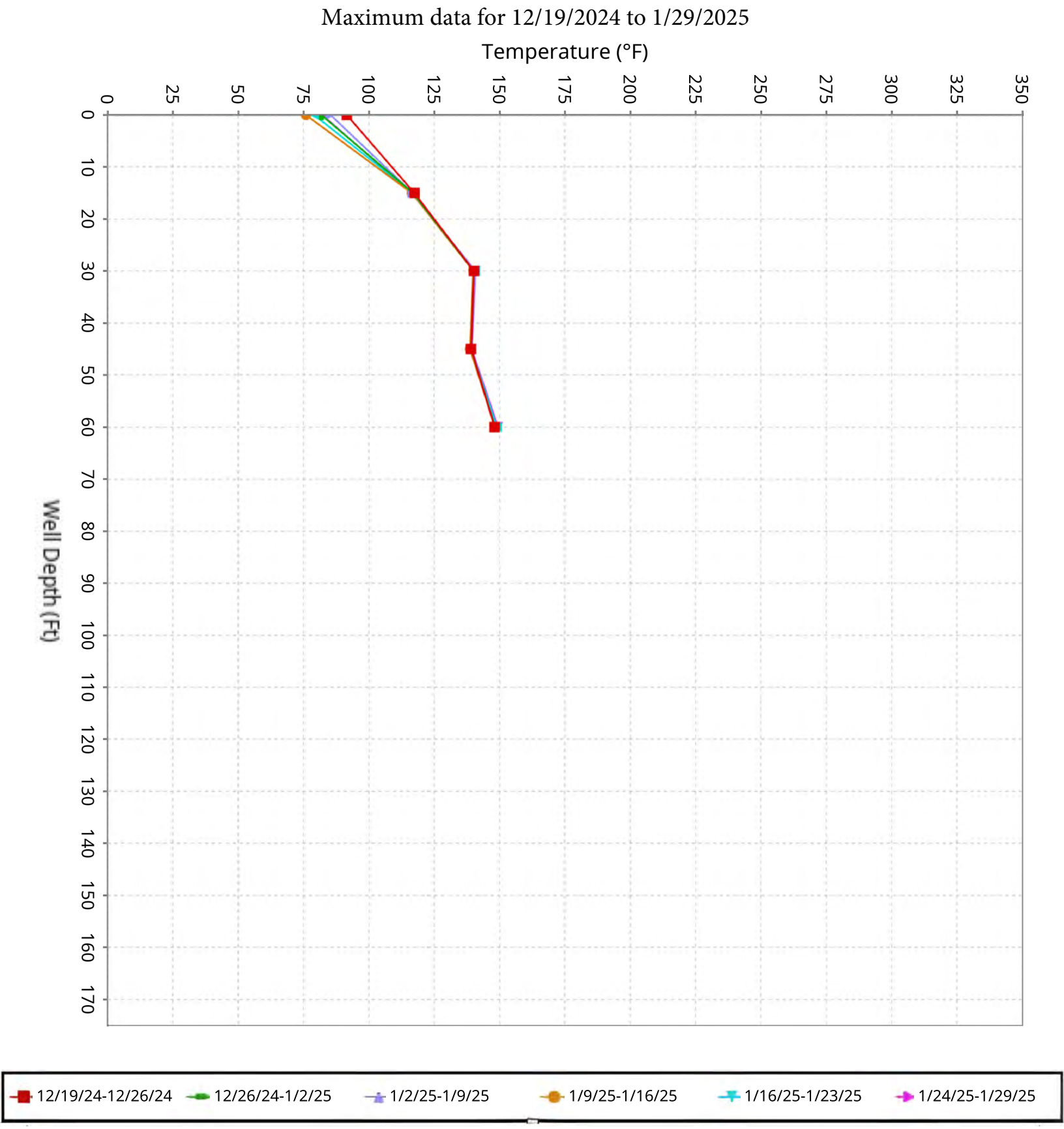
274 Granite Run Drive
Lancaster, PA 17601
717-550-6330

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



SCS ENGINEERS

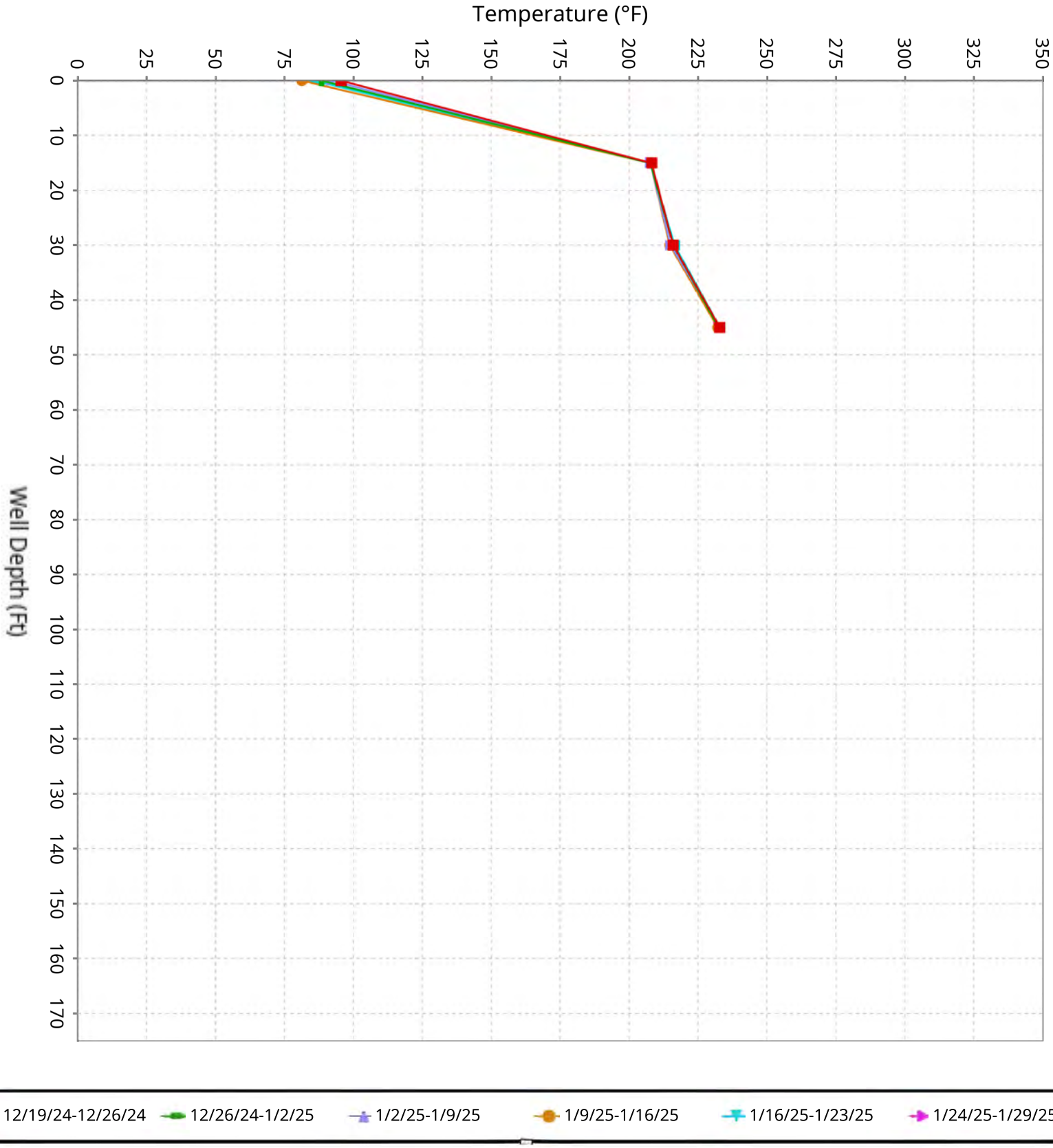
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-2



SCS ENGINEERS

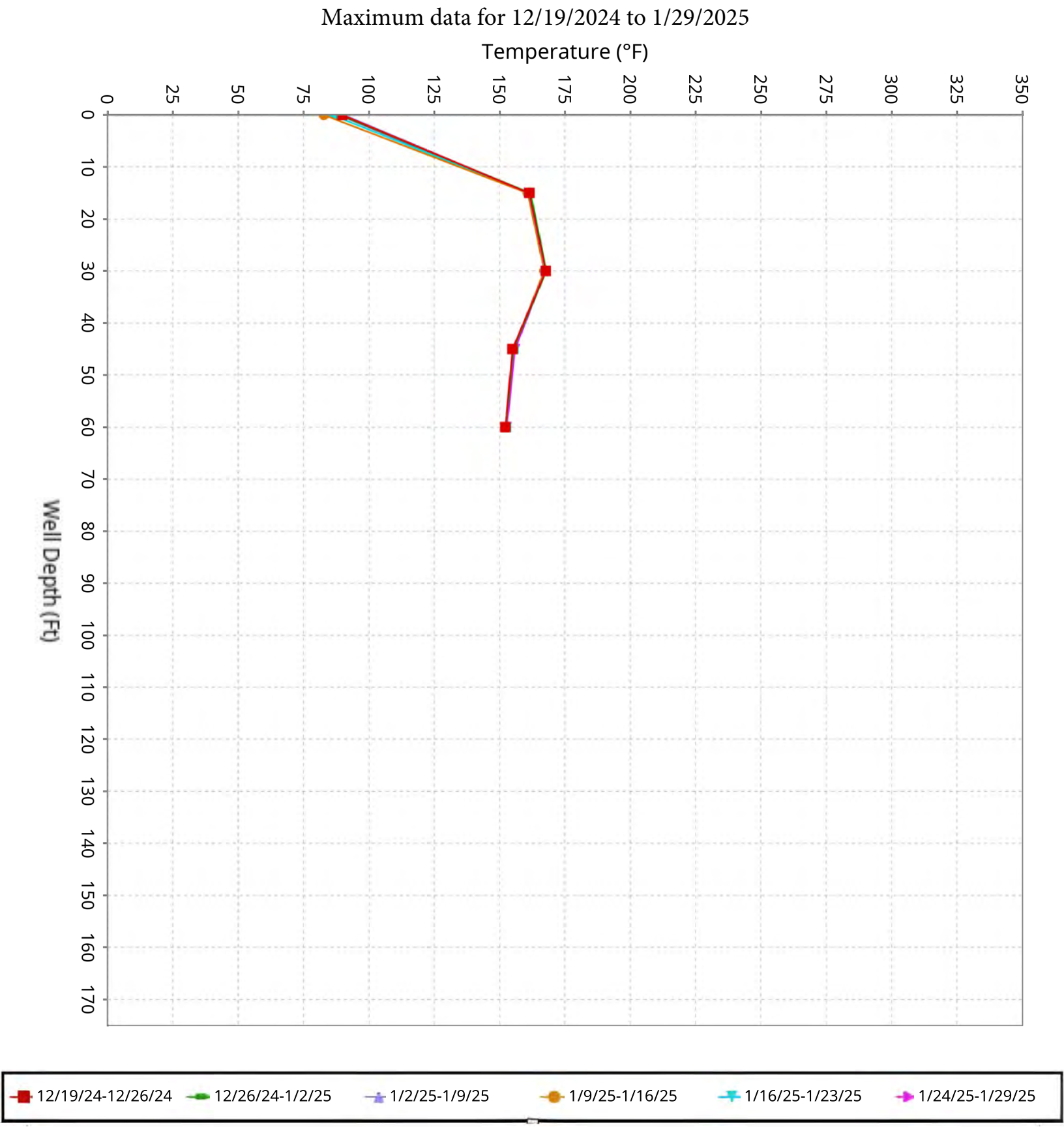
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-3

Maximum data for 12/19/2024 to 1/29/2025



SCS ENGINEERS

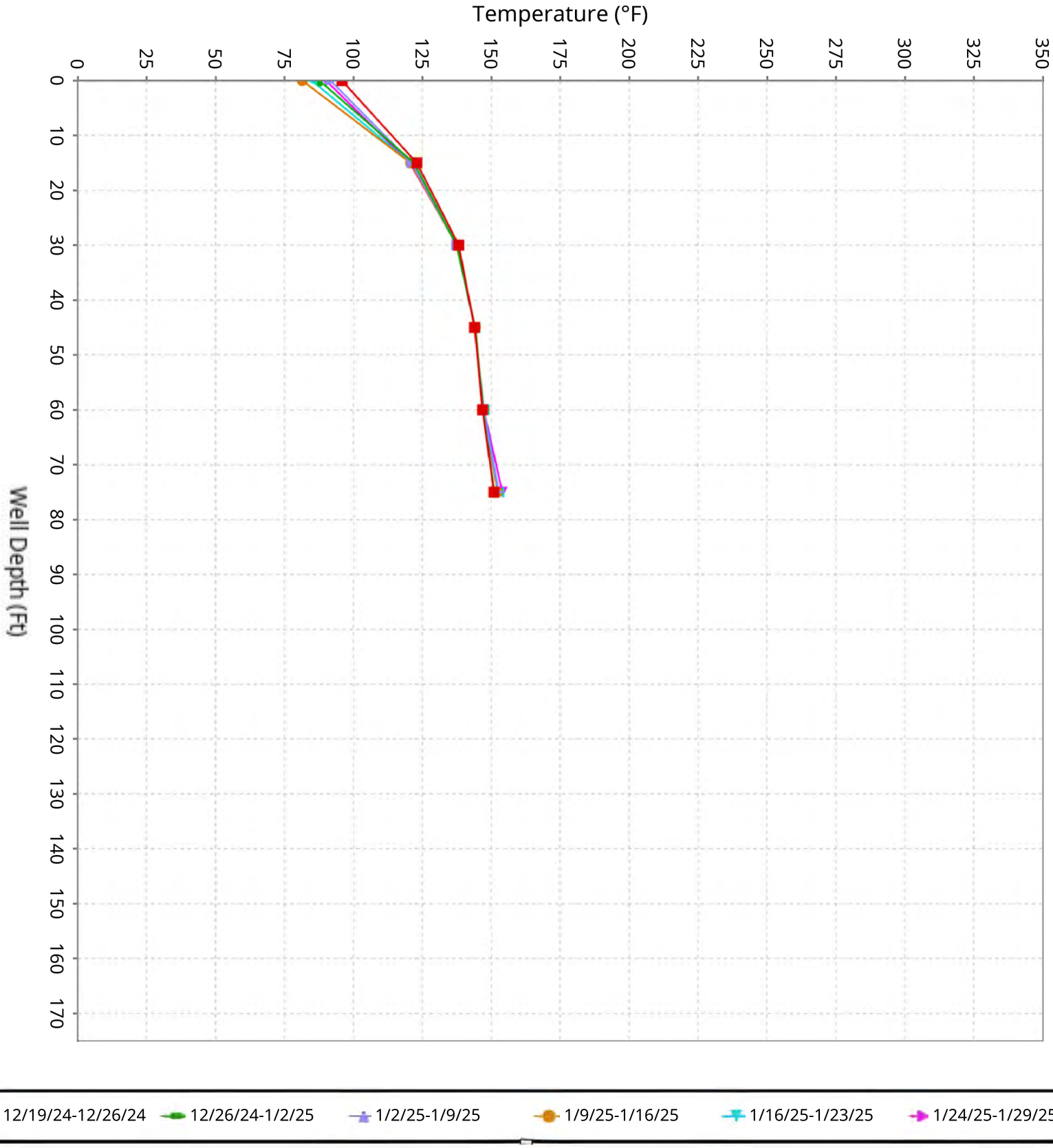
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-4



SCS ENGINEERS

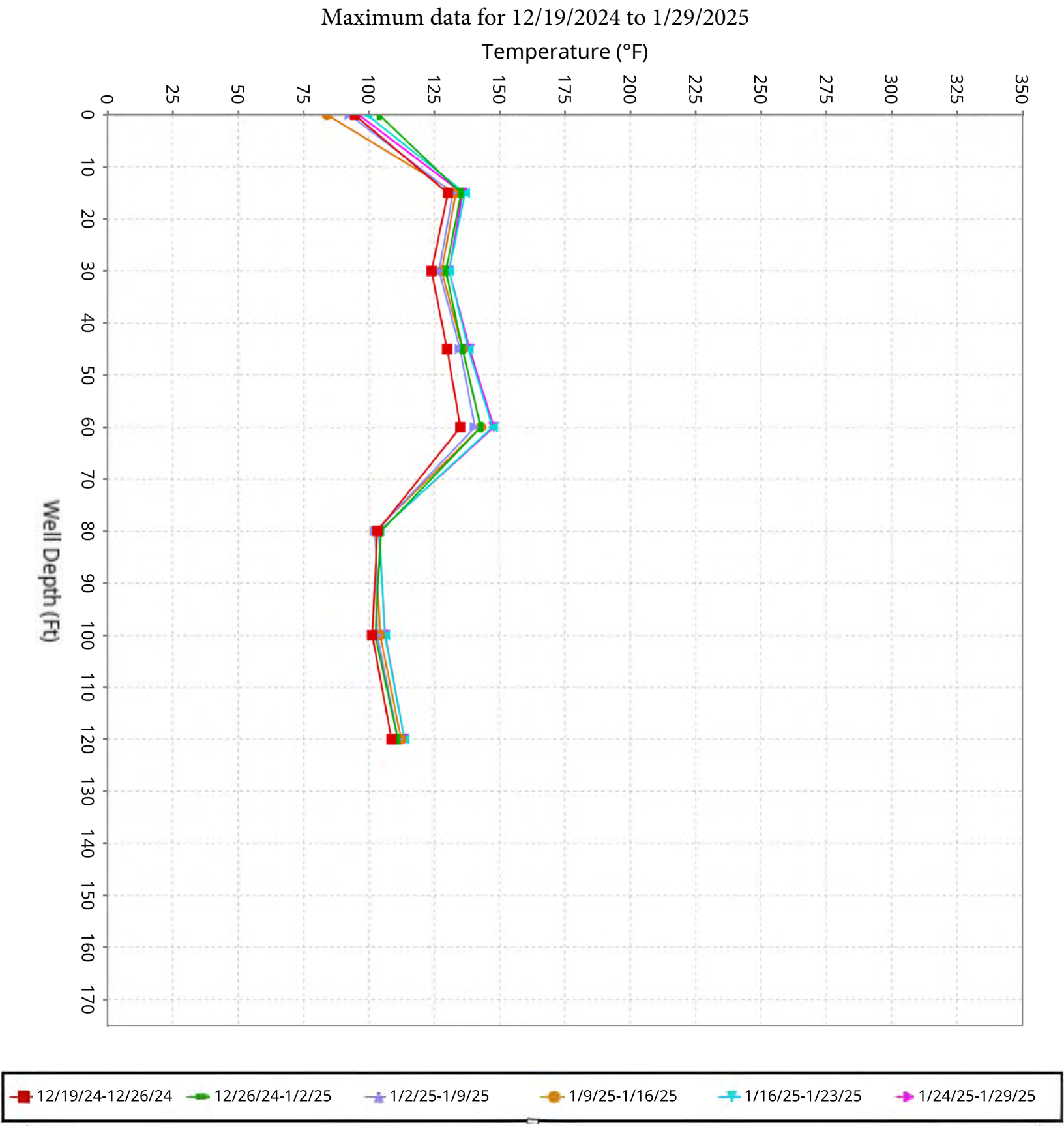
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-5

Maximum data for 12/19/2024 to 1/29/2025



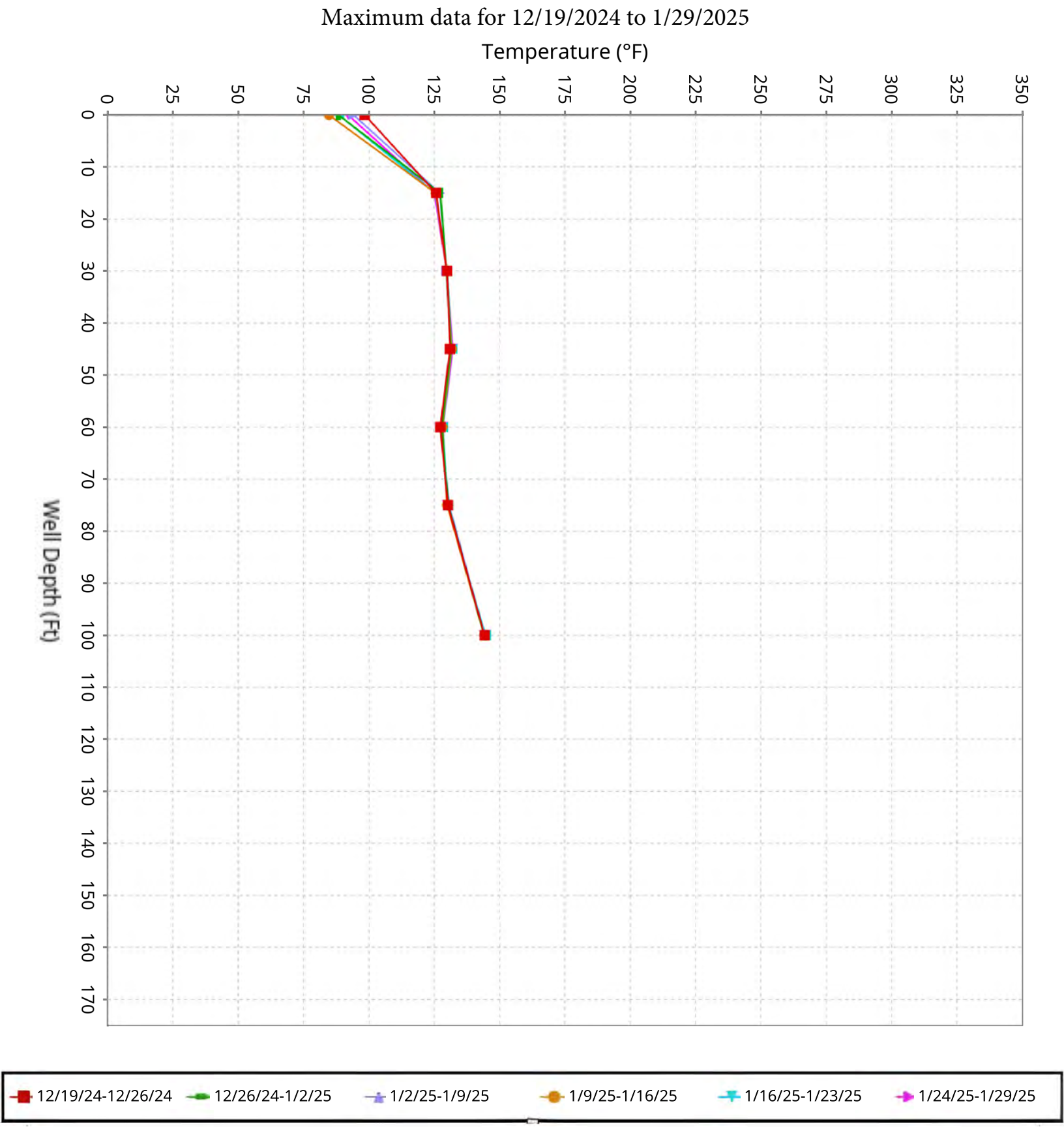
SCS ENGINEERS

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



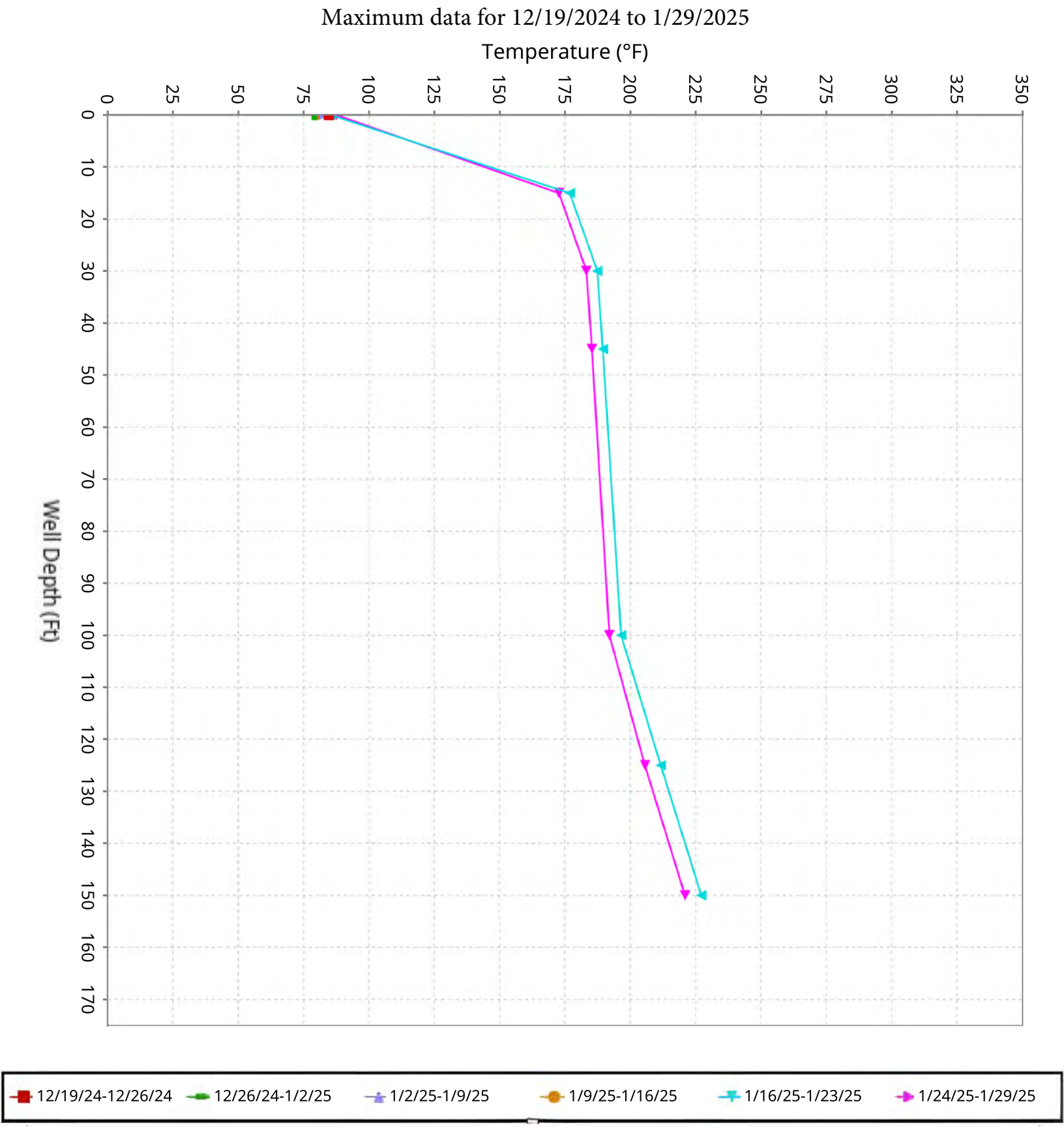
SCS ENGINEERS

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



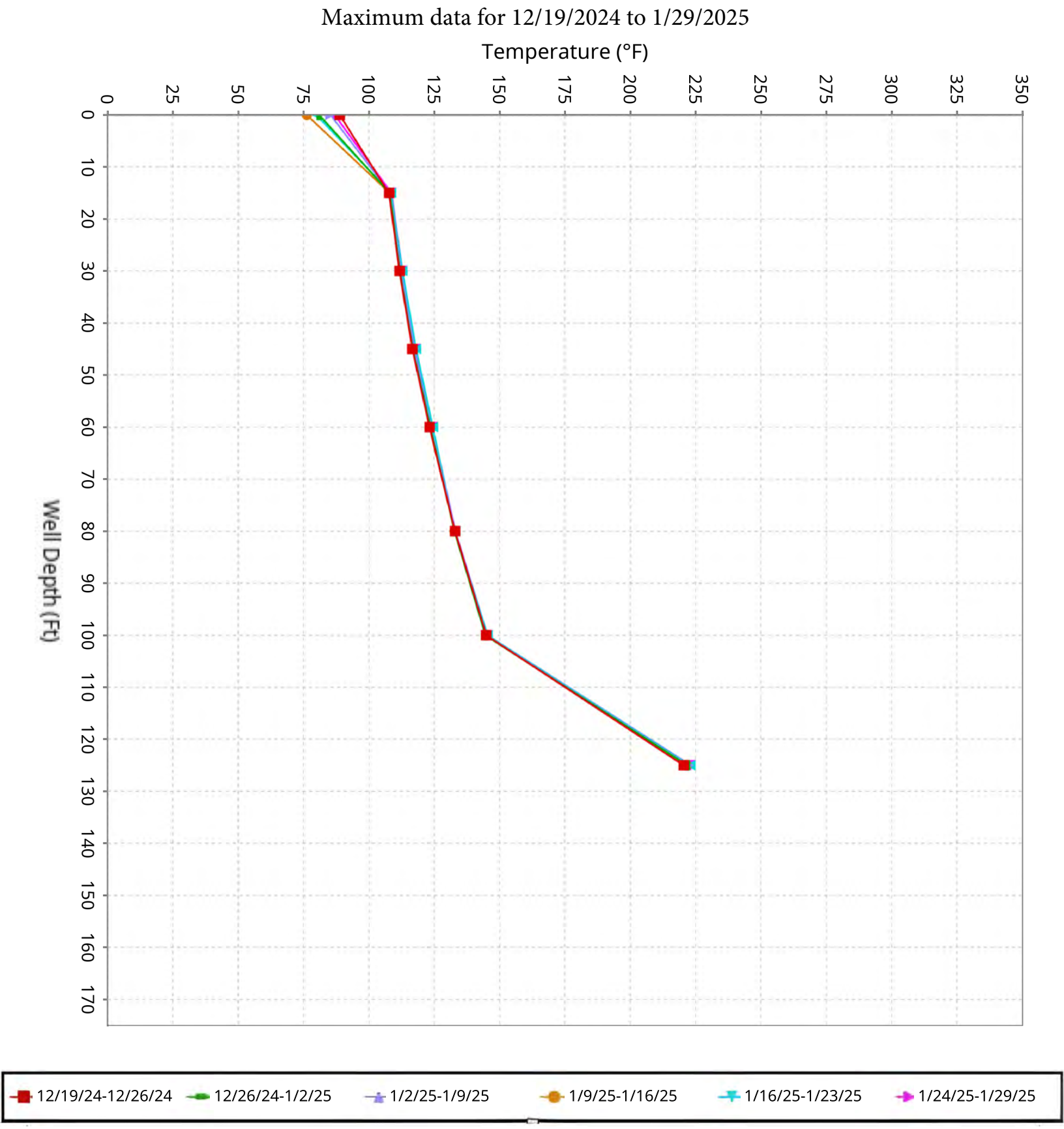
SCS ENGINEERS

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



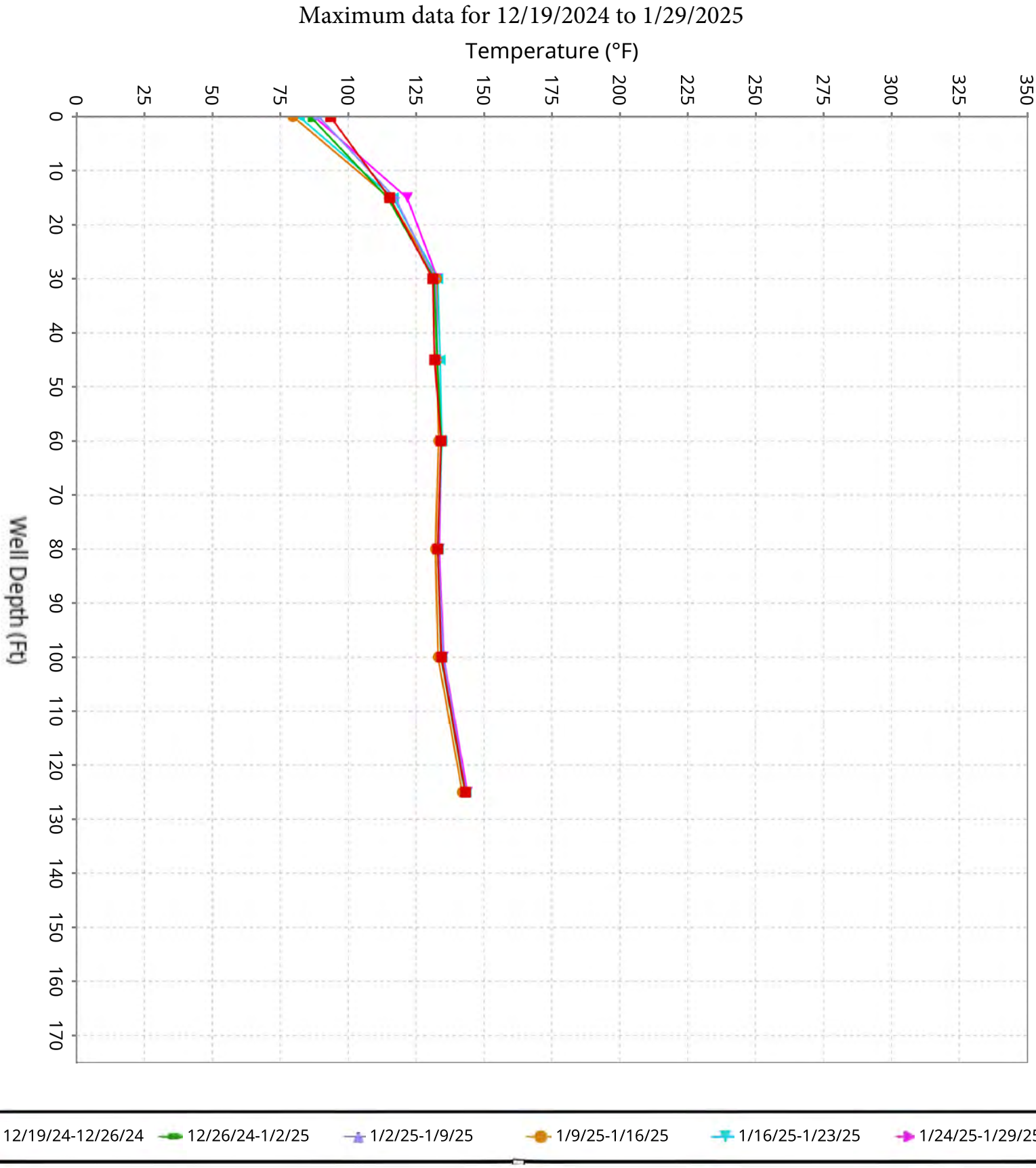
SCS ENGINEERS

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



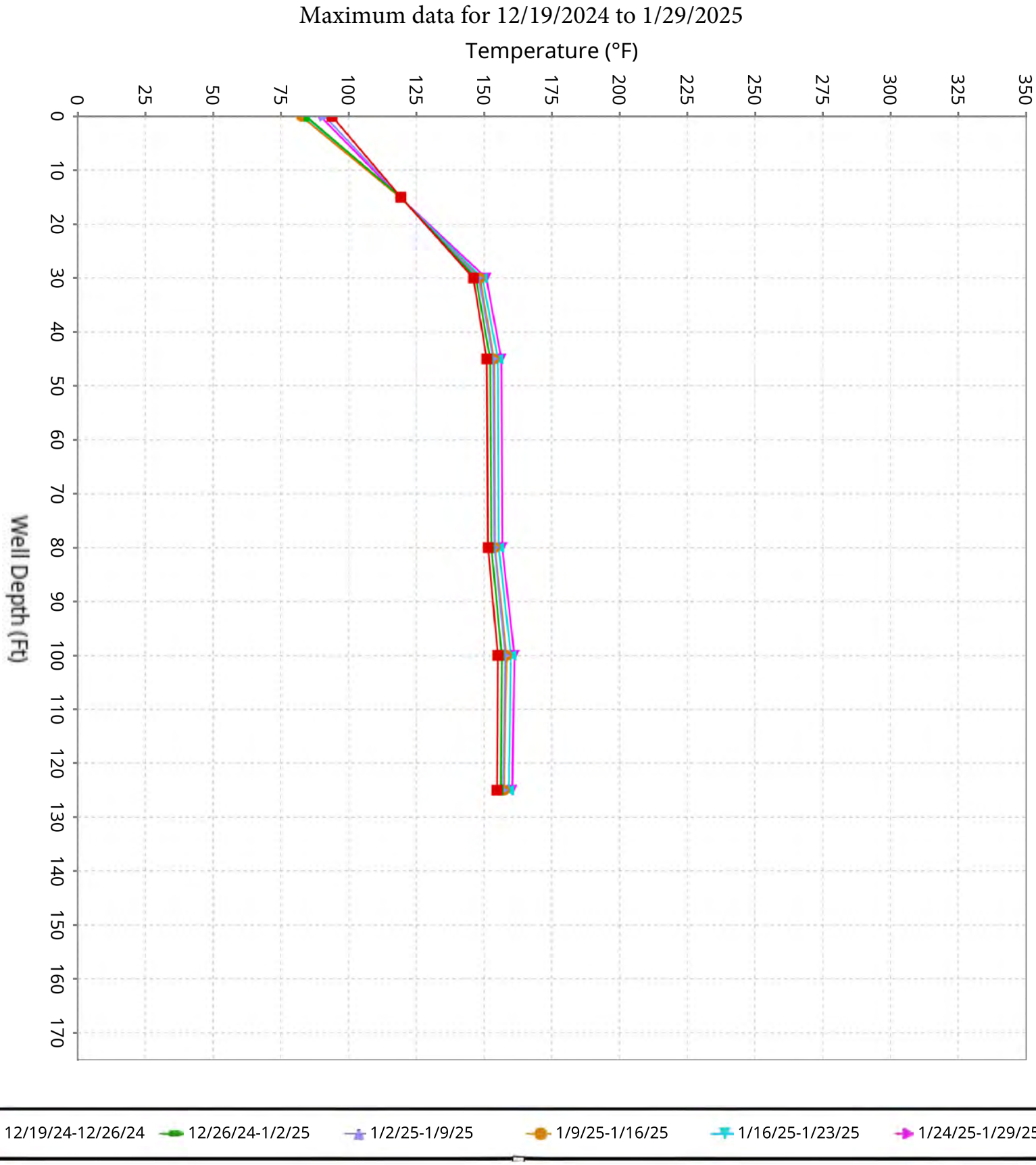
SCS ENGINEERS

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



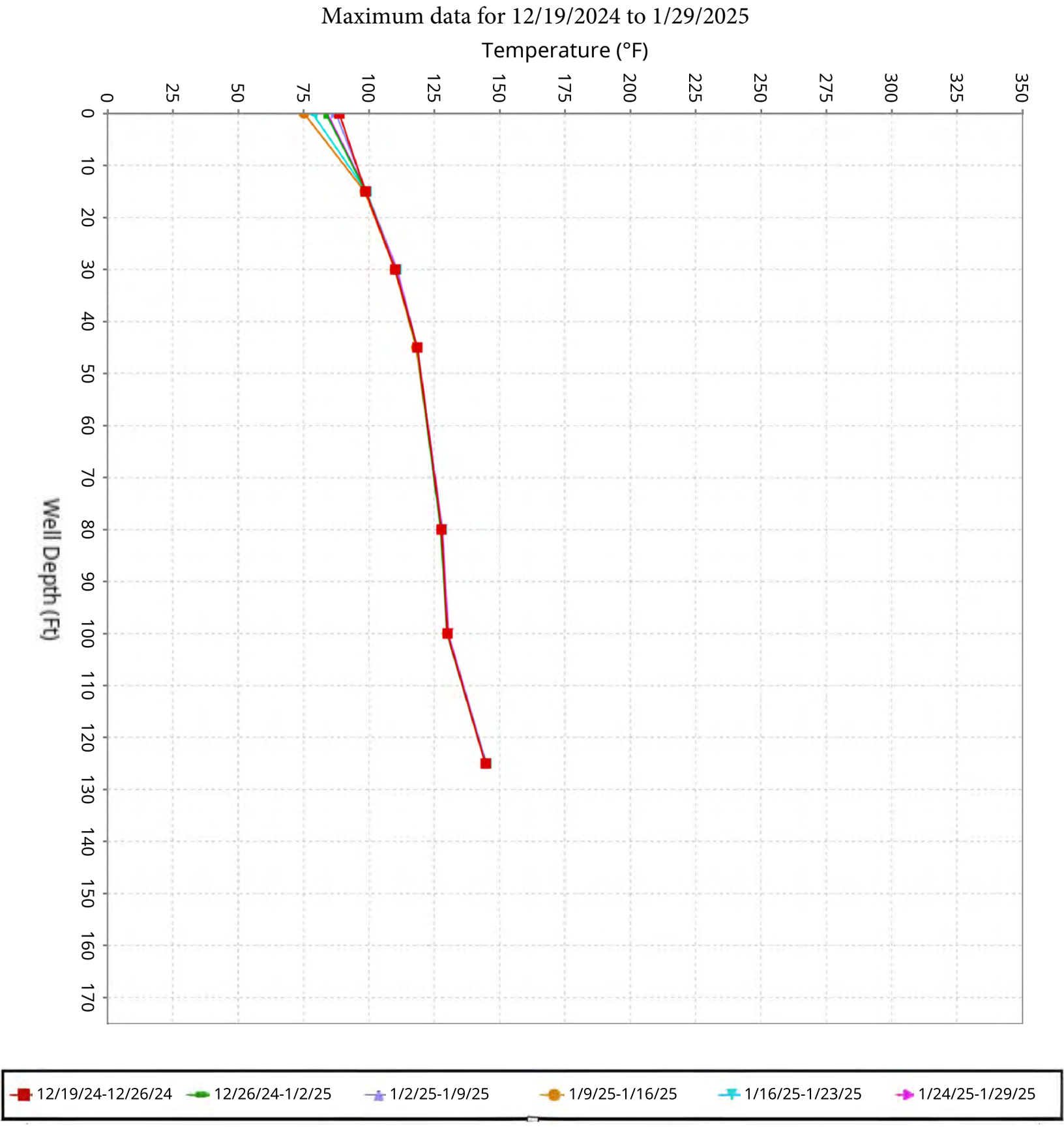
SCS ENGINEERS

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



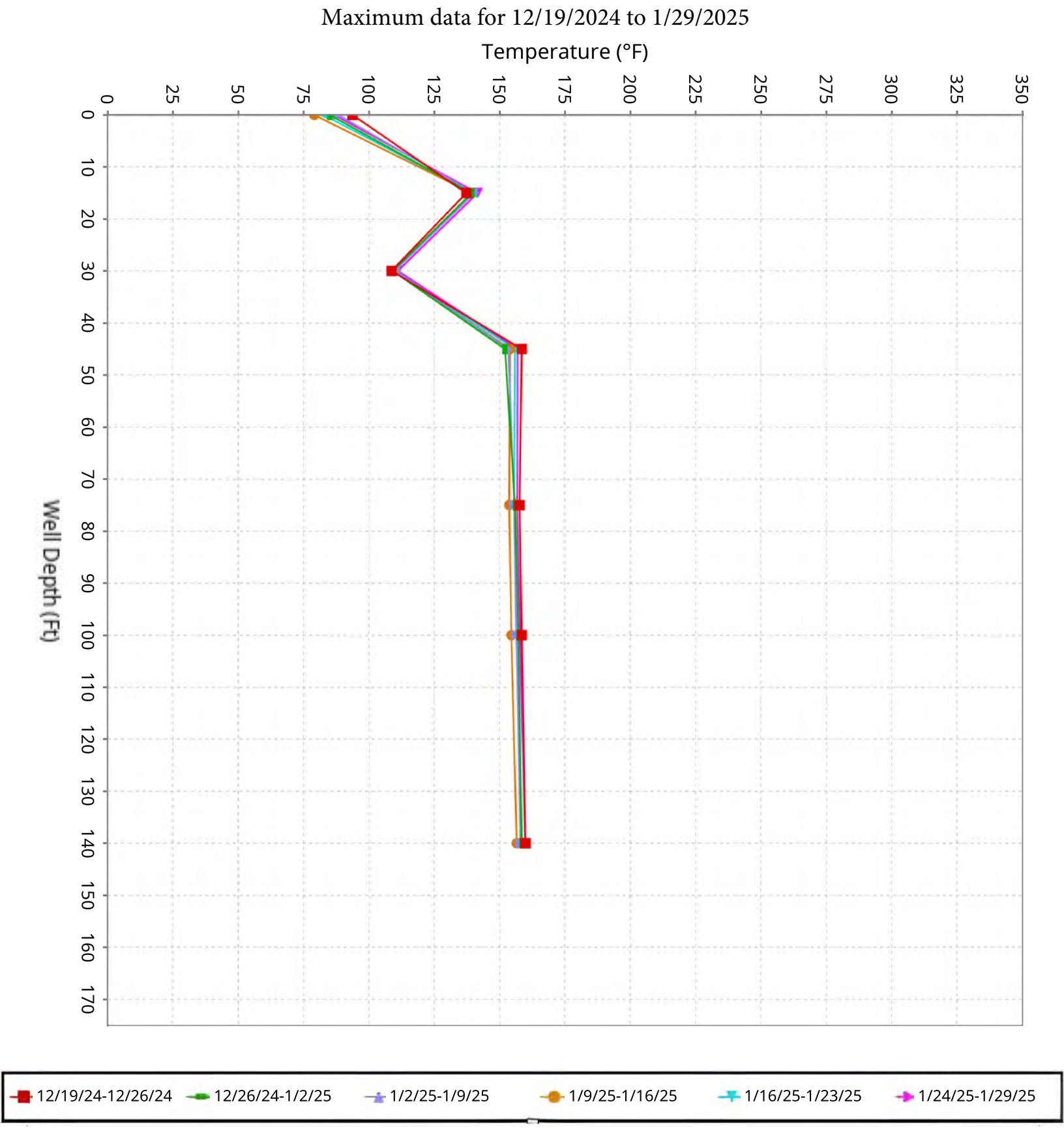
SCS ENGINEERS

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



SCS ENGINEERS

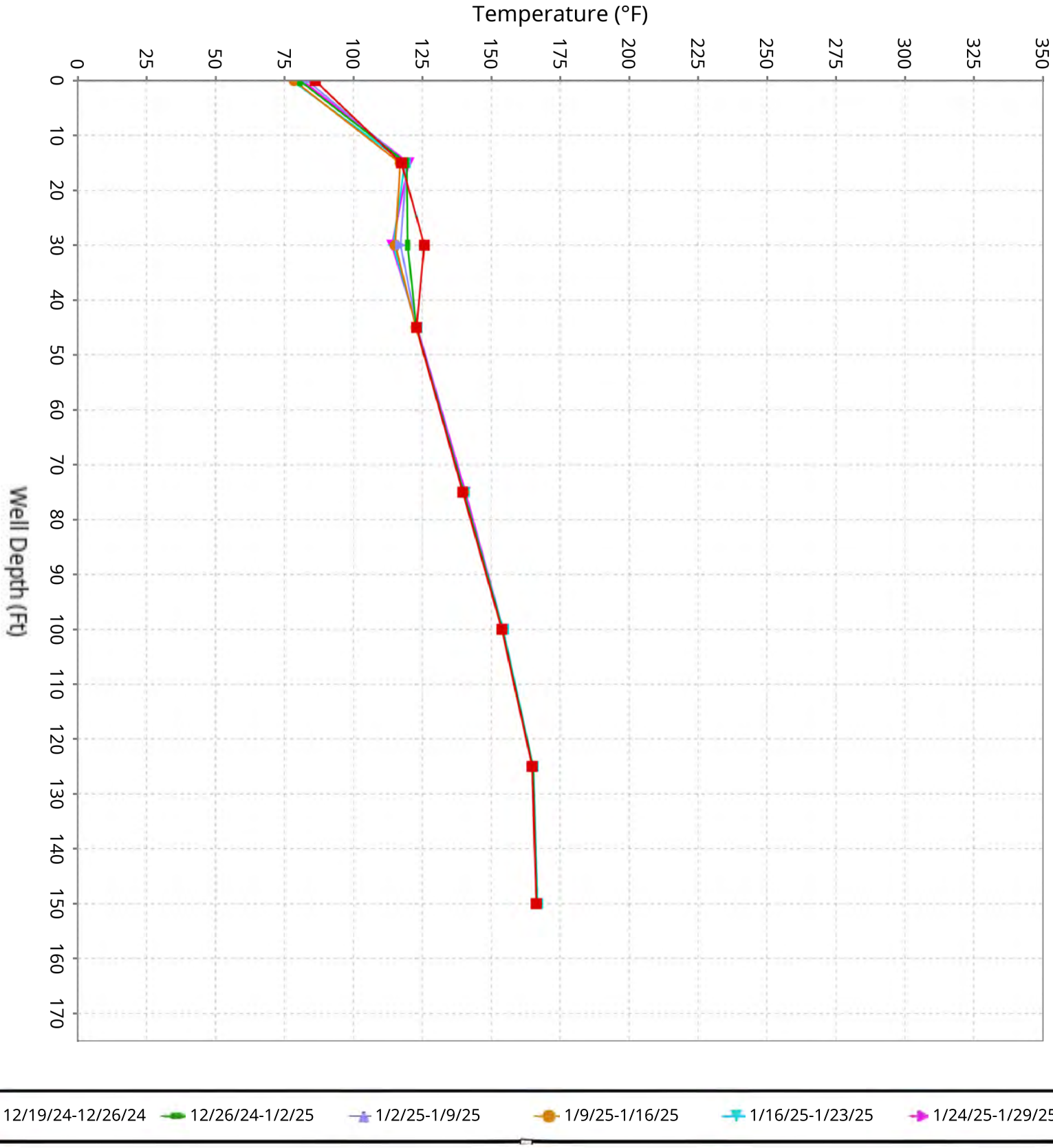
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-13



SCS ENGINEERS

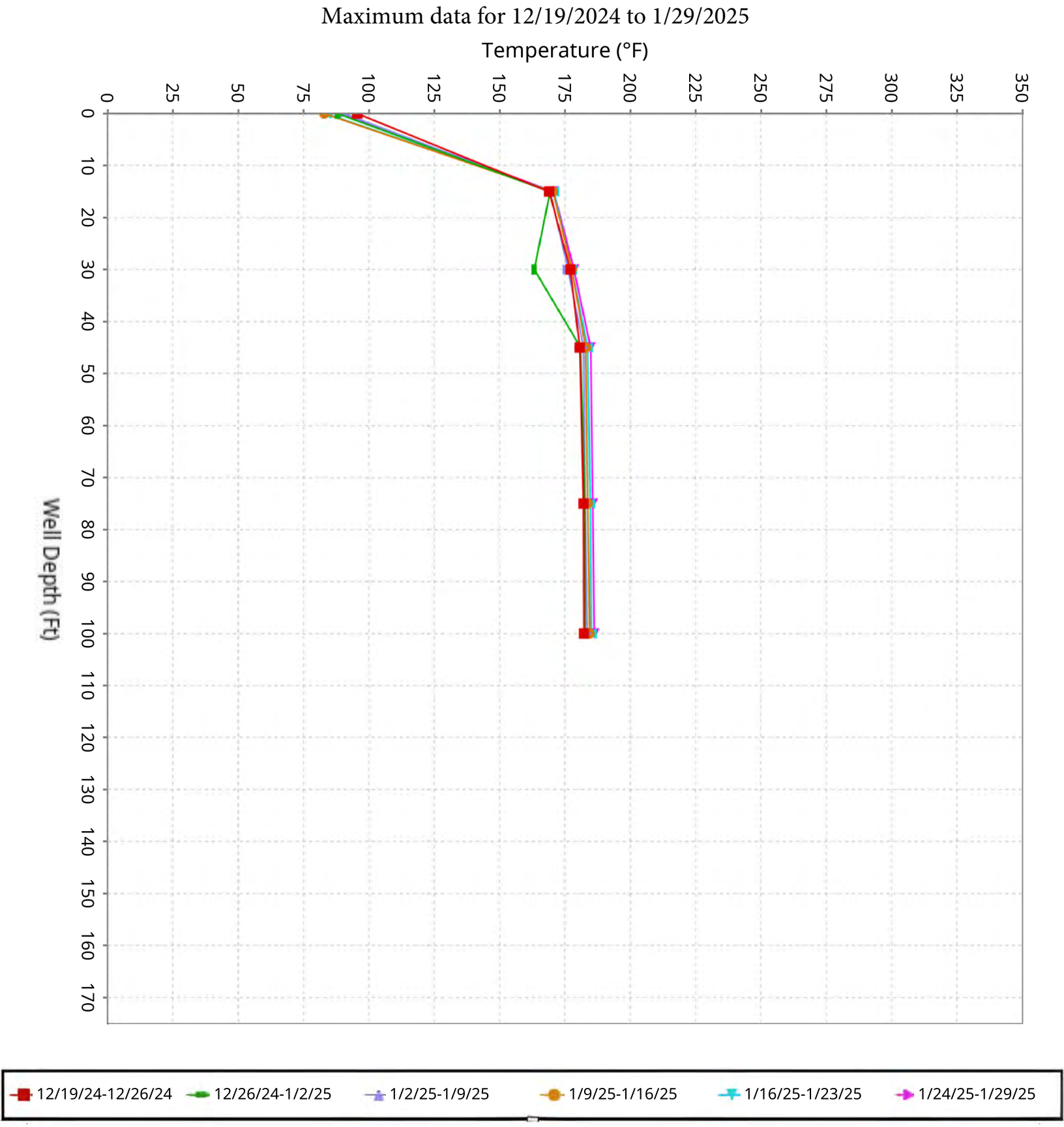
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-14

Maximum data for 12/19/2024 to 1/29/2025



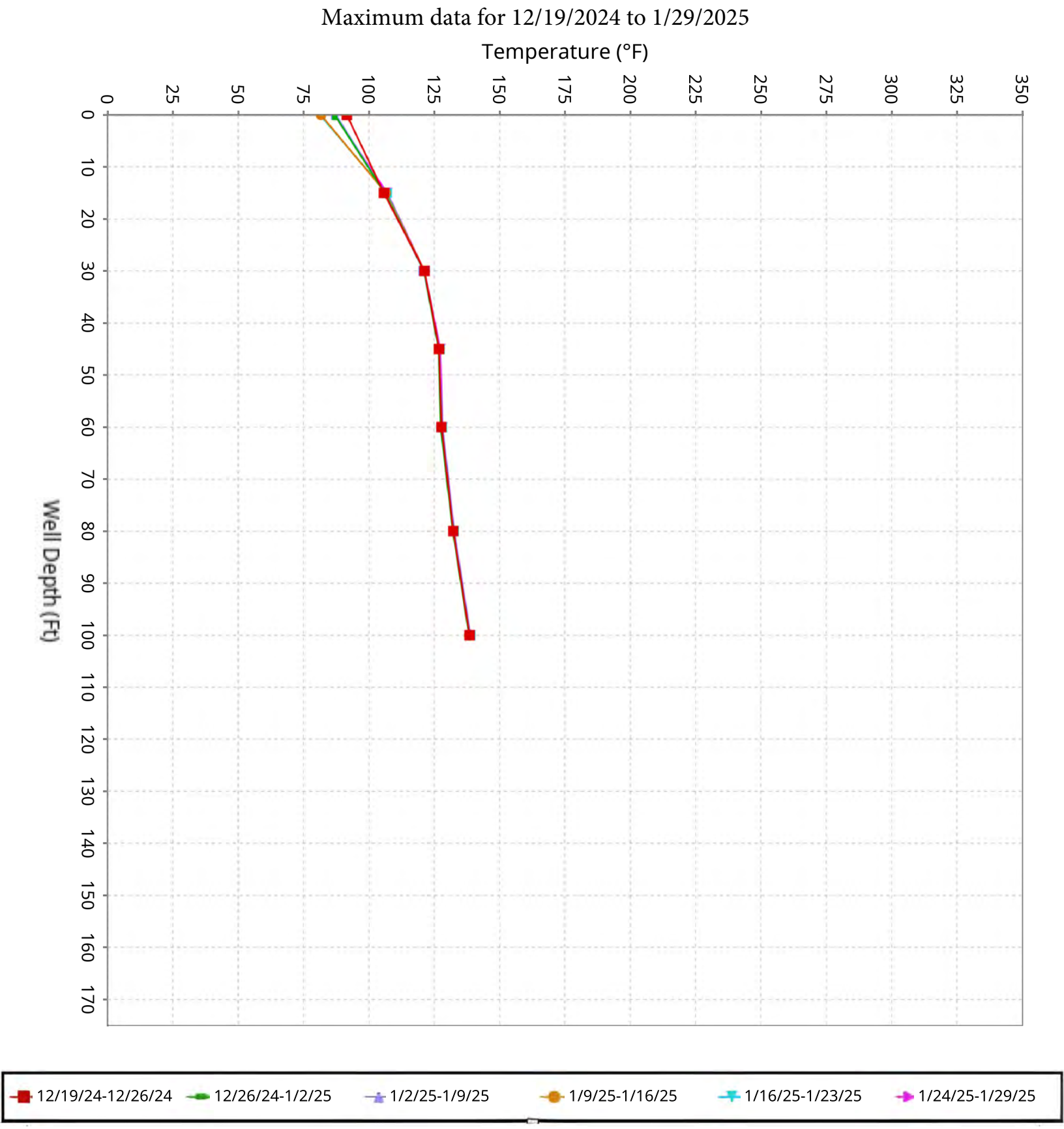
SCS ENGINEERS

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



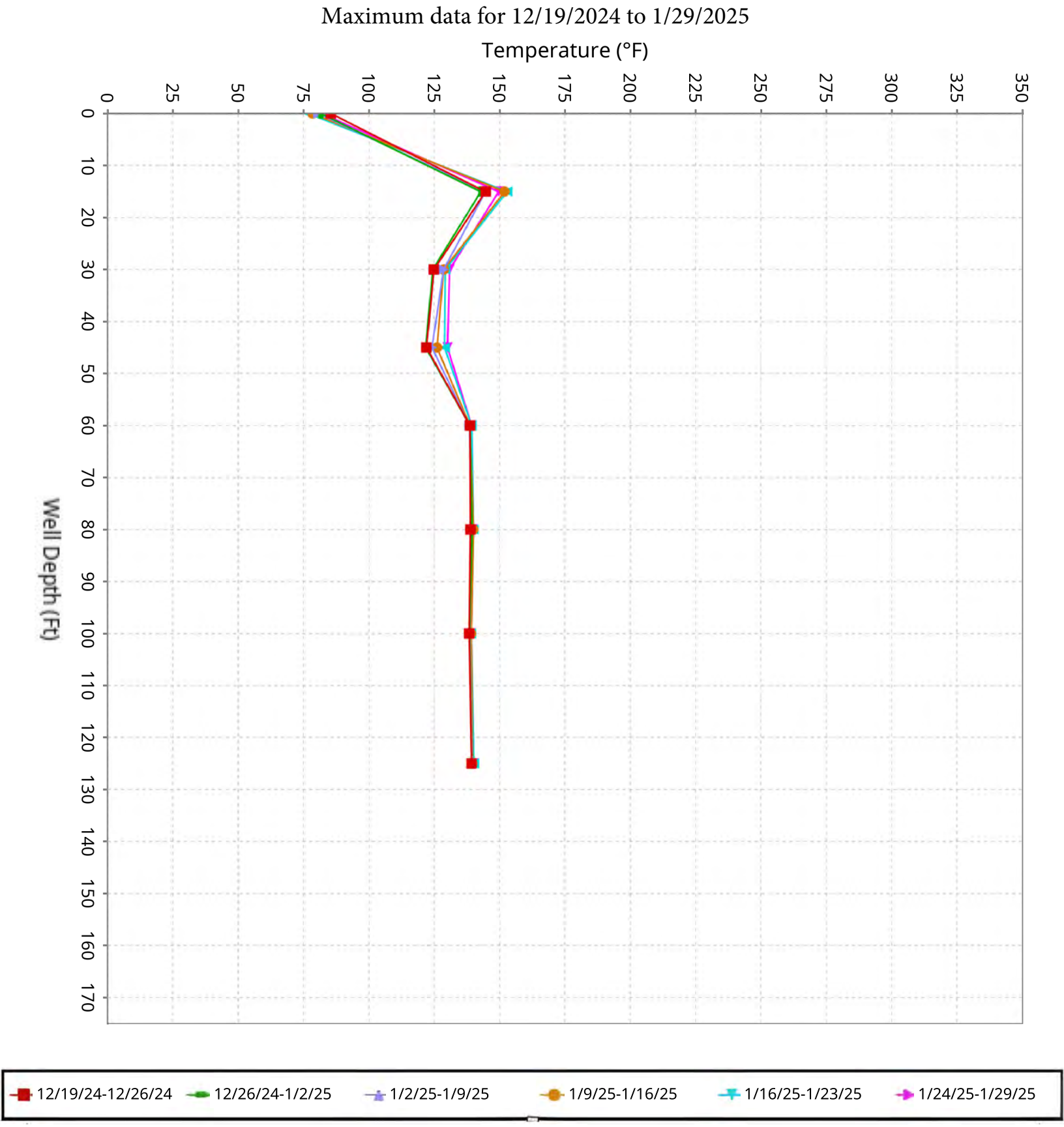
SCS ENGINEERS

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



SCS ENGINEERS

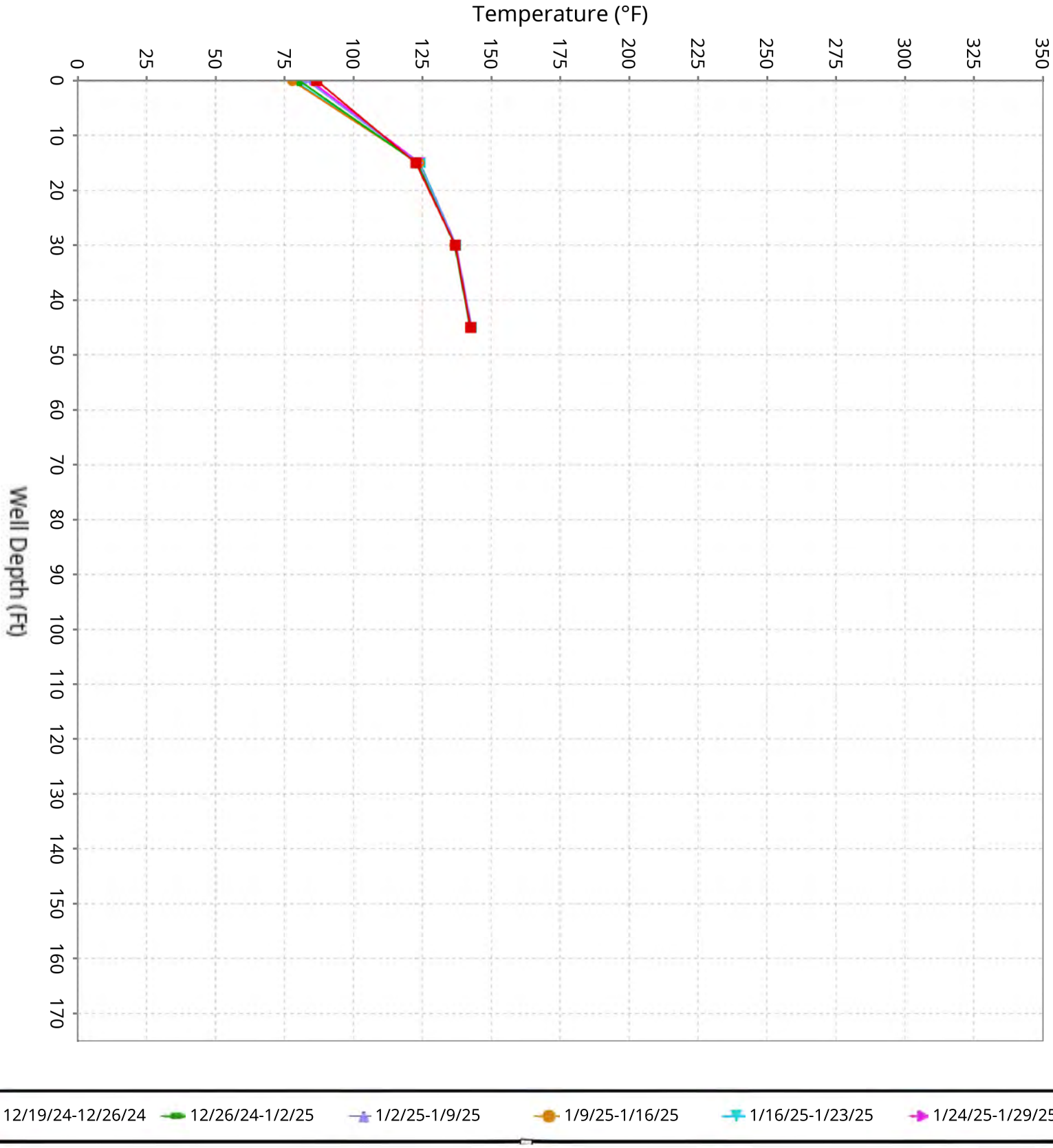
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-17



SCS ENGINEERS

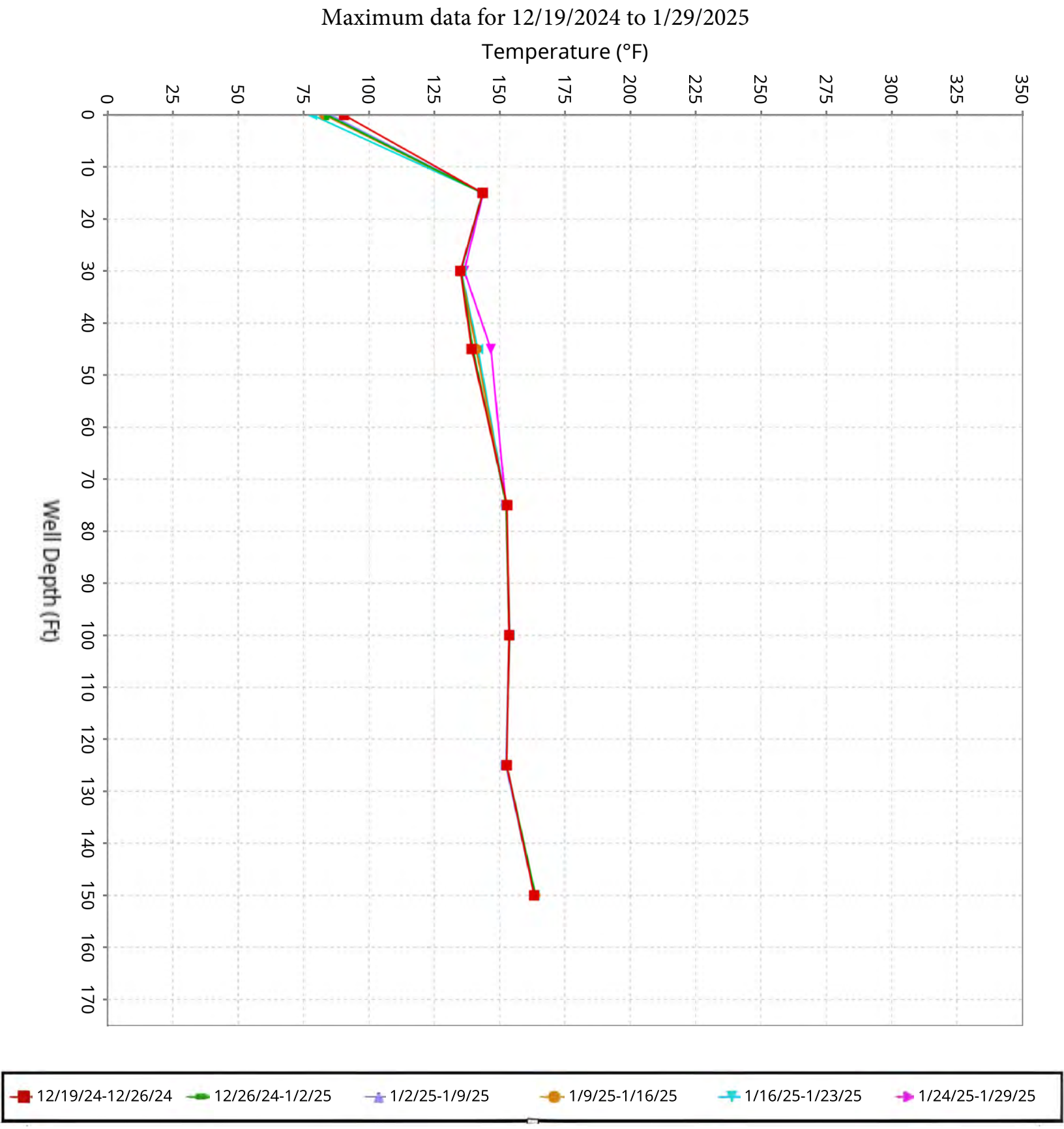
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-18

Maximum data for 12/19/2024 to 1/29/2025



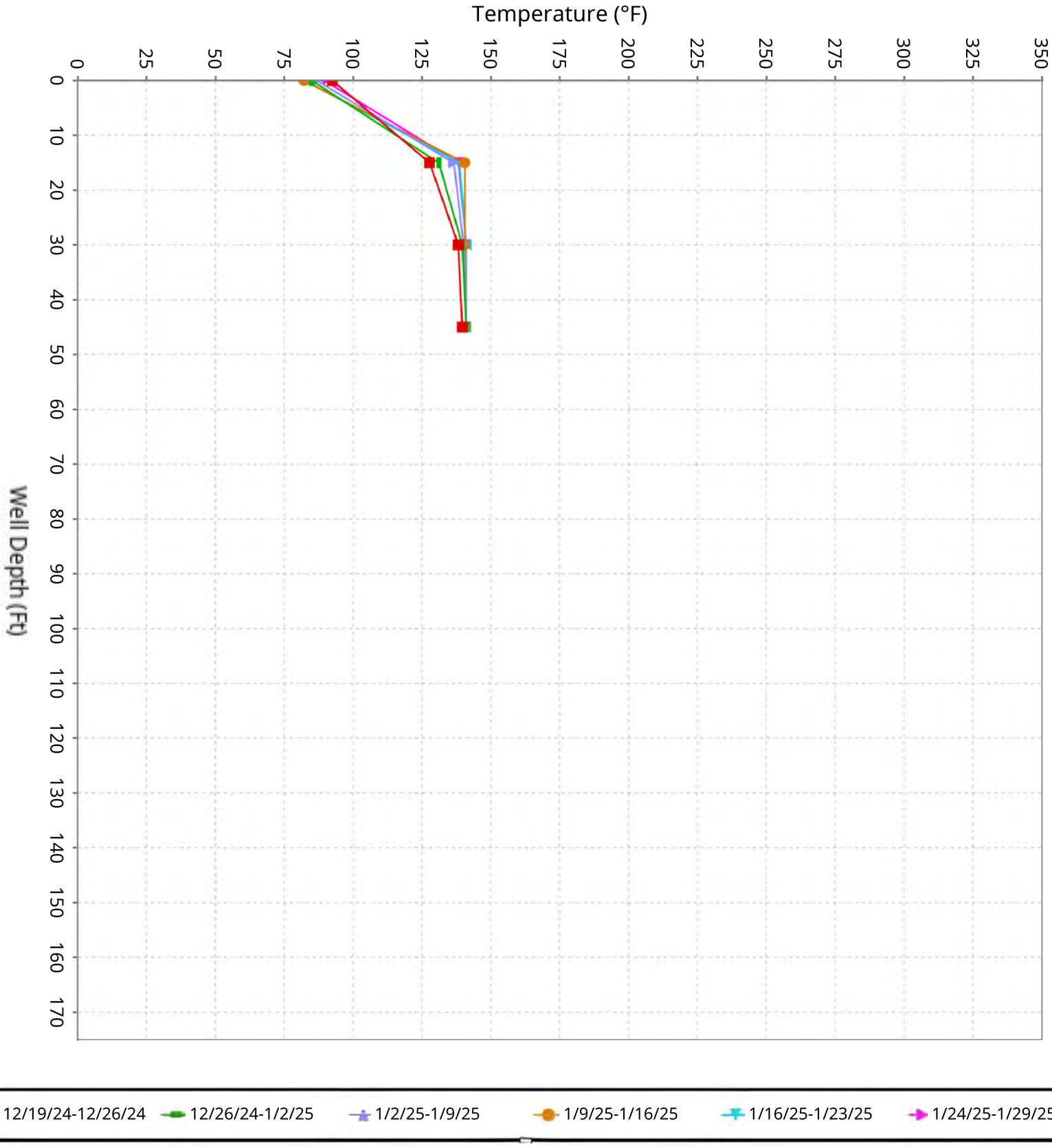
SCS ENGINEERS

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



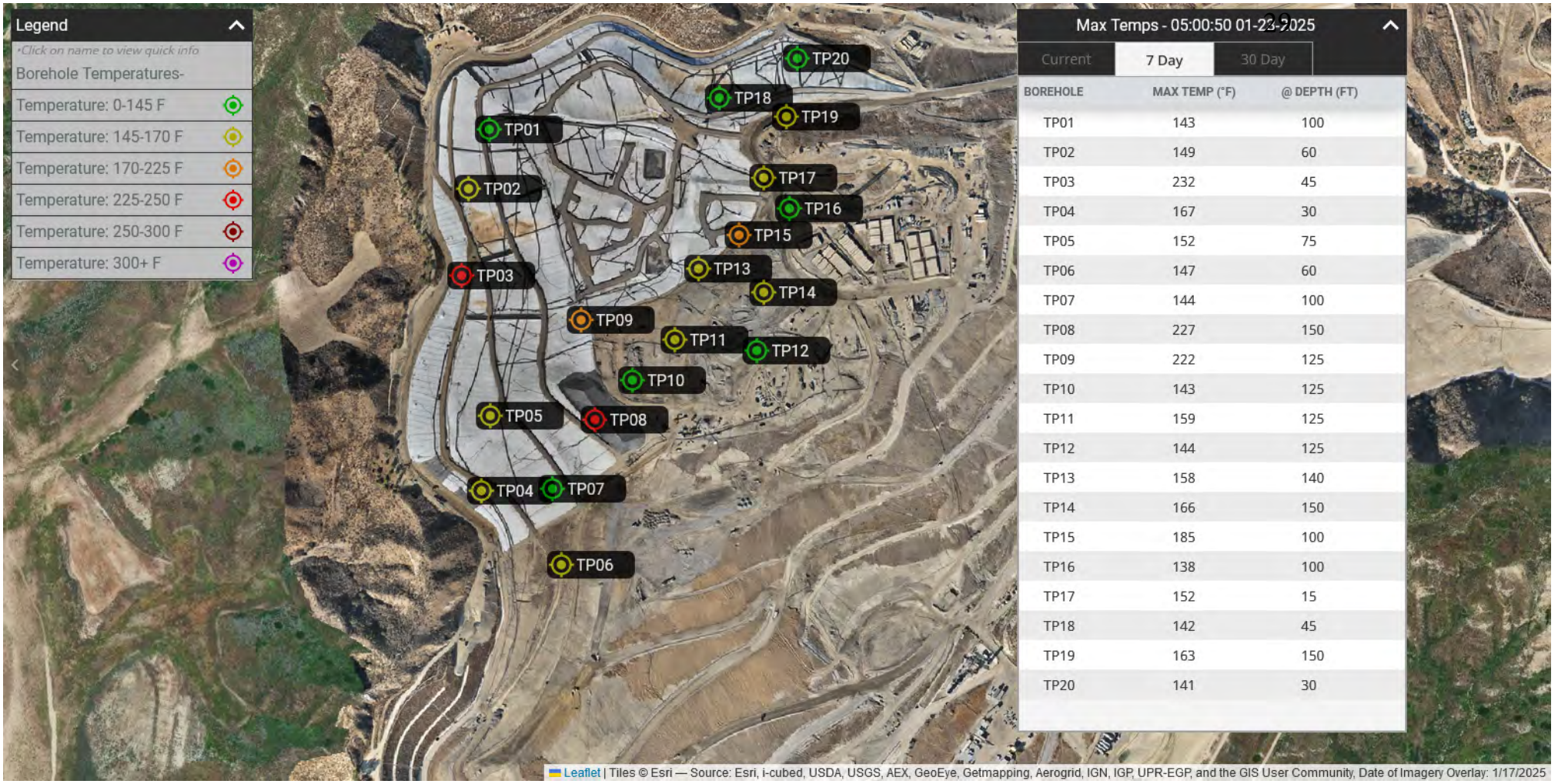
Vertical Temperature Profiles from Temperature Probes at Chiquita Landfill for TP-20

Maximum data for 12/19/2024 to 1/29/2025



SCS ENGINEERS

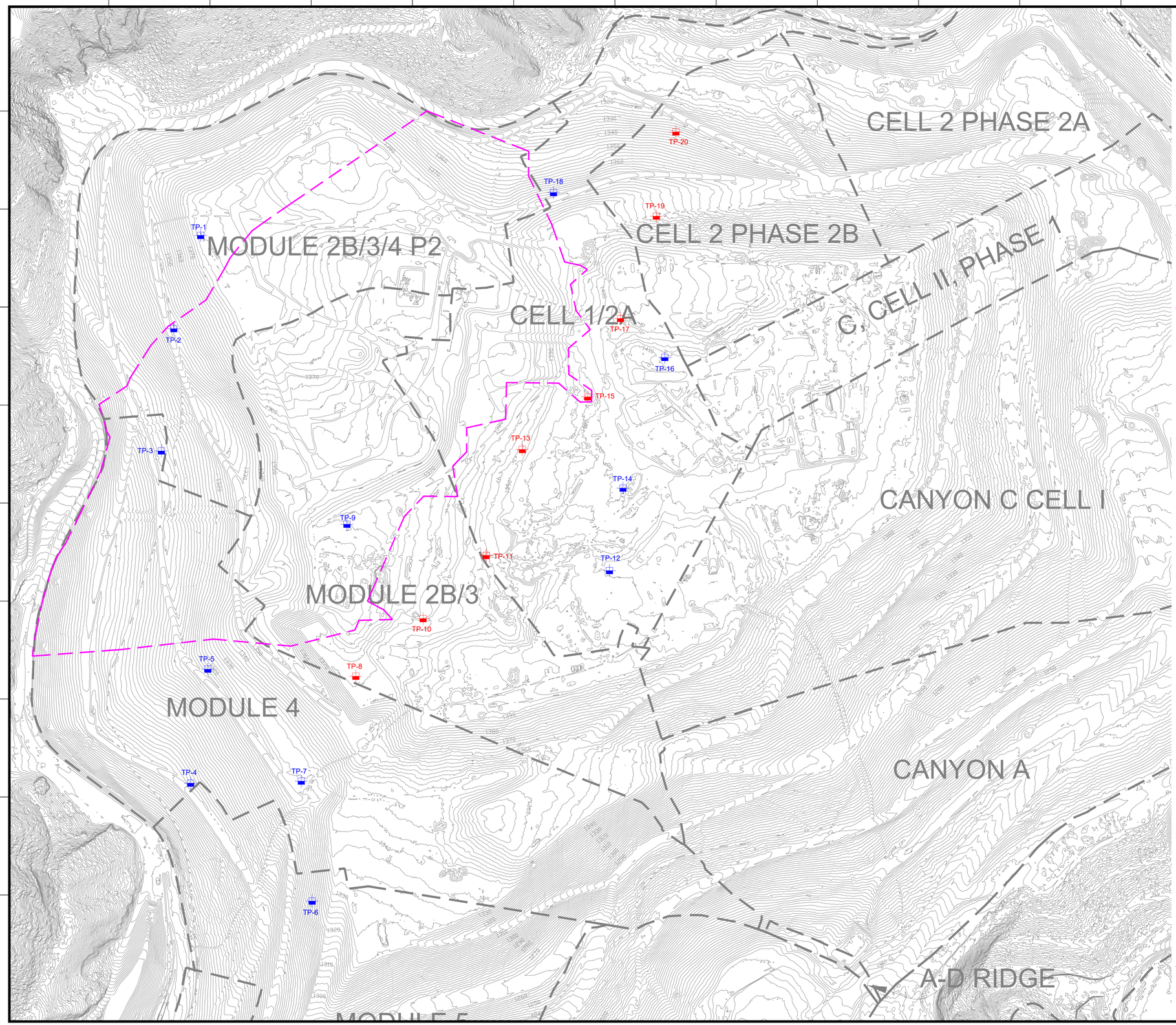
Maximum Vertical Temperature Map from Temperature Probes at Chiquita Landfill

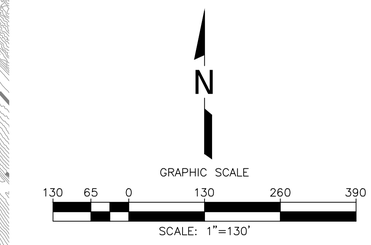


Max Temps - 05:00:50 01-23-2025

Current | 7 Day | 30 Day

BOREHOLE	MAX TEMP (°F)	@ DEPTH (FT)
TP01	143	100
TP02	149	60
TP03	232	45
TP04	167	30
TP05	152	75
TP06	147	60
TP07	144	100
TP08	227	150
TP09	222	125
TP10	143	125
TP11	159	125
TP12	144	125
TP13	158	140
TP14	166	150
TP15	185	100
TP16	138	100
TP17	152	15
TP18	142	45
TP19	163	150
TP20	141	30





LEGEND

- 1150 — EXISTING TOPOGRAPHIC CONTOUR
- EXISTING CELL LIMITS (APPROXIMATE)
- TP-XX — INSTALLED TEMPERATURE PROBES - STANDALONE
- TP-XX — INSTALLED TEMPERATURE PROBES - INSTALLED WITHIN WELL CASING
- REACTION AREA BOUNDARY (APPROXIMATE) - BASED ON DATA REVIEW

GENERAL DRAWING NOTES:

1. EXISTING TOPOGRAPHIC SURVEY INFORMATION SHOWN WAS PROVIDED BY PROPELLER. AERIAL PHOTOGRAPHY DATED JANUARY 22, 2025.
2. NORTH ARROW SHOWN HERE IS REFERENCE TO THE CALIFORNIA STATE PLANE ZONE V COORDINATE SYSTEM, NAD 83.

NO.	REVISION	DATE

SHEET TITLE: TEMPERATURE PROBE INSTALLATION MAP

PROJECT TITLE: TEMPERATURE PROBE INSTALLATION PROJECT
CHIQUITA LANDFILL
CASTAIC, CALIFORNIA

CLIENT: CHIQUITA CANYON LANDFILL
CASTAIC, CALIFORNIA

SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS
8799 BALBOA AVENUE SUITE 290
SAN DIEGO, CA 92123
(858) 571-5500 FAX. (562) 427-0805

PROJ. NO: 01204123.35 | DWN. BY: SRM | CHK. BY: JH/WCH | APP. BY: WCH | ACAD FILE: ENGINEERS

DSN. BY: JH/SRM

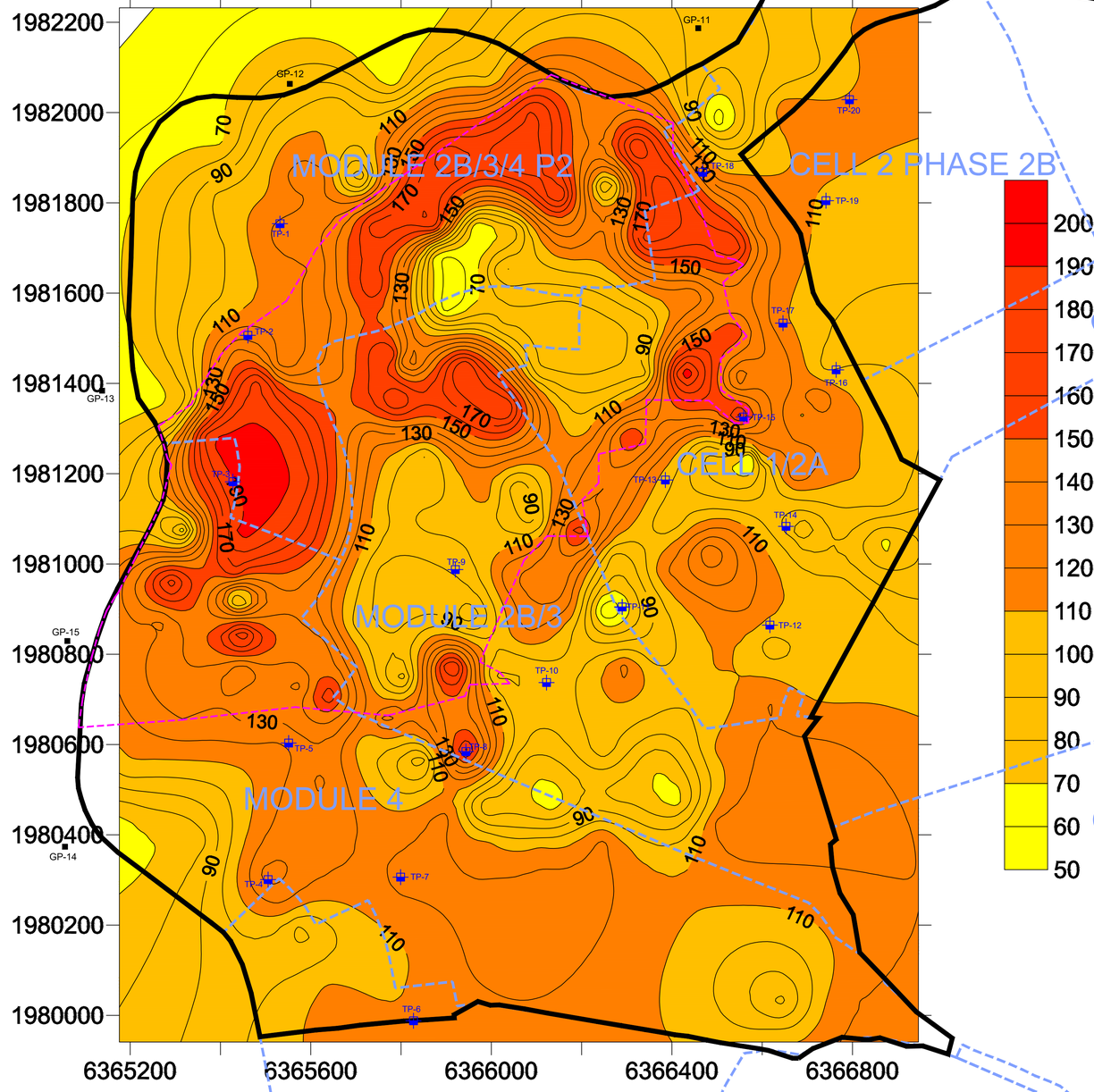
DATE: 01/30/2025

SCALE: AS SHOWN

SHEET: 1

C:\Users\5160srm\Desktop\2025 CCLF Temp. Probe Map_2025-01-30.dwg Jan 30, 2025 - 9:38am By: 5160srm

ATTACHMENT C



N

GRAPHIC SCALE

150 75 0 150 300 450

SCALE: 1"=150'

LEGEND

- EXISTING CELL LIMITS (APPROXIMATE)
- REACTION AREA BOUNDARY (APPROXIMATE) - BASED ON DATA REVIEW
- REACTION AREA BOUNDARY - CONDITION 9A
- GP-XX EXISTING PERIMETER MIGRATION PROBE
- TP-XX EXISTING TEMPERATURE PROBE

GENERAL DRAWING NOTES:

1. NORTH ARROW SHOWN HERE IS REFERENCE TO THE CALIFORNIA STATE PLANE ZONE V COORDINATE SYSTEM, NAD 83.
2. THE LOCATION OF ANY EXISTING PIPING, VALVES, TIE-IN LOCATIONS AND OTHER FEATURES ARE APPROXIMATE AND SHOULD BE USED FOR INFORMATION PURPOSES ONLY. ACTUAL FIELD CONDITIONS MAY VARY AND SUBJECT TO CHANGE BASED ON FUTURE FILL OPERATIONS, WASTE PLACEMENT, TOPOGRAPHIC FEATURES, AND OTHER SITE-SPECIFIC FACTORS.

DATE | REVISION | NO.

SHEET TITLE: ISOTHERMAL GRADIENT MAP FEBRUARY, 2025

PROJECT TITLE: CHIQUITA CANYON LANDFILL CASTAIC, CALIFORNIA

CLIENT: CHIQUITA CANYON LANDFILL CASTAIC, CALIFORNIA

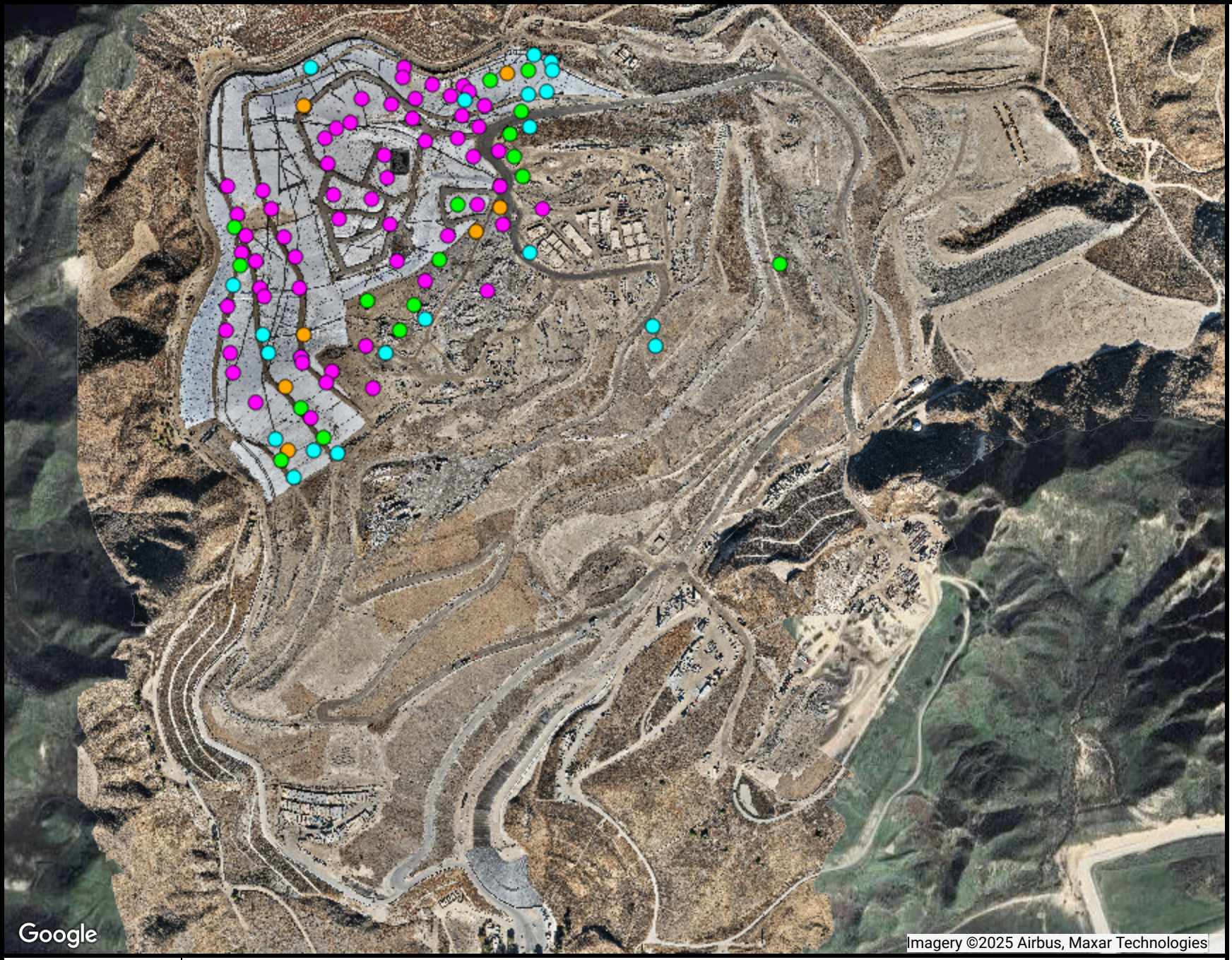
SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS
8799 BALBOA AVENUE SUITE 290
SAN DIEGO, CA 92123
(858) 571-5500 FAX. (562) 427-0805

ACAD FILE: PE/ENGINEERS | DWN. BY: SRM | CHK. BY: - | APP. BY: - | PROJ. NO. 01204123.41 | DSN. BY: -

DATE: 02/10/2025

SCALE: AS SHOWN

SHEET: 1



Ranges Mapped

				# Points
>=	0	and <	100	21
>=	100	and <	500	17
>=	500	and <	1000	7
>=	1000	and <	1000000	59

Point Type Legend

well

N

SCSeTools

Chiquita Canyon Landfill

Range Map

Parameter: CO (mid range)

Analysis Method: Average

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

Map generation date : 02/07/2025