February 11, 2025

Luke LeMond
Site Manager
Solid Waste Program
State of Washington Dept. of Ecology
Central Regional Office
1250 West Alder St.
Union Gap, WA 98903-0009

Re: DTG Yakima – Agreed Order No. DE 21624 – Monthly Progress Letter – January

Dear Mr. LeMond:

In accordance with Section 7.3 of Agreed Order (AO) No. DE 21624, the following is a description of the actions taken during January 2025 to implement the requirements of this AO.

Activities:

On-site activities included weekly gas probe and every other week ambient monitoring. The once per month regulatory review meeting was held on January 16, 2025. The monitoring data summary through January 2025 from Landfill Fire Control, Inc. (LFCI) is attached.

DTG developed the RI Work Plan.

DTG continued to develop the 2024 annual groundwater monitoring report.

Deviations from Plans (if any):
None.

Deviations Description from the Scope of Work and Schedule:
None.

All Data Received or Collected:

Ambient and gas probe data for gases and temperature were emailed, separately, to Ecology weekly after measurements were taken. Gas probe data was entered into the tracking spreadsheets and assessed by LFCI. The summary of the data has been included as an attachment.

The Hydraulic Testing Technical Memorandum was submitted to Ecology on January 2, 2025.

The laboratory data for Q4 PFAS groundwater sampling was submitted to Ecology on January 2, 2025.

The laboratory data for Q4 SVOCs and dioxins/furans groundwater sampling was submitted to Ecology on January 9, 2025.

The RI Work Plan was submitted to Ecology on January 31, 2025.

Address
22745 29th Dr. SE, Ste 200,
Bothell, WA 98021

Contact
425 549 3000
dtgrecycle.com

Deliverables for the Upcoming Month:
Deliverables will include:

- Weekly ambient and gas probe data
- February Progress Report
- 2024 annual groundwater report
- RI Work Plan bid documents

Please contact me to discuss any of the above items.

Respectfully,

Ian Sutton
Director of Engineering
DTG Recycle
isutton@dtgrecycle.com

Enclosures: LFCI Data Update – January 2025

cc: mbrady@parametrix.com
steven.newchurch@co.yakima.wa.us

February 5th, 2025 LFCIPRJ-2023-001

Mr. Ian Sutton, Director of Engineering
DTG Recycle
P.O. Box 14302 Mill Creek, WA 98082

By email: isutton@dtgrecycle.com

Re: Monthly Data Assessment Report DTG Yakima Landfill Fire Incident – January 2025

Dear Mr. Sutton,

LFCI has prepared a monthly review and update of gas and temperature monitoring data that is being collected at the DTG Recycle Landfill Fire in Yakima, Washington. The update includes maps showing the spatial distribution of temperature, carbon monoxide, and oxygen within the monitoring area and presents the data collected, highlighting trends and interpreting the results.

Following the suspected flare up during December and before the Christmas holidays, LFCI has observed the collected data showing continuing signs of suppression. While the efforts are working, fire suppression response is slow on account of low biological activity within the landfill. Nevertheless, the highest observed temperatures at GP-3 are still showing an overall decline. However; in the past month the rate of cooling has slowed and appears to be levelling off in both T-1 and GP-3 between 250 and 300F. This trend is somewhat concerning as the objective is to achieve temperatures below 180F. Prior to the levelling off trend extinguishment temperature of less than 180 F were expected to be reached in 3 to 6 months. At present, the suppression may require 6 months to 12 months, although the gas composition data continues to indicate that the smoulder is becoming less active, as discussed below.

The landfill gas composition data is indicating that the subsurface smolder is becoming less and less active with CO, H2, VOC's and H2S all trending strongly downward. The notable uptick in VOC's noted previously continues to decrease even further. Carbon Monoxide levels have significantly decreased from previous levels, down to below 3,500ppm in thermistor T-3, which is the lowest levels measured to date in that well. Given the high H2 levels that are known to cause cross sensitivity issues on CO, when the latest CO readings are corrected for H2 concentration, the results indicate that the corrected CO levels are also generally trending downward. There has been some upwards movement in measurements in the past month but levels are once again trending downwards and are currently around 2,000ppm.

Per LFCI's fire control plan, monitoring can be reduced to once every two weeks once CO levels drop below 500 ppm and the fire can be declared extinguished after CO concentration is below 200 ppm. Based on the latest dataset LFCI is projecting that this level will be reached in about 3 months, but could be longer on account of residual background gas in the pore space.

Plotting the temperature data in plan view clearly shows that the area affected by fire has markedly decreased over time. As stated in previous reports, LFCI believes that the data shows a small smolder continues to be active near GP-3, and that the rate of combustion of the smolder is steadily decreasing, however slowly. Based on the extinguishment target of temperature dropping below 180°F, we currently project that the fire will be declared extinguished within six months to one year. However; if the temperature response continues to level off around 300 F, additional intervention may become necessary.

Based on this, LFCI recommends that monitoring continue on a weekly basis until it can be shown that CO levels in all locations have decreased to below 500ppm, once corrected for cross sensitivity effects. At that time, monitoring can be decreased for prevention purposes. Given the recent response and the reduced time line now projected to extinguishment, LFCI is of the opinion that further intervention is not warranted at this time.

We trust that this report provides the information you require, and should you need anything else please don't hesitate to contact the undersigned.

Sincerely,

LANDFILL FIRE CONTROL INC.

Dr. Tony Sperling, P.Eng.
President

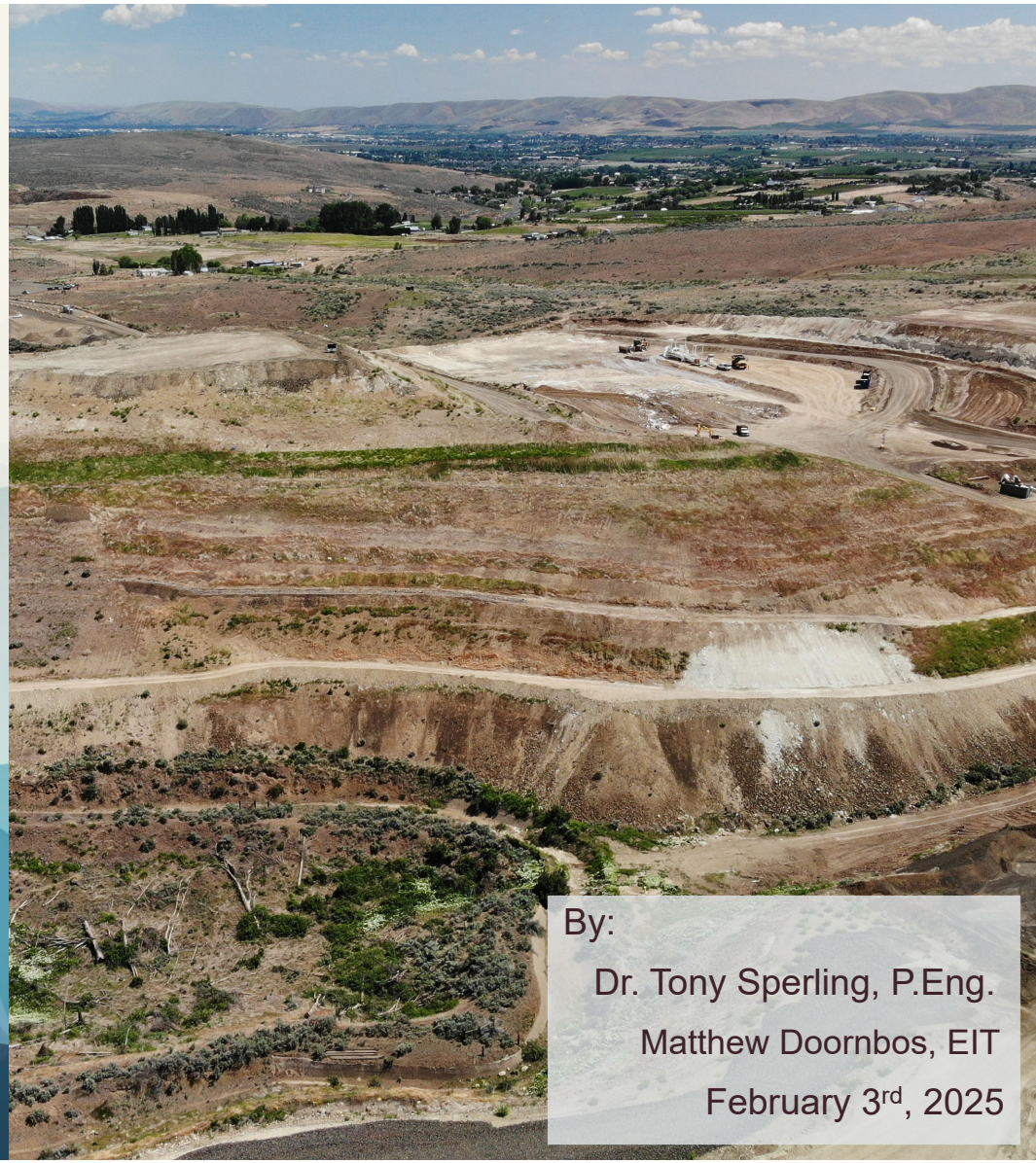
PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
A. SPERLING

February 5th, 2025

DTG LPL LANDFILL FIRE INVESTIGATIONS AND MITIGATION

Monthly Monitoring Data Review

January 2024



By:

Dr. Tony Sperling, P.Eng.

Matthew Doornbos, EIT

February 3rd, 2025

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LANDFILLFIRE.com
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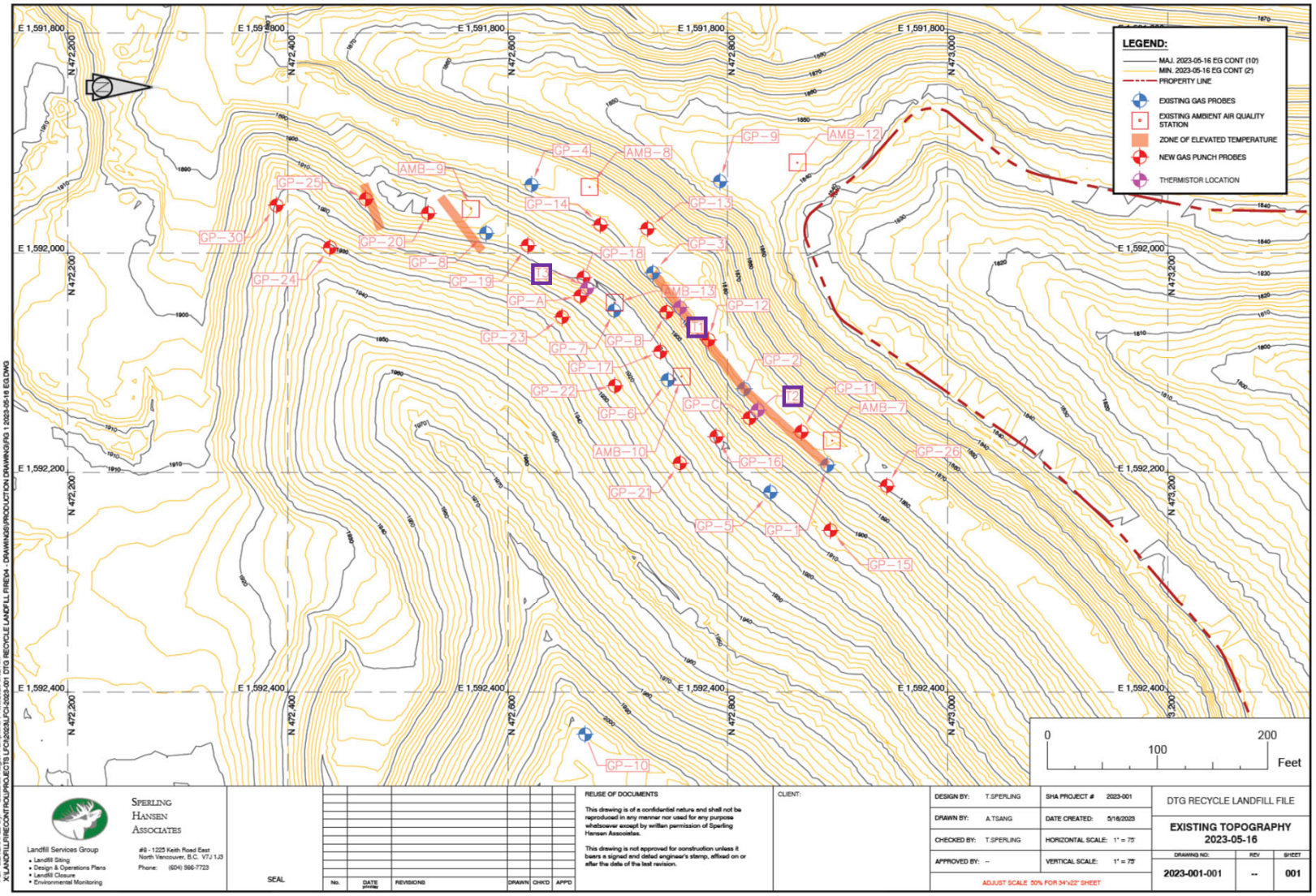

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- Landfill Siting
- Design & Operations Plans
- Landfill Closure
- Environmental Monitoring

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Phone: (604) 986-7723

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CHECKED BY:	T.SPERLING	HORIZONTAL SCALE:	1" = 75'
APPROVED BY:	--	VERTICAL SCALE:	1" = 75'

ADJUST SCALE 30% FOR 34"x22" SHEET

DTG RECYCLE LANDFILL FILE

EXISTING TOPOGRAPHY 2023-05-16

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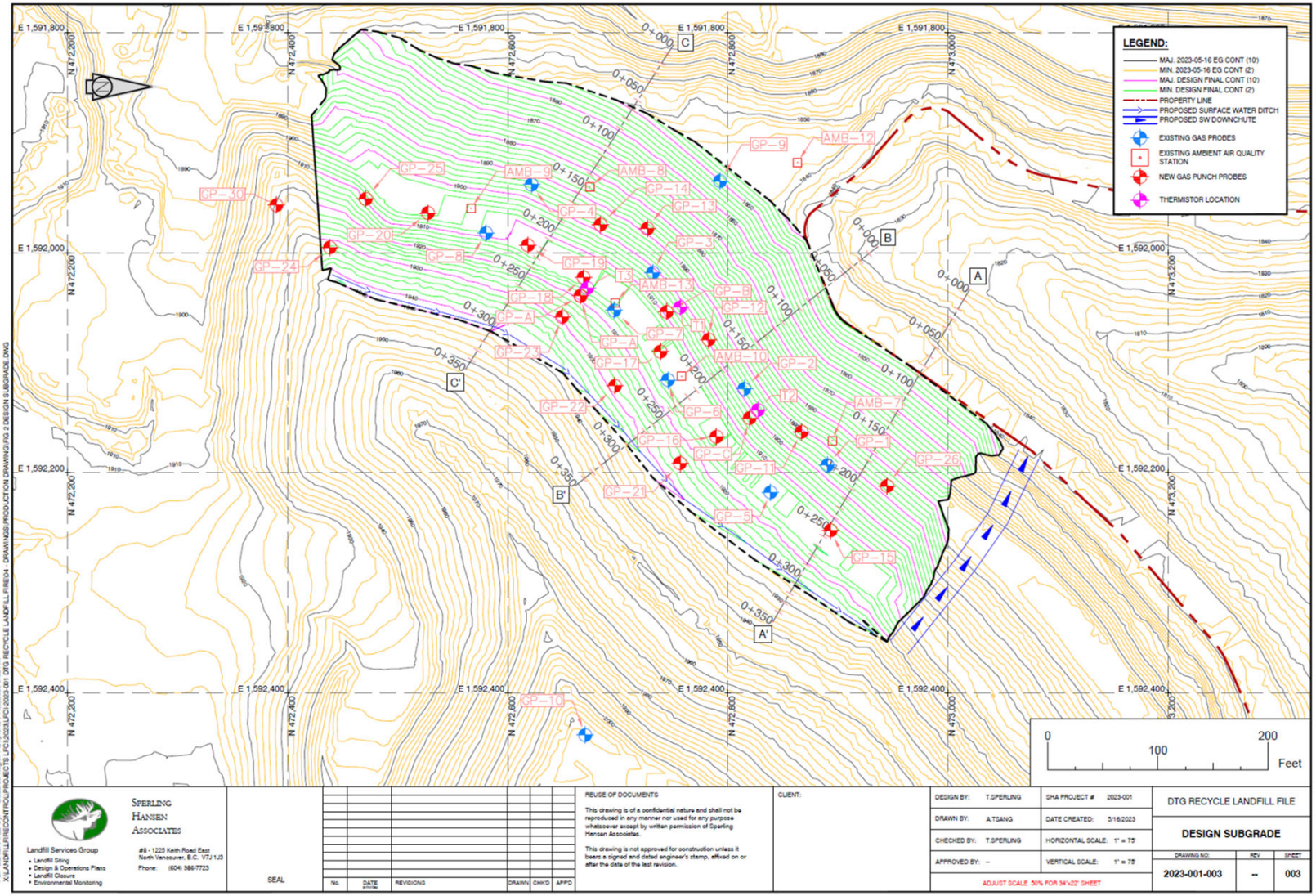
2023-001-001	--	001



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ADJUST SCALE 50% FOR 34"x22" SHEET

DTG RECYCLE LANDFILL FILE

DESIGN SUBGRADE

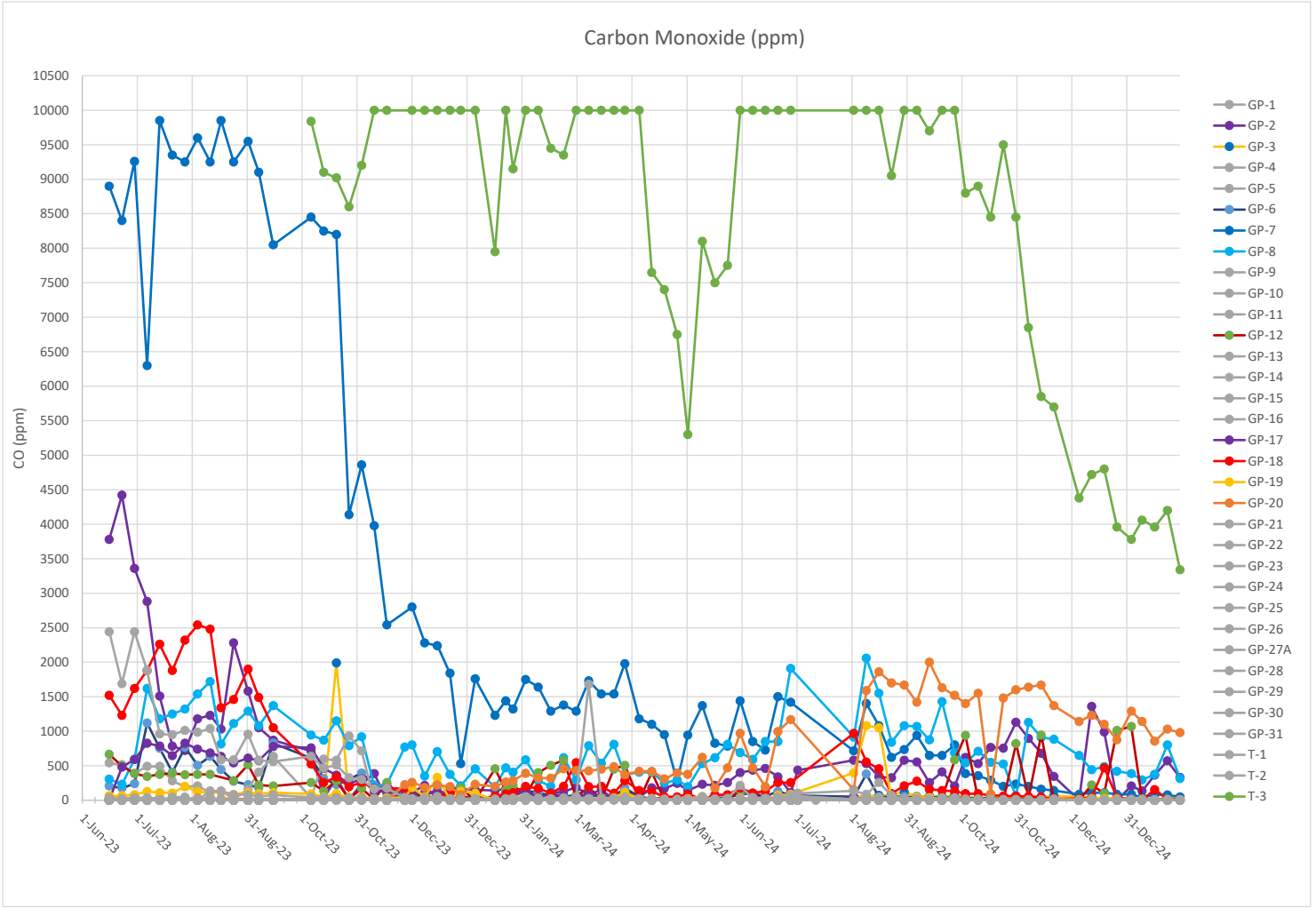
DRAWING NO:	REV	SHEET
2023-001-003	--	003

Carbon Monoxide

January has seen large pressure swings, with a large increase at the beginning of the month and a large decrease at the end. This explains the slower trend upwards during the month and the sharp downwards tick at the end of the month.

CO levels are now at an all-time low, with T-3 measuring below 3,500ppm (uncorrected)

CO levels in GP-12 have decreased, following the increase that was noted in December.



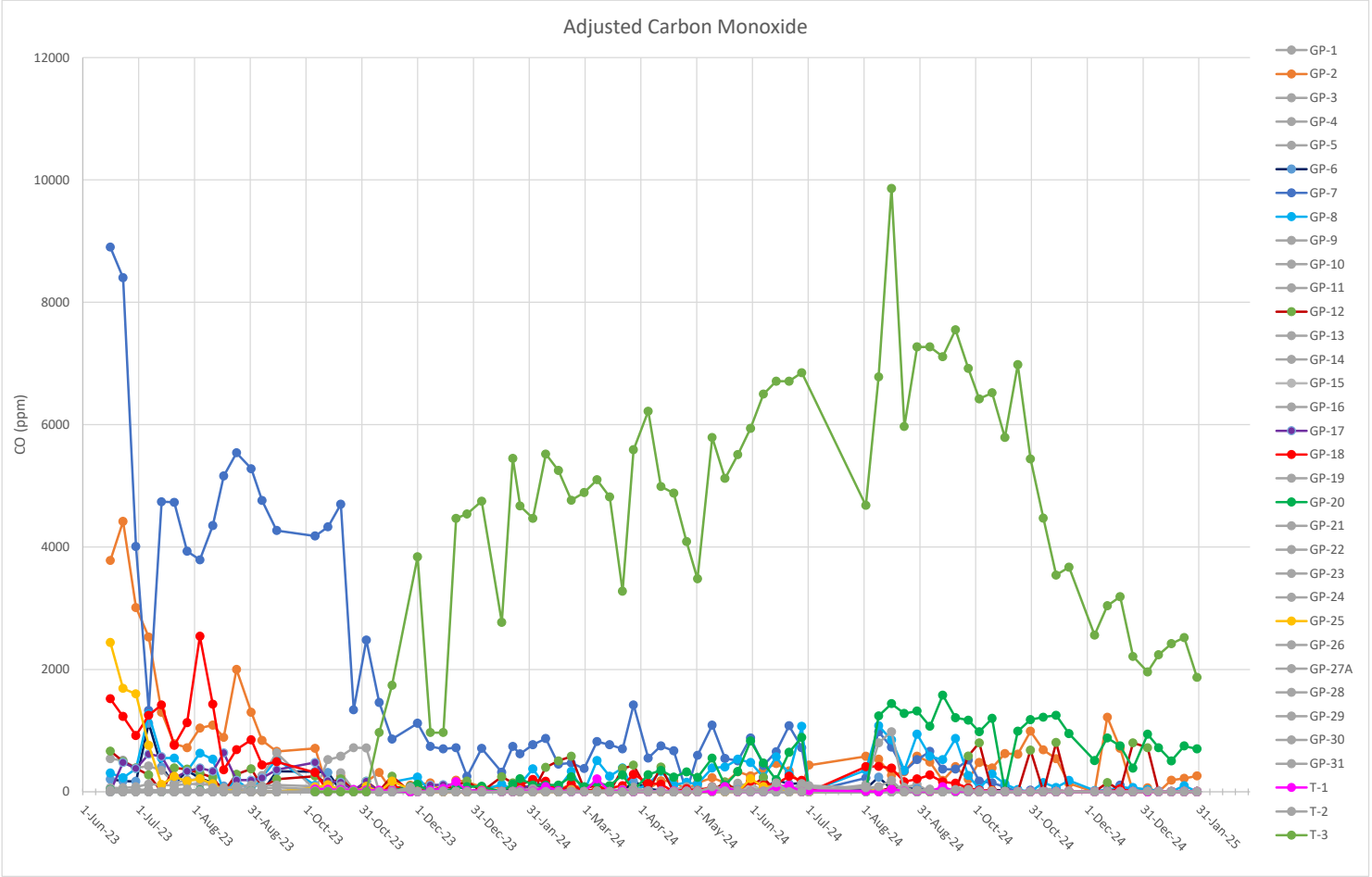
CO Adjusted for H2 Gas

Adjusted CO measurements have been consistently decreasing since August 2024.

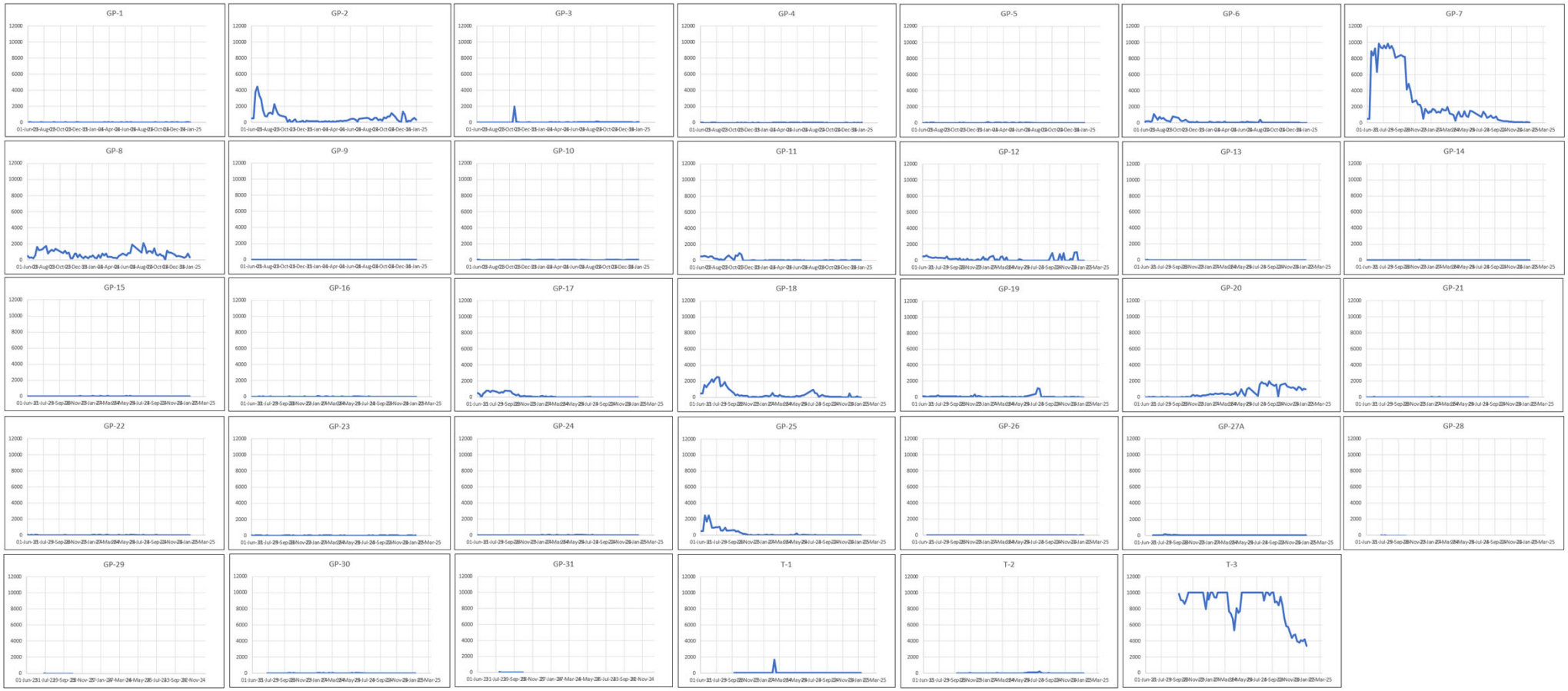
Projection for reaching 200 ppm is currently at about 3 months.

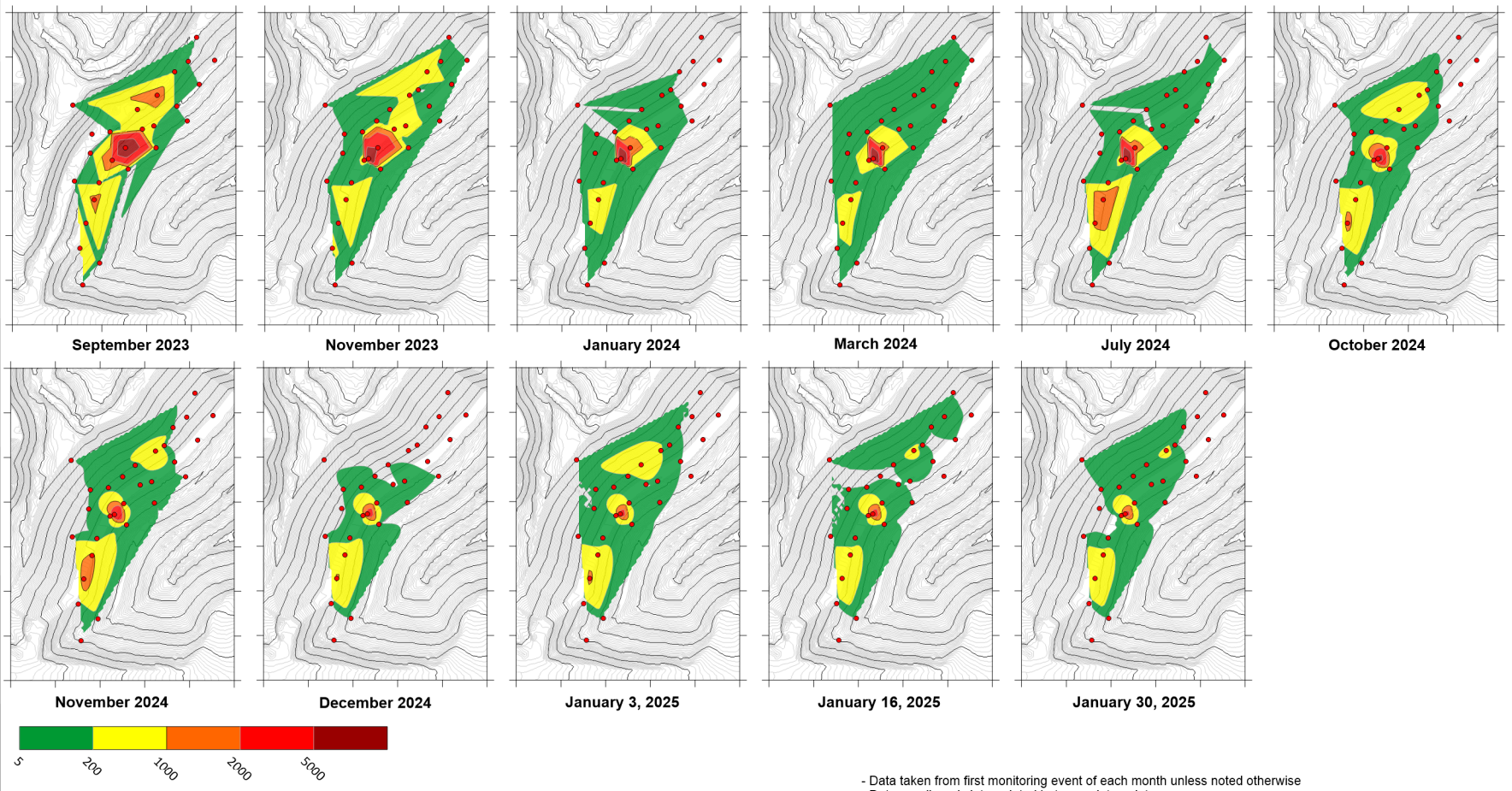
Note that prior to August, 2024 most data was >10,000 ppm, so graphed increase prior to this time is not truly representative.

Just like the uncorrected data, T-3 is at an all-time low.



CO Levels by Individual Wells





- Data taken from first monitoring event of each month unless noted otherwise
- Data was linearly interpolated between data points
- Datapoints (probe locations) represented in red
- CO levels are measured in ppm
- Ground contours are of existing ground at beginning of project, with design contours added for after addition of fill

LANDFILLFIRE.com

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DTG Recycle

DESIGN BY:	T. SPERLING
DRAWN BY:	M. DOORNBOS
DATE CREATED:	2025/02/03
SHA PROJECT #	LFCI-2023-001

DTG RECYCLE LANDFILL FIRE

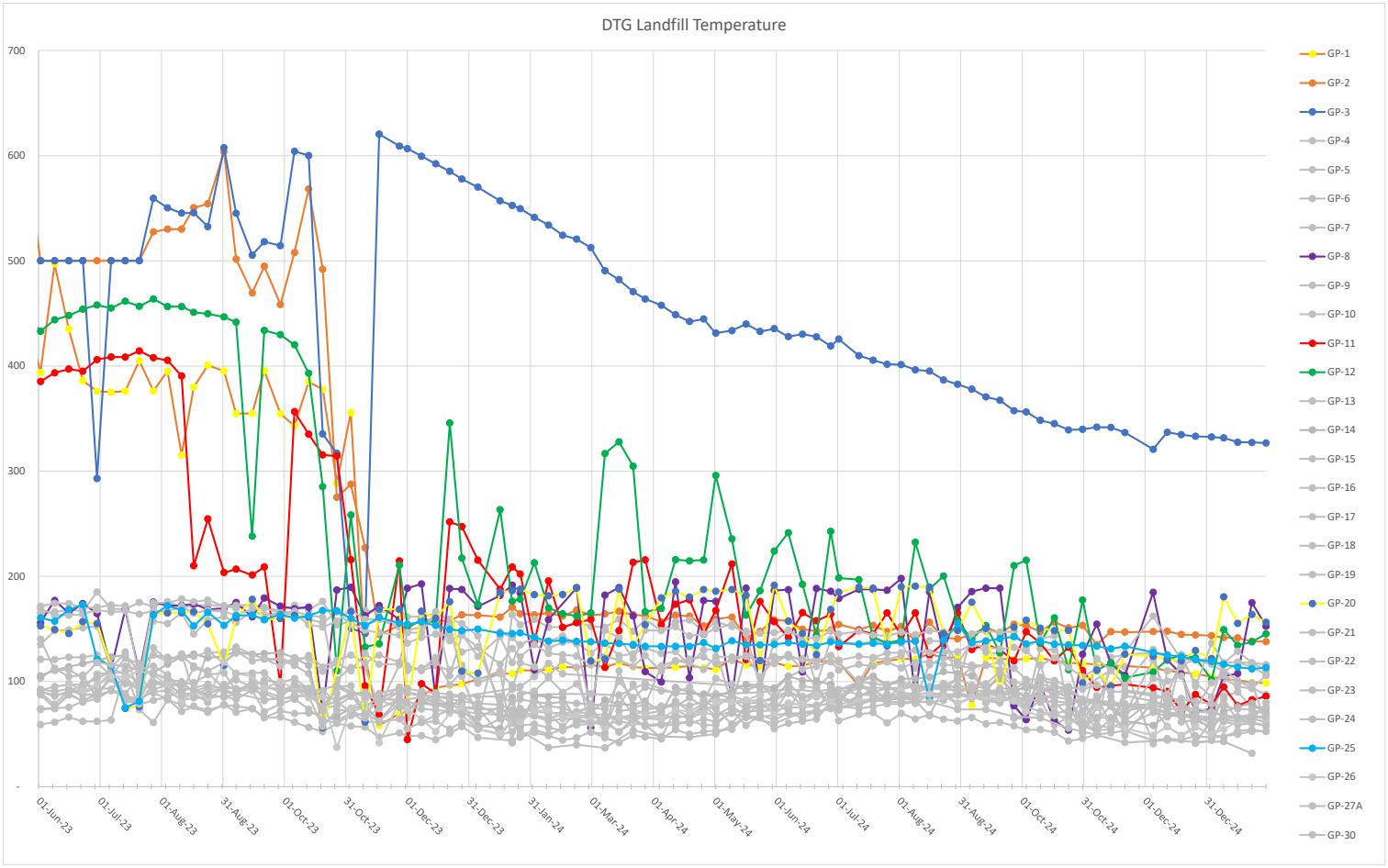
MONTHLY MONITORING SUMMARY SPATIAL MAPS - CO

DRAWING NO.	REV	SHEET
LFCI-2023-001-01-CO	1	1

Temperature (F)

While decreasing, January saw the temperatures in GP-3 decrease only slowly.

All other wells have remained low, with some variability possibly caused by atmospheric pressure swings.

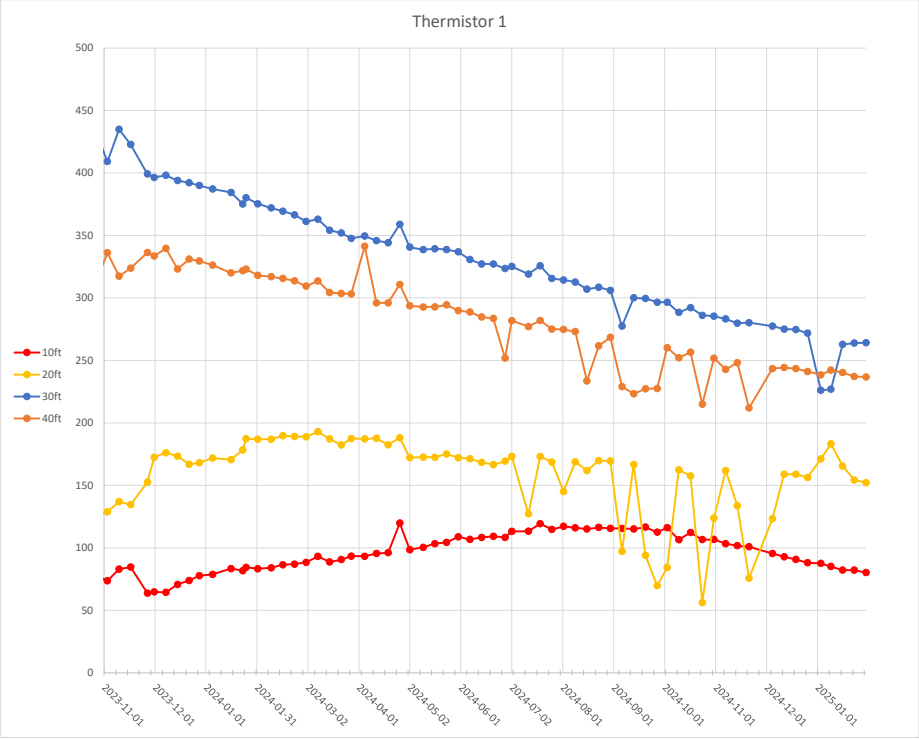


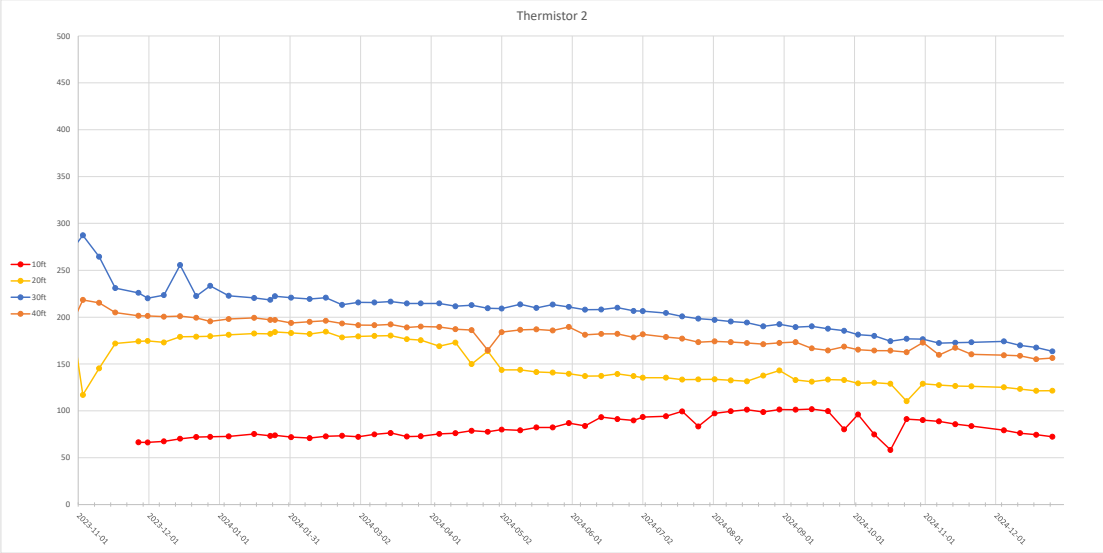
Thermistor Temperatures

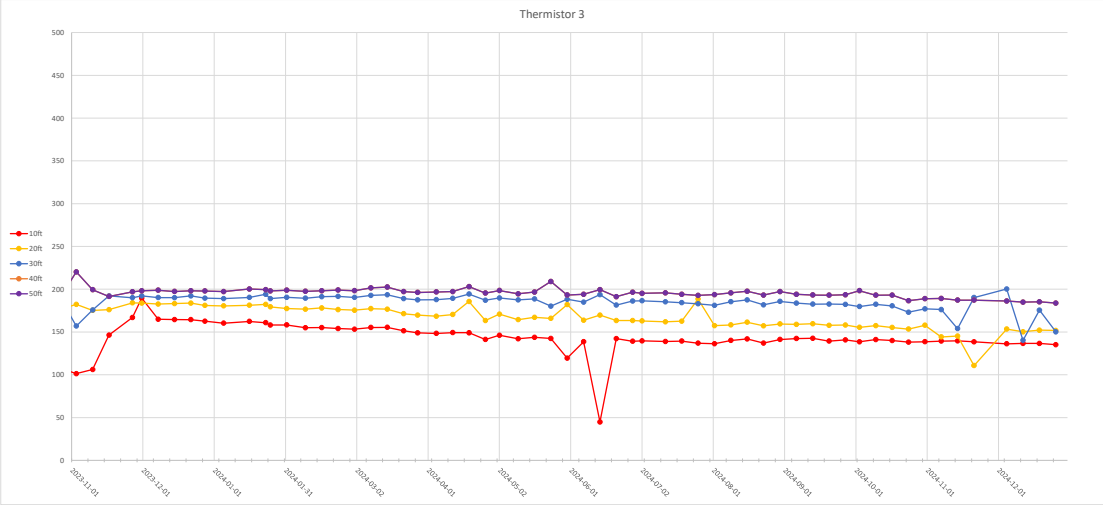
Thermistor temperatures mostly stable, with downward trend in T-1 and T-2, and the levelling trend in T-3 continuing. Monitoring of T-1 is recommended to ensure no major changes. Noted that the deeper measurement of 20ft below surface is cooler than measurements at 10ft depth but oscillations indicate there is an issue with the temperature readings at 20 ft. on T-1. Consideration should be given to installing a dedicated thermistor.

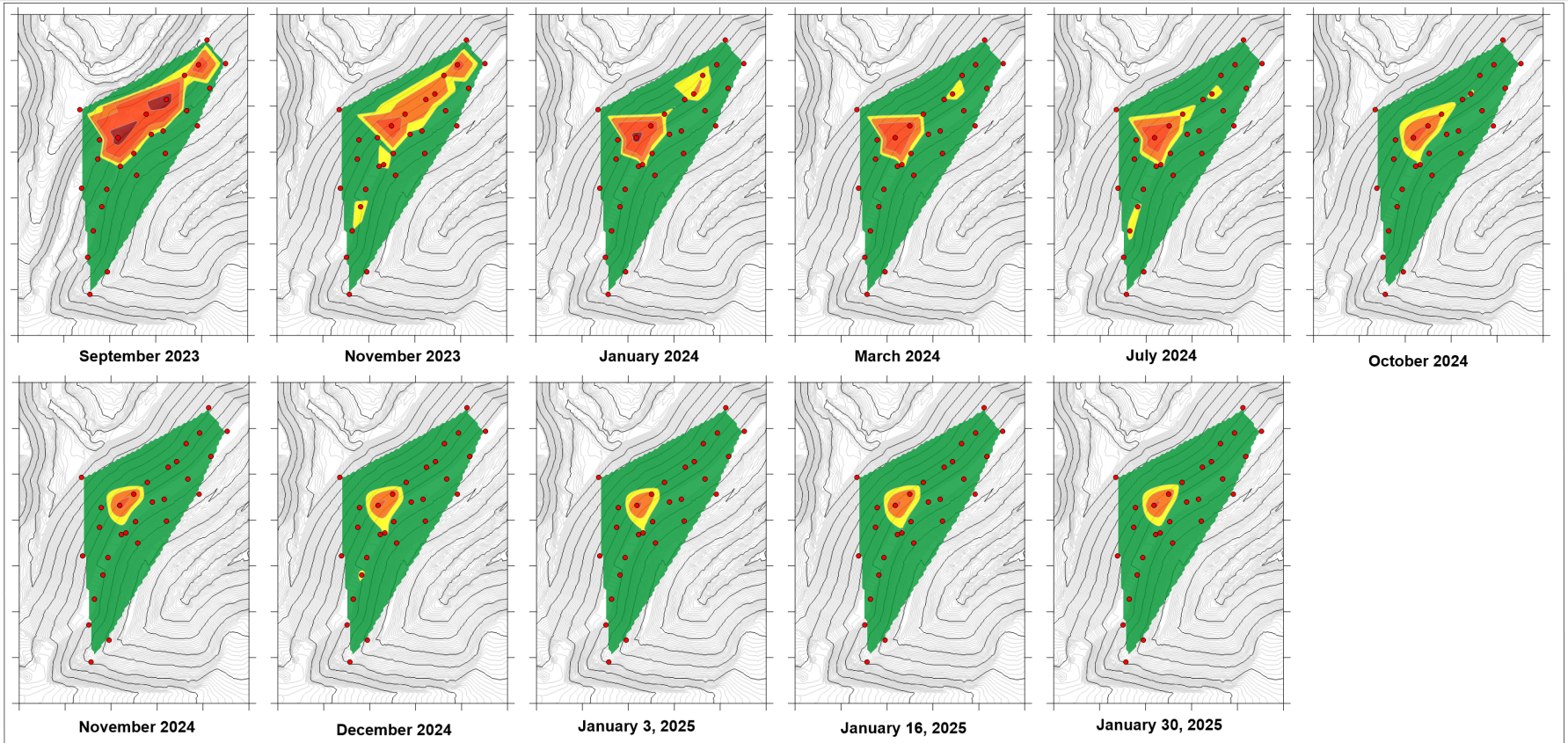
Rate of thermal decrease is very slow, 50 degrees every 4 months. We project about 2 years will be needed to get to desired baseline levels around 122F without additional cooling effort.

Spatial heat map confirms that cooling trend continues across landfill, with hot spots shrinking in size.









- Data taken from first monitoring event of each month unless noted otherwise
- Data has been interpolated between data points
- Datapoints (probe locations) represented in red
- Temperatures are measured in Degrees F
- Ground contours are of existing ground at beginning of project, with design contours added for after addition of fill

No.	DATE yr/m/day	REVISIONS	DRAWN	CHK'D	APP'D
1	2025/02/03	ISSUED FOR REVIEW	MD	TS	TS

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DATE CREATED:	2025/02/03
SHA PROJECT #	LFCI-2023-001

DTG RECYCLE LANDFILL FIRE

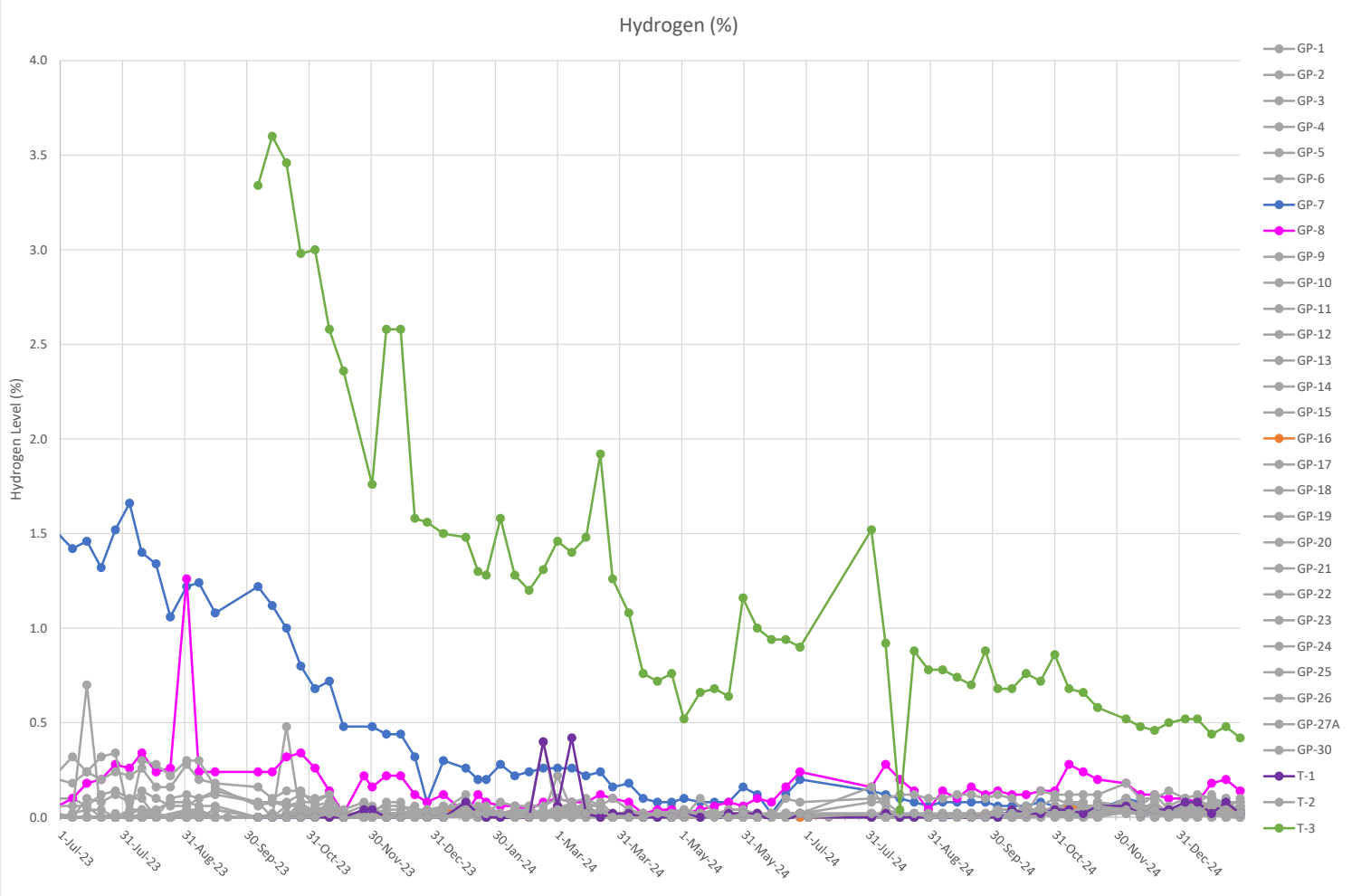
MONTHLY MONITORING SUMMARY SPATIAL MAPS - TEMPERATURE

DRAWING NO.	REV	SHEET
LFCI-2023-001-01-TEMP	1	1

Hydrogen

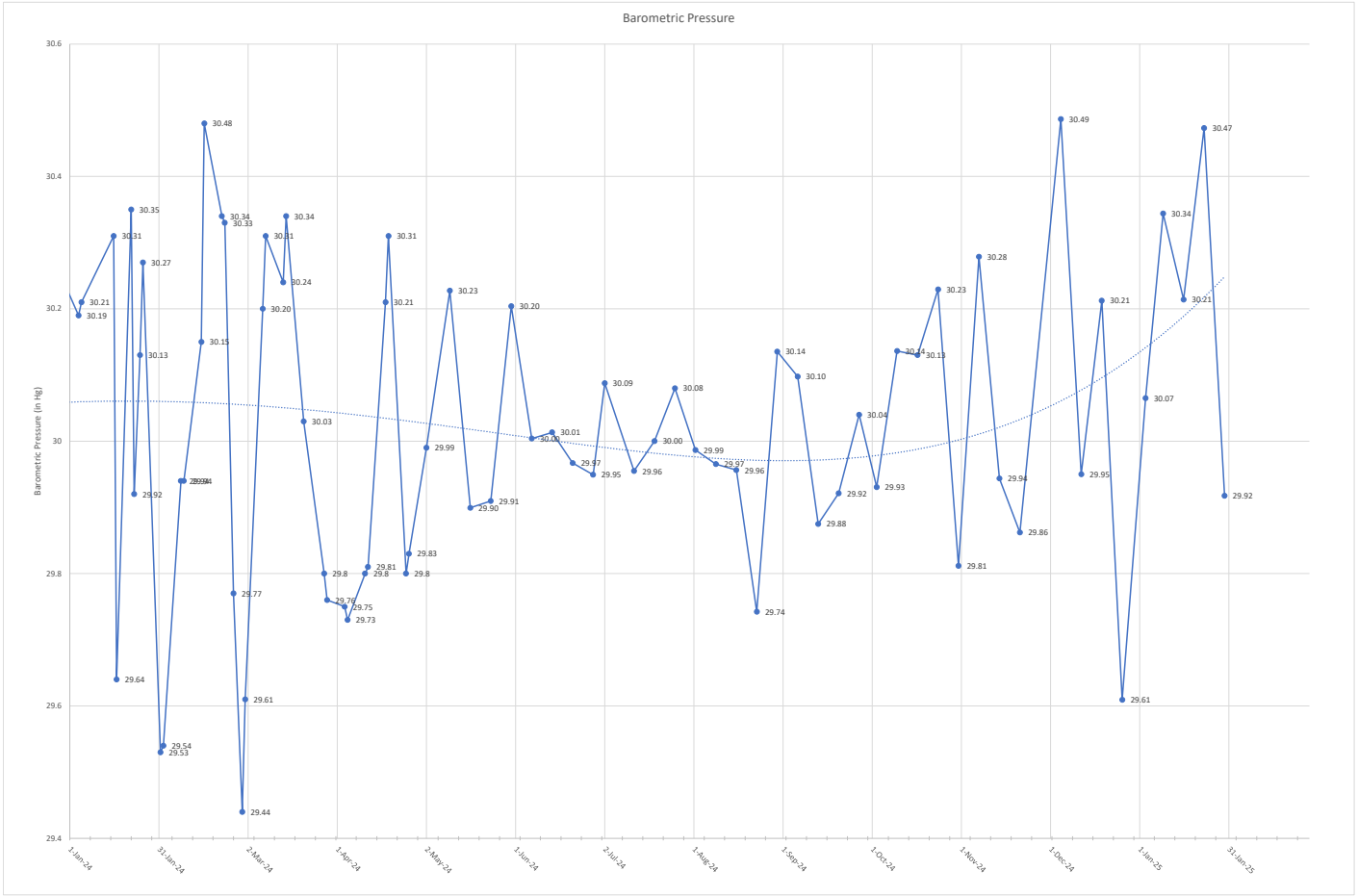
Hydrogen has decreased to just below 0.4% in T-3, and has steadily decreased from 0.8% in mid August of 2024.

Hydrogen remains very low in all other wells. Production of H_2 is often observed with smoldering waste. LFCI believes that the level of H_2 dropping continues to indicate that the fire is less active.



Barometric Pressure

The site observed large swings in the barometric pressure over the last month. The pressure increased significantly during the first week of 2025, and decreased significantly during the last week of the month.

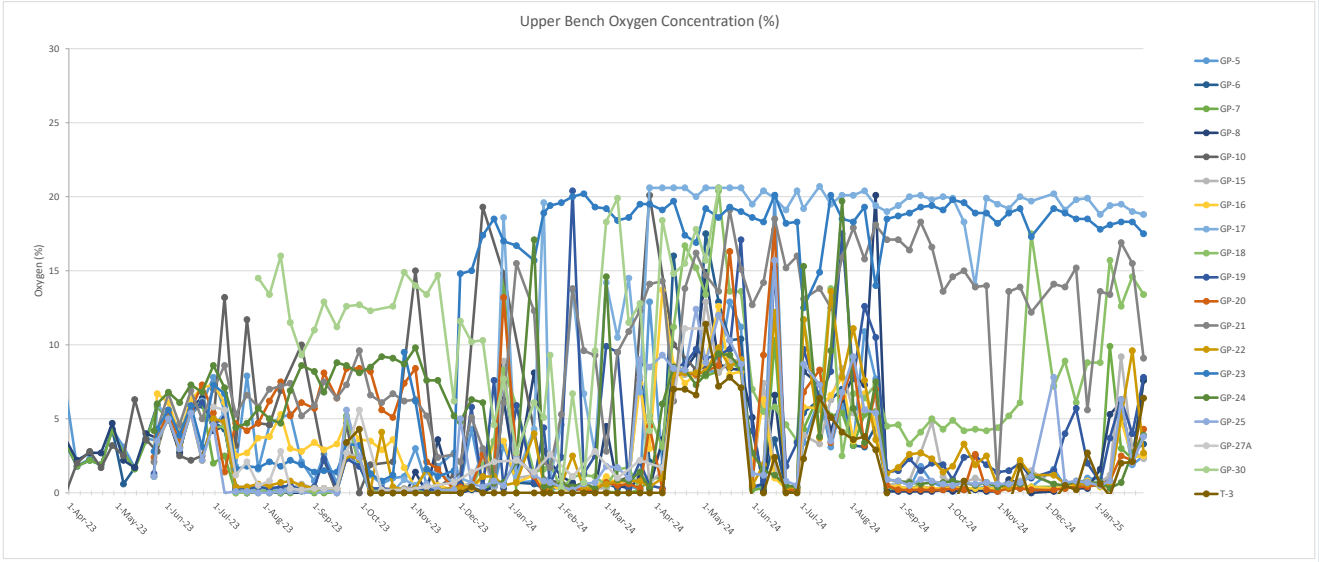


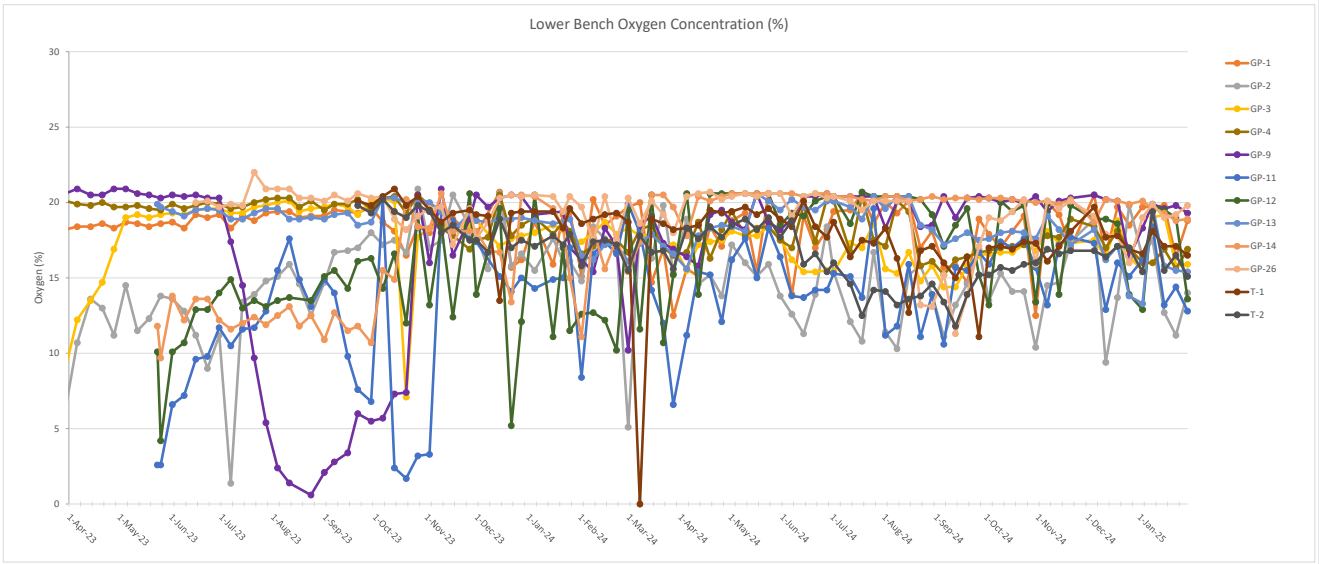
Oxygen

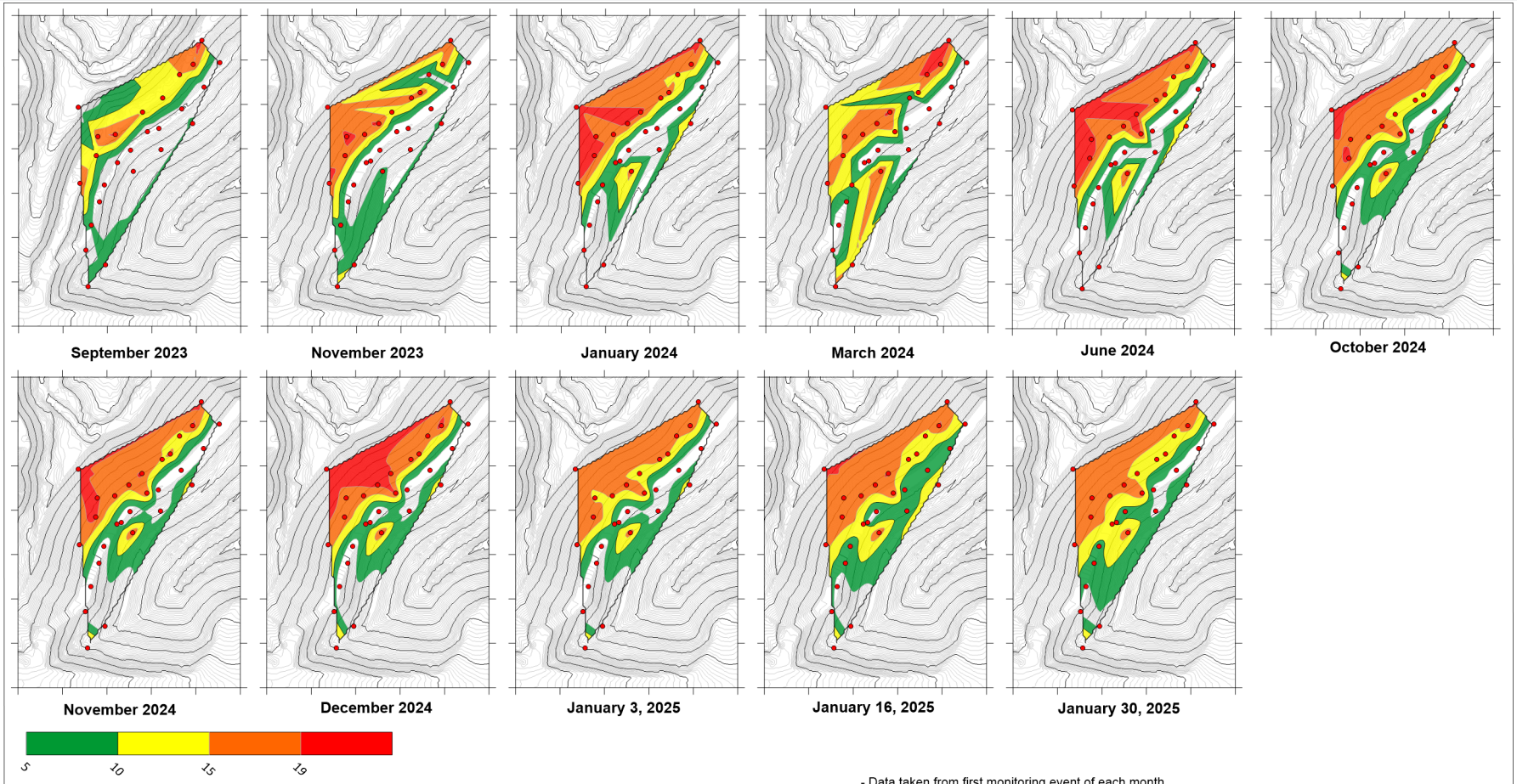
The oldest portion of the landfill is likely relatively inert and biologically inactive, producing very little methane. As a result, the pore space is full of atmospheric air.

Some GPs likely susceptible to swings in pressure – LFCI believes this is causing the spikes. This theory fits with the beginning of January, but the latest upwards pressure spike seems to have brought oxygen levels even higher.

Noted that higher levels of oxygen in GP-9 at landfill toe (>20%) are causing the spatial maps to be somewhat skewed, indicating air intrusion throughout the toe of the landfill. This is likely not a true portrayal of O2 levels within the fill.







- Data taken from first monitoring event of each month
- Data was linearly interpolated between data points
- Datapoints (probe locations) represented in red
- O2 levels are measured in % composition
- Ground contours are of existing ground at beginning of project, with design contours added for after addition of fill

No.	DATE yr/m/day	REVISIONS	DRAWN	CHK'D	APP'D
1	2025/02/03	ISSUED FOR REVIEW	MD	TS	TS

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DATE CREATED:	2025/02/03
SHA PROJECT #	LFCI-2023-001

DTG RECYCLE LANDFILL FIRE

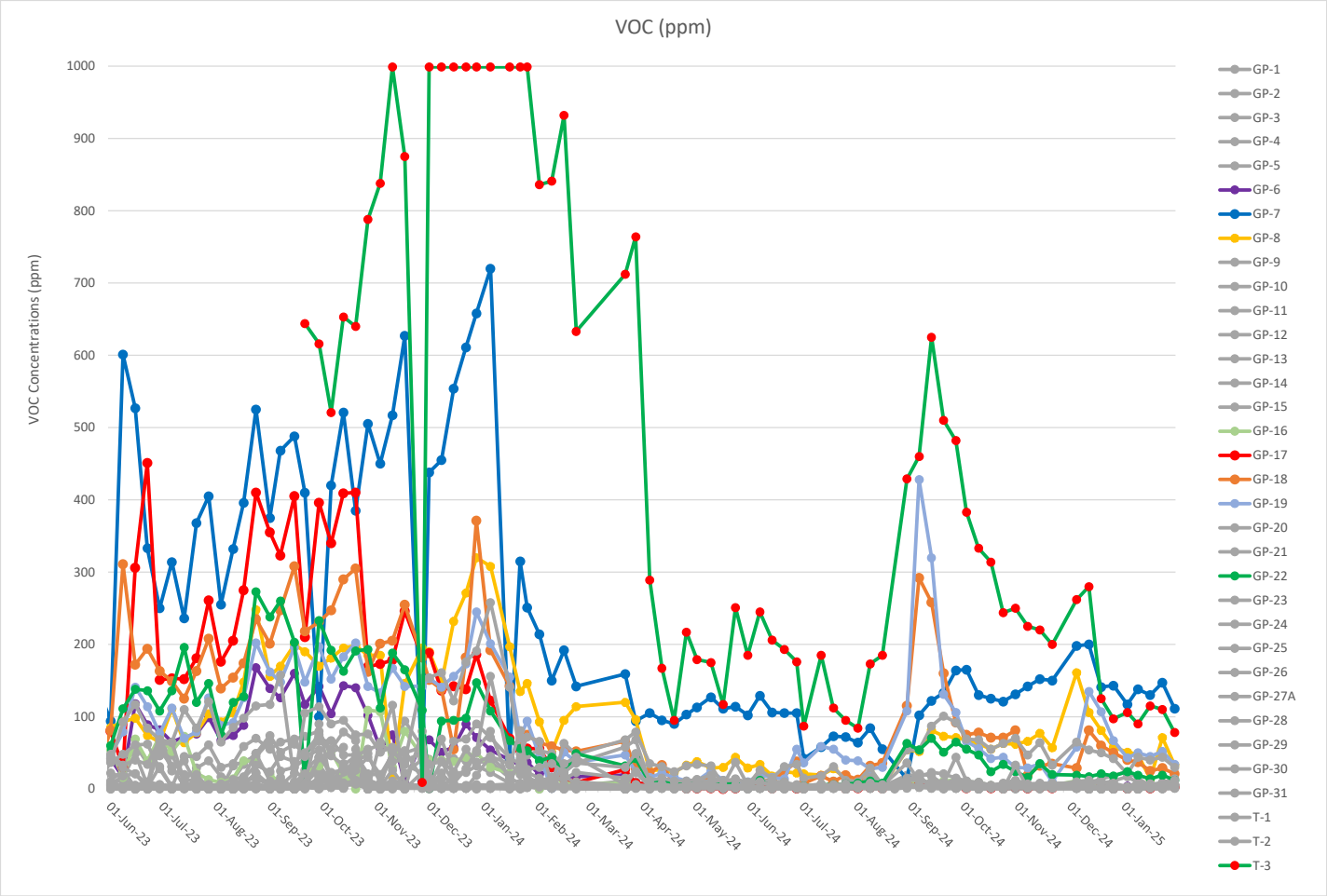
MONTHLY MONITORING SUMMARY SPATIAL MAPS - O2

DRAWING NO.	REV	SHEET
LFCI-2023-001-01-O2	1	1

Volatile Organic Compounds

Increase seen VOC concentration in T-3 in August has continued to decrease even further.

Through January, VOC levels continued to slowly decrease to around 100ppm or below, indicated reduced smolder activity.

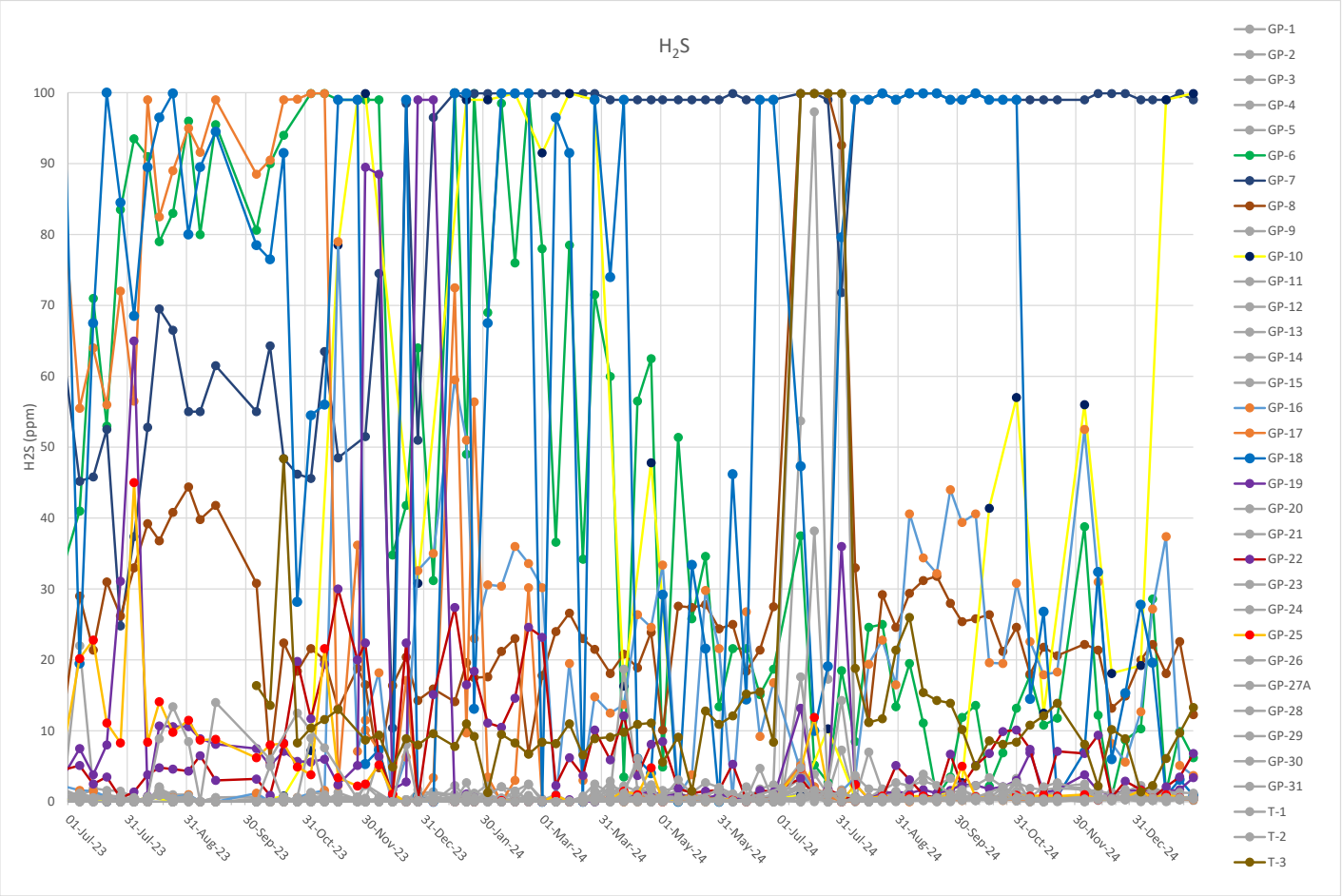


Hydrogen Sulfide

H_2S data continues to be noisy, likely affected by atmospheric pressure fluctuation.

Most locations are low, but GP-10 and GP-7 remain high.

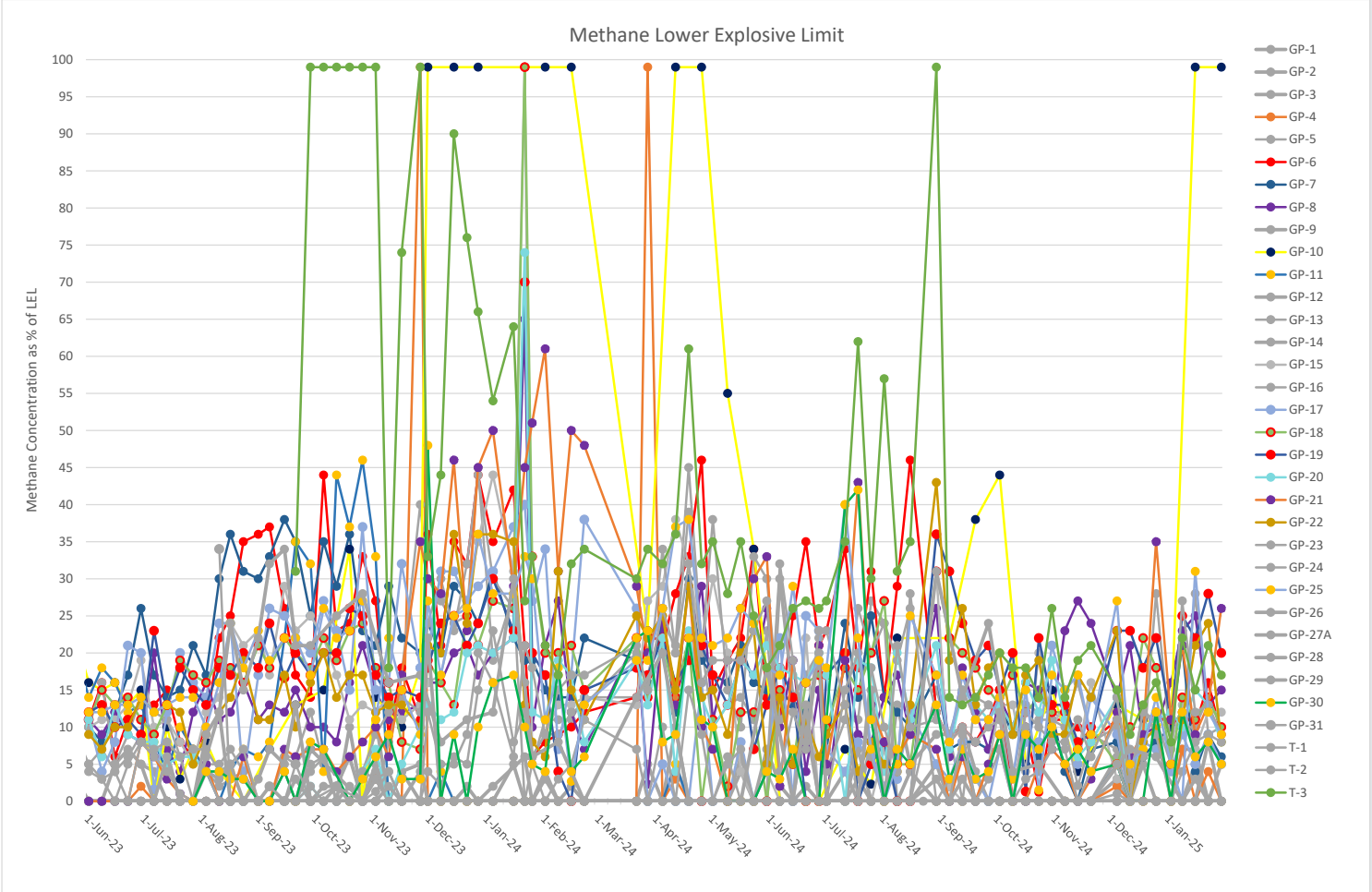
As mentioned previously, it is possible that the H_2S sensor is being impacted by CO cross interference. With CO concentration decreasing, reported H2S concentration is dropping as well.



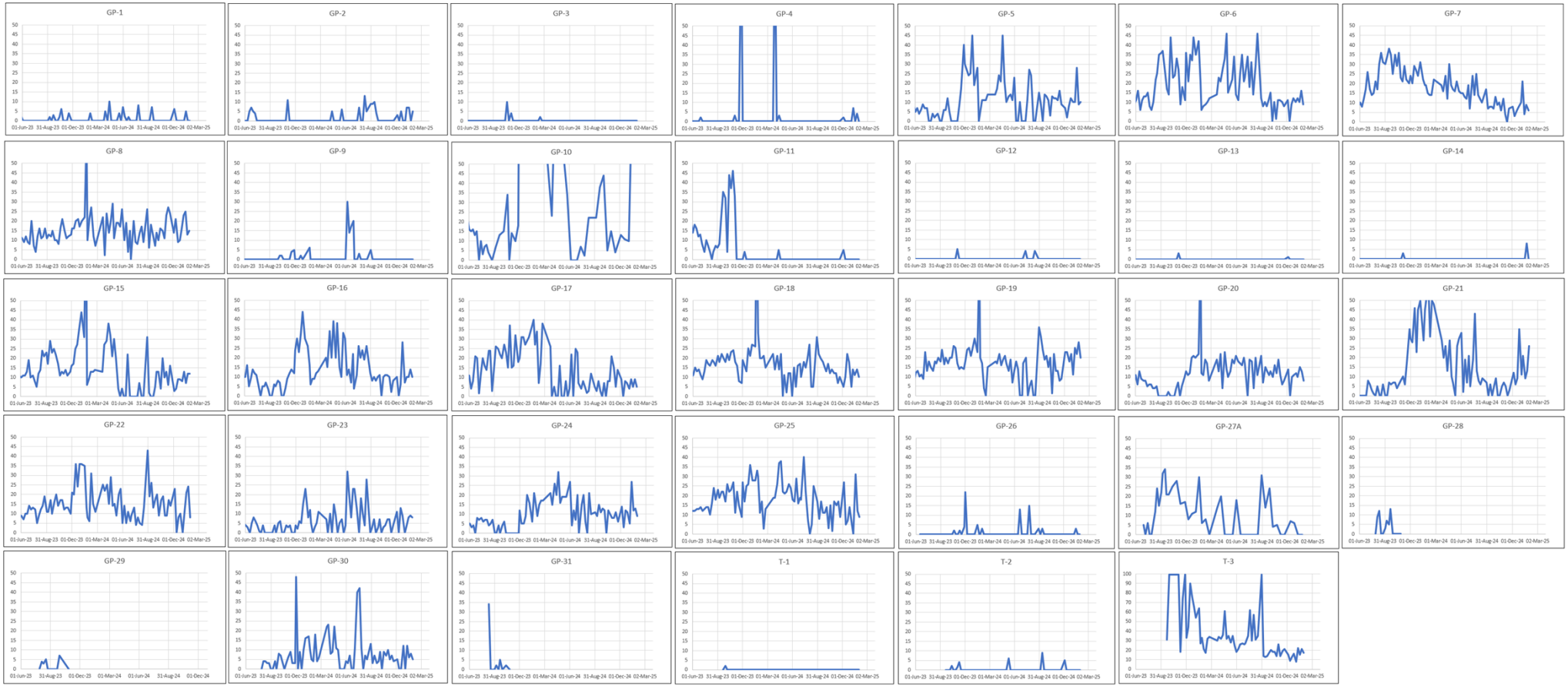
Lower Explosive Limit

Many data points fluctuating wildly – methane composition is a better indicator of levels within the landfill.

Overall stability of LEL within the past month, somewhat higher than previous measurements.



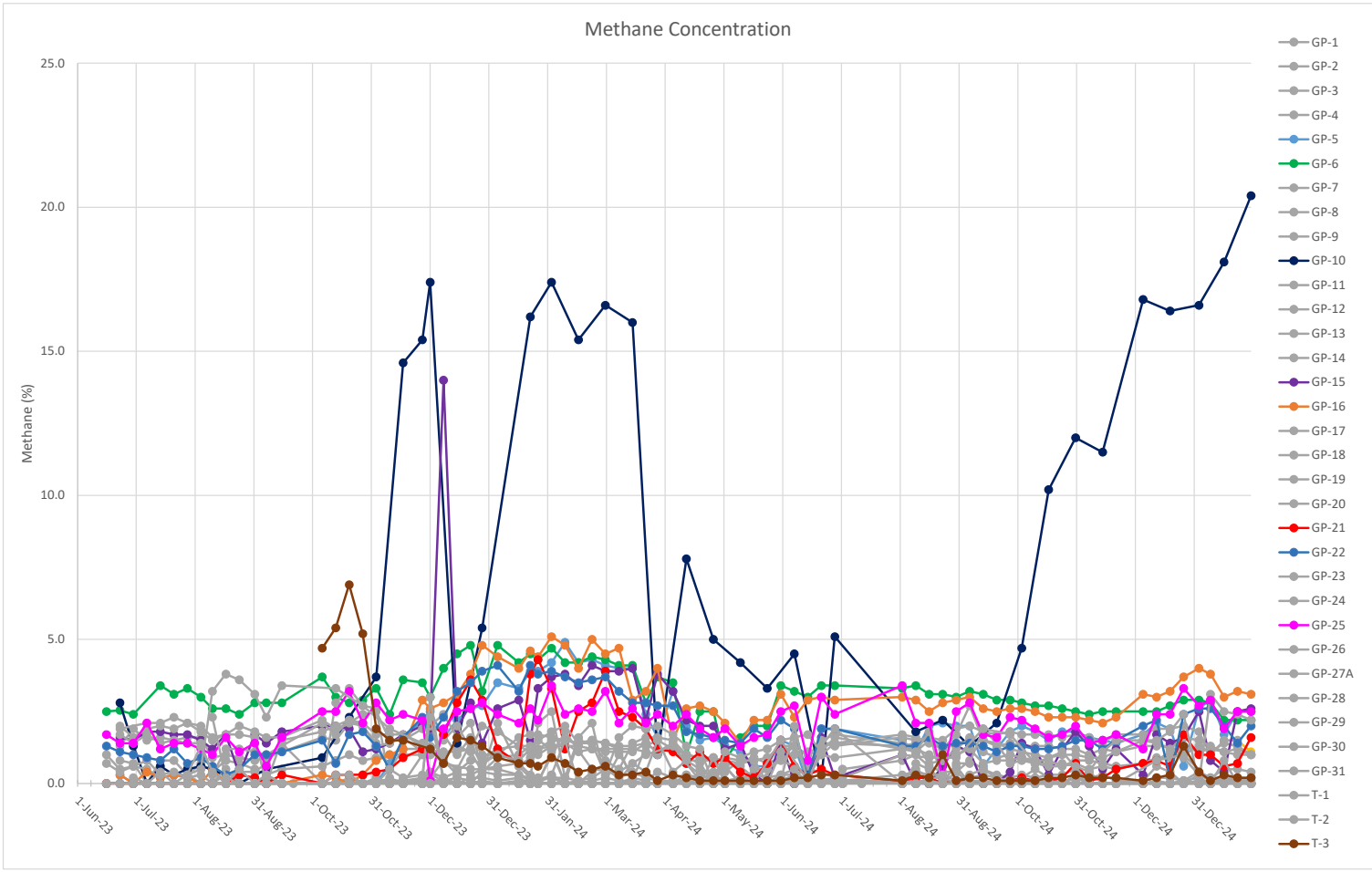
LEL for individual GP



Methane

Methane levels for most wells are converging between 0 and 4% indicating that landfill is not biologically active.

Only well GP-10 is indicating higher methane, now climbing above 20%. Higher methane concentrations are typically observed at this well as it is affected by more recently placed waste that is still in process of decomposition.




LANDFILLFIRE.com
GP-10
GP-21
GP-22
GP-23
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GP-16
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T1
GP-18
GP-19
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GP-20
GP-25
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GP-14
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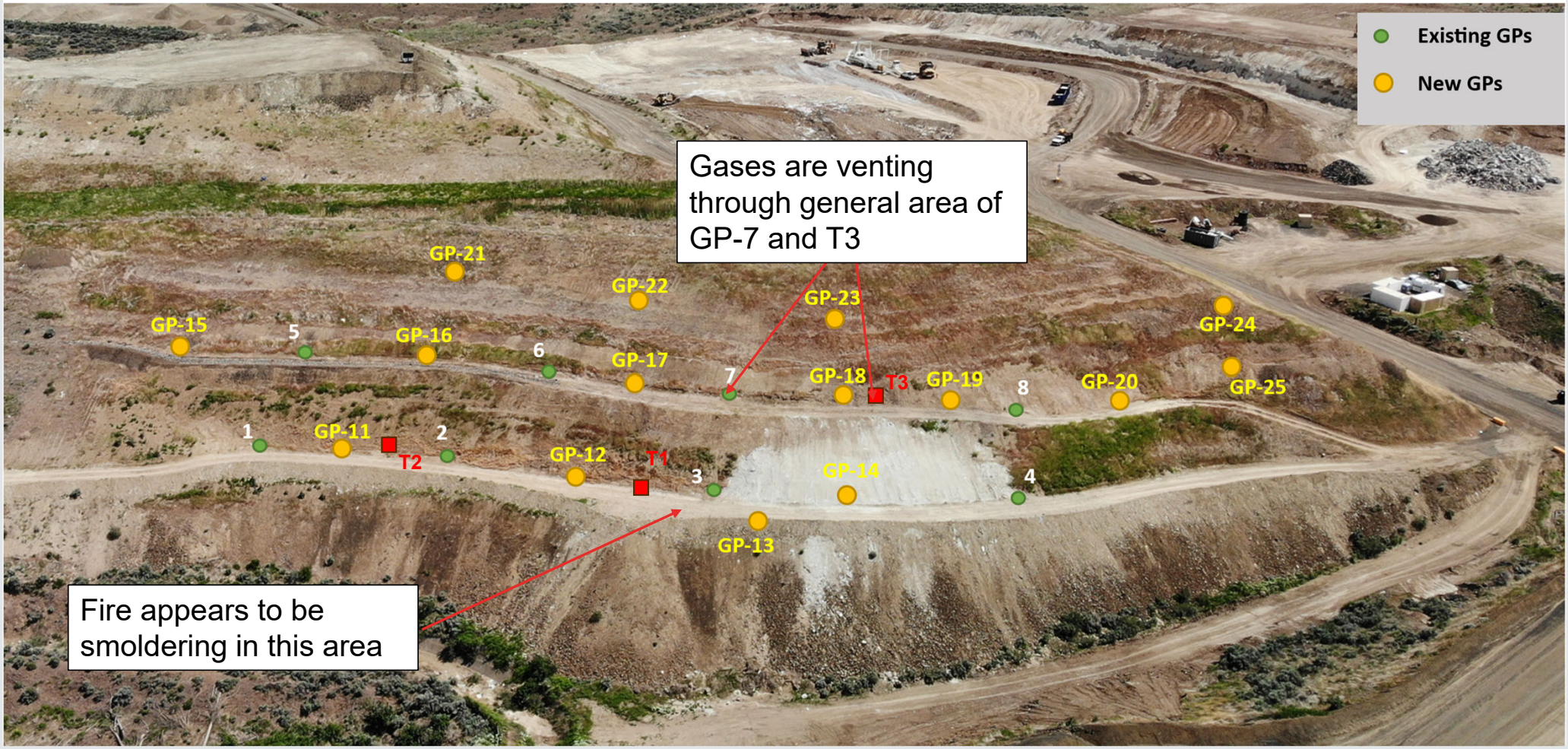
GP-13
Existing GPs
New GPs

Fire Path


Existing GPs
New GPs
Gases are venting through general area of GP-7 and T3
Fire appears to be smoldering in this area
GP-21
GP-22
GP-23
GP-15
5
GP-16
6
GP-17
7
GP-18
T3
GP-19
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GP-20
GP-24
GP-25
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GP-11
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GP-12
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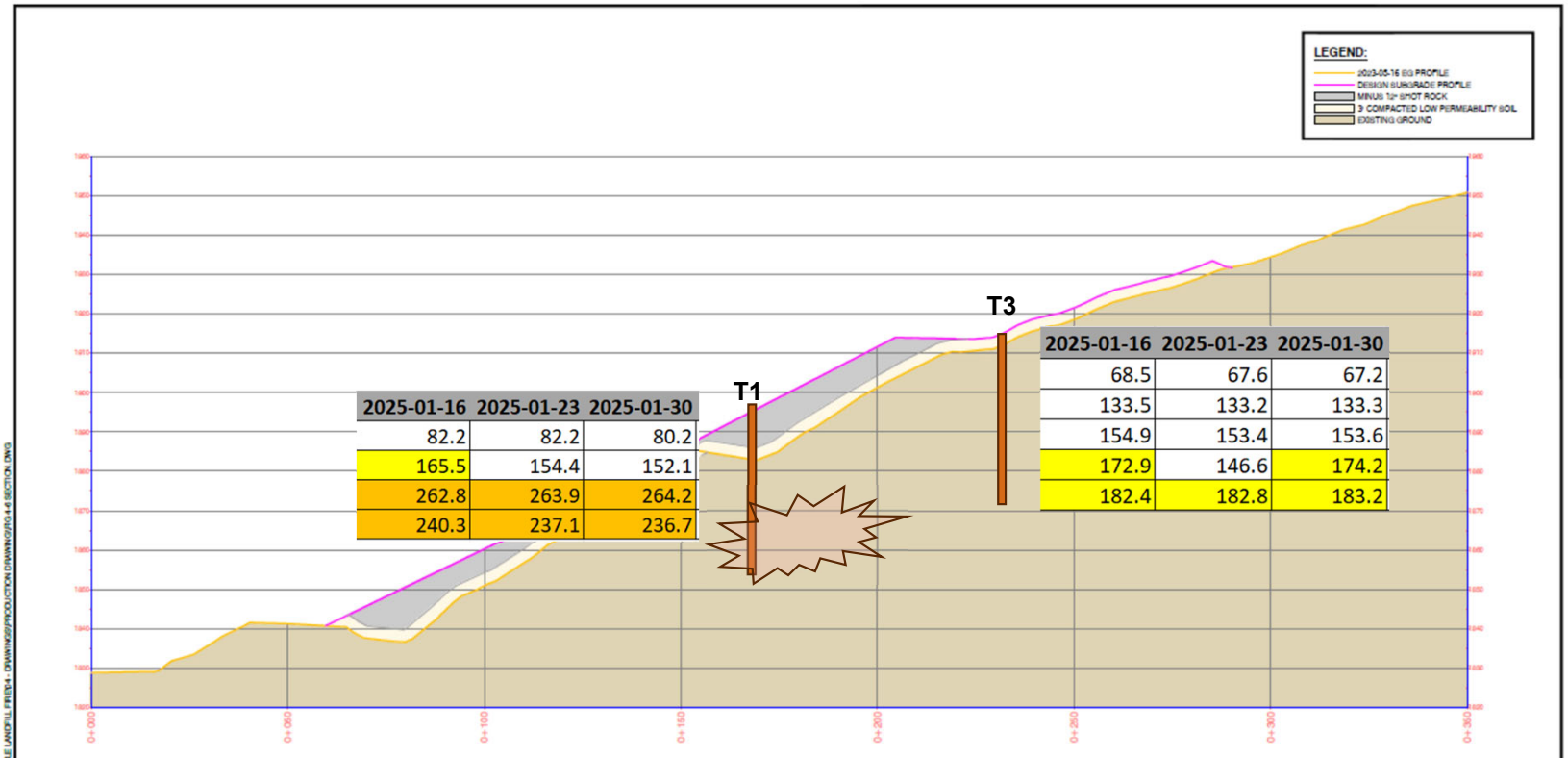
GP-13



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82.2	82.2	80.2
165.5	154.4	152.1
262.8	263.9	264.2
240.3	237.1	236.7

2025-01-16	2025-01-23	2025-01-30
68.5	67.6	67.2
133.5	133.2	133.3
154.9	153.4	153.6
172.9	146.6	174.2
182.4	182.8	183.2

SECTION B - B'

H - 1" : 25'

V - 1" : 25'

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APPROVED BY:	–	VERTICAL SCALE:	1" = 25'

ADJUST SCALE 50% FOR 24"x32" SHEET

DTG RECYCLE LANDFILL FILE

SECTION B-B'

DRAWING NO.	REV	SHEET
2023-001-005	–	005

Data Interpretation

LFCI believes that suppression efforts continue to work, but slowly. CO levels and temperatures have decreased dramatically since cover fill was placed. Temperatures continue to decrease, and CO has dramatically decreased over the past few months.

In LFCI experience, CO has been best indicator of suppression at other landfill sites.

High O2 continues to fluctuate - this is likely due to large atmospheric pressure swings and pervious waste mass allowing entry of ambient air.

Temperature has dropped significantly all around, GP-3 continues to fall, albeit slowly in January.

LFCI believes that the waste continues to smolder underneath GP-3 and T-1 (elevated temperature) but the rate of smolder is steadily decreasing. Also, a ‘chimney’ effect is occurring, causing higher levels of indicator gases T-3 and GP-7.

LFCI believes that with the placement of the soil wedge gas flow southward has become the preferred migration path for combustion gases from the smolder at T-1, resulting in elevated readings in GP-20 area.