April 10, 2024

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 – March

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 March 2024 to implement the requirements of this AO.

Activities:
On-site activities included weekly ambient and gas probe sampling. The once per month regulatory review meeting was also held on March 21, 2024 to assess conditions and the data. The data summary through March 2024 from Landfill Fire Control, Inc. (LFCI) is attached.

Air sampling was performed March 26-28, 2024. Samples are undergoing laboratory analysis which will be assessed and reported.

Revisions to Limited Remedial Investigation (RI) Work Plans have been underway in accordance with the January 22, 2024 Ecology letter and the January 26, 2024 review meeting with Ecology. Work Plans and revisions to date include:

- Thermistor Work Plan (work and report completed)
- Air Sampling Work Plan (work completed, awaiting lab analysis)
- Air and Landfill Gas (LFG) Sampling and Analysis Plan (Submitted March 21, 2024 in conjunction with the Air Sampling Work Plan)
- Groundwater Sampling/RI Work Plan (work scheduled for Q2/Q3 2024)

Arrangements have been progressed for the execution of the Groundwater Sampling/RI Work Plan, including well drilling scheduled to begin in May 2024.

Deviations from Plans (if any):
Not all the originally planned puff samples were possible due to remote power limitations. Additionally, one of the background puff samplers shutdown during sampling which prevented the sample from being taken. The deviations will be addressed in the air sampling report.

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.

Air sampling data will be provided once received from the laboratory.

Deliverables for the Upcoming Month:
Deliverables will include:

- Air Sampling Work Plan results
- Weekly ambient and gas probe data
- Draft Limited RI Work Plan

Please contact me to discuss any of the above items.

Respectfully,

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

Enclosures: Monthly Data Assessment Report DTG Yakima Landfill Fire Incident – March 2024

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

April 8, 2024 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 – March 2024

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 heat and CO within the monitoring area and presents the data collected, highlighting trends and interpreting the results.

Considering the available data, the oxygen suppression appears to be working, but the fire suppression response is slow on account of low biological activity within the landfill. Nevertheless, the highest observed temperatures at GP-3 continue to decline at a steady rate. Temperatures and CO concentrations at the most bar hole punch locations continue to trend downward, with only T-3 remaining at elevated CO concentration.

Plotting of the temperature and CO data in plan view clearly shows that the area affected by fire has markedly decreased over time. Based on the available data, LFCI believes that a small smolder continues to be active in close proximity to GP-3, and that the rate of combustion of the smolder is steadily decreasing.

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 200ppm. At that time, monitoring can be decreased for prevention purposes.

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

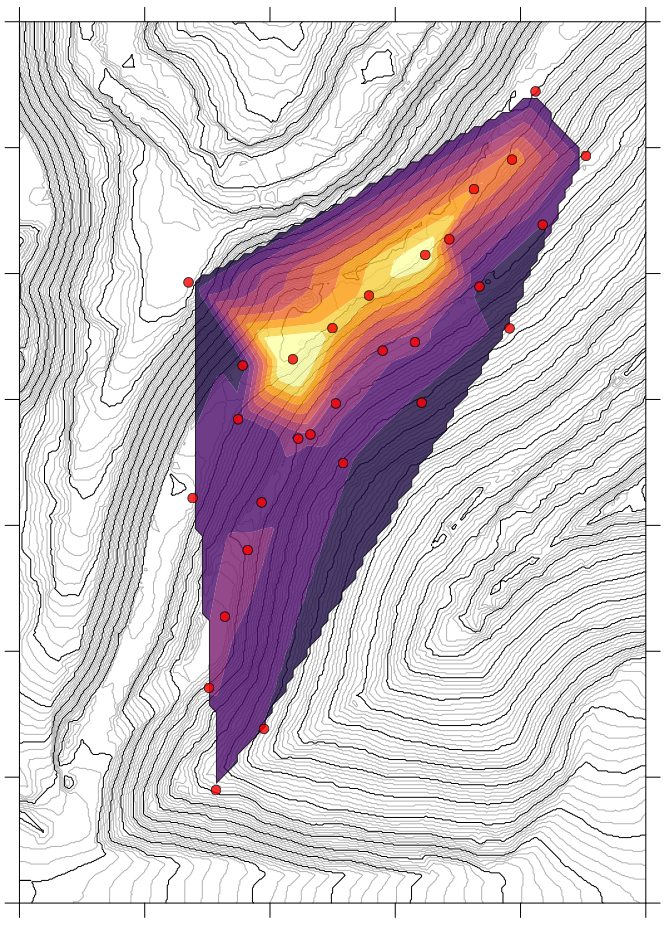
Sincerely,

LANDFILL FIRE CONTROL INC.

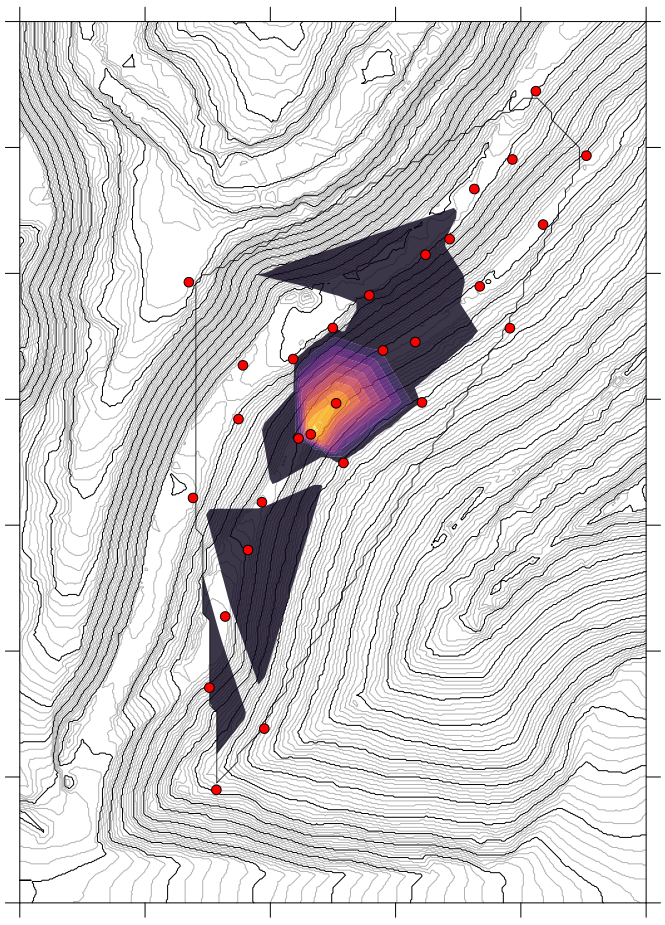
Dr. Tony Sperling, P.Eng.
President

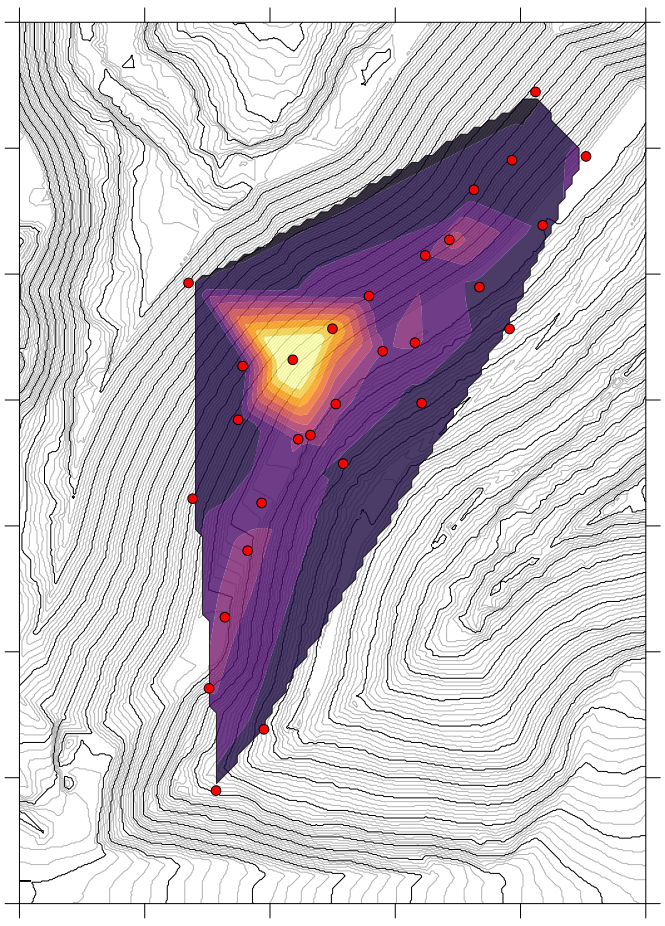
PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA A. SPERLING

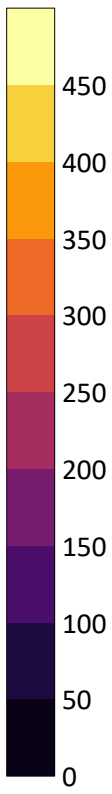
April 8th, 2024



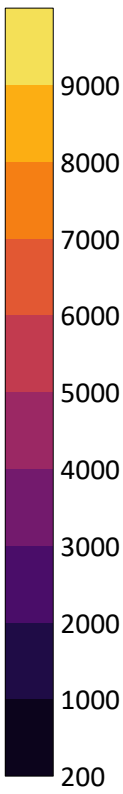
October 6, 2023
Before Cover Fill is Placed

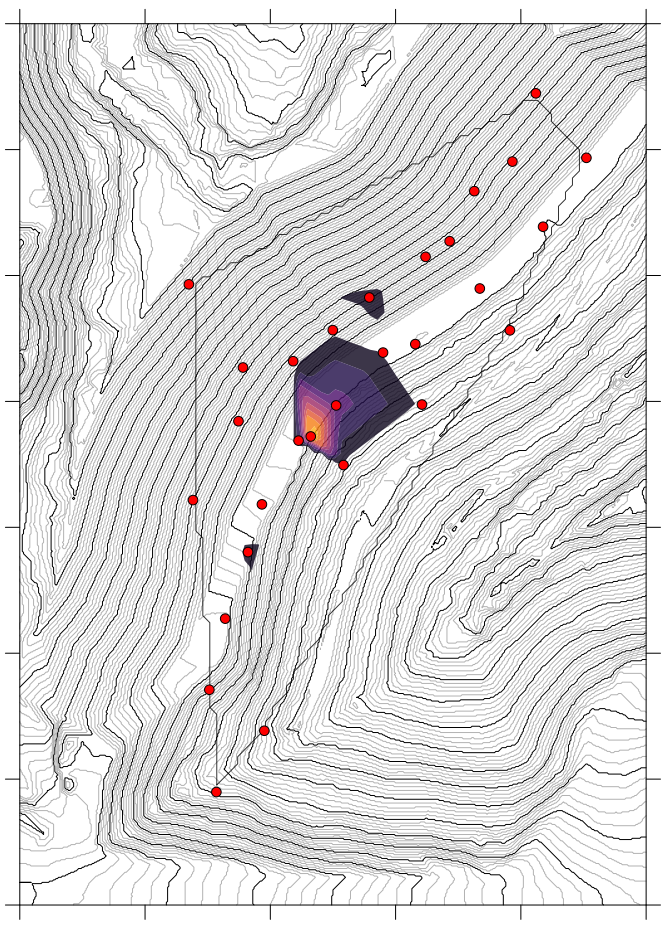


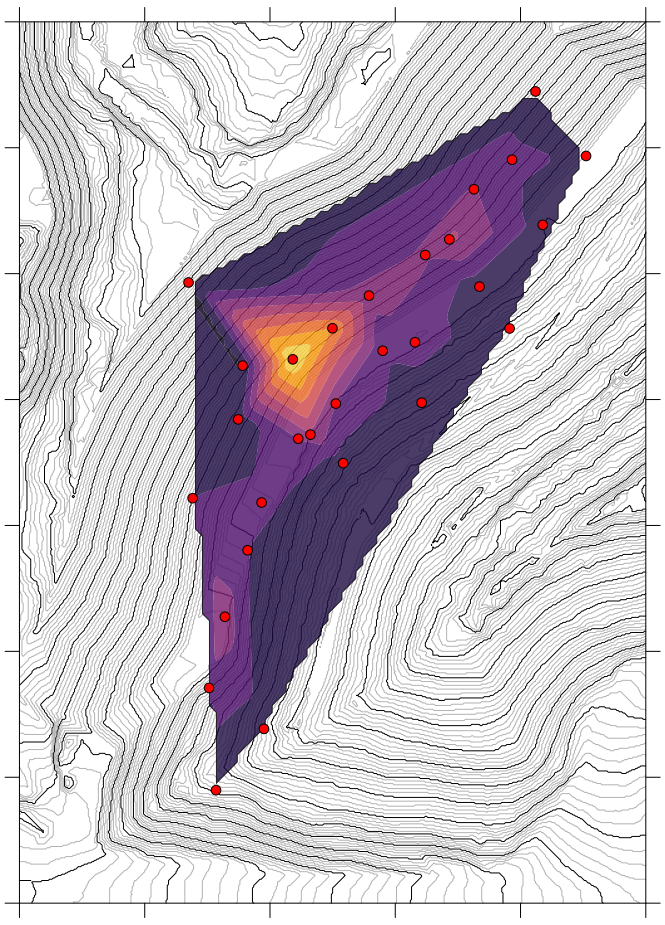




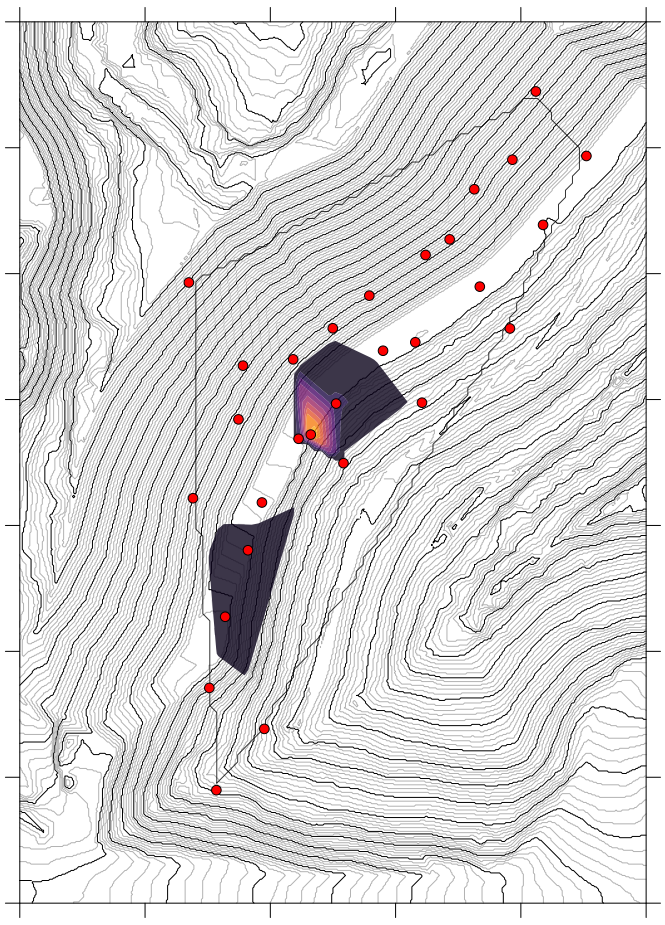
November 17, 2023
After Cover Fill
is Placed







April 5, 2024
Latest Data From 2024



Temperature (Degrees F)

Carbon Monoxide (ppm)

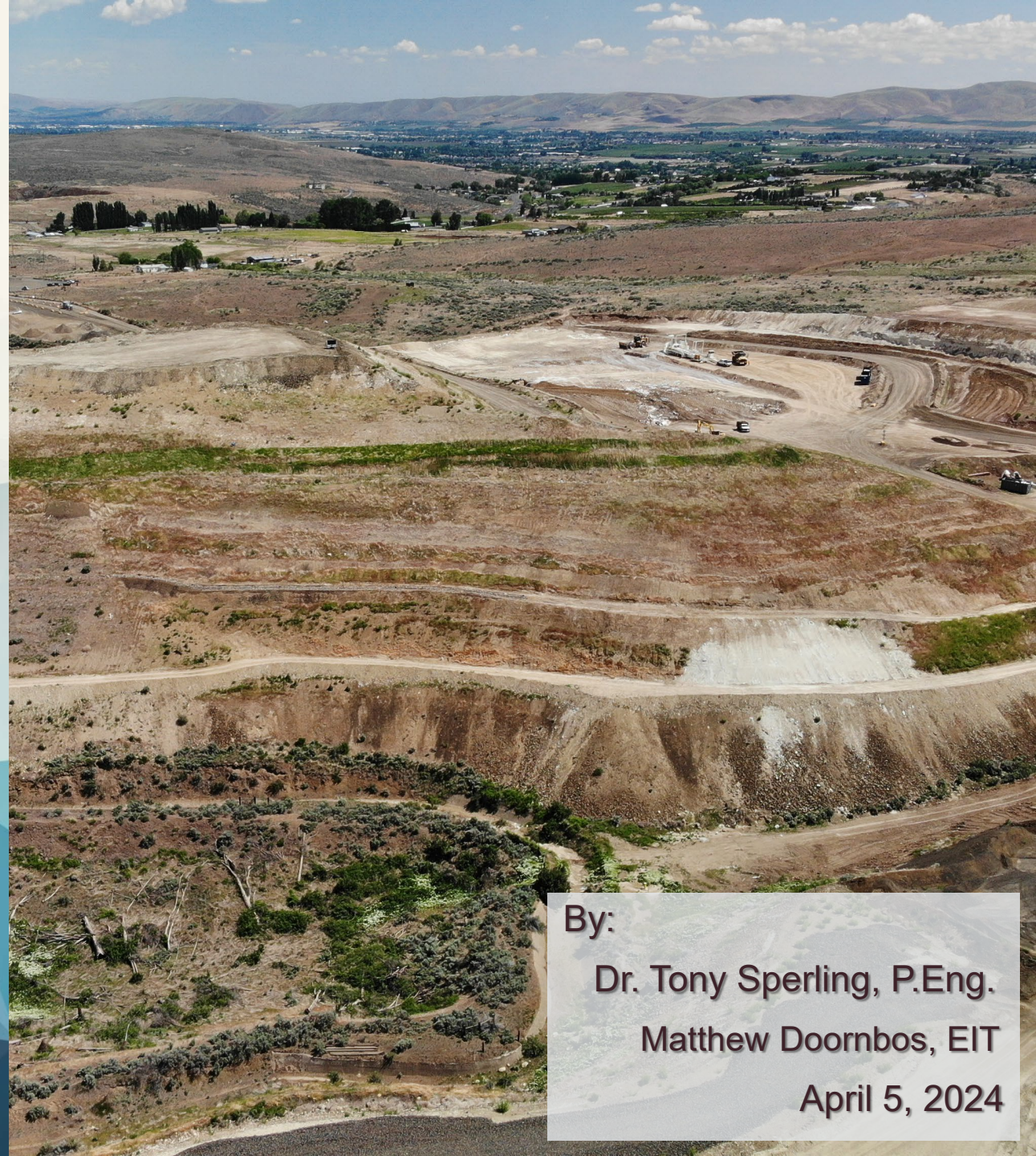
2024 DTG Recycle Landfill Fire
- Note that the heat map is an approximation, due to limited number of datapoints available.
- Red dots represent the location of recorded measurements.
- Contour surfaces for November and April are based off design fill, not surveyed actual.

Designed: MD 2024-04-08
Drawn: MD 2024-04-08
Checked: TS

March Data Trends

DTG LPL LANDFILL FIRE INVESTIGATIONS AND MITIGATION

Monthly Monitoring Data Review



By:

Dr. Tony Sperling, P.Eng.

Matthew Doornbos, EIT

April 5, 2024

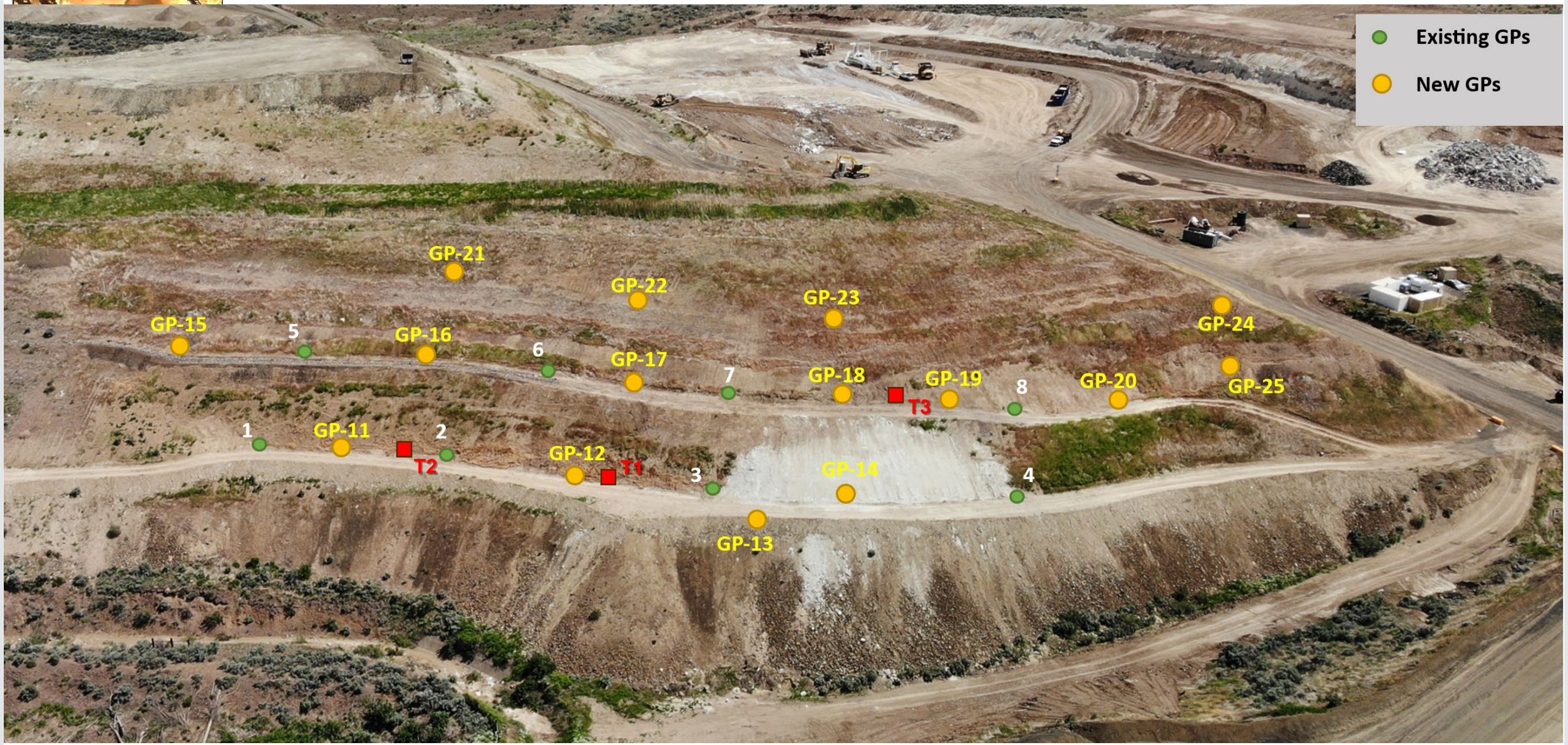
Agenda

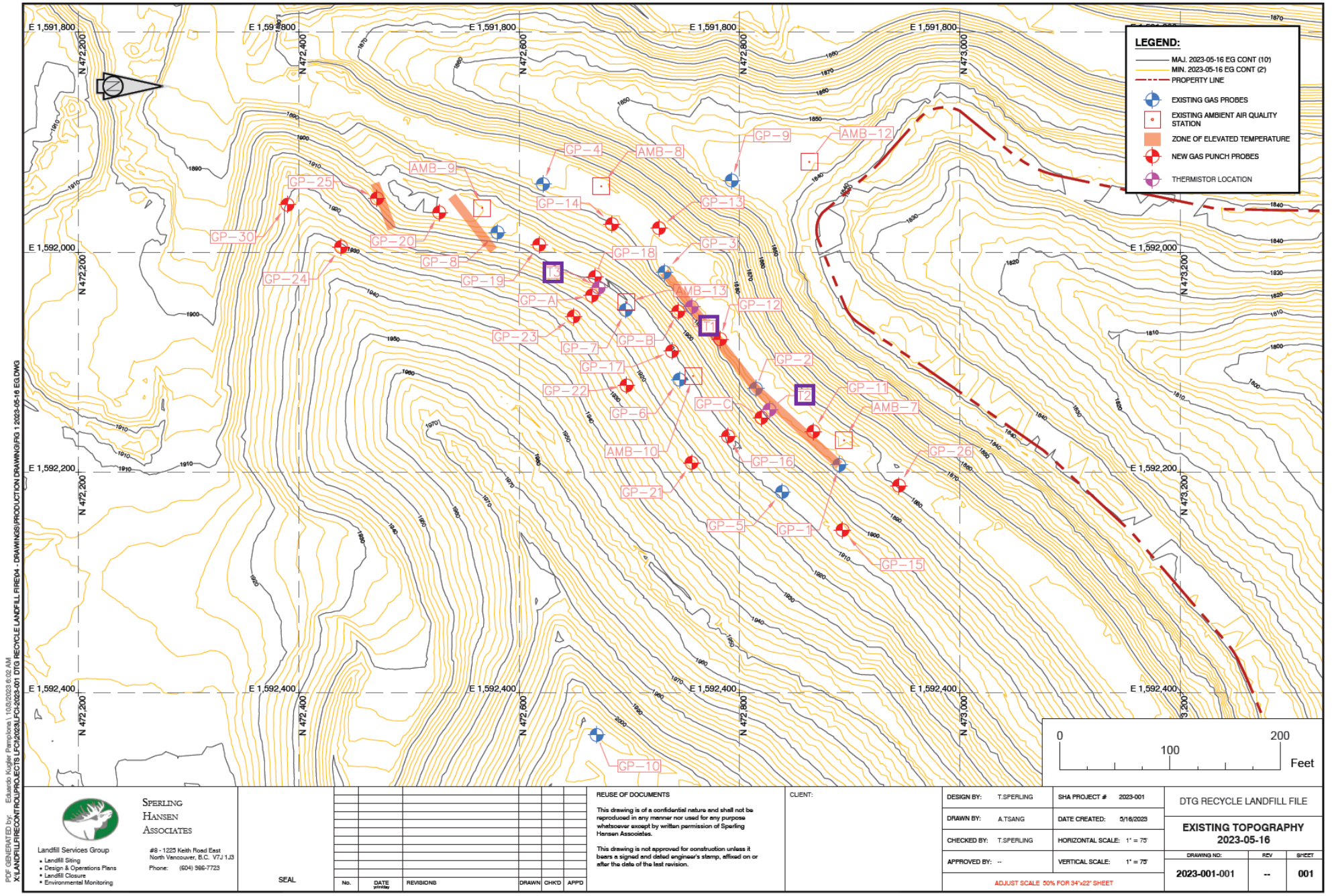
Monitoring Data Review

CO, Temp, $O_{2,}$ VOC, H_2S, LEL, CH_4

Thermistor Temperature Data

Overall Interpretation


LANDFILLFIRE.com
Existing GPs
New GPs
GP-21
GP-22
GP-23
GP-15
5
GP-16
6
GP-17
7
GP-18
GP-19
8
GP-20
GP-24
GP-25
T3
1
GP-11
2
T2
GP-12
T1
3
GP-14
4
GP-13



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X:\LANDFILL\RECONTROL\PROJECTS LFC\2023\LFC1-2023-001 DTG RECYCLE LANDFILL FIRE\04 - DRAWINGS\PRODUCTION DRAWING\FIG 1 2023-05-16 EG.DWG

SPERLING HANSEN ASSOCIATES

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

#9 - 1223 Keith Road East
North Vancouver, B.C. V7J 1J3
Phone: (604) 986-7723

SEAL

No.	DATE (d/m/y)	REVISIONS	DRAWN	CHK'D	APP'D

CLIENT:

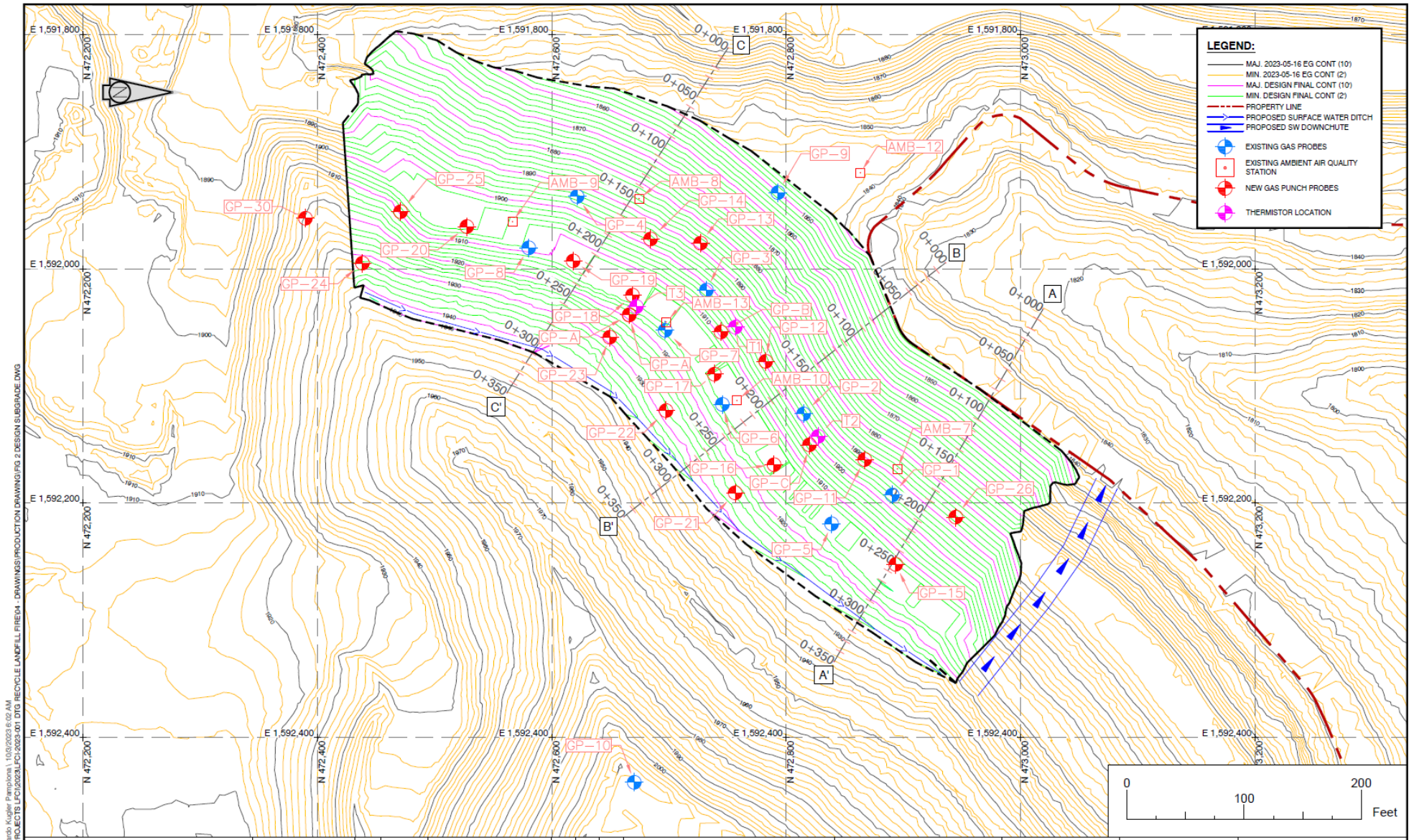
DESIGN BY:	T.SPERLING	SHA PROJECT #	2023-001
DRAWN BY:	A.TSANG	DATE CREATED:	5/16/2023
CHECKED BY:	T.SPERLING	HORIZONTAL SCALE:	1" = 75'
APPROVED BY:	--	VERTICAL SCALE:	1" = 75'

ADJUST SCALE 50% FOR 34"x22" SHEET

DTG RECYCLE LANDFILL FILE

EXISTING TOPOGRAPHY 2023-05-16

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



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X:\LANDFILL\RECONTROL\PROJECTS LFC\2023\LFC\2023-001 DTG RECYCLE LANDFILL FIRE\04 - DRAWINGS\PRODUCTION DRAWING\FIG 2 DESIGN SUBGRADE.DWG

Sperling Hansen Associates

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

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APPROVED BY:	--	VERTICAL SCALE:	1" = 75'

ADJUST SCALE 50% FOR 34"x22" SHEET

DTG RECYCLE LANDFILL FILE

DESIGN SUBGRADE

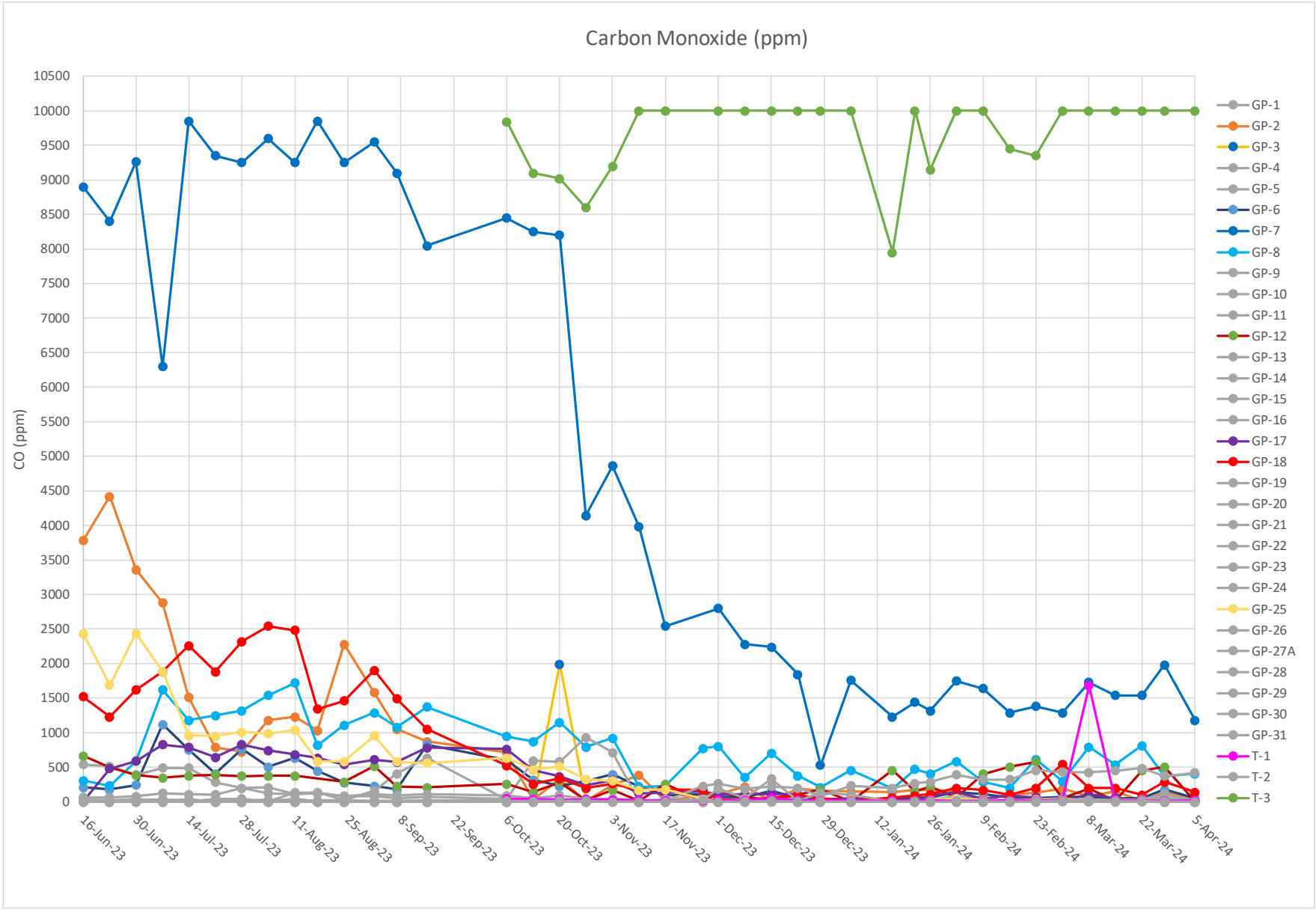
DRAWING NO:	REV	SHEET
2023-001-003	--	003

Carbon Monoxide

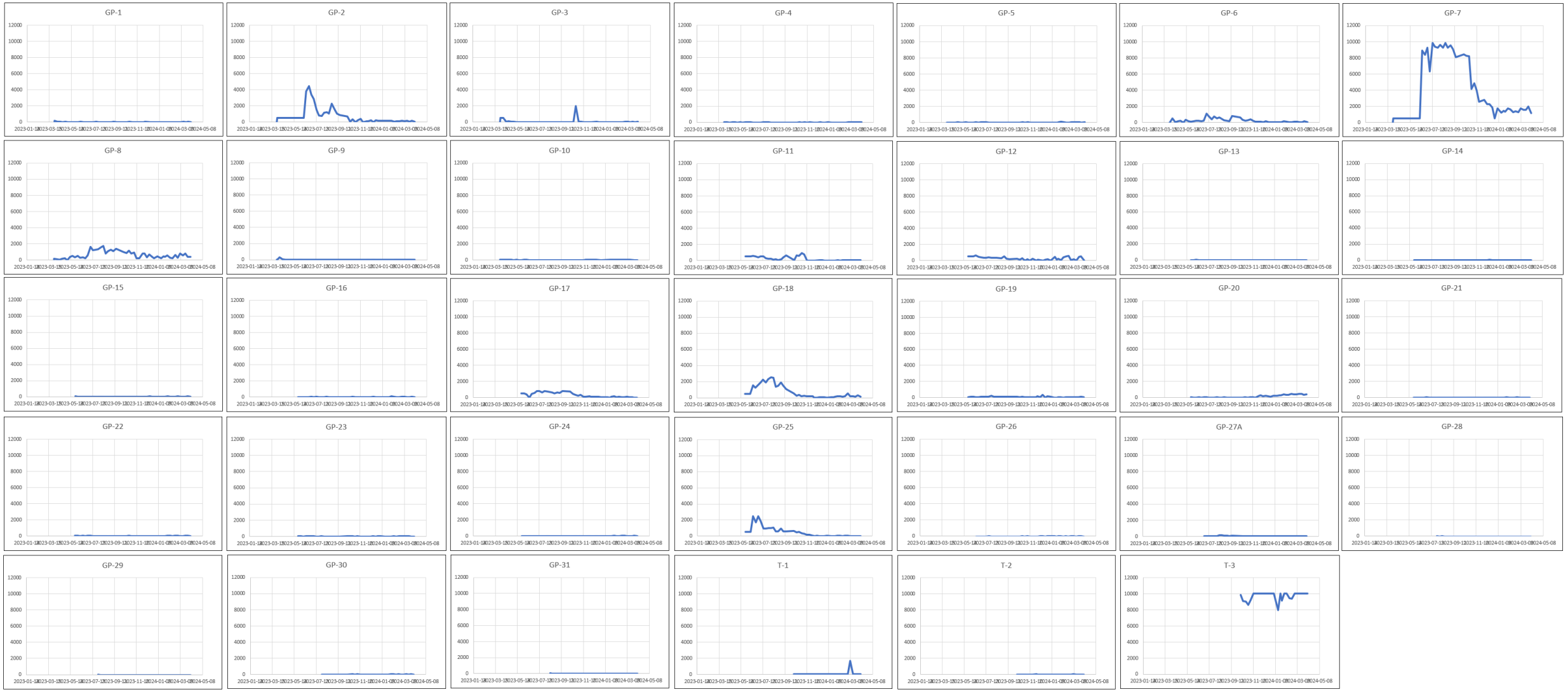
T-3 has remained high, above readable levels.

GP-7 seems to have stabilized around 1500ppm.

Lab-analyzed gas samples should give an indication of where CO is really at in T-3.



CO Levels by Individual Wells

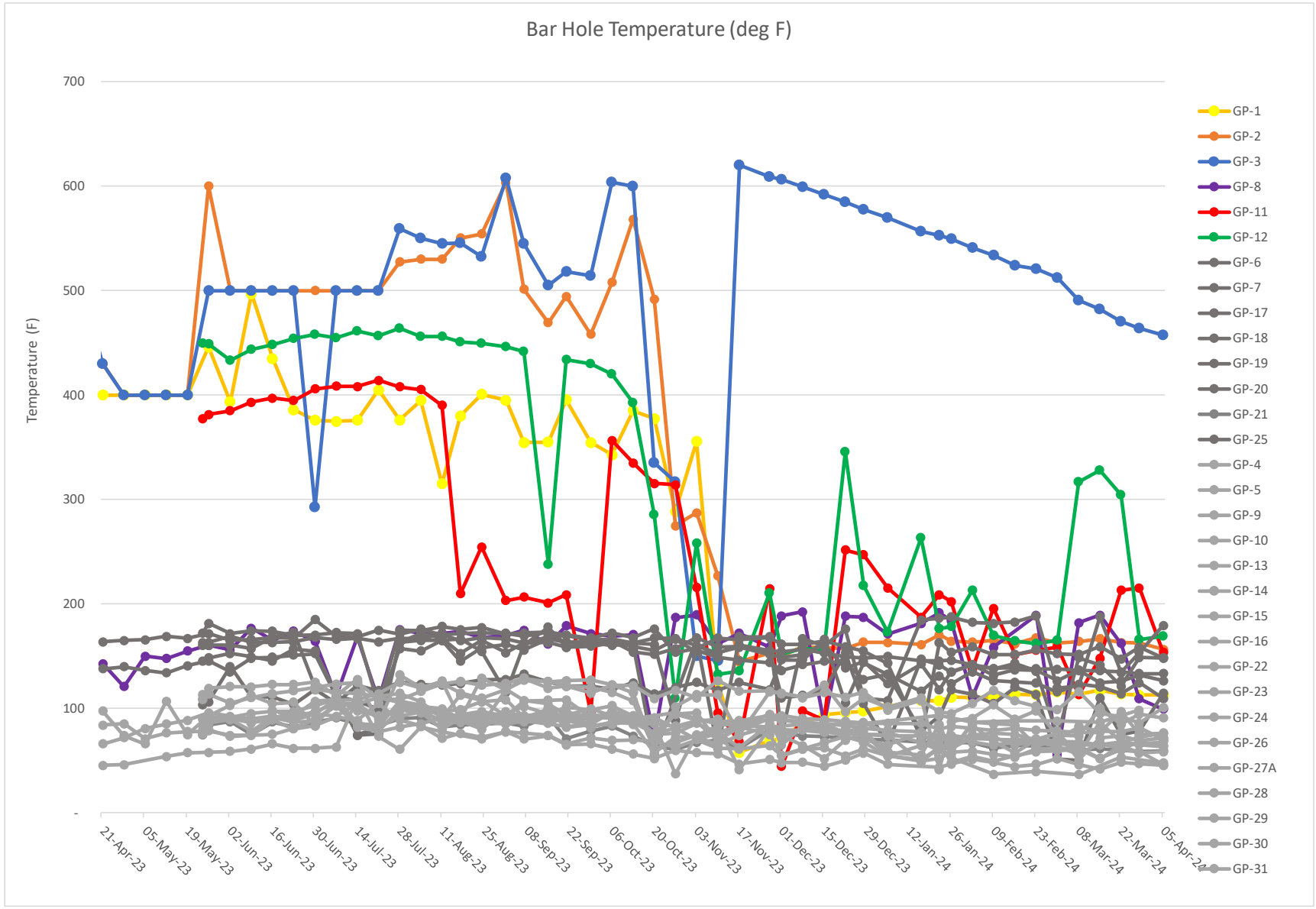


Temperature (F)

Temperature has continued to decrease in GP-3

This matches with higher temperatures in T-1 at 30’ below ground, currently around 350F.

GP-11 and GP-12 rose then fell, may be attributed to pressure swings.

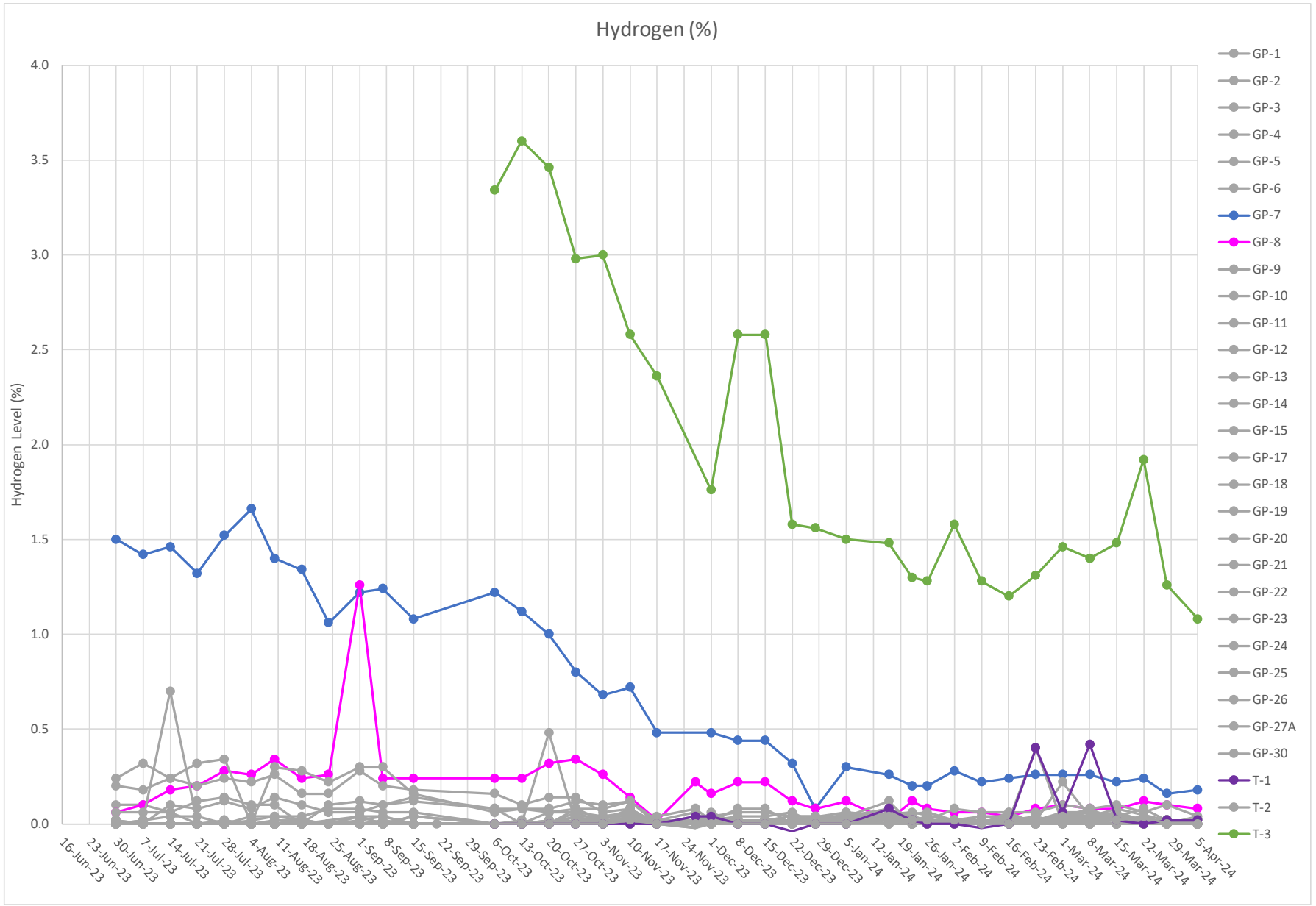


H_2

Hydrogen seems to be similar to the CO levels.

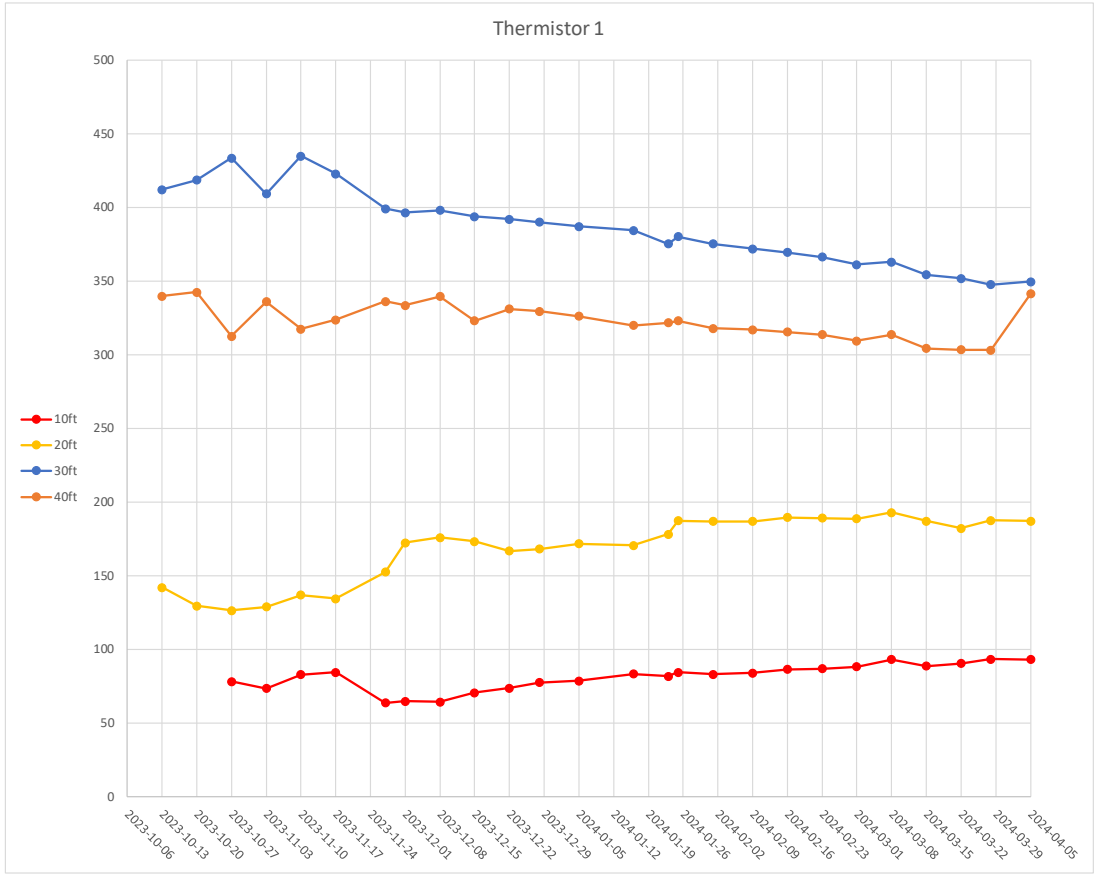
T-3 is trending downward, has declined significantly after cover was applied.

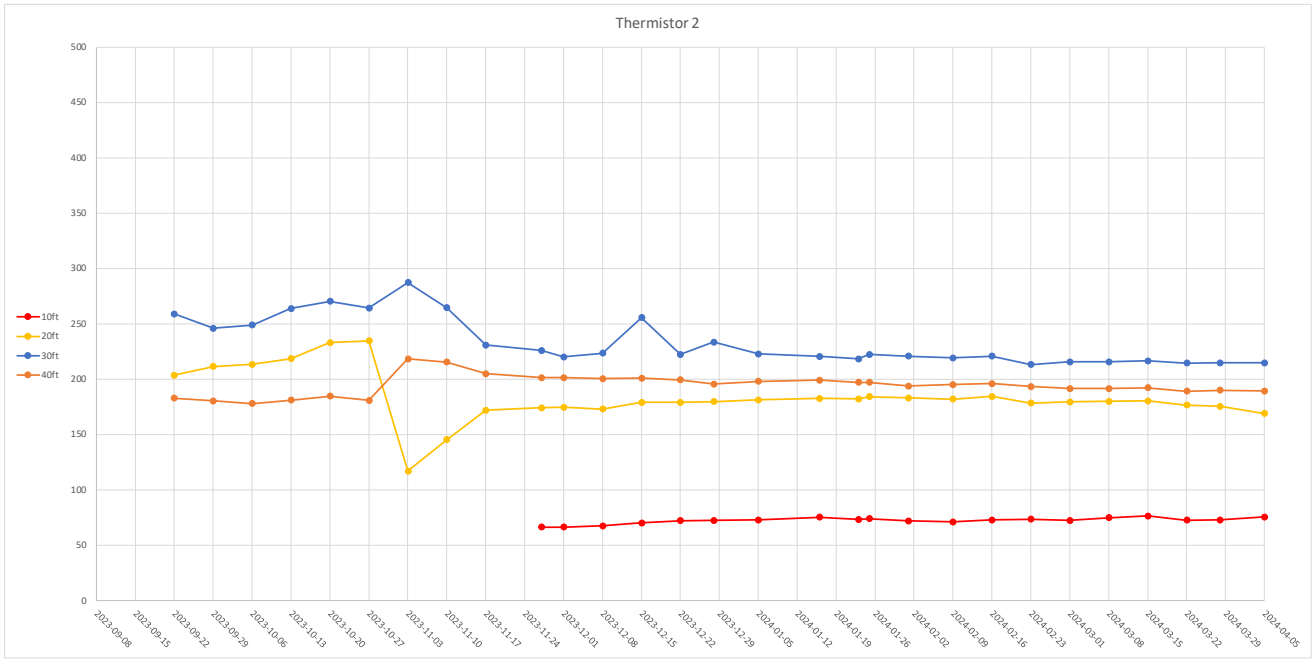
Even if H2 data is scrubbed from the CO data, GP-7 and T-3 remain high in CO.

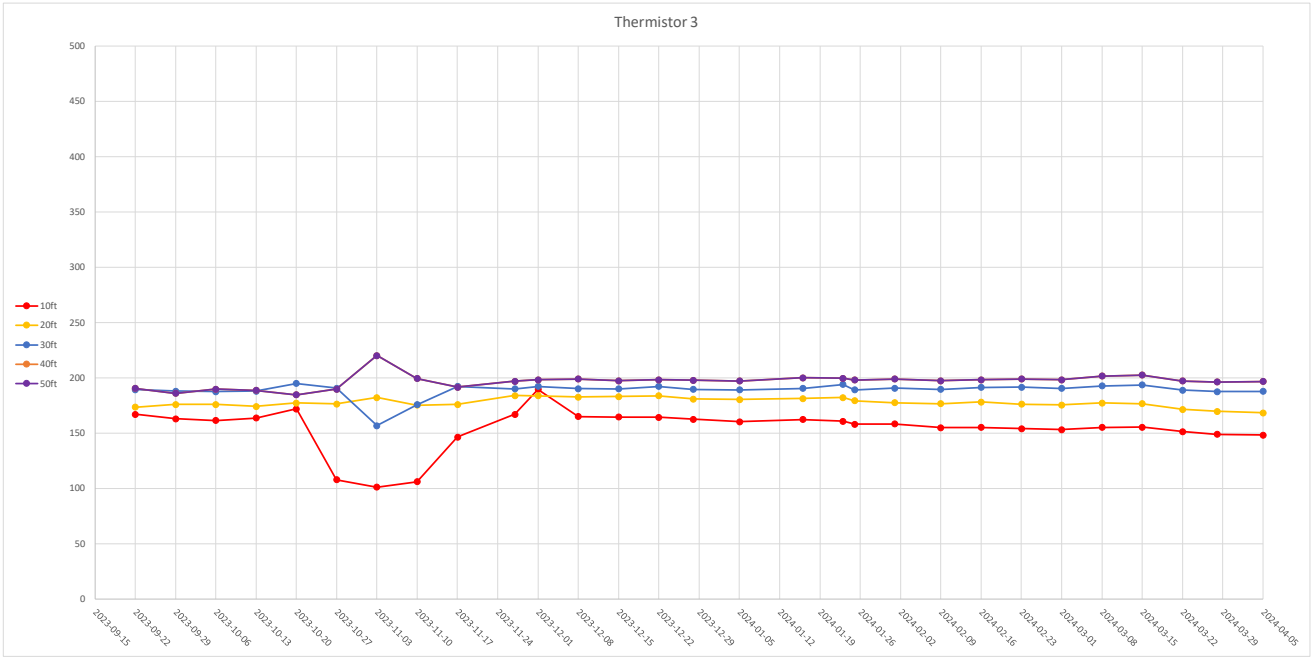


Thermistor Temperatures

Thermistor temperatures mostly stable. Elevated temperatures in Thermistor 1 around depths of 30-40ft. Spike in Thermistor 1 this week at 40ft.







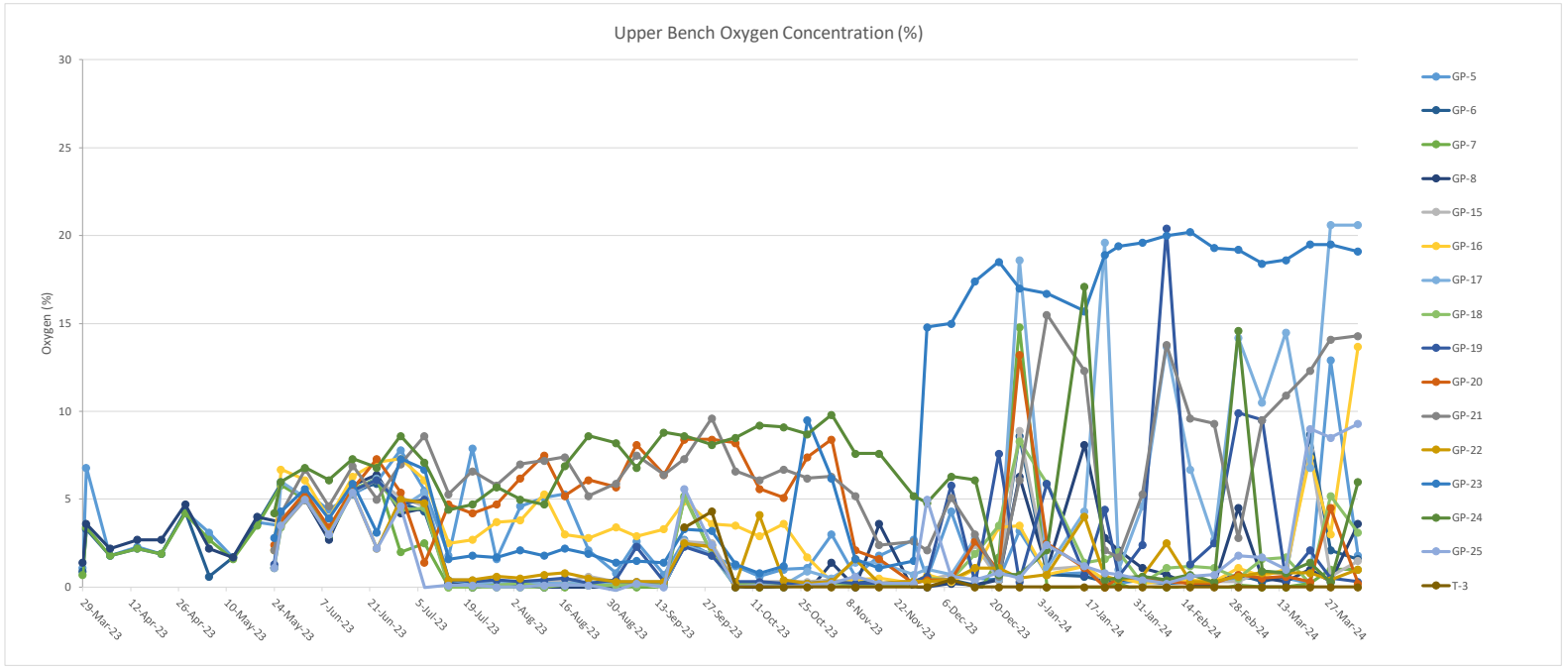
O_2

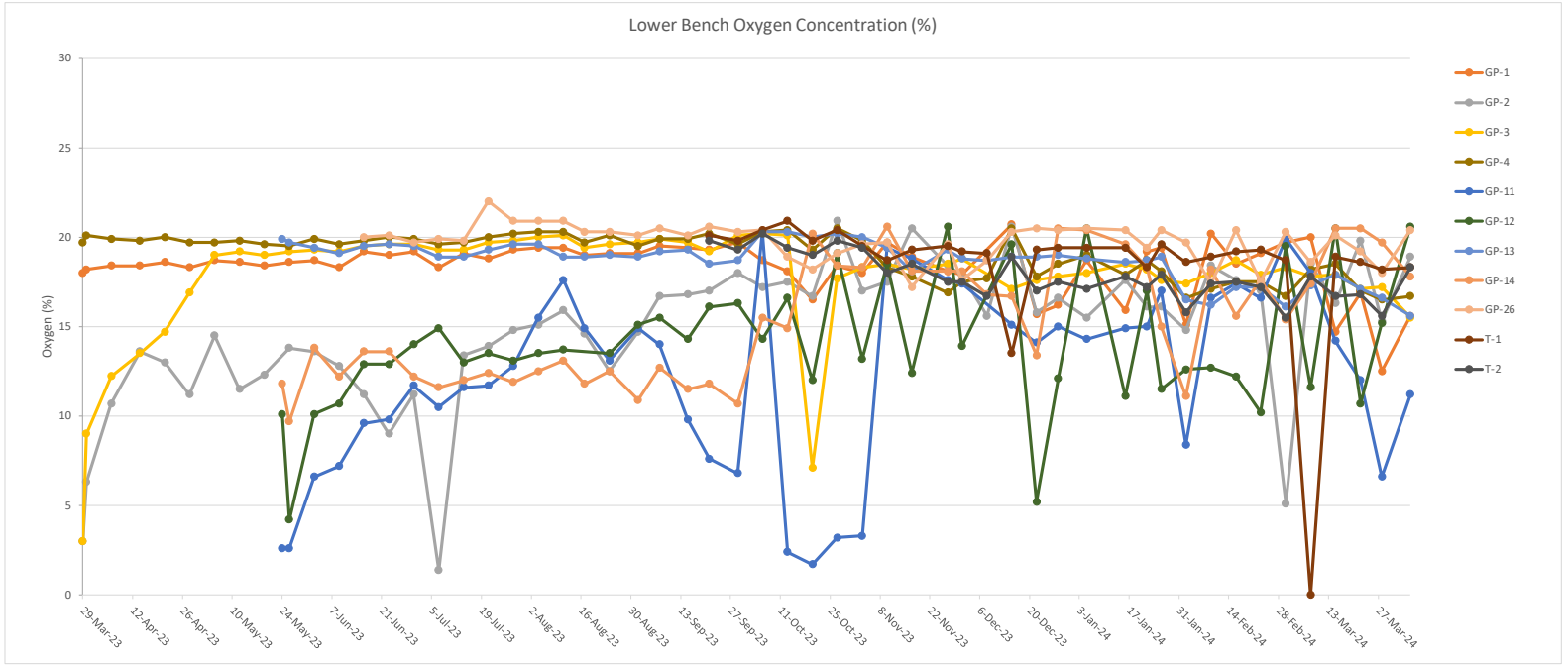
Lower bench is reading approximately atmospheric oxygen. Starting to see some downward trends.

Upper bench has very low (<5%) concentration.

Oldest portion of Landfill is probably relatively inert and biologically inactive, producing very little methane. As a result, pore space is full of atmospheric air.

Some GPs likely susceptible to swings in pressure – LFCI believes this is causing the spikes.

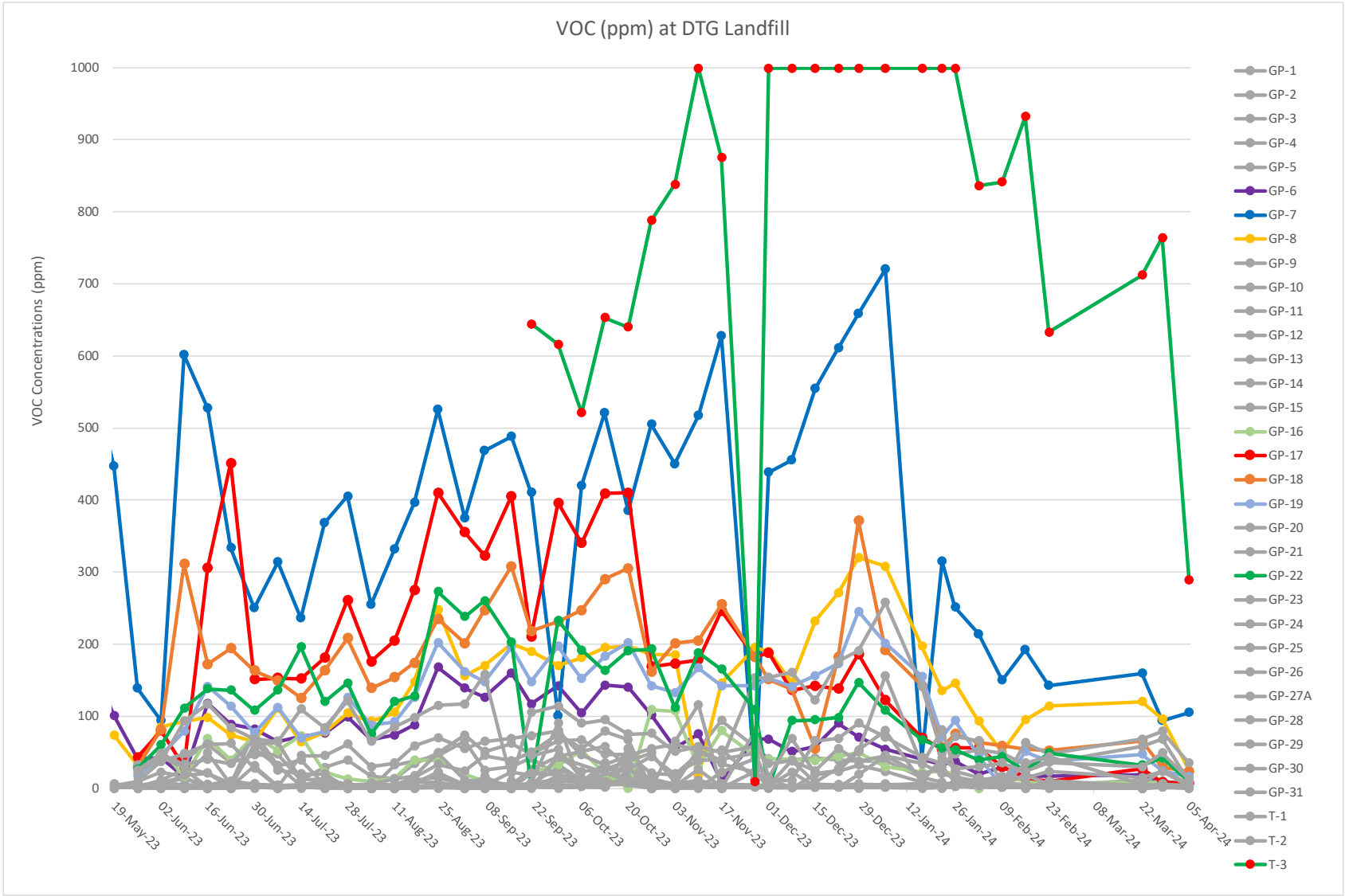




VOC’s

T-3 has now decreased significantly over past month.

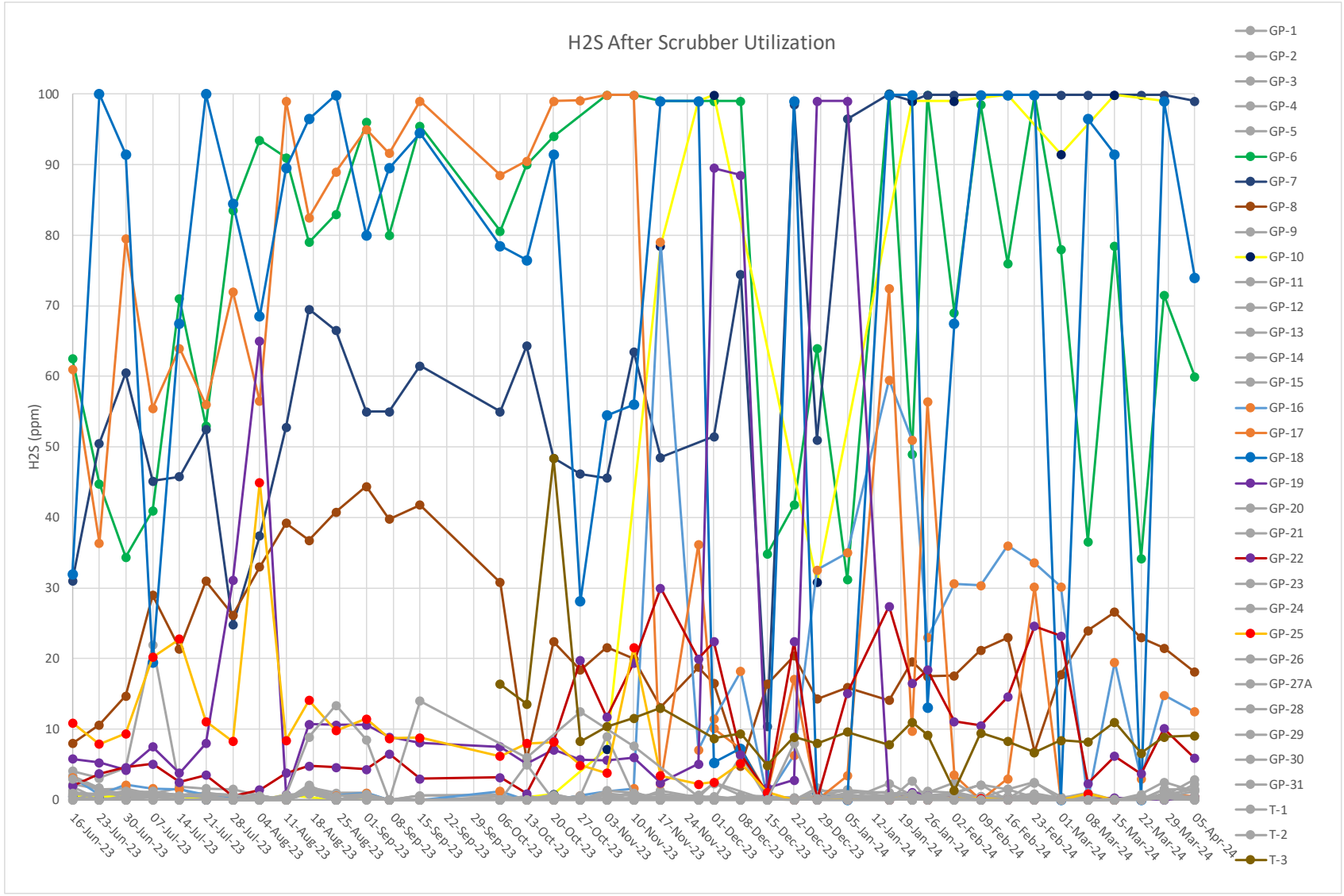
Decreasing trend visible in all locations in past few months.

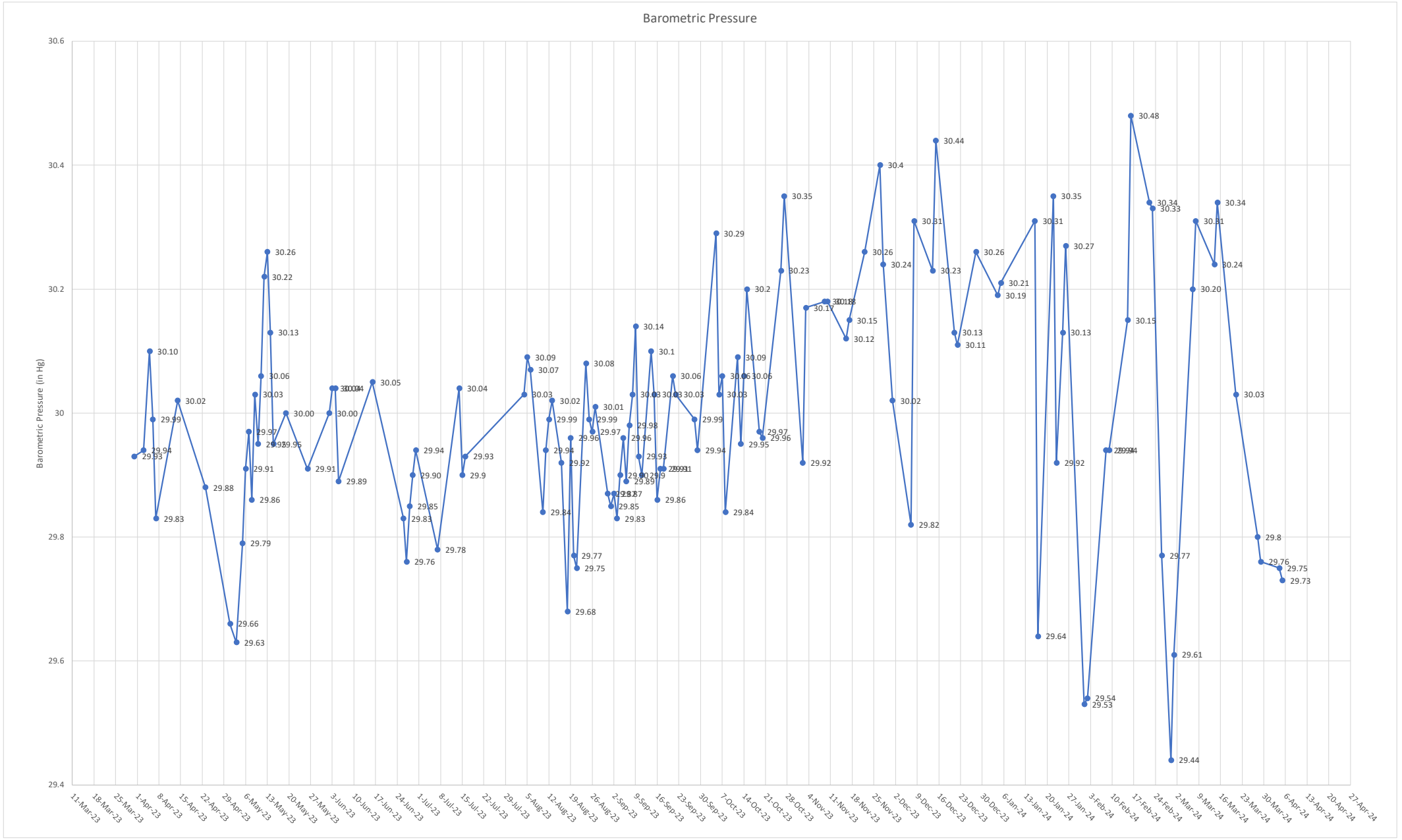


H_2S

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

Of note, GP-7 has remained high for past few months, and GP has remained stable around 10ppm.




Barometric Pressure
Barometric Pressure (in Hg)
30.6
30.4
30.2
30
29.8
29.6
29.4
11-Mar-23
18-Mar-23
25-Mar-23
1-Apr-23
8-Apr-23
15-Apr-23
22-Apr-23
29-Apr-23
6-May-23
13-May-23
20-May-23
27-May-23
3-Jun-23
10-Jun-23
17-Jun-23
24-Jun-23
1-Jul-23
8-Jul-23
15-Jul-23
22-Jul-23
29-Jul-23
5-Aug-23
12-Aug-23
19-Aug-23
26-Aug-23
2-Sep-23
9-Sep-23
16-Sep-23
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30-Sep-23
7-Oct-23
14-Oct-23
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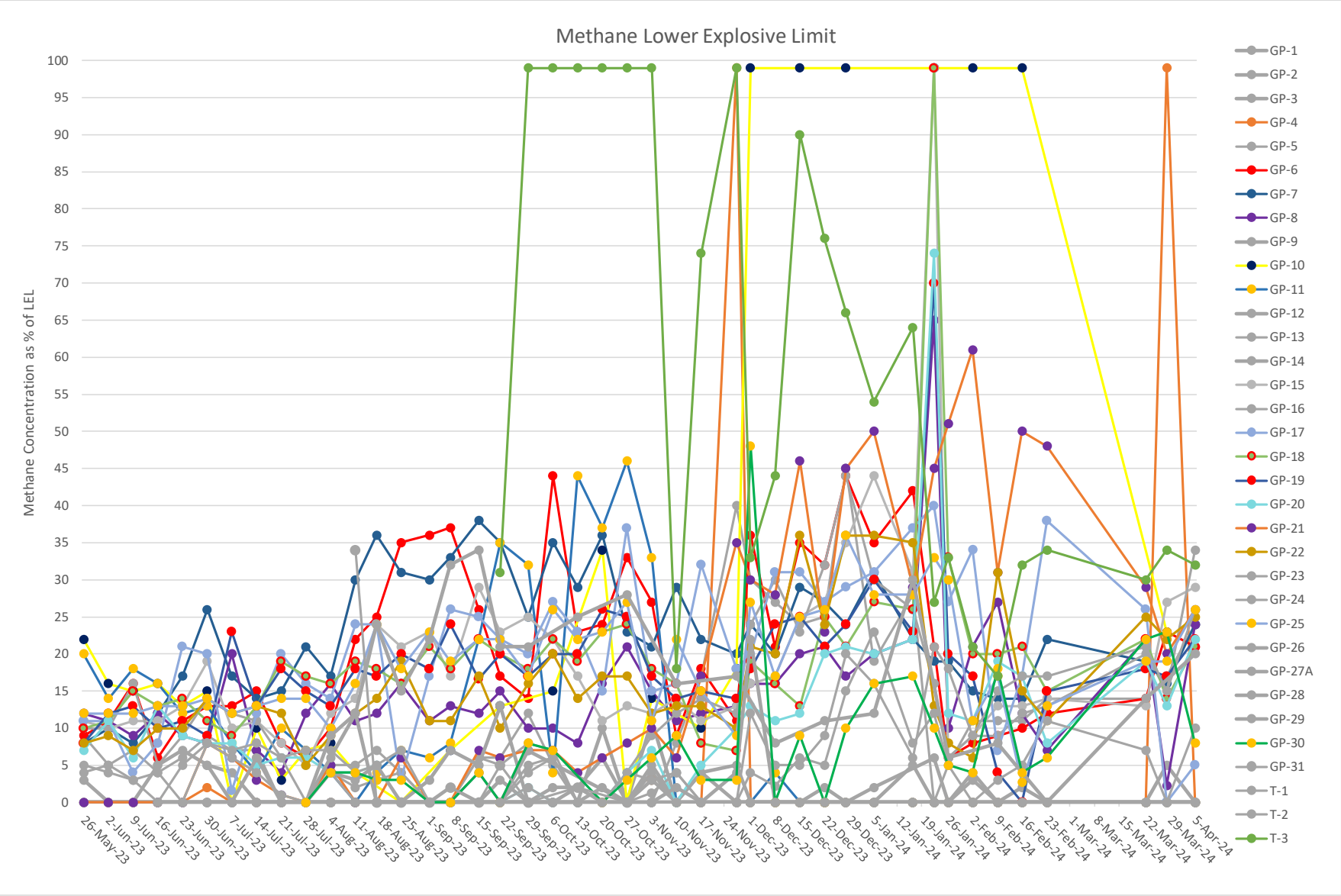
27-Jan-24
3-Feb-24
10-Feb-24
17-Feb-24
24-Feb-24
2-Mar-24
9-Mar-24
16-Mar-24
23-Mar-24
30-Mar-24
6-Apr-24
13-Apr-24
20-Apr-24
27-Apr-24

Lower Explosive Limit

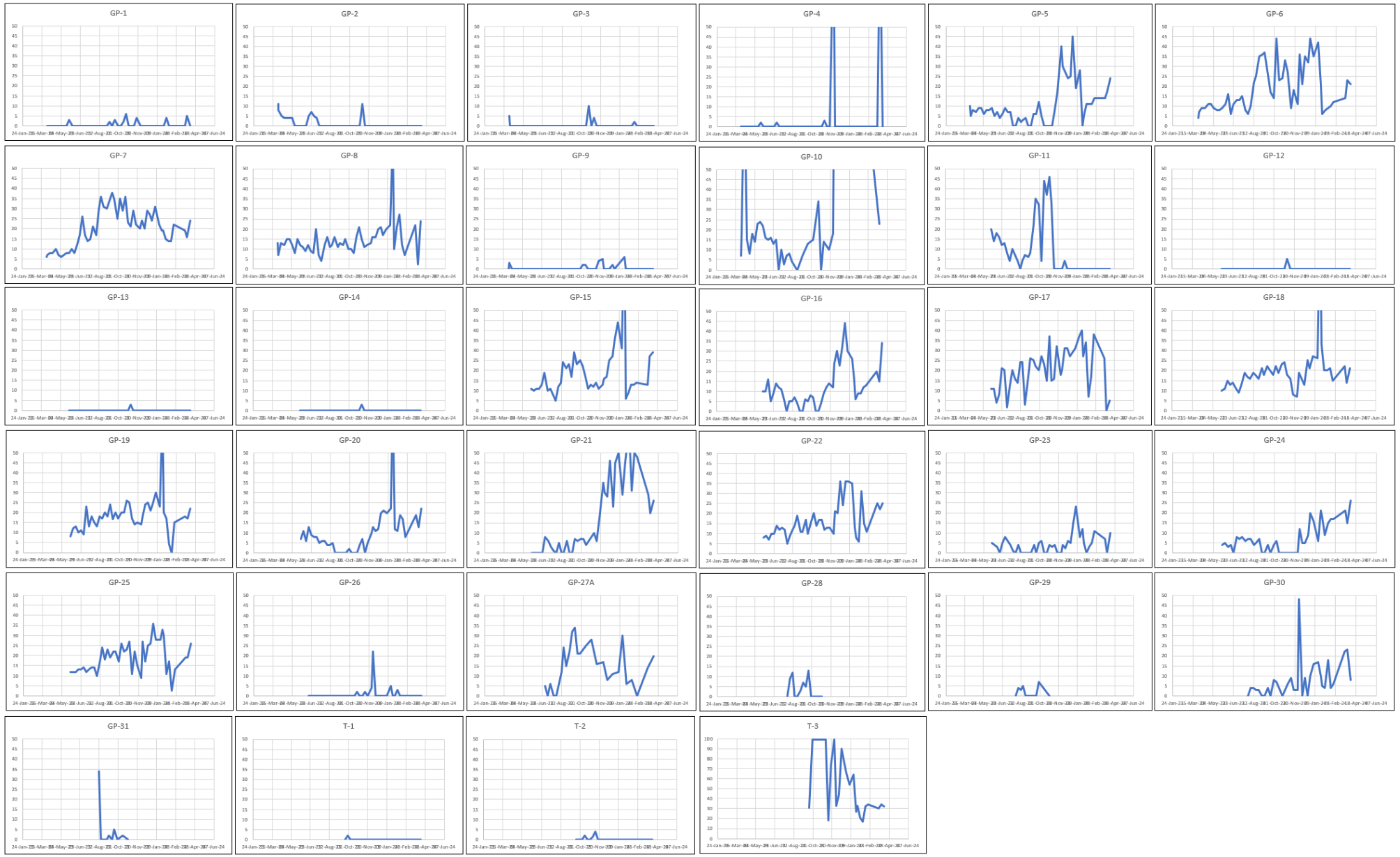
Many data points fluctuating wildly.

GP-10 has now declined.

Upward trend in methane visible.



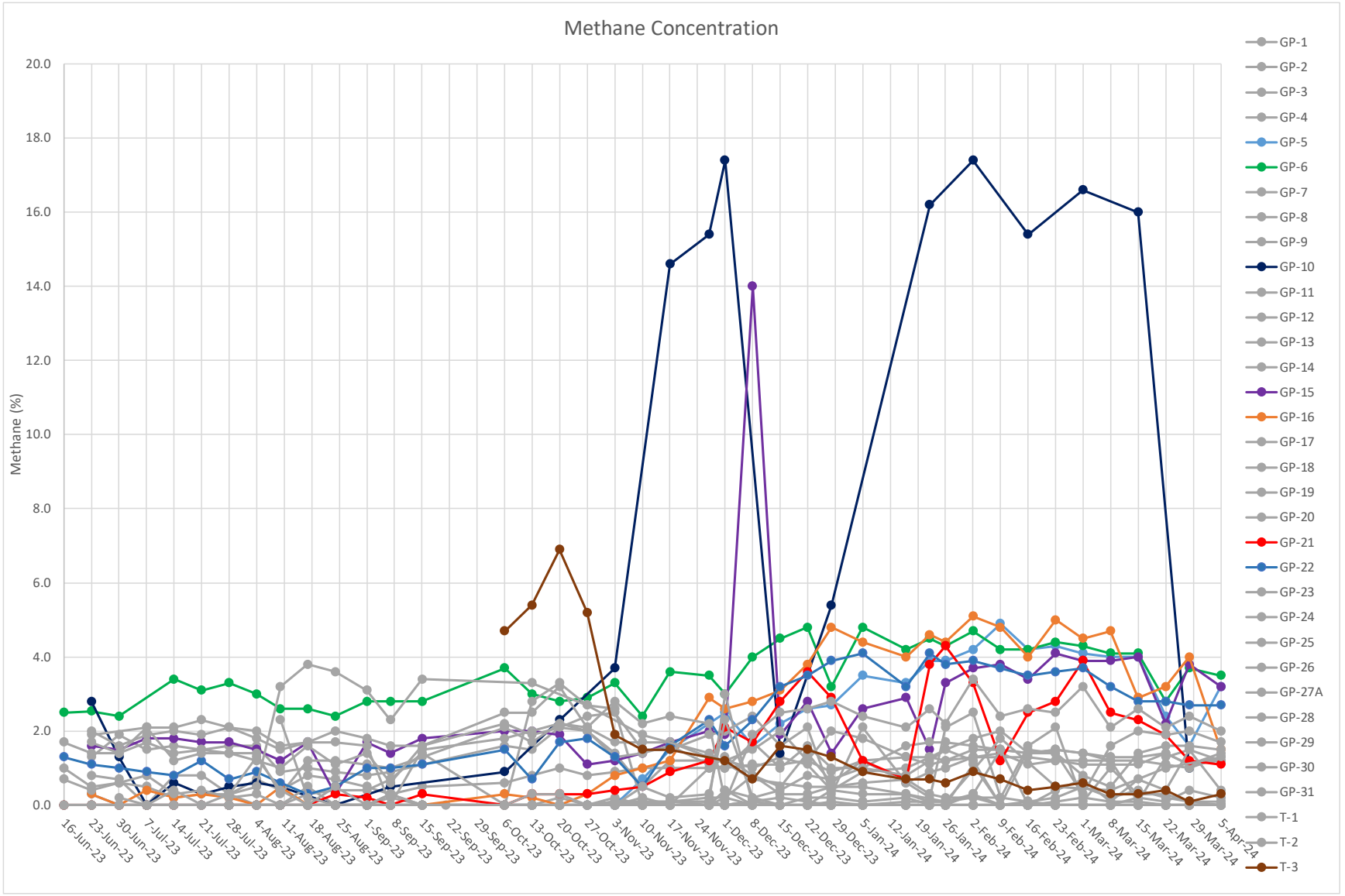
LEL for individual GP



CH_4 (%)

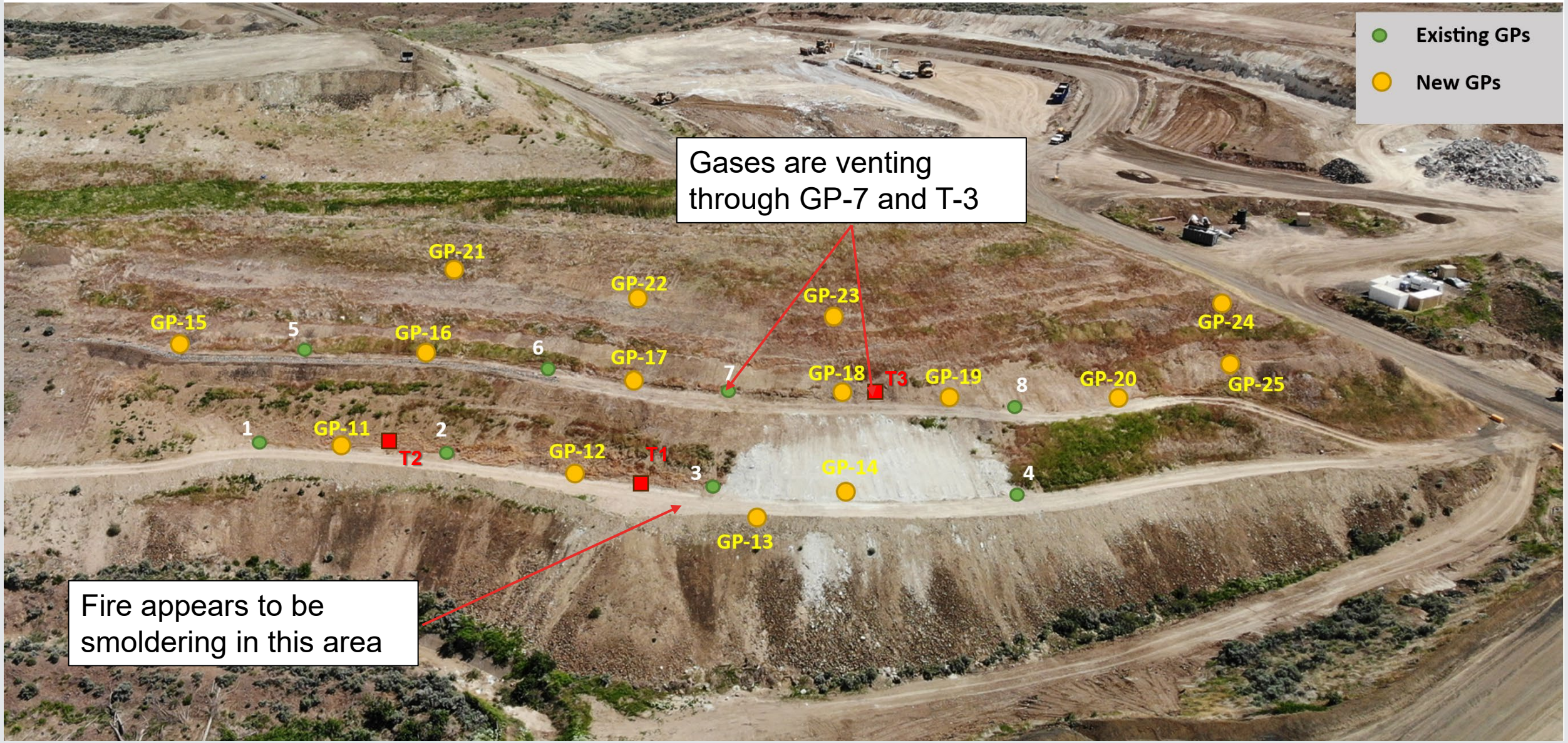
GP-10 has decreased for last monitoring event measured.

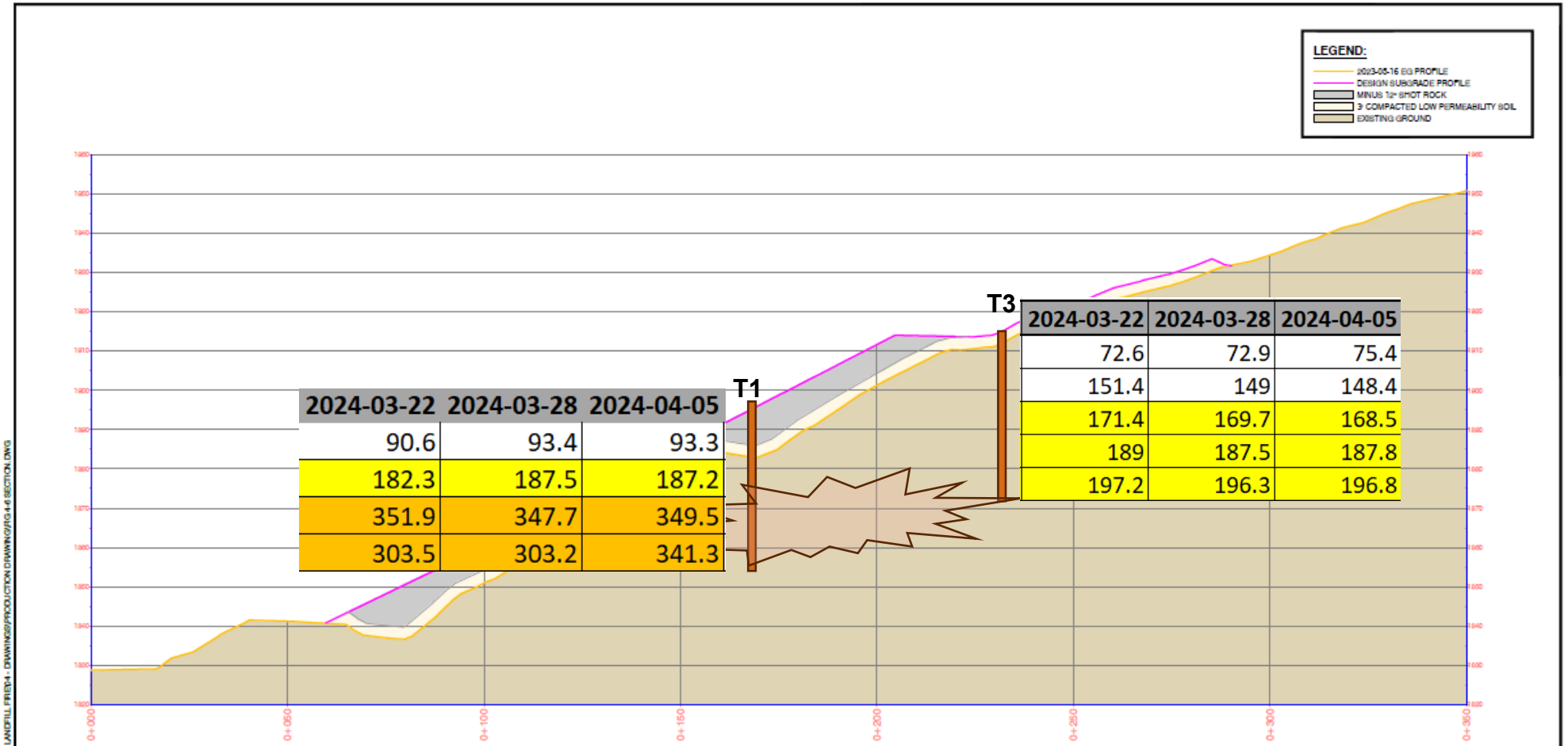
South upper bench area slightly elevated, at around 2-4%.




LANDFILLFIRE.com
High Temp
High CO
High H2S
High VOC
Existing GPs
New GPs
GP-10
GP-21
GP-22
GP-23
GP-24
GP-15
GP-16
GP-17
GP-18
GP-19
GP-20
GP-25
GP-11
GP-12
GP-13
GP-14
T1
T2
T3
1
2
3
4
5
6
7
8

Fire Path


Existing GPs
New GPs
Gases are venting through GP-7 and T-3
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
8
GP-20
GP-24
GP-25
1
GP-11
T2
2
GP-12
T1
3
GP-14
4
GP-13



2024-03-22	2024-03-28	2024-04-05
90.6	93.4	93.3
182.3	187.5	187.2
351.9	347.7	349.5
303.5	303.2	341.3

2024-03-22	2024-03-28	2024-04-05
72.6	72.9	75.4
151.4	149	148.4
171.4	169.7	168.5
189	187.5	187.8
197.2	196.3	196.8

SECTION B - B'

H - 1" : 25'

V - 1" : 25'

SPERLING HANSEN ASSOCIATES
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• Landfill Siting
• Design & Operations Plans
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• Environmental Monitoring
#8 - 1285 Keith Road East
North Vancouver, B.C. V7J 1J3
Phone: (604) 986-7720

SEAL

No.	DATE	REVISIONS	DRAWN	CHKD	APP'D

CLIENT:

DESIGN BY:	T.SPERLING	SHA PROJECT #	2023-001
DRAWN BY:	A.TSANG	DATE CREATED:	5/16/2023
CHECKED BY:	T.SPERLING	HORIZONTAL SCALE:	1" = 25'
APPROVED BY:	–	VERTICAL SCALE:	1" = 25'

ADJUST SCALE 50% FOR 34"x22" SHEET

DTG RECYCLE LANDFILL FILE

SECTION B-B'

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

Data Interpretation

Suppression efforts are working. CO levels and temperatures have decreased dramatically since cover fill was placed.

In SHA experience, CO has been best indicator of suppression at other landfill sites. CO levels in GP-7 have dropped significantly in past few months. Waiting to see results in T-3, lab results should provide more insight.

High O2 below lower bench road continues, this is likely due to pervious waste mass allowing entry of ambient air.

Temperature has dropped significantly all around, especially in GP-3.

LEL and CH4 are slowly increasing, indicating less air entry into landfill.

Overall, it appears that the waste is smoldering underneath GP-3 and T-1 (elevated temperature) and a ‘chimney’ effect is occurring, causing high CO and VOC’s in T-3 and GP-7.