

October 12, 2023
File No: 07214017.93

Steve Cassulo
District Manager
Chiquita Canyon Landfill
29201 Henry Mayo Dr.
Castaic, CA 91384

Subject: Chiquita Canyon Landfill – Response to Los Angeles County Public Works Letter Dated September 20, 2023 – Request for More Information on the Range Maps

Dear Mr. Cassulo:

On September 20, 2023, Los Angeles County Public Works (“PW”) provided Chiquita Canyon, LLC (“Chiquita”) with additional comments on Chiquita’s initial Condition 69 report. One of PW’s requests was for a written explanation interpreting the results shown on the range maps for flow, methane quality, and methane-to-carbon dioxide ratios from October 2022 to January 2023 from the preliminary root cause analysis.

SCS Engineers (“SCS”) has prepared this response letter providing the requested information.

Adjusted Flow Range Map:

The Adjusted Flow (AdjFlow) range map shows the average landfill gas (LFG) flow in standard cubic feet per minute (scfm) for each monitored LFG extraction well location, following any adjustments to the well during initial sampling. Locations listed as “Out of Range” did not have flow readings during the listed timeframe (e.g., wells may have been offline due to location in/around active waste filling operations, reading error, etc.).

The flow from each LFG extraction well is an indicator of its LFG extraction performance, and the overall map demonstrates LFG flow variations in the waste mass. Lowest flows are expected from vertical LFG extraction wells located towards the perimeter of the waste mass since they are generally installed in shallower waste. Note that higher flows seen at the perimeter occur with horizontal LFG extraction wells which have their wellhead at the perimeter of the Landfill despite being installed under the landfill surface.

Interior LFG extraction wells, installed in deeper waste, are generally expected to have higher LFG extraction potential and flows. Lower LFG flows are generally seen in the following conditions:

- Watered-in screened section of the extraction well.
- Pinching of well casing due to differential settlement.
- Clogged well perforations.



CH₄ Range Map:

The CH₄ (methane) range map shows the average methane concentration at each monitored LFG extraction well location. Locations listed as “Out of Range” did not have flow readings during the listed timeframe (e.g., wells may have been offline due to location in/around active waste filling operations, reading error, etc.).

Methane concentrations indicate typical landfill decomposition process and can range between 30% and 60%. LFG extraction wells on the higher end (40%-60%) typically indicate newer waste, earlier in the decomposition process. LFG extraction wells on the lower end of this range (30%-40%) typically indicate older waste with greater decomposition, thus generating less methane.

Lower methane concentrations (e.g., below 30%) are generally seen in the following conditions:

- LFG extraction wells located at the perimeter of the landfill footprint.
- LFG extraction wells that are may be pinched or watered-in or otherwise damaged, preventing the collection of LFG from the extraction well.
- Older waste areas where the decomposition process is slowing down.
- Areas where other thermogenic or biogenic process(es) are occurring.

CH₄:CO₂ Range Map:

The CH₄:CO₂ (methane to carbon dioxide ratio) range maps shows the average ratio of methane to carbon dioxide (CH₄:CO₂) concentrations at each monitored LFG extraction well location. Locations listed “Out of Range” did not have flow readings during the listed timeframe (e.g., wells may have been offline due to location in/around active waste filling operations, reading error, etc.).

CH₄:CO₂ ratios are utilized as a tool in understanding the decomposition process within the landfill. Higher CH₄:CO₂ ratios indicate newer waste, earlier in the decomposition process. Lower CH₄:CO₂ ratios indicate older waste with greater decomposition, thus generating less methane. Lower ratios are generally seen in the following conditions:

- LFG extraction wells located at the perimeter of the landfill footprint.
- LFG extraction wells that are may be pinched or watered-in or otherwise damaged, preventing the collection of LFG from the extraction well.
- Older waste areas where the decomposition process is slowing down.
- Areas where other thermogenic or biogenic process(es) are occurring.

Map Interpretation:

Individually, each range map does not provide enough data to draw conclusions on the overall health of the wellfield, as the data presented has multiple factors that could be causing low flows, low methane, or low CH₄:CO₂. When examining all maps together, methane generation in the older sections of the Landfill to the east and southeast has begun to decline due to the age of the waste. On the east side of the landfill (Canyons A and C), some old horizontal wells may be impacted or

Mr. Steve Cassulo
October 12, 2023
Page 3

watered-in, reducing their effectiveness. Additionally, the area of the Landfill with high concentration of yellow highlighted wells in Modules 2/B/3/4 P2, 2B/3, and portions of Module 4 are indicative of a possible thermogenic or biogenic reaction process.

If you have any questions regarding information contained in this submittal, please contact the undersigned at 858-571-5500.

Sincerely,

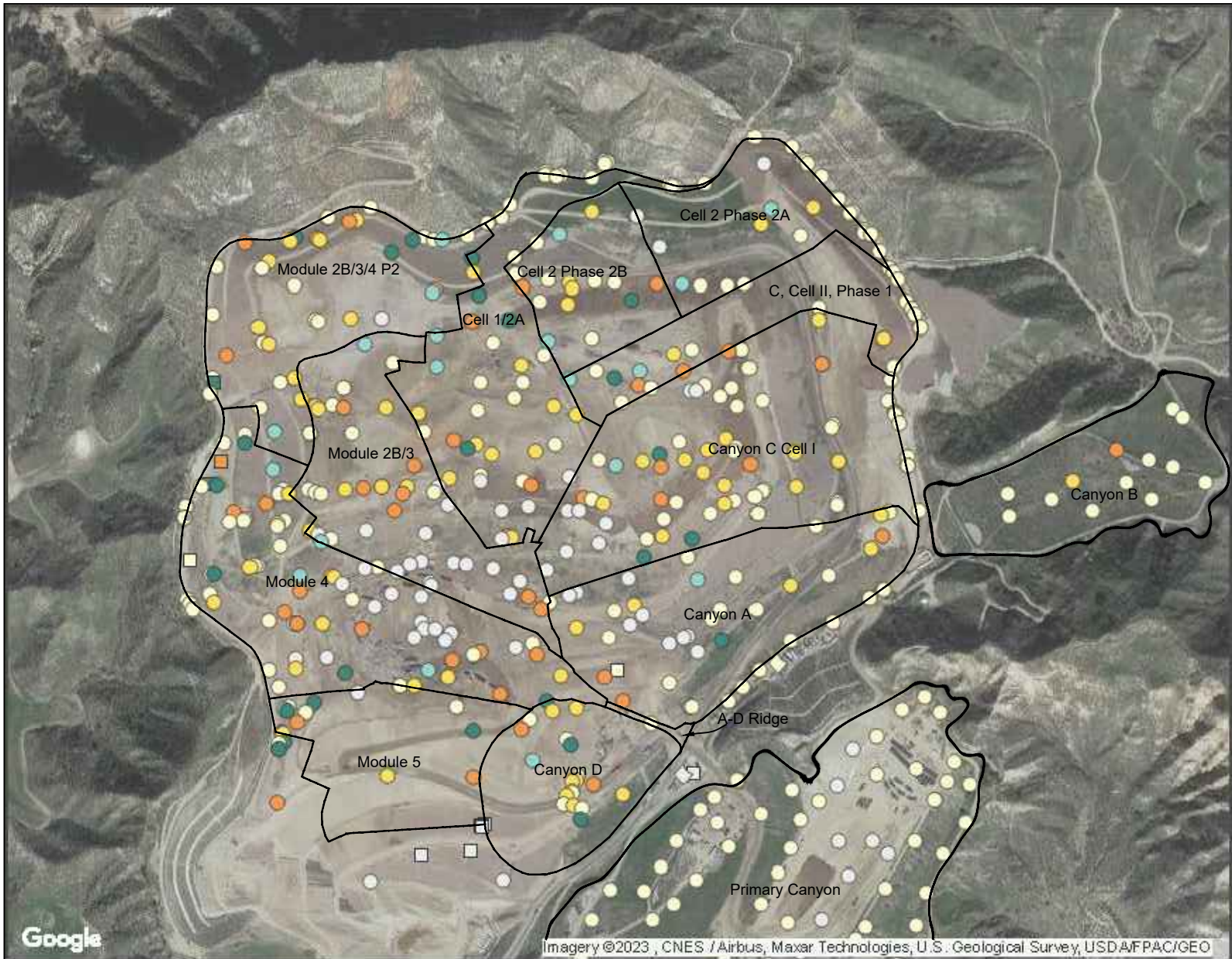


Srividhya Viswanathan, P.E.
Vice President/Project Director
SCS ENGINEERS



Patrick S Sullivan, REPA
Senior Vice President
SCS ENGINEERS

cc: Cornelius Fong, SCS Engineers
William C. Haley, PE., SCS Engineers
Gabrielle Stephens, SCS Engineers
Ray Huff, SCS Engineers



Ranges Mapped

- ≥ 0 and < 10
- ≥ 10 and < 20
- ≥ 20 and < 30
- ≥ 30 and < 40
- ≥ 40 and < 100
- Out of Range

Point Type Legend

- calibration record
- flare engine-ghg
- monitoring probe
- sample port
- well

Google

Imagery ©2023, CNES / Airbus, Maxar Technologies, U.S. Geological Survey, USDA/FPAC/GEO

SCSeTools

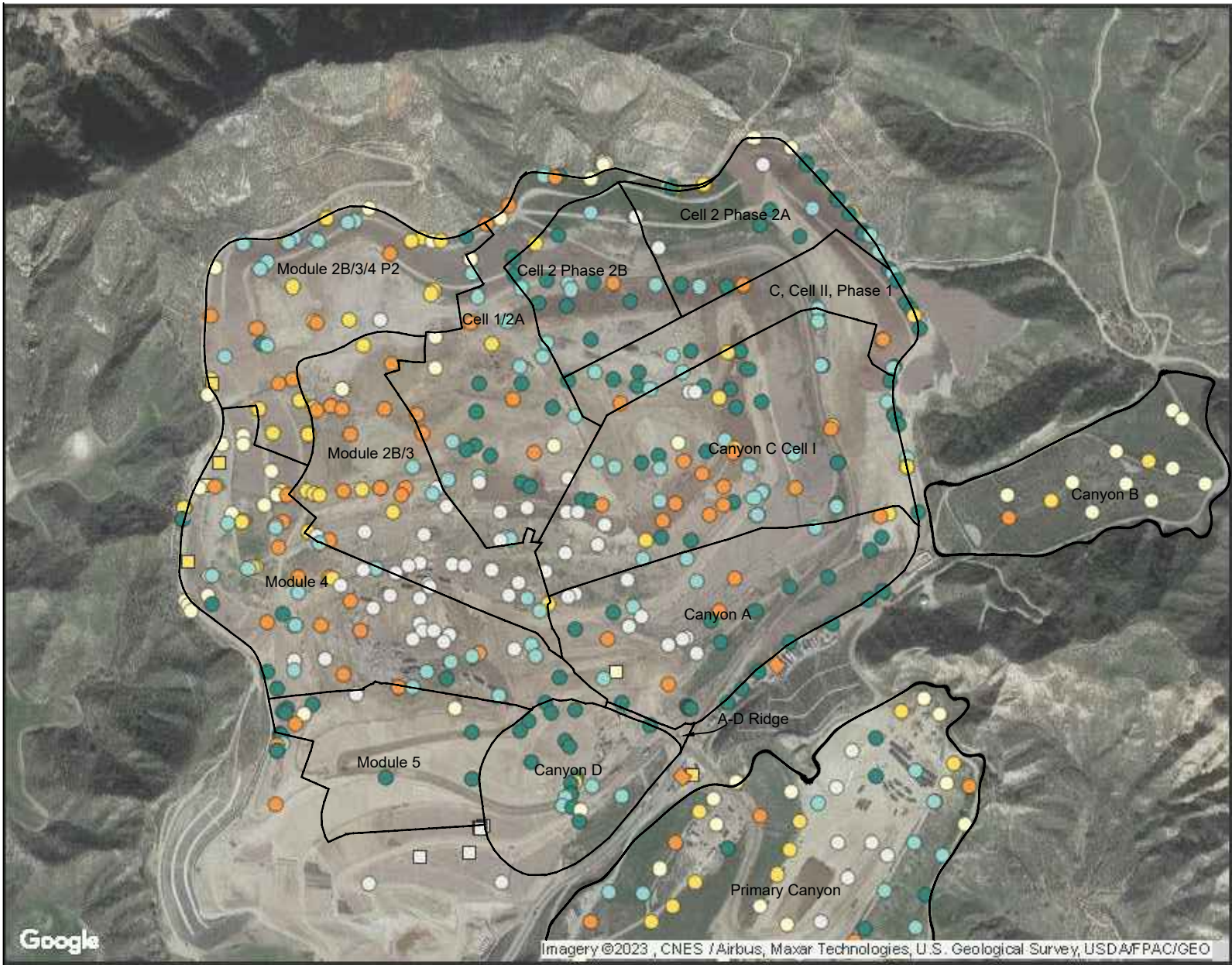
**Chiquita Canyon Landfill
Range Map**

Parameter: AdjFlow

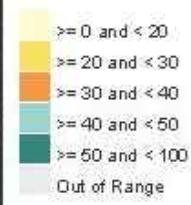
Analysis Method: Average

Date Range: 10/01/2022 - 01/31/2023

Map generation date : 02/08/2023



Ranges Mapped



Point Type Legend



Google

Imagery ©2023, CNES / Airbus, Maxar Technologies, U.S. Geological Survey, USDA/FPAC/GEO

SCSeTools

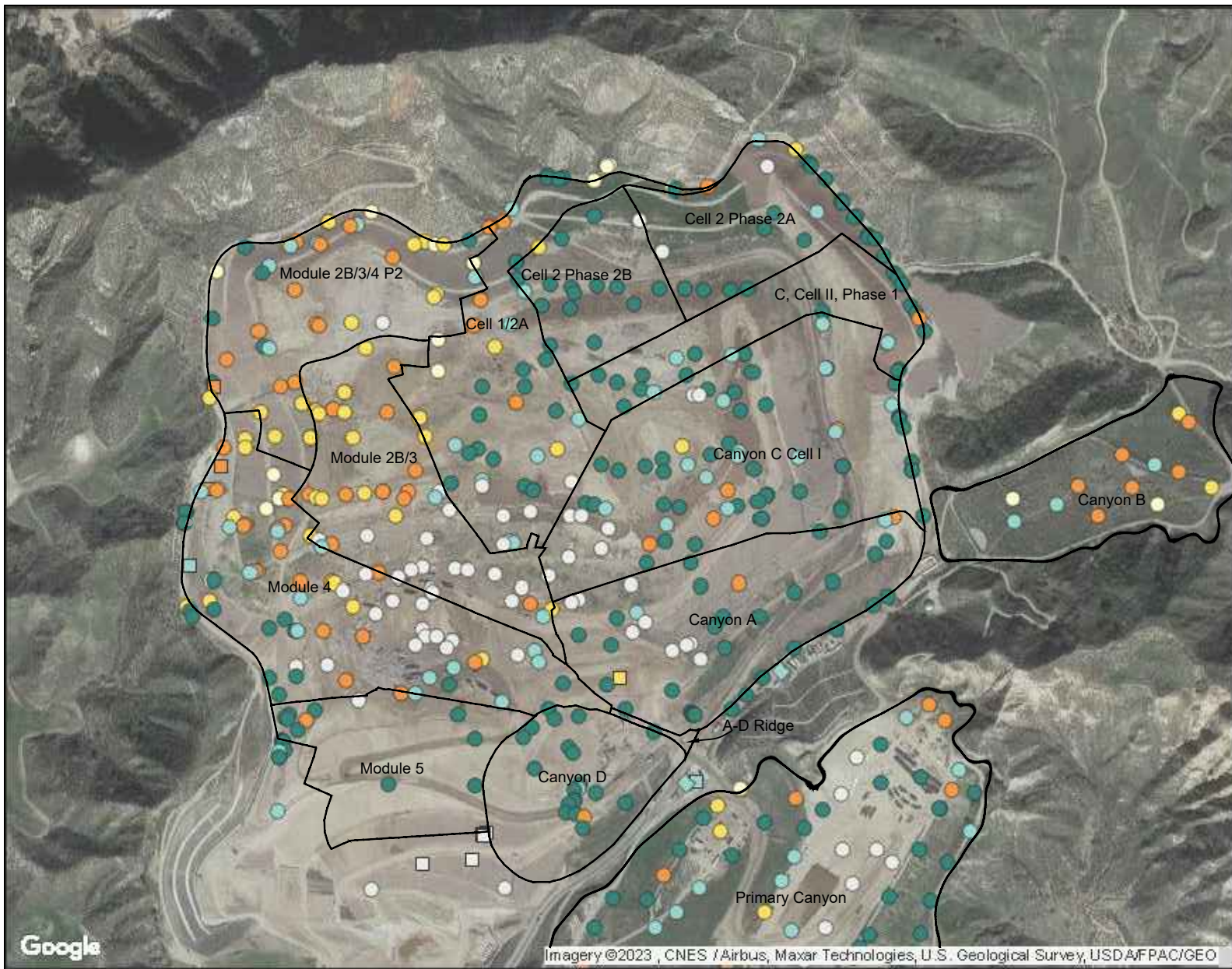
**Chiquita Canyon Landfill
Range Map**

Parameter: CH4

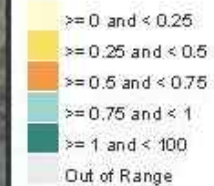
Analysis Method: Average

Date Range: 10/01/2022 - 01/31/2023

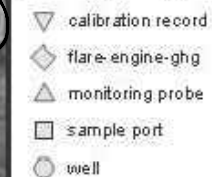
Map generation date : 02/08/2023



Ranges Mapped



Point Type Legend



Chiquita Canyon Landfill

Range Map

Parameter: CH4CO2

Analysis Method: Average

Date Range: 10/01/2022 - 01/31/2023

Map generation date : 02/08/2023

