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March 11, 2024

Ms. Cindy Koepke
Hydrogeologist
Wisconsin Department of Natural Resources
3911 Fish Hatchery Road
Fitchburg, WI 53711

Subject: Refuse Hideaway Landfill
2023 Operation Monitoring and Maintenance Annual Report

Dear Ms. Koepke:

TRC performed operation, monitoring, and maintenance services at the Refuse Hideaway Landfill in Middleton, WI (Site) in 2023 in accordance with the WDNR's *Refuse Hideaway Landfill Operations and Maintenance Services Request for Bid*, issued on August 5, 2021. TRC has prepared this report to summarize operation and maintenance services performed from December 2022 through November 2023. These services were previously documented in monthly Operation, Monitoring, and Maintenance Activity Reports submitted to the Wisconsin Department of Natural Resources (WDNR).

Site Electrical Upgrades

Maintenance and Repairs

Electrical service issues for the Site which were observed in October 2022 were reevaluated and a summary of the system upgrades, the electrical evaluation, and recommendations for further repairs/modifications of the system were submitted by TRC to the WDNR in a memorandum dated December 8, 2022 (Attachment 1). Based on TRC's recommendations, the WDNR agreed to conduct preliminary harmonics voltage monitoring, replacement of the Site transformer with an appropriately sized step-up transformer for 240 voltage alternating current (VAC) input and 480 VAC output, the addition of a surge protector between the Madison Gas and Electric (MG&E) service and the new transformer, and preparation of a one-line diagram for the Site's electrical service.

Van Ert Company, Inc. (Van Ert) was contracted by the WDNR and was on site May 23, 2023, to begin electric service repairs. Two harmonics voltage monitoring devices were installed to monitor voltage from the MG&E service to the Site and from the solar panel system on site. The instruments were installed and remained in place for a two-week duration. While on site in May, Van Ert conducted a Site walk to collect details to create a one-line diagram. On June 9, 2023, Van Ert submitted the *Electrical System Diagnostics and Repairs Refuse Hideaway Landfill* Report which summarized details of the harmonics voltage monitoring and the completed one-line diagram created for the Site. The report submittal and diagram are included in Attachment 1. TRC conducted a review of the report submittal and provided minor comments, concurrence from Van Ert was received via email on June 28, 2023, and documentation is provided in Attachment 1. Following review of the harmonic testing, Van Ert procured the necessary equipment for the electrical system repairs/upgrades.

After arrival of the new equipment, Van Ert was on site on August 30, 2023, to replace the existing transformer and install a surge protector to the system. After replacing the transformer, Van Ert collected VAC readings for the service coming in from MG&E (input to transformer) and VAC readings for the output from the transformer, and documentation is included in Attachment 1. Upon completion, electrical service was restored to the Site.

Gas Extraction System

Operation Summary

The gas extraction system (GES) operated until December 15, 2022, when an overvoltage fault was observed, and the system was shut down for the remainder of the 2022 calendar year. Based on issues with the Site electrical service and transformer system installed in October 2022, it was recommended that the system remain off until the Site electrical issues could fully be resolved.

The GES was restarted on September 6, 2023, by TRC after electrical service repairs/modifications where completed. The GES remained operational for the rest of the 2023 calendar year.

Observations and Findings

Gas probe monitoring was conducted monthly between December 2022 and November 2023. Due to the operational restrictions of the GES in 2023 and seasonality of gas production/migration, it was not possible to fully evaluate if the operation of the GES resulted in any trends for results observed in the gas probes. When the GES was operating continuously between September and November, probes with elevated methane levels (prior to September 2023) generally showed a decrease in concentration; however, further operation of the GES and gas probe monitoring during the 2024 reporting period will provide more details for identification of any trends. The 2023 Gas Probe Monitoring Data is summarized in Attachment 2, and gray shaded rows in that table indicate the GES was operating at that time.

The GES operated as designed once the electrical service to the Site was repaired. GES inspection information and operating parameters were included in the monthly report submittals and data collected from the gas extraction wells (GW) is summarized in Attachment 3. The thirteen (13) GWs were monitored monthly while the GES was in operation. Adjustments to the applied vacuum and flowrate at each well head were completed monthly based on observed gas concentrations at each GW.

Maintenance and Repairs

Following start-up and operation of the GES, TRC field personnel observed that the lateral gas extraction wells installed near GW-5 remain connected to the GW9/GW5 header (extraction line depicted on drawing in Attachment 4) which extends between gas wells GW-5 and GW-9. It was observed that vacuum is being applied to the lateral wells and currently no valves are in place to make system adjustments to the lateral wells. Based on review of the May 2015 *Construction Completion Report – Landfill Gas System Modification*[1] the lateral wells were directly connected to the extraction GW9/GW5 header without valves. The report noted that valves were not installed:

- Due to high methane concentrations historically observed at the lateral wells sample ports;
- To minimize project cost by not adding valves; and
- Inflatable sewer balls could be installed within the lateral well stickups to block off vacuum to the lateral wells if necessary.

[1] Leggette, Brashears & Graham, Inc. Construction Completion Report – Landfill Gas System Modifications. May 2015.

The valve along the GW9/GW5 header was replaced adjacent GW5 during the 2020-2021 system modification work. Currently the new valve is positioned closed, however the vacuum is still applied to the lateral wells based on the direct connection to the GW9/GW5 header (Attachment 4). TRC conducted minor repairs to the above grade lateral well stickups to reduce ambient air intrusion into the system. TRC recommends monitoring the lateral wells in conjunction with the GW to determine if the lateral wells should be modified to reduce or eliminate applied vacuum. Aside from the repairs to the electrical service and observed operation of the lateral extraction system, there were no other observations or findings related to the GES that require attention in 2024.

Leachate Extraction System

Operation Summary

Operation and repairs for the air compressor for the leachate extraction system (LES) were further evaluated and summarized in TRC's December 8, 2022, evaluation submittal (Attachment 1). Based on observed issues with the air compressor system, TRC recommended replacement of the motor contact and overload contactor, and testing of the motor's electrical winding system. Between May and October 2023, Van Ert conducted motor testing and select repairs as discussed further below, and the system was restarted in October 2023.

However, based on exterior temperatures and recommendations from FS Curtis (compressor manufacturer), the system was kept off for the remainder of 2023 until the compressor can be relocated to a temperature-controlled environment to allow for cold weather operations. Winter operation conditions have been evaluated and TRC has coordinated and discussed options for cold weather operation with subcontractors. Recommendations have been provided to the WDNR.

Observations and Findings

The air compressor operation and leachate tank level are used to monitor the functionality of the LES throughout the year. The LES did not operate continuously in 2023 due to the issues with the air compressor and Site electrical. Leachate tank levels were monitored during bi-weekly and/or monthly inspections, as reported in monthly report submittals. The WDNR pumped leachate from the tank on an as-needed basis throughout 2023.

A leachate sample was collected on March 27, June 30, and September 28, 2023, from the leachate tank and analyzed by Eurofins Environmental Testing or Pace Analytical Services, LLC for inductively coupled plasma (ICP) metals and mercury per the Section 2.01 of the Wastewater Discharge Permit NTO-5.11. The laboratory analytical report is provided in Attachment 5.

Maintenance and Repairs

While on site on May 23, 2023 conducting harmonic testing, Van Ert completed an electrical motor insulation resistance test on the air compressor motor for the leachate extraction system. They concluded that there was no damage to the electrical winding system. The motor passed tests recommended by ANSI/NETA ATS-2017 7.15.1.B. Field notes and documentation of the test are included in Van Ert's June 2023 report (Attachment 1).

In preparation for system startup following Site electrical repairs, the oil in the air compressor was changed on August 23, 2023. Van Ert replaced the motor starter contact for the air compressor system on August 30, 2023, but the system remained off as the overload contactor for the compressor remained on backorder.

In September of 2023, the high-level float for the leachate tank was noted to be in alarm condition even though the tank level was below high-level conditions. TRC found that a portion of the electrical line for the float was damaged. The line was repaired in October of 2023 and the alarm float remained operational for the remained of the 2023 calendar year.

Van Ert replaced the overload contactor for the air compressor system on October 25, 2023, and the leachate extraction system was restarted. Following restart, each of the 11 dedicated bladder pumps were assessed and restarted to allow for leachate to be pumped. However, based on exterior temperatures and recommendations from the compressor manufacturer the system was kept off for the remainder of 2023 until the compressor can be relocated to a temperature-controlled environment to allow for cold weather operations.

Landfill Cap and Stormwater Drainage Features

Summary

TRC inspected the landfill cap and stormwater conveyance features monthly throughout the 2023 reporting period when the cap was not covered with snow. This included, at minimum, the inspection of the cap integrity, the condition of drainage ways, the condition of vegetative cover, and the inspection of the sediment basin. Observations were previously documented and submitted to the WDNR in monthly Operation Monitoring and Maintenance Activity Reports.

Observations and Findings

Based on TRC's monthly observations, the condition of the landfill cap and sediment basin remained in good condition in 2023. Minor erosion was observed at the eastern drainage way and minor areas of bare soil were observed throughout the landfill cap that had been previously seeded in 2022.

Maintenance and Repairs

There was no reseeding or maintenance done in 2023; however, as discussed with the WDNR, TRC plans to reseed select areas in Spring of 2024 and will continue to monitor the cap for any changes.

Conclusions

TRC will continue to conduct scheduled Site visits through June 2024 and work with the WDNR to conduct necessary repairs and/or system modifications to support the operation of the GES and LES.

If you have any questions, please contact me at astehn@trccompanies.com or 608-807-8112.

Sincerely,

TRC

Molly Wagler
Project Engineer

Andrew Stehn, PE
Project Manager

Attachments:
1. Electrical Repair Documentation
2. Gas Probe Monitoring Summary Table
3. Gas Extraction Well Summary Table
4. Post Construction GW4 and GW5 Landfill Gas Piping Detail
5. Leachate Laboratory Analytical Report

Attachment 1

Electrical Repair Documentation

Electrical Service and Air Compressor System Evaluation

TRC
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Madison, WI 53717

Main 608.826.3600

Technical Memorandum

To:	Cynthia Koepke – Wisconsin Department of Natural Resources
From:	Andrew Stehn, Senior Project Engineer/Project Manager – TRC
Subject:	Refuse Hideaway Landfill Electrical Service and Air Compressor System Evaluation
Date:	December 7, 2022
CC:	Katherine Vater – TRC Eric Hartford – TRC
Project No.:	457573.0001.0000

Introduction

The Refuse Hideaway Landfill gas and leachate extraction system was installed in spring of 2021 and was operational by fall of 2021. Cold weather operation in winter of 2021-2022 resulted in the need for additional insulating and heat tracing of select portion of the gas extraction system and repairs to the air compressor system for leachate extraction. TRC worked with Perennial Energy (PEI), the company that built the leachate and gas extraction system, to upgrade the system to operate in colder weather and to make select repairs to the air compressor system. The purpose of this memorandum is to discuss electrical service and air compressor system issues observed following PEI's upgrade work in June 2022.

Background

In June 2022, PEI installed additional heat trace tape and insulation along the gas extraction system piping due to operational issues during winter of 2021-2022. The cold weather caused accumulation and freezing of condensation in the gas extraction lines, shutting down the gas extraction system. The gas extraction system was left off until October 2022 due to electrical service issues as further discussed below.

The air compressor system operated with excessive noise during cold weather and was shutdown in winter 2021-2022 to ensure the equipment was not further damaged. Based on communication between PEI and TRC, the cold weather may have caused the oil in the reservoir to gel up, causing excessive noise and failure of part of the compressor system. Based on the warranty for the compressor and the observed operational issues, PEI, recommended that the first repair be a replacement of the pump head. Following the replacement, the air compressor system was attempted to be restarted but the compressor motor was found inoperable.

PEI checked the electrical service to the motor and found that the required three phase 460 voltage alternating current (VAC) was not being supplied to the motor. Therefore, the compressor could not be started to determine if the pump head replacement fixed the air compressor system. In addition, other troubleshooting of the compressor system could not be completed due to the lack of adequate electrical service.

TRC contacted Madison Gas and Electrical (MG&E) following the identification of the electrical service issue. An MG&E technician checked the service to the site on June 29, 2022, and confirmed the service being provided to the site was the three phase 120/208 VAC and that there were no issues with the service supply. After confirmation from MG&E, it was determined that three dry contact transformers were installed on a wood structure adjacent MG&E's service pole. The transformers were being used to step-up the MG&E service to three phase 480 VAC to allow for the leachate and gas extraction system to operate. The transformers were not part of MG&E's service, and this part of the electrical system is the responsibility of the property owner/representative. Since three phase 480 VAC was not being supplied to the air compressor system, there seemed to be an issue between the transformers and the extraction system panel. Therefore, TRC contacted Van Ert Electric (Van Ert) to review the site electrical service on June 30, 2022.

Electrical Service Troubleshooting and Repair

Van Ert found that two of the three installed transformers were not functioning as needed and the transformers would need to be replaced to reestablish the required 460-480 VAC. Van Ert, TRC, and the Wisconsin Department of Natural Resources (WDNR) evaluated and discussed options for repairing the system which included:

- Option 1: Installation of three 30 Kilovolt-amperes (kVA) transformers in-kind on the existing structure
- Option 2: Installation of one 75 kVA transformer in-kind on the existing structure
- Option 3: Installation of one 75 kVA transformer in-kind in the small shed located near the extraction systems skid

For Option 1, Van Ert provided via email an approximate cost for three individual 30 kVA transformers compared to a single 75 kVA transformer and the cost was approximately twice as much for three transformers. Van Ert confirmed that a single 75 kVA transformer would be able to provide the same output as three individual 30 kVA transformers. TRC provided this information to the WDNR and the WDNR agreed with proceeding with Option 2 or 3 for a single 75 kVA transformer. TRC requested that Van Ert provide a cost for Options 2 and 3. The quotes and further details were provided to the WDNR via email on August 29, 2022. Following review of the two quotes between TRC and WDNR, Van Ert revised the quote for Option 2 to include cleaning and sealing of the existing wood structure and WDNR selected Option 2 to repair the electrical service.

Between September 29 and October 5, 2022, Van Ert completed the following tasks to repair/upgrade the electrical service:

- Removal and disposal of the existing transformers and associated equipment;
- Pressure washing and resealing of the existing wood structure;

- Installation of a new wood base and a roof on the existing wood structure (metal roof still to be installed when materials are available, not installed as of the date of this memorandum); and

- Installation of one 75 kVA Square D transformer (Three Phase 480 Delta Secondary 208 Y/120 – Model Number EXN75T3H) and associated connections. The transformer product sheets are included in the Attachment 1.

Gas and Leachate Extraction Start-up

Van Ert conducted startup of the new transformer on October 6, 2022 and the output from the transformer was approximately 560 VAC. Based on this output, Van Ert adjusted the tap settings on the transformer to the lowest setting (tap 7) which resulted in an output of approximately 500 VAC. This output is higher than the necessary electrical input (460-480 VAC) for the extraction systems, but Van Ert indicated that an output of +/- 20% the necessary electrical service is within typical tolerance.

The gas extraction system was restarted following the transformer replacement and remains in operation. The air compressor system was restarted but the compressor motor did not turn on. The electrical service to the motor starter was checked and was reading 500 VAC. The motor starter contactor overload relay was checked and found to be tripped and when reset, the motor started. However, the contactor began to produce smoke and the system was shut down. Based on the historical on/off operation, the noisy compressor system operation and cold weather shutdowns in winter of 2021-2022, and on-going inadequate electrical service, it is not clear what caused the contactor failure. TRC and Van Ert discussed the failure of the compressor system and decided to obtain an electrical engineer's opinion on the issues observed. After confirming with WDNR, TRC had its own electrical engineer evaluate the air compressor system and electrical service issues to determine the next appropriate steps to bring the air compressor system back on-line.

Between October 26 and October 31, 2022, TRC conducted site visits to collect electrical information to further evaluate the system. Field notes from the site visits are included in Attachment 2.

TRC Electrical Engineering Evaluation

TRC reviewed the electrical service to the site and to the air compressor system. TRC reviewed both the 75 kVA transformer equipment selection and electrical system field measurements/observations to understand the supply of power to the air compressor system.

Transformer Selection

The Square D transformer installed is a dry type, low voltage, step down transformer generally used to step voltage down from three phase 480 VAC (primary input) to three phase 208 Y/120 VAC (secondary output). However, at the site the electrical connection for the transformer is installed in the opposite direction to step the voltage up from the 208 VAC from MG&E to provide a 480 VAC output (actual output is measured at 500 VAC). Van Ert was contacted and they confirmed that the previously installed transformers were configured the same way and Van Ert replaced the system in kind with the exception of installing one transformer instead of three.

TRC noted the configuration of the transformer connection is reversed when installed in this manner, which can increase inrush currents during startup events. TRC electrical engineering

agrees that the current configuration is less than ideal and will result in decreased service life for the transformer, and potentially downstream components such as the compressor motor starter.

Field Measurements/Observations

On October 26, 2022, TRC was onsite to photograph various aspects of the electrical service, transformer connections, and air compressor system connections. On October 31, 2022, TRC and Van Ert were onsite to collect field voltage measurements from the input and output of the transformer and between each tap set. Field notes from both site visits are included in Attachment 2. TRC also contacted MG&E to discuss the service being provided to the site based on field observations.

Based on review of the measurements and discussion with MG&E, TRC makes the following observation and two recommendations regarding the new transformer. Additional observations are included in the conclusions section and recommendations for the systems follow in the recommendations section.

- The transformer rating on the secondary side of the Square D transformer is 208 VAC phase-to-phase (line-to-line). The 480 VAC side of the transformer has 7 taps and Van Ert has wired the transformer on lowest setting, tap 7. Tap 7 correlates to an output of 431 VAC for a 208 VAC input, which is a ratio of approximately 2.072. Applying 240 VAC (as field measured) and the 2.072 ratio, translates to approximately 497 VAC output when wired on tap 7. Field voltages measured on the 480 VAC side of the transformer ranged from 497 VAC to 501 VAC, which matches the expected values given the tap 7 connection.

- Field voltages measured in the transformer on one line to line connection (Brown leg to Ground) was recorded as 102 VAC. This could be normal if the transformer is designed this way, but this seems like an unusual value. It could also be indicative of an insulation issue somewhere on this phase (contamination, partial insulation failure, etc.). It is recommended that this measurement be investigated further, perhaps performing insulation tests on the overall circuit.

- The previous electrical system contained a surge protector before and after the three step-up transformers. TRC evaluated the current system with a single transformer and would recommend installing one surge protector between the transformer and the service line to the extraction system skid.

Conclusions

Based on TRC's, PEI's, and Van Ert's work at the site since 2021, the following are conclusions regarding the air compressor system and electrical supply system based on the information available to date:

- The phase-to-phase (line-to-line) voltage service to the site was field measured to be 240 VAC not 208 VAC, which MG&E noted in June 2022 is the service being provided. TRC discussed this potential discrepancy with MG&E and following multiple conversions with MG&E, it was determined that based on the age of the system the service is actually 240 VAC Delta. MG&E no longer provides this service for new systems, 208 VAC Delta is now provided, which may be the reason why their records indicate the service to the site is 208 VAC Delta.

- The current transformer is supplying approximately three phase 500 VAC to the site.
- There is no surge protector installed on the electrical service to the site.
- The motor name plate rating for the air compressor system is 460 VAC. Given the failure of the previous step-up transformers, it is not known what voltage was being supplied to the air compressor system prior to failure over the winter of 2021-2022.
- When the air compressor system was operational, it required the compressor motor to switch on and off on frequent basis to supply the well field with sufficient air to operate the extraction pumps. The frequent on and off operation could have been a contributing factor to accelerating equipment failure (i.e., motor starter contactor).
- The currently available 500 VAC is approximately 109% of the air compressor system rating, which is too high for the motor insulation if exposed to this VAC over long periods of time. Given the utility supply voltage can also vary and could be up to 5% higher on a continuous basis and still acceptable (240 VAC is a very typical baseline value), that would expose the motor to voltages 14% above name plate ratings. The higher voltages coupled with increased inrush currents could contribute to an accelerated insulation loss of life and ultimate failure of any new/replacement equipment.
- The air compressor, or some of its components, will require replacement to bring the air compressor system back into service.

Recommendations

Based on review of the system and conclusions made, the transformer installed is designed for a voltage step down with an input (primary) voltage of three phase 480 VAC and output (secondary) voltage of three phase 208 VAC. The unit will operate as wired to step voltage up from 208 VAC to 480 VAC however, the service from MG&E is 240 VAC. The higher input voltage creates a higher output voltage (500 VAC) which over time could reduce the longevity of the leachate and gas extraction systems and the transformer itself. The gas extraction system and transformer can operate as installed but reduced lifespan of the equipment is anticipated. TRC recommends three potential options to resolve the electrical issue at the site. The objectives of these recommendations are to (1) bring the air compressor system back on-line and (2) provide an electrical service to the site that provides the 460-480 VAC needed.

- Option 1: MG&E Three Phase 480 VAC Service
  - Remove the existing transformer and have MG&E provide the three phase 480 VAC service directly to the site. TRC discussed this option with MG&E and assuming they would be running the service to the same general area where the current service is provided the cost for MG&E would be approximately $17, 800. A service request would need to be submitted and generally a service can be installed 90 days following the application submittal. There may also be some minor cost for an electrician to make final connections to the onsite system. This also does not take into account any change (if necessary) to the current solar panel system, as that system has not been evaluated at this time. TRC would recommend installing a surge protector between the new service and the site panel.
  - Replace the air compressor motor starter contactor and overload relay, or replace the entire air compressor.

- Option 2: Replace the Site Transformer
  - Install an appropriately sized step-up transformer for 240 VAC input and 480 VAC output. This transformer configuration is an option, and one supplier provided a cost at approximately $6,000. This option would replace the existing transformer with this new appropriately sized transformer. Cost for the installation and the return of the existing transformer would need to be further discussed with Van Ert. Van Ert did note that a cost reimbursement for the existing transformer could be provided if the current unit is resold. For this option, TRC would recommend installing a surge protector between the new transformer and the service line to the leachate and gas extraction system panel.
  - Replace the air compressor motor starter contactor and overload relay, or replace the entire air compressor.
- Option 3: Minimum Equipment Repairs
  - Continue to operate the existing transformer.
  - Replace the air compressor motor starter contactor and overload relay and operate the system under the current configuration with the potential of future equipment failure. Note additional issues may still be present for the compressor as TRC has not had the ability to run the system to further troubleshoot if the compressor is operational.
  - If this option is pursued, TRC would recommend further evaluation of the brown to ground leg as discussed in the above conclusions section.
  - For this option TRC would recommend installing a surge protector between the existing transformer and the onsite service line to the leachate and gas extraction system panel.

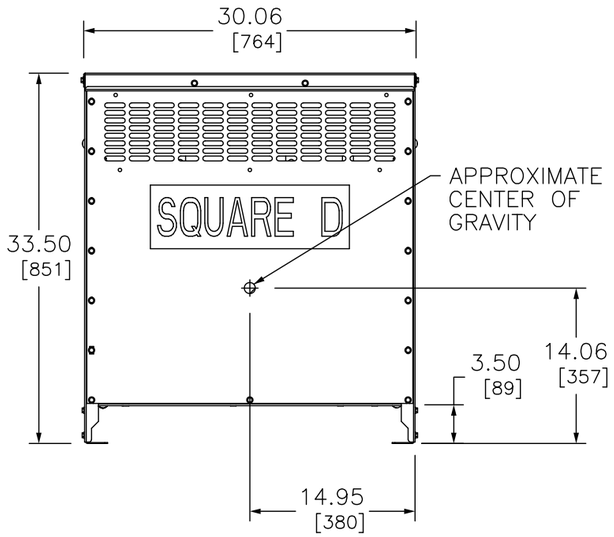
Regardless of the option selected, the air compressor motor contactor and overload relay, at a minimum, need to be replaced and TRC recommends installing a surge protector. Note that reduced equipment life on both the gas extraction and air compressor systems is anticipated by running them at 500 VAC electrical service. Although there are additional costs, TRC recommends further evaluation of Options 1 and 2, so that the site electrical service can provide the desired 480 VAC. This will allow the existing and any future equipment repairs/replacements to operate at their peak performance, and will reduce maintenance costs and system outages over time. TRC will conduct a follow-up meeting with the WDNR to discuss the evaluation, conclusions, and recommendations outlined in this memorandum.

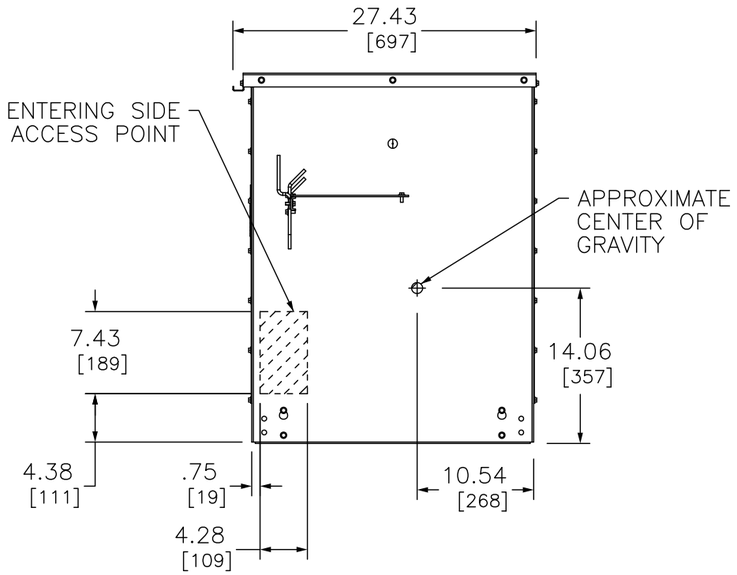
List of Attachments

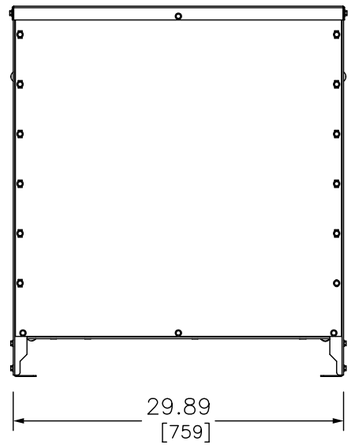
- Attachment 1: Transformer Product Sheets
- Attachment 2: Field Notes

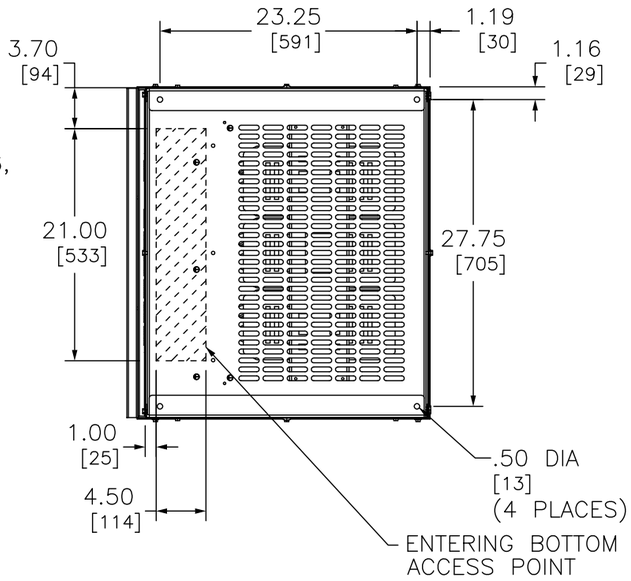
Attachment 1

Transformer Product Sheets









SEISMIC QUANTIFICATION

TO BE COMPLIANT WITH THE SEISMIC REQUIREMENTS OF ASCE/SEI 7, THIS UNIT IS SELF CERTIFIED TO ICS ES AC156, BY SHAKE TABLE QUALIFICATION TESTING.
THE ENCLOSURE ABOVE IS 20M.

TRANSFORMER SPECIFICATION

75 KVA 3 PHASE 60 HERTZ
PRIMARY VOLTAGE: 480 DELTA
SECONDARY VOLTAGE: 208Y/120
150°C RISE ABOVE 40°C AMBIENT
220°C INSULATION SYSTEM ALUMINUM WINDING
APPROXIMATE WEIGHT: 515 LBS
GUARANTEED SOUND LEVEL: 45 dB
TYPE 2 ENCLOSURE PAINTED ANSI 49 GREY
MINIMUM EFFICIENCY 98.60% @ 35% LOADING 75°C
COMPLYING WITH DOE 2016–10 CFR 431
(78 FR 23335–APRIL 18, 2013)

NOTES:

cULus List TO UL 1561 AND C22.2No47, FILE NUMBER E6868
ALL UNITS 100% TESTED PRIOR TO SHIPPING TO NEMA ST–20 (2014)
MANUFACTURE IN ISO 9001 FACILITIES
GREEN PREMIUM (RoHS/REACH COMPLIANT, PRODUCT ENVIRONMENT PROFILE)
REGISTERED TO DOE VIA 10 CFR 429 & NRCAN
MINIMUM CLEARANCE 1/2 INCH PER ALCOVE TESTING UL 1561. SIDES AND REAR
FRONT ACCESS MUST COMPLY WITH NEC WORK SPACE REQUIREMENTS,
MINIMUM CLEARANCE OF 6 INCHES.
CONDUIT ENTRY AREA ARE SHOWN ABOVE, LOCATIONS ARE FRONT SIDES
AND FRONT BOTTOM

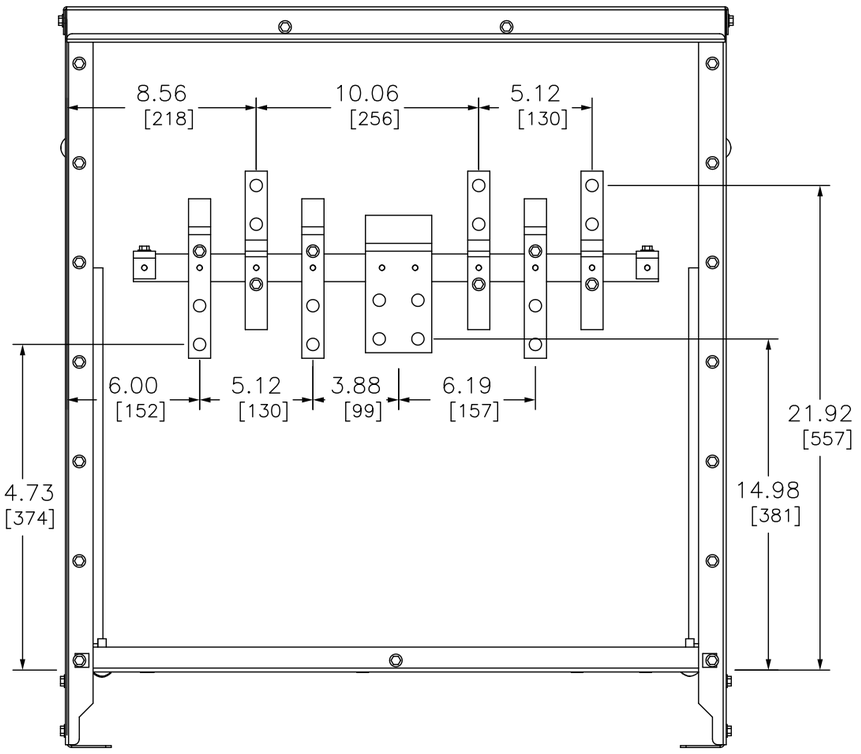
DUAL DIMENSIONS: INCHES
MILLIMETERS

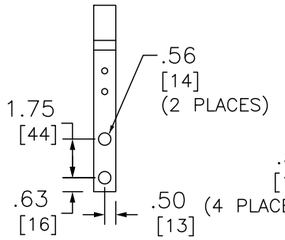
LOW VOLTAGE DISTRIBUTION TRANSFORMER
DOE 2016
DRY TYPE TRANSFORMERS CATALOG NO EXN75T3H
3 PHASE, 480 DELTA
SECONDARY 208Y /120, ALUMINUM

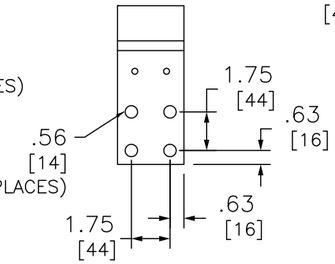
SQUARE D™
by Schneider Electric

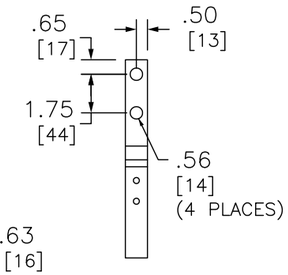
DWG# NO. EXN75T3H PG 1

NOVEMBER 2019



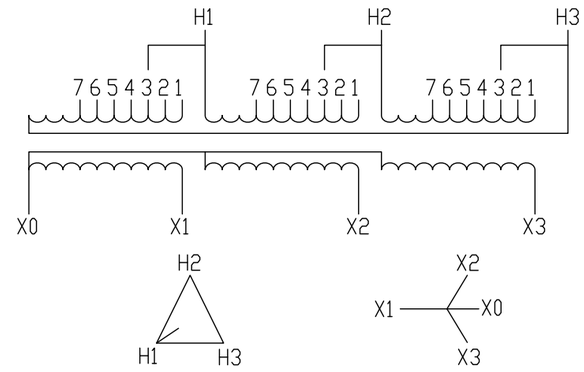






IN EACH PHASE CONNECT TO TAPS	
PRIMARY VOLTS	2–2.5% FCAN 4–2.5% FCBN
504	1
492	2
480	3
468	4
456	5
444	6
432	7

NOTE: ACTUAL VOLTAGES & NAMEPLATE VALUES MAY NOT MATCH VOLTAGE IN TABLE



DUAL DIMENSIONS: INCHES
MILLIMETERS

LOW VOLTAGE DISTRIBUTION TRANSFORMER
DOE 2016
DRY TYPE TRANSFORMERS CATALOG NO EXN75T3H
3 PHASE, 480 DELTA
SECONDARY 208Y /120, ALUMINUM

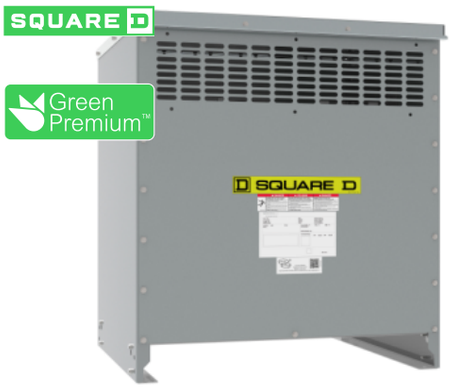
SQUARE D™
by Schneider Electric

DWG# NO. EXN75T3H PG 2

NOVEMBER 2019

Product data sheet

Specifications



Low voltage transformer, DOE 2016, dry type, 3 phase, 75kVA, 480V pri, 208Y/120 sec, Al, 150C rise, Type 2

EXN75T3H

Product availability : Stock - Normally stocked in distribution facility

Price* : 5,456.00 USD

Main

Range of Product	Square D
Product or Component Type	DOE 2016 energy efficient transformer
Device short name	DOE 2016
Transformer type	Energy efficient
Device Application	Low voltage electrical distribution

Complementary

Box number	20M
Phase	3 phase
Rated operational power in VA	75 kVA
Network Frequency	60 Hz
Type of cooling	Natural convection
Primary Voltage	480 V delta
Number of tap-offs	2 2.5 % FCAN 4 2.5 % FCBN
Primary operational current	90.21 A 208.18 A 75 kVA
Secondary voltage	208Y/120 V
Coil Material	Aluminium
Basic IMP level (BIL)	10 kV
Temperature Rise	150 °C 220 °C insulated
DOE Efficiency	98.63 % at 35 % load factor , 167 °F (75.0 °C)
Sound Level	3 dB NEMA ST-20 47 dB
%IZ	4.90 %
%IX	3.97 %
X/R Ratio	1.54
Inrush current	985 A
Let Through Current	3.71 kA
Transformer Losses	142 no load (core loss)

* Price is “List Price” and may be subject to a trade discount – check with your local distributor or retailer for actual price.

	2226 load loss (coil loss)
Transformer BTU/HR	696 16.6 % 959 25 % 2383 50 % 4757 75 % 8080 100 %
Height	33.50 in (851 mm)
Depth	27.44 in (697 mm)
Width	30.08 in (764 mm)
Net Weight	515.00 lb(US) (233.60 kg)
Mounting support	Floor Floor, with 7400FMB Ceiling, with 7400CMB18M19M20M Wall, with 7400WMB18M19M20M
Degree of protection	UL type 2 UL type 3R, with 7400WS18M19M20M
Electrical connection	2 Hole Nema Pad primary 0.44 in (11.1 mm) 2 Hole Nema Pad secondary 0.44 in (11.1 mm) 4 Hole Nema Pad sec - XO 0.44 in (11.1 mm)
Number of mounting holes	0.51 in (13 mm)

Environment

Ambient air temperature for operation	104 °F (40 °C)
Average ambient air temperature for operation	30 °C
Standards	UL 1561 CSA C22.2 No 47 NEMA ST-20

Ordering and shipping details

Category	16256-3PH EXN/2016 15-150KVA LVGP XFMR
Discount Schedule	PE2X
GTIN	785901272687
Returnability	Yes
Country of origin	MX

Packing Units

Unit Type of Package 1	PCE
Package 1 Length	32.00 in (81.28 cm)
Number of Units in Package 1	1
Package 1 Width	35.00 in (88.9 cm)
Package 1 Height	38.50 in (97.79 cm)
Package 1 Weight	544.98 lb(US) (247.2 kg)

Offer Sustainability

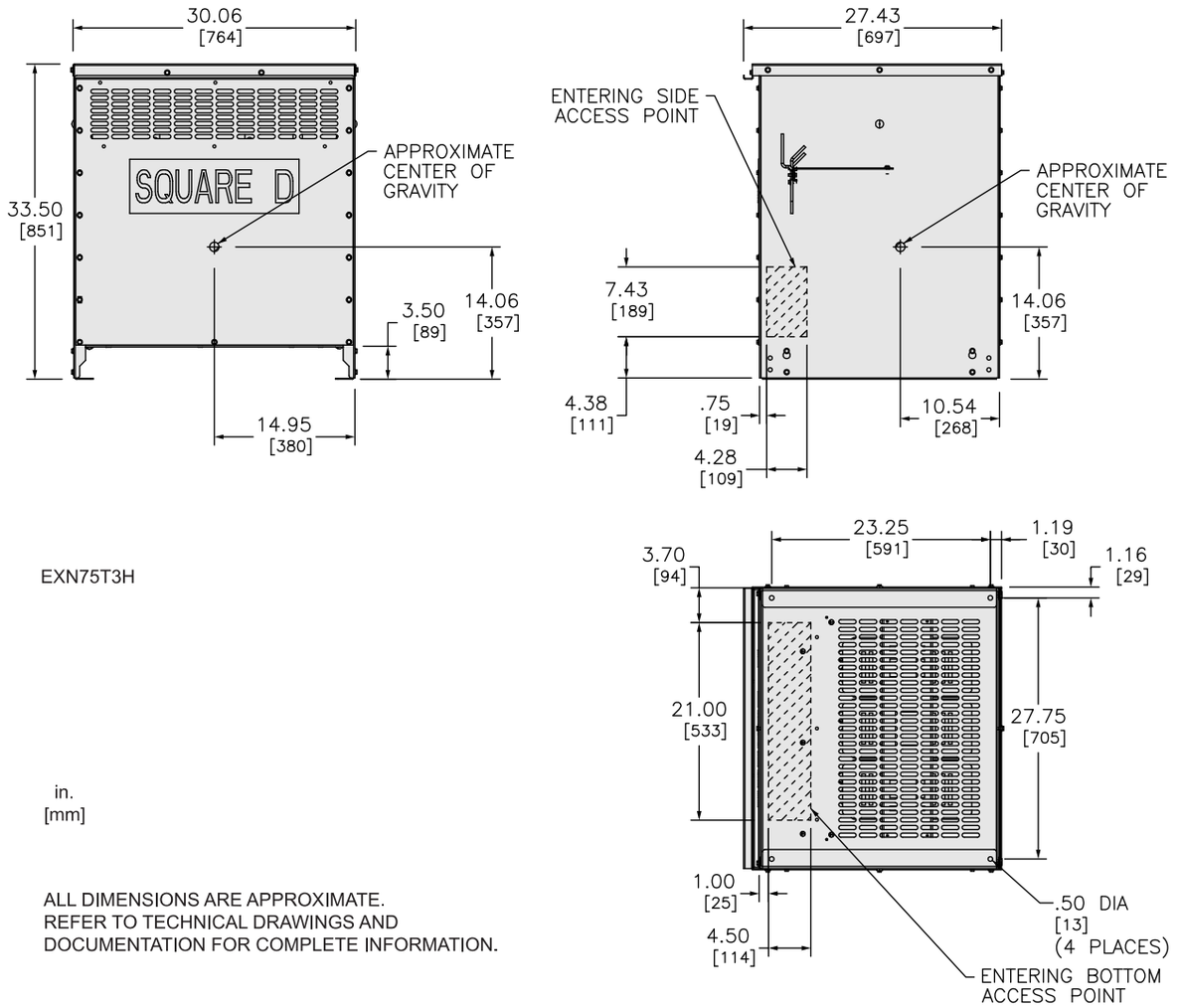
Sustainable offer status	Green Premium product
California proposition 65	WARNING: This product can expose you to chemicals including: Phenyl Glycidyl Ether, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov
REACh Regulation	REACh Declaration
REACh free of SVHC	Yes
EU RoHS Directive	Compliant EU RoHS Declaration

Toxic heavy metal free	Yes
Mercury free	Yes
RoHS exemption information	Yes
China RoHS Regulation	China RoHS declaration Pro-active China RoHS declaration (out of China RoHS legal scope)
Environmental Disclosure	Product Environmental Profile
PVC free	Yes
Halogen content performance	Halogen free plastic parts product

Product data sheet EXN75T3H

Technical Illustration

Dimensions



EXN75T3H

in.
[mm]

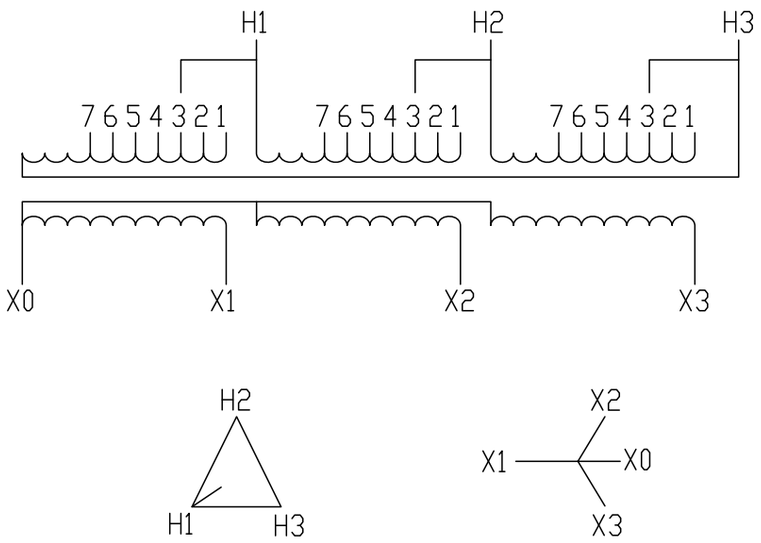
ALL DIMENSIONS ARE APPROXIMATE.
REFER TO TECHNICAL DRAWINGS AND
DOCUMENTATION FOR COMPLETE INFORMATION.

Wiring Diagram

IN EACH PHASE CONNECT TO TAPS	
PRIMARY VOLTS	2–2.5% FCAN 4–2.5% FCBN
504	1
492	2
480	3
468	4
456	5
444	6
432	7

NOTE: ACTUAL VOLTAGES & NAMEPLATE VALUES MAY NOT MATCH VOLTAGE IN TABLE

EXN75T3H



REFER TO TECHNICAL DRAWINGS AND DOCUMENTATION FOR COMPLETE INFORMATION.

Attachment 2

Field Notes

RHL Repairs - Daily Log

Refuse Hideaway, October 26, 2022

10/26/2022, 8:28:46 PM UTC

CREATED

10/26/2022, 7:48:39 PM UTC
by Andrew Stehn

UPDATED

10/26/2022, 8:28:46 PM UTC
by Andrew Stehn

STATUS

Complete

LOCATION

43.098195, -89.576455

PROJECT

No Project

ASSIGNED TO

No Assignment

Work Date	October 26, 2022
Work Start Time	14:48
Project Name	RHL Source Control Systems Repair and Upgrades
TRC Project Manager Name	Andrew Stehn
Client Contact Name	Cynthia Koepke - WDNR
TRC Field Team Lead Name	Andrew Stehn
General Weather Conditions	
Daily Work Objective	Collect photos of electrical systems
On-Site Personnel (Name - Company)	Andrew Stehn TRC
On-Site Equipment (Name - Company)	

Weather (1 Item)

Weather - 1. 14:50

Date	October 26, 2022
Time	14:50
Tap to Add Weather Data	
Weather Summary	CONDITIONS: Clear, TEMPERATURE: 51.21 F, PRESSURE: 1008 hPa, RELATIVE HUMIDITY: 54 %, WIND SPEED: 12.66 MPH, WIND DIRECTION: 310 degrees

Health and Safety Tailgate

Health and safety tailgate conducted?	
Tail Board Leader	
Attendees	
Topics of H&S	

Work Summary

Work Summary Entry (1 Item)

Work Summary Entry - 1. AS, 15:27

Time of Summary Entry	15:27
Description of Activities	Collecting photos To provide to TRC electrical engineers to troubleshoot electrical and air compressor issues.

Initials	AS

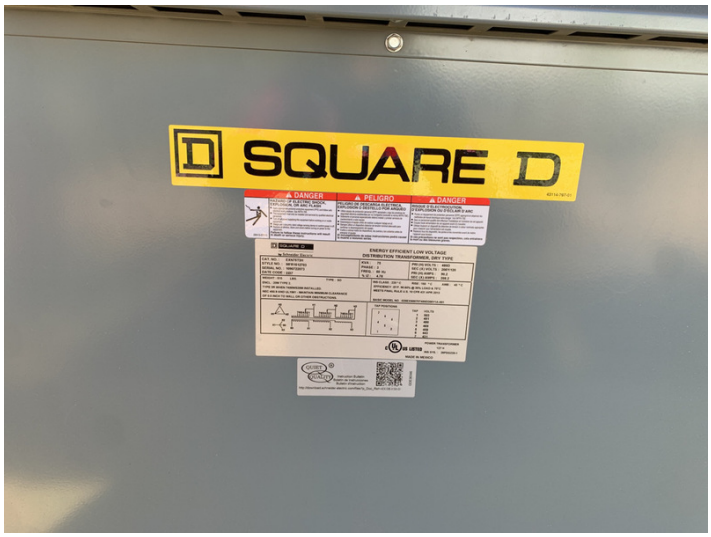
Site Visitors

Construction Activity Photos

Photo Info (7 Items)

Photo Info - 1. 14:52, Photo of electrical feed from MG&E pole and transformer.

Photos




SERVICE METER


Cutler-Hammer
ON
OFF


SERVICE METER
ABB
MGE 278850
MILBANK

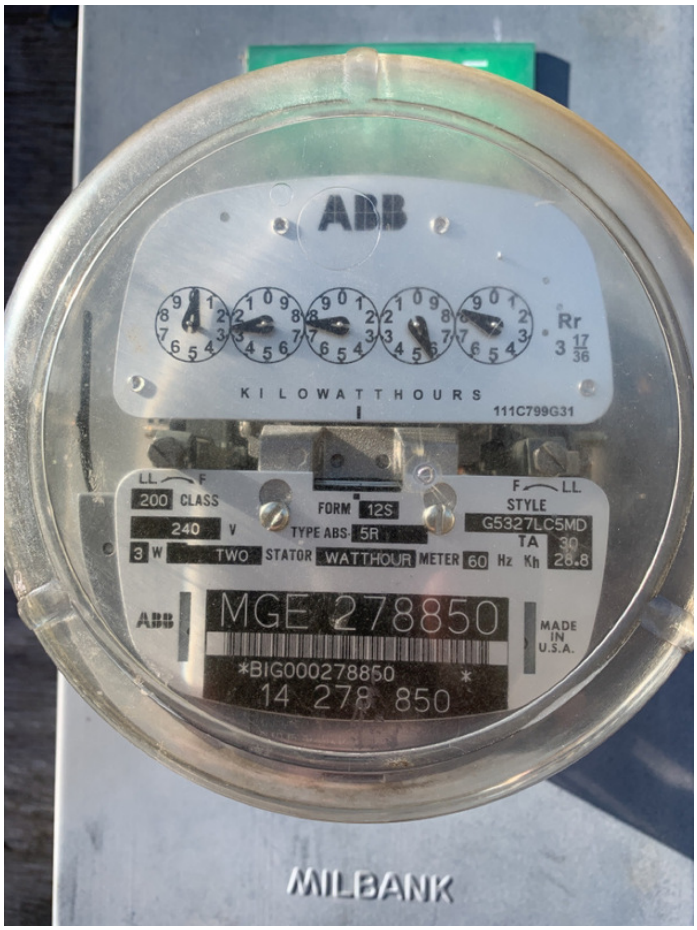
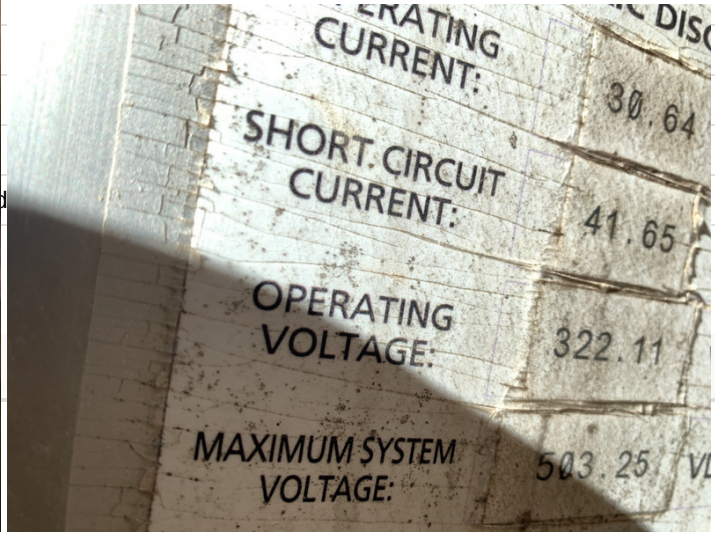


ABB
KILOWATTHOURS
111C799G31
200 CLASS
240 V
3 W TWO
FORM 12S
TYPE ABS 5R
STATOR WATTHOUR METER 60 Hz
STYLE G5327LC5MD
TA 30
Kh 26.8
MGE 278850
*BIG000278850
14 278 850
MADE IN U.S.A.
MILBANK


SOLAR (PV) METER
SOLAR (PV) UTILITY AC DISCONNECT


Fronius IG Plus


CURRENT:
30.64
SHORT CIRCUIT CURRENT:
41.65
OPERATING VOLTAGE:
322.11
MAXIMUM SYSTEM VOLTAGE:
503.25

Photos


460 VOLT 3 PHASE
SERVICE DISCONNECT
DANGER
Arc Flash And Shock Hazard
Appropriate PPE Required


460 VOLT 3 PHASE
FLARE DISCONNECT
DANGER
Arc Flash And Shock Hazard
Appropriate PPE Required


XFMR DISCONNECT
460 VOLT


240/120 VOLTS
PANEL A


240/120 VOLTS
PANEL A
MAIN
LIGHT


DANGER
PELIGRO
DANGER
460 PRI VOLTS
240/120 SEC VOLTS


ELECTRIC SHOCK,
OR ARC FLASH
PELIGRO DE DESCARGA ELÉCTRICA,
EXPLOSIÓN O DESTELLO POR ARQUEO
El incumplimiento de estas instrucciones podrá causar la muerte o lesiones serias.
SQUARE D
Schneider Electric
1939
MADE IN
MEXICO-24
CAT. NO.: 5S1F
5 KVA PHASE: 1
FREQUENCY: 60 Hz. INS. CLASS: 180 DEG. C
GENERAL PURPOSE TRANSFORMER
Rainproof
Type 3R
460 PRI VOLTS
240/120 SEC VOLTS

Photo Date	October 26, 2022
Photo Time	14:58
View Direction	
Description	Shed
Photographers Name	Andrew astehn

Photo Info - 3. Skid electrical

Photos

Photo Date	October 26, 2022
Photo Time	
View Direction	
Description	Skid electrical
Photographers Name	Andrew Stehn

Photo Info - 4. 15:04, 240 volt panel and transformer

Photos


240 VOLTS
THIS DISCONNECT DOES NOT REMOVE ALL POWER FROM PANEL
DANGER
HIGH VOLTAGE TURN POWER OFF BEFORE SERVICING
CP-EDP-2


MAIN
PRINCIPAL
CONTROLS
LIGHTS/HEATER
GFCI RCP
A/C
AIR DRYER
HEAT TRACE
WARNING
ADVERTENCIA
AVERTISSEMENT


CP-E/E-1


PANELBOARD / PANNEAU DE DISTRIBUTION / TABLERO DE ALUMBRADO / DISTRIBUCION
NQ
2943521916002000 1
70
120/240 V
100% Neutral
21054
DANGER / PELIGRO / DANGER
WARNING
ADVERTENCIA
AVERTISSEMENT

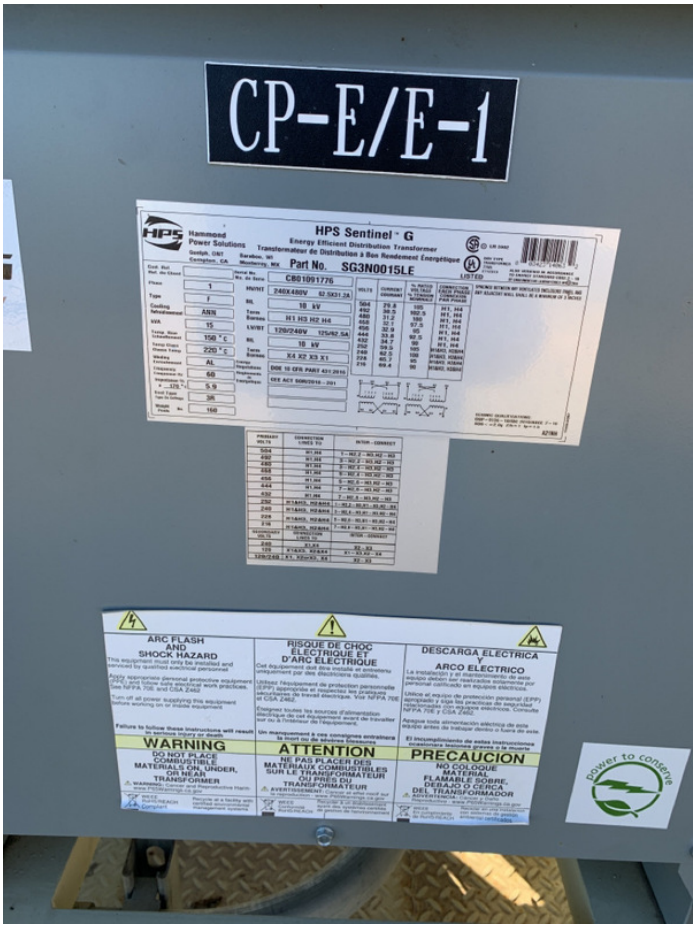
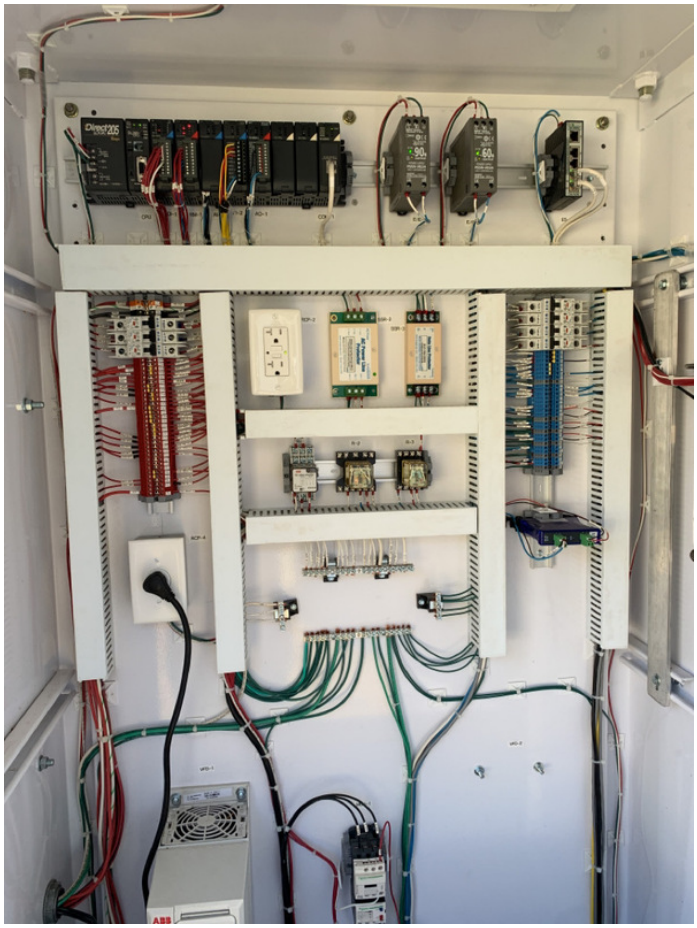


Photo Date	October 26, 2022
Photo Time	15:04
View Direction	
Description	240 volt panel and transformer
Photographers Name	Andrew Stehn

Photo Info - 5. 15:06, PIC

Photos




716
MOV-1
718
Schneider
LC1D09

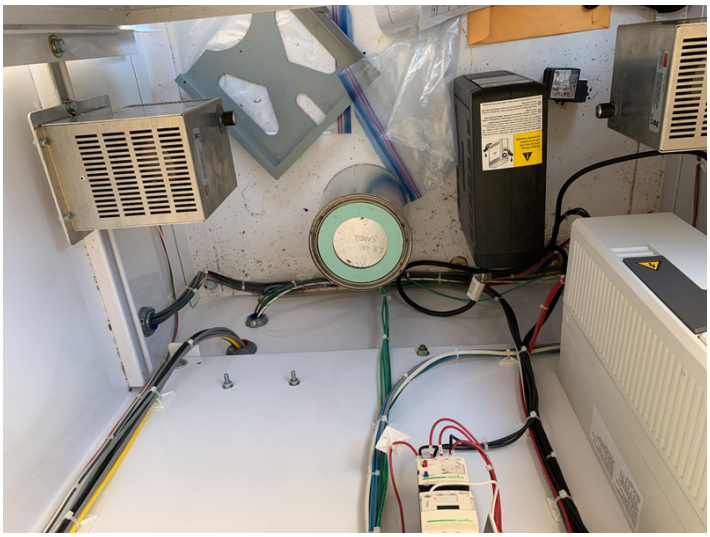
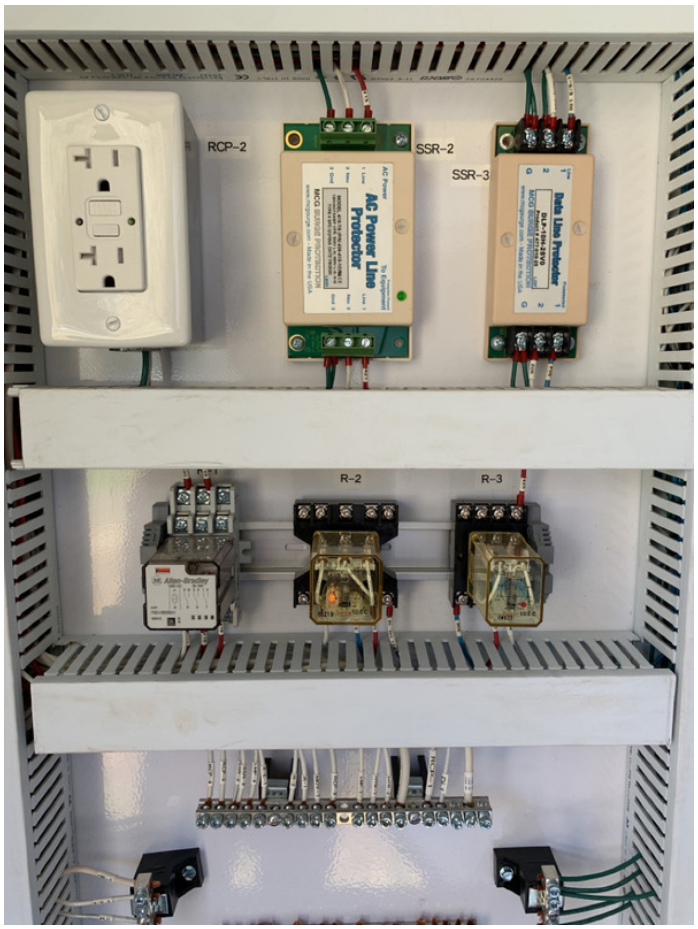


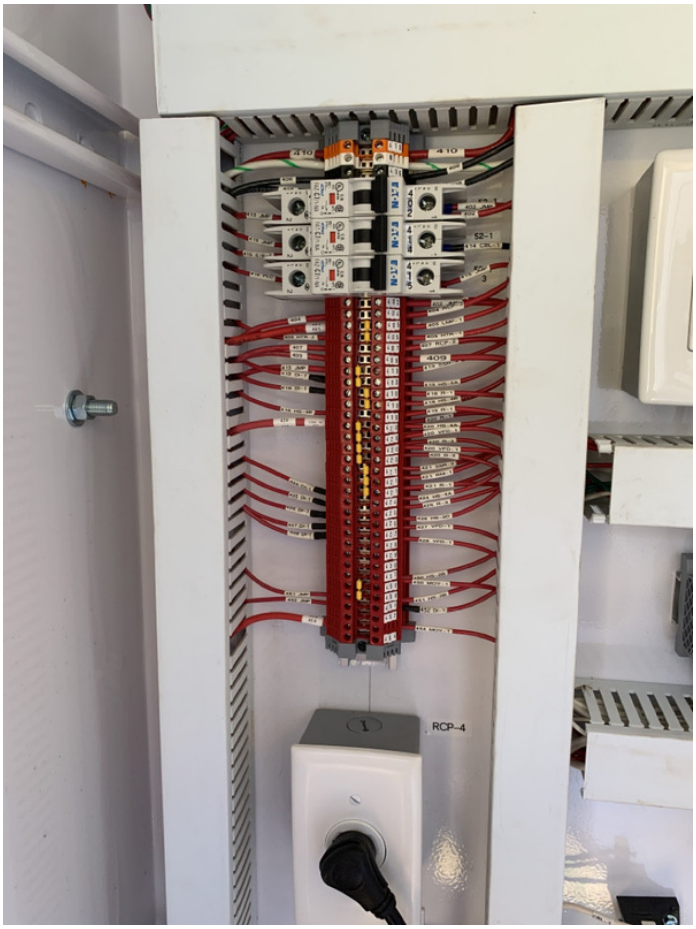

ABB
POWER
FAULT


VFD-1
ABB


Direct 205
LOGIC
Koyo
DL-260
DI-1
RM-1
AI-2
COM-1


RCP-2
SSR-2
SSR-3
AC Power Line Protector
Data Line Protector
R-2
R-3


90W
OUTPUT
PSSR-VE24
60W
PSSR-VD24
SSR-2
SSR-3


RCP-4


240 VOLTS
DANGER

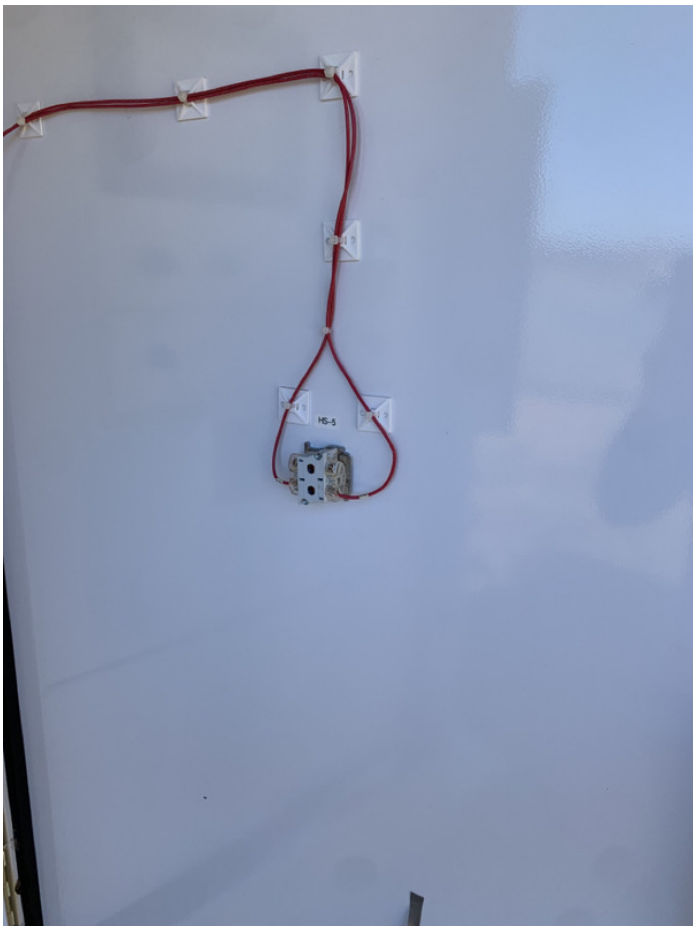
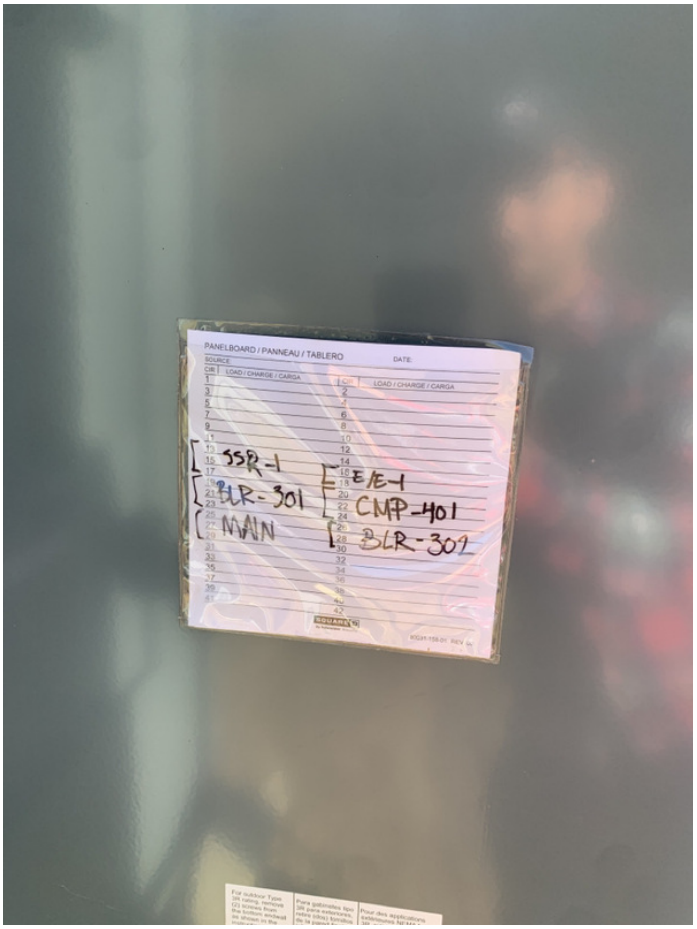

HS-5

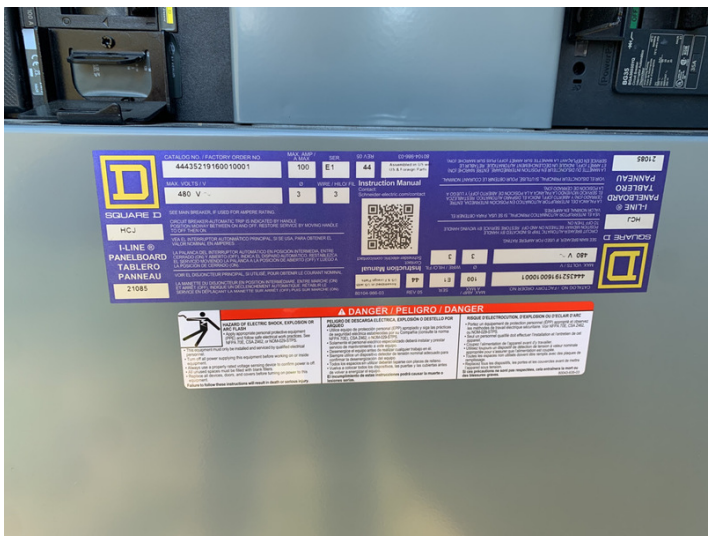
Photo Date	October 26, 2022
Photo Time	15:06
View Direction	
Description	PIC
Photographers Name	Andrew Stehn

Photo Info - 6. 15:12, 480 Panel

Photos


480 VOLTS
THREE PHASE
DANGER
CP-EDP-1


PANELBOARD / PANNEAU / TABLERO
DATE:
SOURCE
CIR
LOAD / CHARGE / CARGA
SSR-1
BLR-301
MAIN
E/E-1
CMP-401
BLR-302


SQUARE D
I-LINE ®
PANELBOARD
TABLERO
PANNEAU
21085
Instruction Manual
DANGER / PELIGRO / DANGER


TYPE 3R, 5 & 12 ENCLOSURE
GABINETE TIPO 3R, 5 y 12
COFFRET TYPE 3R, 5 et 12
Catalog or Assy. No. /No. de catálogo o ens. /N° de catalogue ou d'assemb.
HCJ3273WP
SER.
E1
For Use With Panelboards
A Utiliser avec les Panneaux de Distribution
Para Usarse en los Tableros
HCJ I-LINE
SQUARE D
by Schneider Electric
Assembled in MX with MX & Foreign Parts
21035
80045-091-01
29
Issue No. 0091687
Cutout Box
Caja Recortada
Boîte découpée
Panelboard Box or Front
Caja o Parte Frontal del Tablero de Alumbrado Distribución
Boîte ou Face Avant du Panneau De Distribution


SSR-1
BLR-301
PRINCIPAL
MAIN


E/E-1
CMP-401
BLR-302

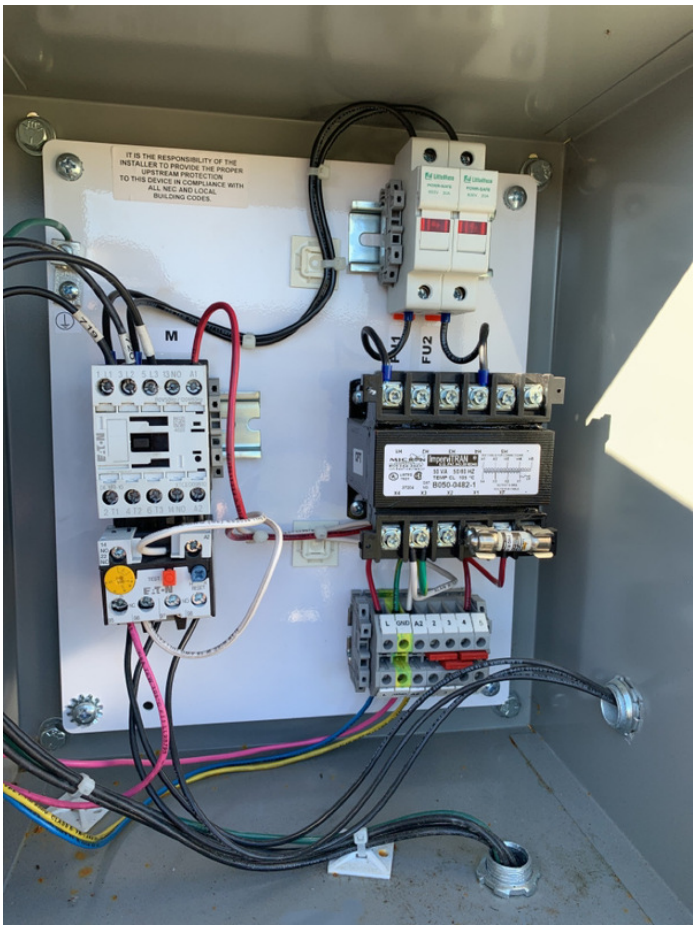
Photo Date	October 26, 2022
Photo Time	15:12
View Direction	
Description	480 Panel
Photographers Name	Andrew Stehn

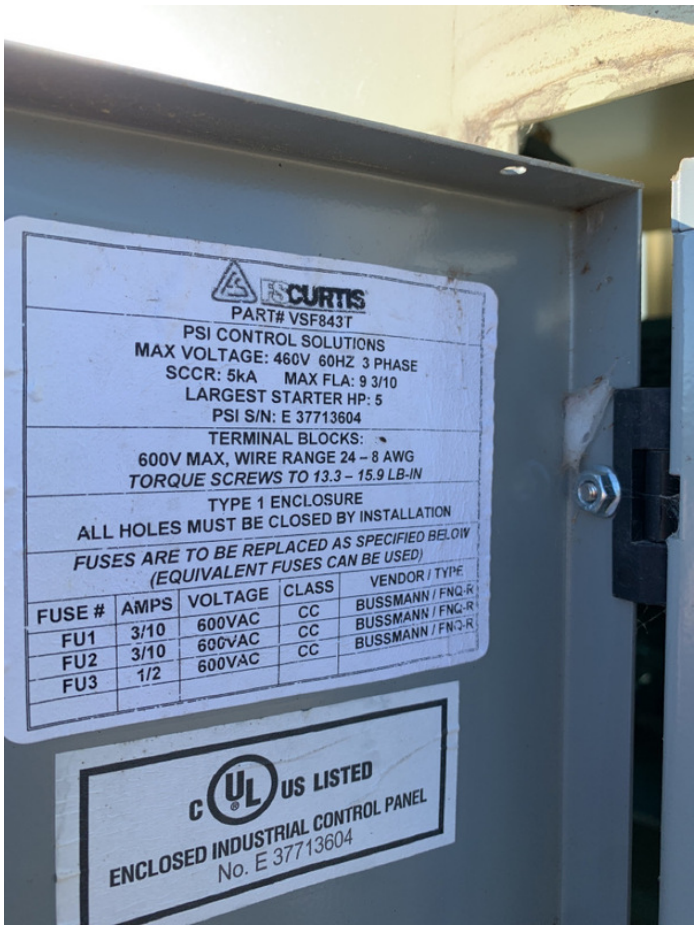
Photo Info - 7. 15:15, Air Compressor

Photos

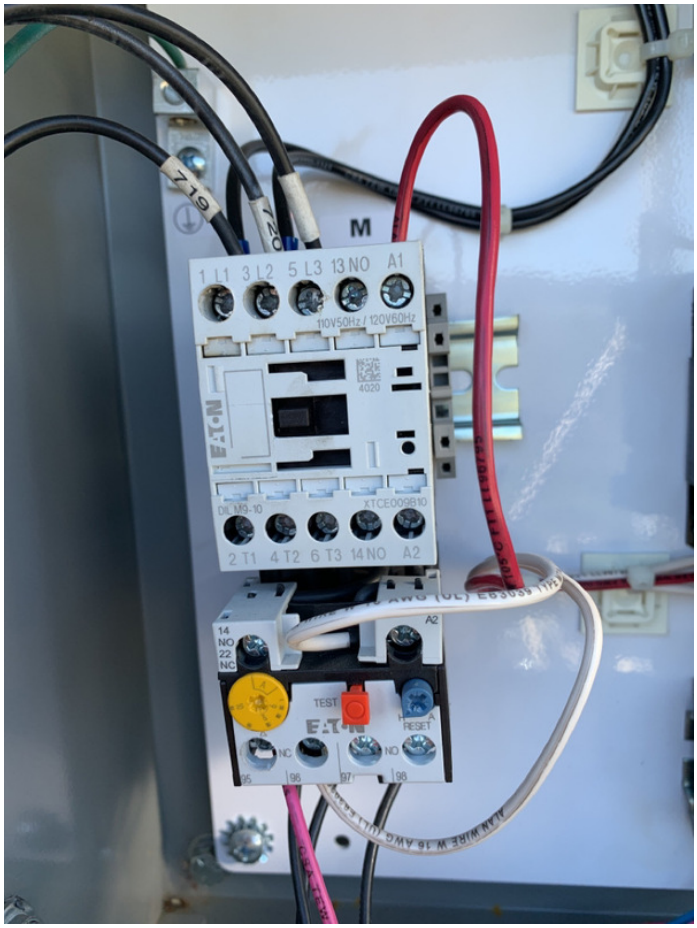

FSCURTIS
FCA05E57V8U-A4L1XX
CA05E57A21188
5
Lot #
002
460
PSI
175
NOTICE
WARNING

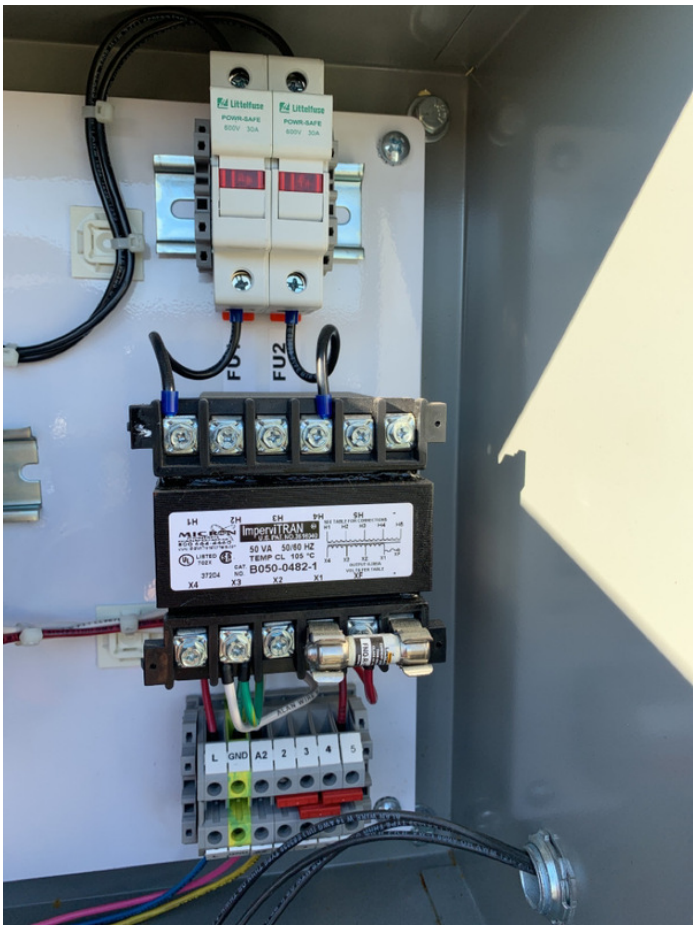

CAUTION
GHS-CMP-401

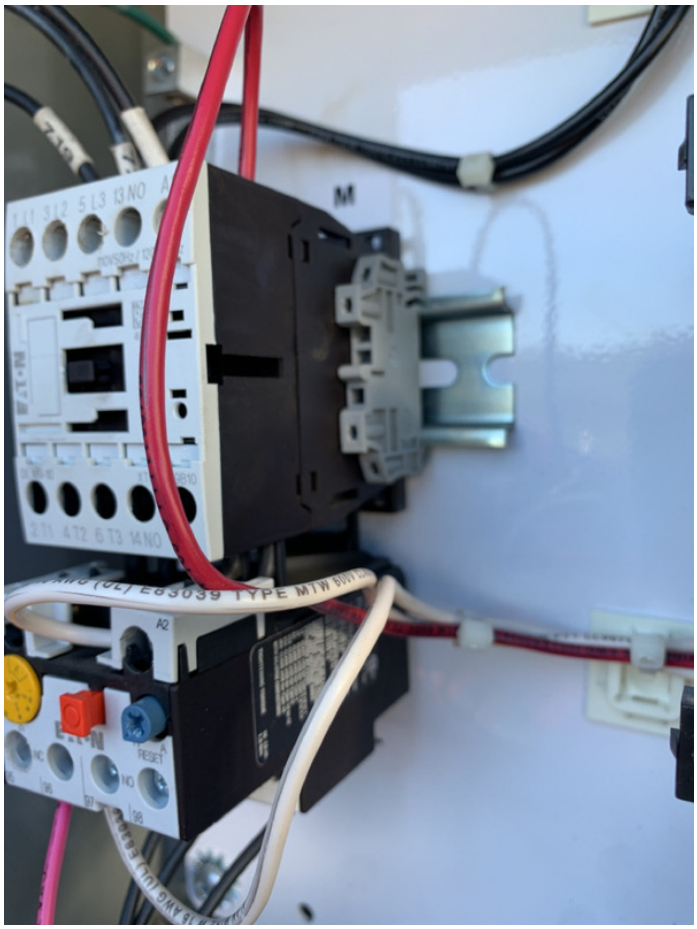

IT IS THE RESPONSIBILITY OF THE INSTALLER TO PROVIDE THE PROPER UPSTREAM PROTECTION TO THIS DEVICE IN COMPLIANCE WITH ALL NEC AND LOCAL BUILDING CODES.
M
FU1
FU2

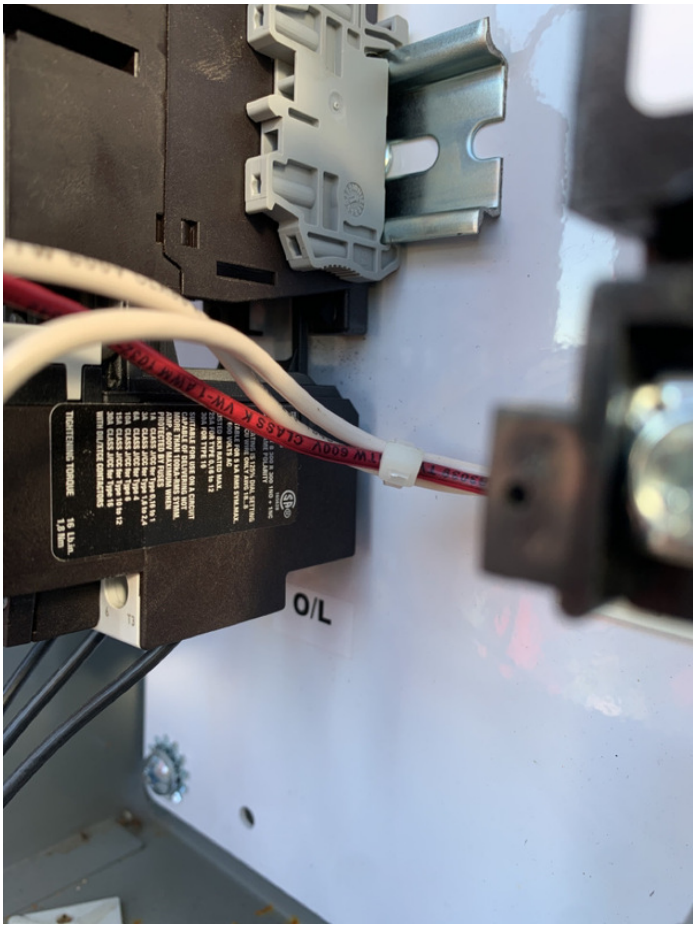

CURTIS
PART# VSF843T
PSI CONTROL SOLUTIONS
MAX VOLTAGE: 460V 60HZ 3 PHASE
SCCR: 5kA MAX FLA: 9 3/10
LARGEST STARTER HP: 5
PSI S/N: E 37713604
TERMINAL BLOCKS:
600V MAX, WIRE RANGE 24 – 8 AWG
TORQUE SCREWS TO 13.3 – 15.9 LB-IN
TYPE 1 ENCLOSURE
ALL HOLES MUST BE CLOSED BY INSTALLATION
FUSES ARE TO BE REPLACED AS SPECIFIED BELOW
(EQUIVALENT FUSES CAN BE USED)
FUSE # | AMPS | VOLTAGE | CLASS | VENDOR / TYPE
FU1 | 3/10 | 600VAC | CC | BUSSMANN / FNQ-R
FU2 | 3/10 | 600VAC | CC | BUSSMANN / FNQ-R
FU3 | 1/2 | 600VAC | CC | BUSSMANN / FNQ-R
c UL us LISTED
ENCLOSED INDUSTRIAL CONTROL PANEL
No. E 37713604


SCE
SAGINAW CONTROL & ENGINEERING
95 Midland Road Saginaw, MI 48638
989-799-6871 Fax 989-799-4524
SCE West
cULus LISTED
cUL CSA 22.2 94 14 Issue No. A-2, 192
ENCLOSURE TYPE 1
INDUSTRIAL CONTROL PANEL ENCLOSURE
IEC 60529
4125681
IP 30
SCE-14N1208LP
E-182557
KY

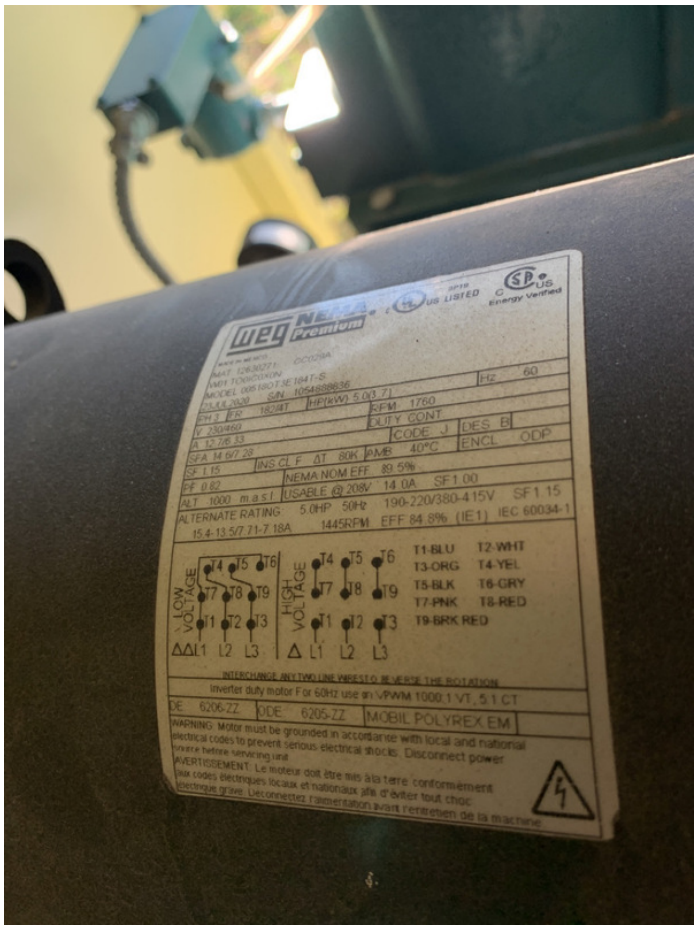

M
1 L1 3 L2 5 L3 13 NO A1
110V50Hz / 120V60Hz
2 T1 4 T2 6 T3 14 NO A2
TEST
RESET


Littelfuse
POWR-SAFE
ImperiVTRAN
50 VA 50/60 HZ
TEMP CL 105 °C
B050-0482-1
L GND A2 2 3 4 5


M
A2
RESET


O/L


M


weg
NEMA
Premium
LOW VOLTAGE
HIGH VOLTAGE
T1-BLU T2-WHT
T3-ORG T4-YEL
T5-BLK T6-GRY
T7-PNK T8-RED
T9-BRK RED
MOBIL POLYREX EM

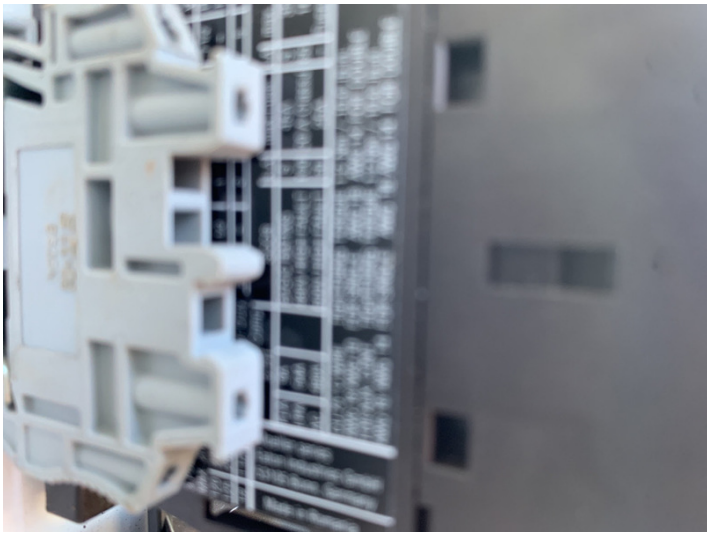
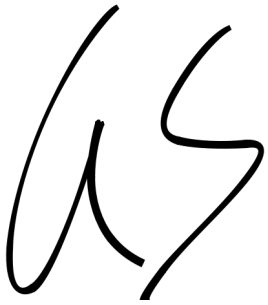


Photo Date	October 26, 2022
Photo Time	15:15
View Direction	
Description	Air Compressor
Photographers Name	Andrew Stehn

End of Day Notes

Summary of Daily Activities	Collected photos of electrical and skid system components
Next Day's Scope of Work	NA
Work End Date	October 26, 2022

Work End Time	15:30
TRC Field Team Lead Signature	

Signed 10/26/2022, 8:28:41 PM UTC

10/31/22

8:15 Andrew Stehn (TRC) and Tory Weidemann (Van Ert) onsite to collect further details on the electrical system for the landfill gas and leachate extraction system.

8:30 Measure voltage input from the MG&E pole (black, red, and blue wires). Input from MG&E is ungrounded delta.

- Black to Red – 240 V
- Red to Blue – 242 V
- Black to Blue - 240 V
- Black to Ground 120 V
- Red to Ground 210 V
- Blue to Ground 120 V

Transformer is currently set on Taps 7 (lowest voltage tap). Measure voltage on the output side of the transformer (Brown, Orange, and Yellow)

- Brown to Yellow – 497 V
- Yellow to Orange – 498 V
- Brown to Orange – 501 V
- Brown to Ground – 102 V
- Orange to Ground – 418 V
- Yellow to Ground – 411 V

Discussed what MG&E would have to do to directly provide 480 3-Phase to the system. Tory noted that they would need to mount a transformer to our pole to provide that voltage from the other pole. We could not just switch the transformers on MG&E pole because that would alter Speedway Sand and Gravels buildings.

9:00 Measured the voltage from each tap to Ground

- T1 (see above photo)
    - Tap 1 to Ground – 179 V
    - Tap 2 to Ground – 167 V
    - Tap 3 to Ground – 154 V
    - Tap 4 to Ground – 142 V
    - Tap 5 to Ground – 130 V
    - Tap 6 to Ground – 114 V
    - Tap 7 to Ground – 102 V
- T2 (see above photo)
    - Tap 1 to Ground – 500 V
    - Tap 2 to Ground – 487 V
    - Tap 3 to Ground – 475 V

    - Tap 4 to Ground – 462 V
    - Tap 5 to Ground – 449 V
    - Tap 6 to Ground – 431 V
    - Tap 7 to Ground – 418 V
- T3 (see above photo)
    - Tap 1 to Ground – 466 V
    - Tap 2 to Ground – 457 V
    - Tap 3 to Ground – 448 V
    - Tap 4 to Ground – 440 V
    - Tap 5 to Ground – 431 V
    - Tap 6 to Ground – 420 V
    - Tap 7 to Ground – 412 V

9:15 Measured the voltage between Taps.

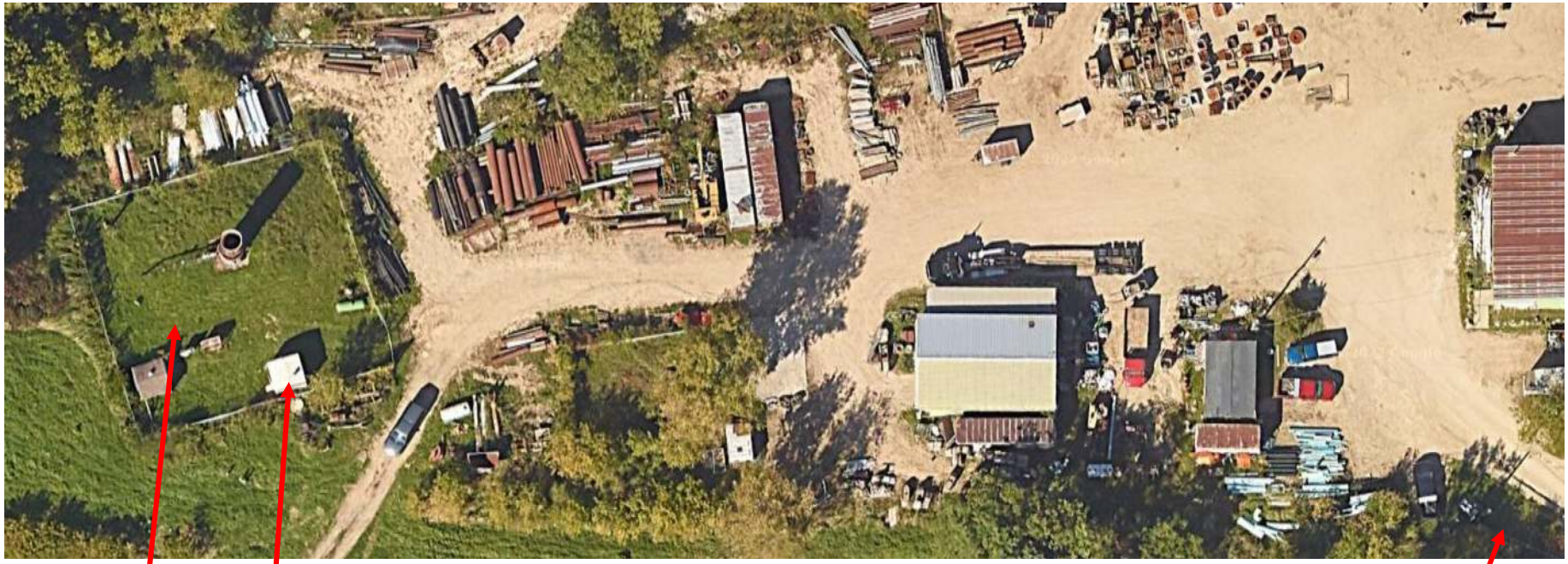
- T1 to T2 (see above photo)
    - Tap 1 to Tap 1 - 630 V
    - Tap 2 to Tap 2 – 609 V
    - Tap 3 to Tap 3 – 589 V
    - Tap 4 to Tap 4 – 569 V
    - Tap 5 to Tap 5 – 548 V
    - Tap 6 to Tap 6 – 522 V
    - Tap 7 to Tap 7 – 502 V
- T2 to T3 (see above photo)
    - Tap 1 to Tap 1 - 625 V
    - Tap 2 to Tap 2 – 604 V
    - Tap 3 to Tap 3 – 584 V
    - Tap 4 to Tap 4 – 564 V
    - Tap 5 to Tap 5 – 544 V
    - Tap 6 to Tap 6 – 518 V
    - Tap 7 to Tap 7 – 498 V
- T1 to T3 (see above photo)
    - Tap 1 to Tap 1 - 626 V

- Tap 2 to Tap 2 – 606 V
- Tap 3 to Tap 3 – 585 V
- Tap 4 to Tap 4 – 565 V
- Tap 5 to Tap 5 – 545 V
- Tap 6 to Tap 6 – 518 V
- Tap 7 to Tap 7 – 498 V

Note MG&E is providing 208/120 3 Phase for the service and the installed transformer steps the voltage up to 480 (closer to 500) V. There is a direct buried cable that runs from the transformer to a shed near the skid system. The shed houses three fused disconnects, one panel, and one small transformer used to step down the supplied 480 3 Ph to 208/120 Single phase to run the lights and electrical outlets in the shed. I found an excerpt from the 1996 OM manual when the old system was installed, and it noted that three buck booster transformers were installed along with 475 feet of larger direct burial cable. I measure the distance on google maps and its approximately 400 ft.

One fused disconnect shuts off the electricity to the shed, a second one shuts off electricity to the skid system, and the third shuts off electricity to the small transformer.

It appears that 480 3 Phase is supplied to the skid system and the air compressor and blower both run off this input. There is another transformer on the skid the steps the voltage down to operate other components on the skid.



Skid (not shown in aerial)

Shed

Service Power Pole and new transformer.

Electrical System Diagnostics and Repairs Refuse Hideaway Landfill

Van Ert Electric Company Inc.

2000 Progress Way
Kaukauna, WI 54130
Tel. (920) 766-3888 Fax (920) 766-0883

June 9, 2023

Andrew Stehn
TRC
999 Fourier Drive Suite 101
Madison, WI 53717

Re: Electrical System Diagnostics and Repairs Refuse Hideaway Landfill

Dear Mr. Stehn,

Van Ert Electric has completed Task 1 of our scope of work at Refuse Hideaway Landfill.

Per Task 1.1 we have created a one-line diagram of the electrical distribution system. It is attached below and includes the solar power generation system, MG&E service, and Flare Hut distribution. During our onsite data collection, we found that the electrical service is rated 240V, 200A and the installed step-up transformer is rated ~~280~~/480V. the mismatch in primary voltages, 240V vs. 208V, will cause a very high secondary voltage on the output of the transformer. We agree with the recommendation of TRC Engineering to replace the existing 75kVA transformer with a NEMA 3R 75kVA step-up transformer 240V(delta primary):480/277V (grounded wye secondary), along with a grounding electrode system.

208*

Per Task 1.2 we completed harmonic voltage monitoring for a two-week period beginning 5/23 and ending 6/5/2023. Monitors were connected to the output of the solar controller, Fronius IG Plus, and the primary side of transformer T-1. At no time during the monitoring period was power lost, nor were there any voltage spikes picked up by the monitoring equipment. The results of the harmonic monitoring are attached below.

During analysis of the data collected from the solar controller, we measured a lack of power output from the inverter controller. The Fronius IG Plus inverter is capable of producing 11.4 kW per documentation provided. We measured only 20W output from the inverter, furthermore the LCD display on the unit is not functioning properly. Per our phone conversation on June 8, 2023, MG&E has not recorded any power generated from the inverter on their PV revenue meter since early 2022. Our recommendation is to replace the existing inverter with a newer model.

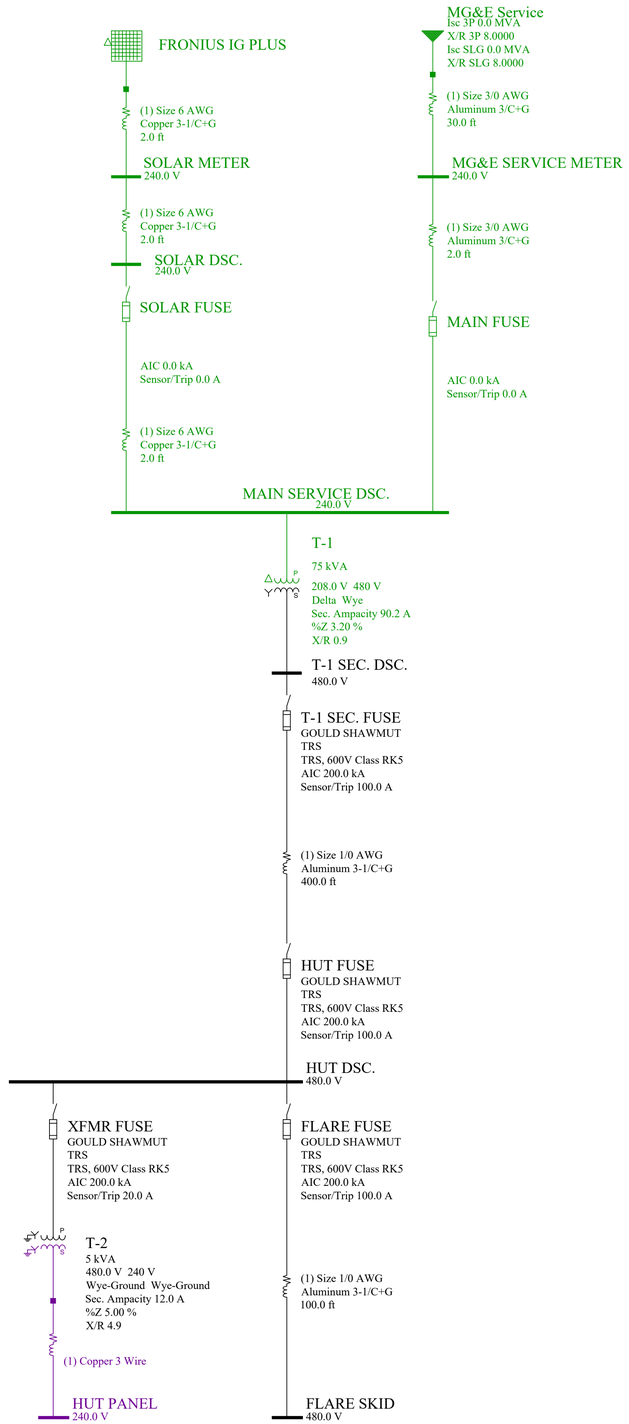
Per Task 2.1 we conducted an Electrical Motor Insulation Resistance Test on the Air Compressor motor and determined that no damage to the electrical winding system was detected. The motor passed tests recommended by ANSI/NETA ATS-2017 7.15.1.B. The test data sheet is attached below.

Please contact me if you have any questions or require further information at (920) 366-4341 or dcunningham@vanert.com.

Sincerely,

David Cunningham P.E.
Electrical Engineer
Van Ert Electric

*Edit made by A.Stehn (TRC) Confirmed by D. Cunningham (Van Ert)



One-Line

NTS

BLACK = 480 VOLT 3 PHASE

GREEN = 240 / 208 VOLT 3 PHASE

PURPLE = 240/120 VOLT SINGLE PHASE

REFUSE HIDEAWAY
Middleton, Wisconsin

ELECTRICAL DISTRIBUTION

Electrical System One-Line

Van Ert Electric
Completed June 2023

Next Evaluation To Be Done June 2028
Unless Substantial Additions Are Made To The System

REV	DATE	NOTES	INIT
1	6/8/23	ONE-LINE AS-BUILT	DC
2	--	--	--
3	--	--	--
4	--	--	--
5	--	--	--
6	--	--	--

PAGE: E-001

Van Ert
ELECTRIC COMPANY INC.
2000 PROGRESS WAY KAUKAUNA, WISCONSIN 54130
(920) 766-3888 Fax-(920) 766-0883

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE INCLUDING CONTRACTOR'S INSTALLERS, PERSONNEL AND ALL SUBCONTRACTOR(S) PERFORMING THE WORK.

PROJECT: REFUSE HIDEAWAY
MIDDLETON, WI

SUBJECT: ONE-LINE

CONTRACTOR: VAN ERT ELECTRIC
DRAWN BY: D. Cunningham
CAD: D. Cunningham
DATE: 6/8/2023

PROJECT NUMBER:
SCALE: NTS

DRAWING NUMBER:
REVISION:
PAGE: E-001

Fluke Energy Analyze Report

Client:
Wisconsin Department of Natural Resourses

Location:
Refuse Hideaway

Description:
Service Harmonic Study

Summary:
The Total Harmonic Distortion (THD) measures below 5% of the fundamental voltage, 240 volts. This is within the acceptable recommended limit per IEEE Std. 519 "Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems".

Session name:
ES.008

Session UUID:
fe7ea43a-d640-4066-ab73-b68ac6a04d06

Description:
Transformer T-1

Notes:
Probes connected to primary side of transformer T-1.

Study Type:
Energy study

Measurement Mode:

Topology:
3-ph Delta

Nominal Voltage:
240V

Nominal Frequency:
60Hz

Buffer Type:
linear (do not overwrite)

Start and End Dates:
Configured start: 5/23/2023 6:03:54 AM
Configured end: 6/6/2023 6:03:54 AM
Actual start: 5/23/2023 6:03:54 AM
Actual end: 6/5/2023 4:09:47 AM

Duration:
Configured duration: 14d 0h 0m 0s
Actual duration: 12d 22h 5m 53s

Number of averaging intervals:
Number of trend intervals as configured: 241919
Number of trend intervals as present: 223272
Trend interval length: 5sec
Number of demand intervals as configured: - - -
Number of demand intervals as present: 0
Demand interval: - - -
Number of PQ intervals as configured: 2015
Number of PQ intervals as present: 1859
PQ interval length: 10min

Event limits:
Dip: 90%
Swell: 110%
Interruption: 5%
Hysteresis: 2%
Inrush current: - - -
Rapid Voltage Changes: - - -

Waveform Deviation: - - -
Mains signalling voltage limit: - - -
Sliding Reference: Off

Event:

Events recorded: 8

	Phase A	Phase B	Phase C	Combined events
Dip	1	1	1	1
Swell	0	0	0	0
Interruption	1	1	1	1
Inrush Current	0	0	0	
Waveshape Deviation	0	0	0	

Waveform recordings: 1
RMS recordings: 1
MSV recordings: 0

Instrument information:

Instrument Type:	FLUKE 1738
Installed Licenses:	none
Instrument versions:	Firmware Version: 2.4
	DSP Version: 2.8
Instrument Serial Number:	60463902
Instrument UUID:	a3076844-4c8a-4dba-811d-426bdf429e14
Instrument time zone:	America/Chicago
Instrument name:	Van Ert 16997 (FLUKE1738)

Attached Current Sensors:

Channel	Ratio	Model	Range	Serial No
1 - A	1:1	iFlex3000-24	3000A	579372004
2 - B	1:1	iFlex3000-24	3000A	579372001
3 - C	1:1	iFlex3000-24	3000A	579372003
4 - N	1:1	Not connected	-	-

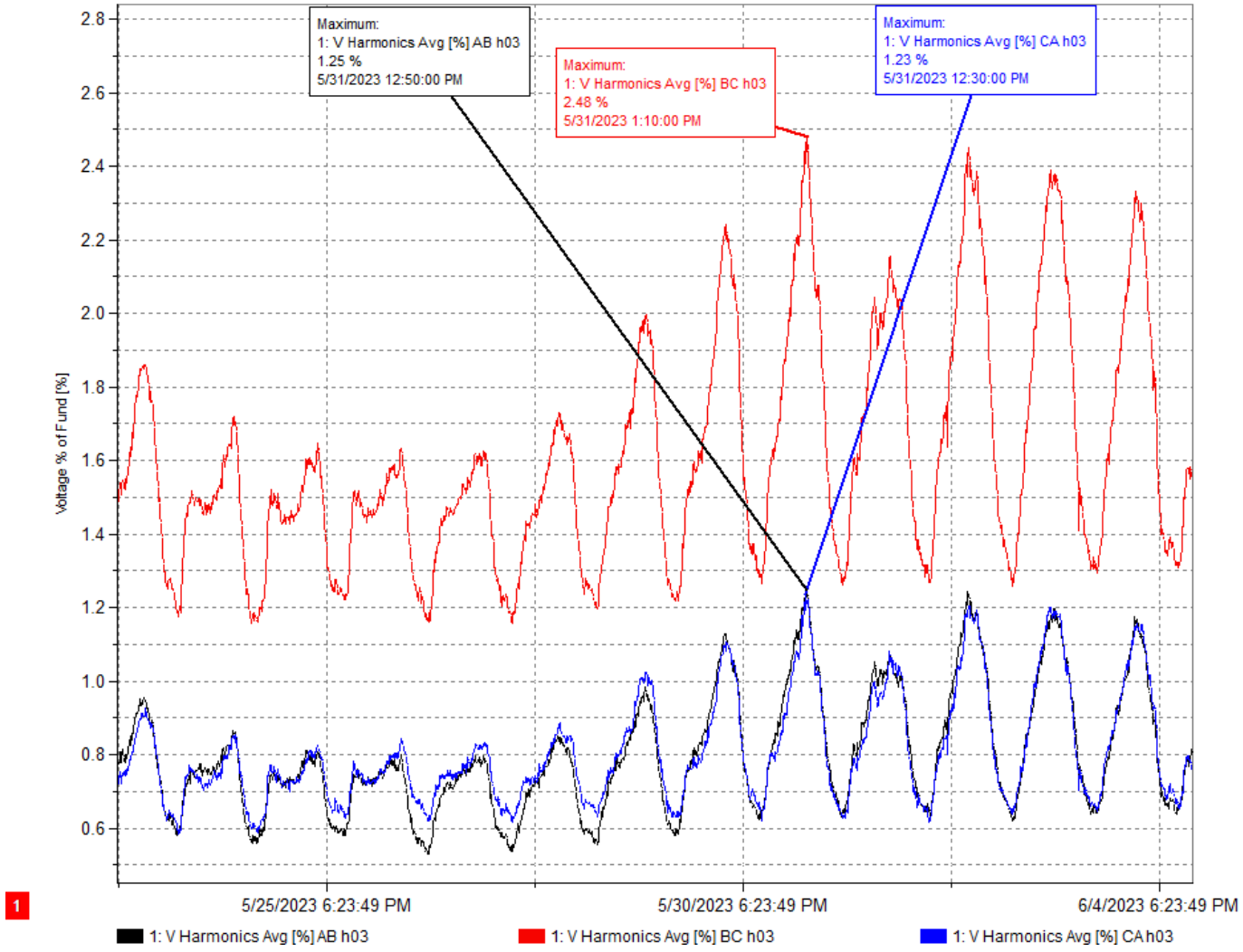
Voltage mapping:

Channel	Ratio
1 - A	1:1
2 - B	1:1
3 - C	1:1

Aux Settings:

Channel	Gain	Offset	Unit
Aux1	1	0	V
Aux2	1	0	V

Harmonics Graph



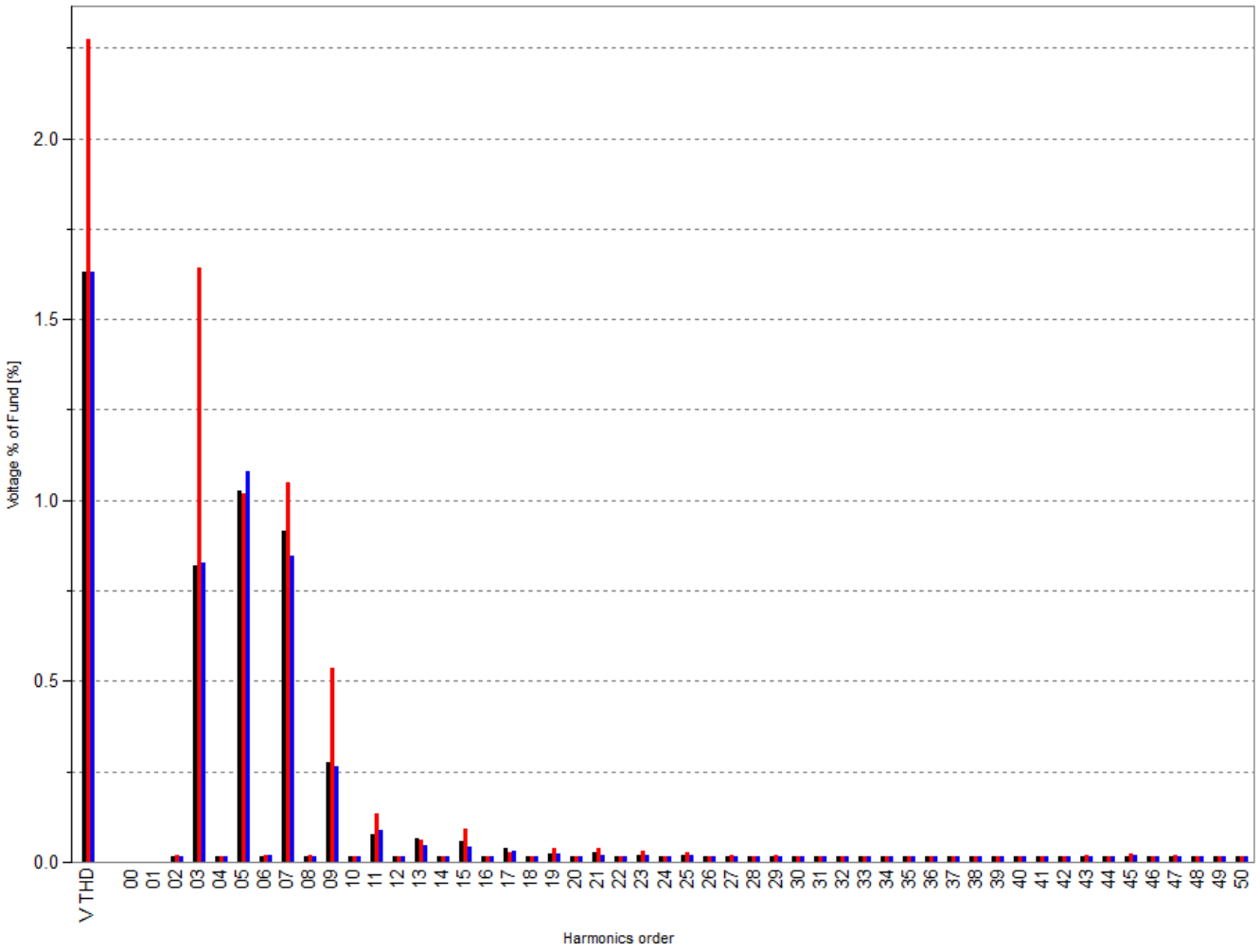
Graph Options:

Left Scale Options	L1 (A)	L2 (B)	L3 (C)	N	Total	Min/Max
V Harm [%]	X	X	X			

Harmonics Bar Graph

ES.008

Invalid values are not shown.



Logging Sessions	ID
ES.008	1
View as:	%Fundamental
Options:	
Channel selection:	Voltage
Phase filter:	A B C

Fluke Energy Analyze Report

Client:
Wisconsin Department of Natural Resources

Location:
Refuse Hideaway

Description:
Solar Output Harmonic Study

Summary:
(1) The Total Harmonic Distortion (THD) measures below 5% of the fundamental voltage, 240 volts. This is within the acceptable recommended limit per IEEE Std. 519 "Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems".

(2) The measured power output of the inverter is minimal. The Fronious IG Plus is capable of producing 11.4 kW. We recommend replacing the inverter.

Session name:
ES.014

Session UUID:
c09eac23-1ff4-495a-8ddb-70f1394a940f

Description:
Solar Output

Notes:
Probes connected to line side of Solar Disconnect.

Study Type:
Energy study

Measurement Mode:

Topology:
3-ph Delta

Nominal Voltage:
240V

Nominal Frequency:
60Hz

Buffer Type:
linear (do not overwrite)

Start and End Dates:
Configured start: 5/23/2023 11:07:25 AM
Configured end: 6/6/2023 11:07:25 AM
Actual start: 5/23/2023 11:07:25 AM
Actual end: 6/5/2023 9:16:19 AM

Duration:
Configured duration: 14d 0h 0m 0s
Actual duration: 12d 22h 8m 54s

Number of averaging intervals:
Number of trend intervals as configured: 241920
Number of trend intervals as present: 223307
Trend interval length: 5sec
Number of demand intervals as configured: - - -
Number of demand intervals as present: 0
Demand interval: - - -
Number of PQ intervals as configured: 2015
Number of PQ intervals as present: 1860
PQ interval length: 10min

Event limits:
Dip: 90%
Swell: 110%
Interruption: 5%
Hysteresis: 2%
Inrush current: - - -
Rapid Voltage Changes: - - -

Waveform Deviation: - - -
Mains signalling voltage limit: - - -
Sliding Reference: Off

Event:

Events recorded: 8

	Phase A	Phase B	Phase C	Combined events
Dip	1	1	1	1
Swell	0	0	0	0
Interruption	1	1	1	1
Inrush Current	0	0	0	
Waveshape Deviation	0	0	0	

Waveform recordings: 0
RMS recordings: 0
MSV recordings: 0

Instrument information:

Instrument Type:	FLUKE 1736
Installed Licenses:	none
Instrument versions:	Firmware Version: 2.2
	DSP Version: 2.7
Instrument Serial Number:	49123622
Instrument UUID:	4dd2fe13-3c8d-4dc9-b261-999d77e72145
Instrument time zone:	America/Chicago
Instrument name:	FLUKE1736<49123622>

Attached Current Sensors:

Channel	Ratio	Model	Range	Serial No
1 - A	1:1	iFlex3000-24	3000A	491872134
2 - B	1:1	iFlex3000-24	3000A	491872120
3 - C	1:1	iFlex3000-24	3000A	491872130
4 - N	1:1	Not connected	-	-

Voltage mapping:

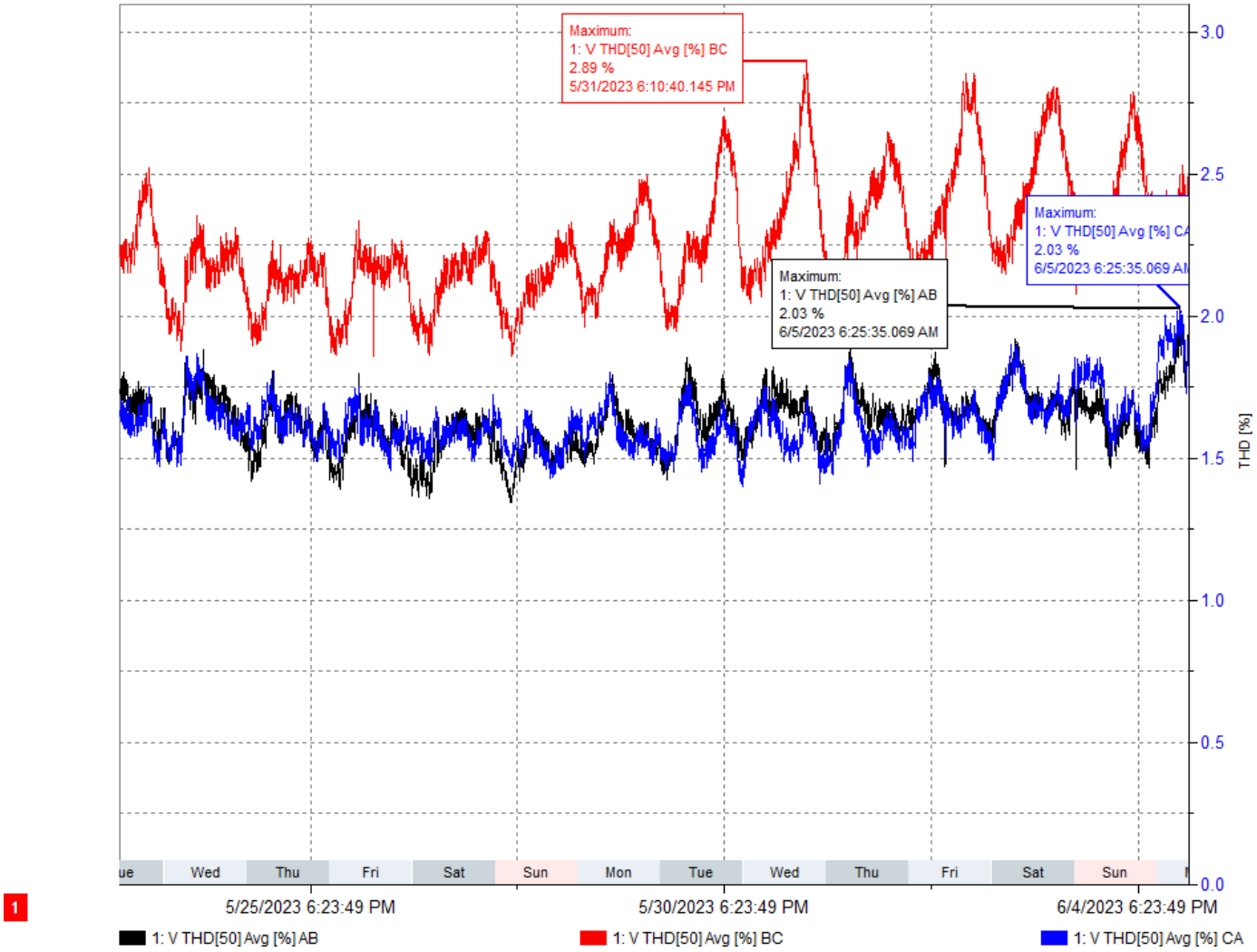
Channel	Ratio
1 - A	1:1
2 - B	1:1
3 - C	1:1

Aux Settings:

Channel	Gain	Offset	Unit
Aux1	1	0	V
Aux2	1	0	V

V, A, Hz, THD graph

Invalid values are not shown.



1

Notes:

ID	Text
3	Maximum: 1: V THD[50] Avg [%] AB 2.03 % 6/5/2023 6:25:35.069 AM
4	Maximum: 1: V THD[50] Avg [%] BC 2.89 % 5/31/2023 6:10:40.145 PM
5	Maximum: 1: V THD[50] Avg [%] CA 2.03 % 6/5/2023 6:25:35.069 AM

Graph Options:

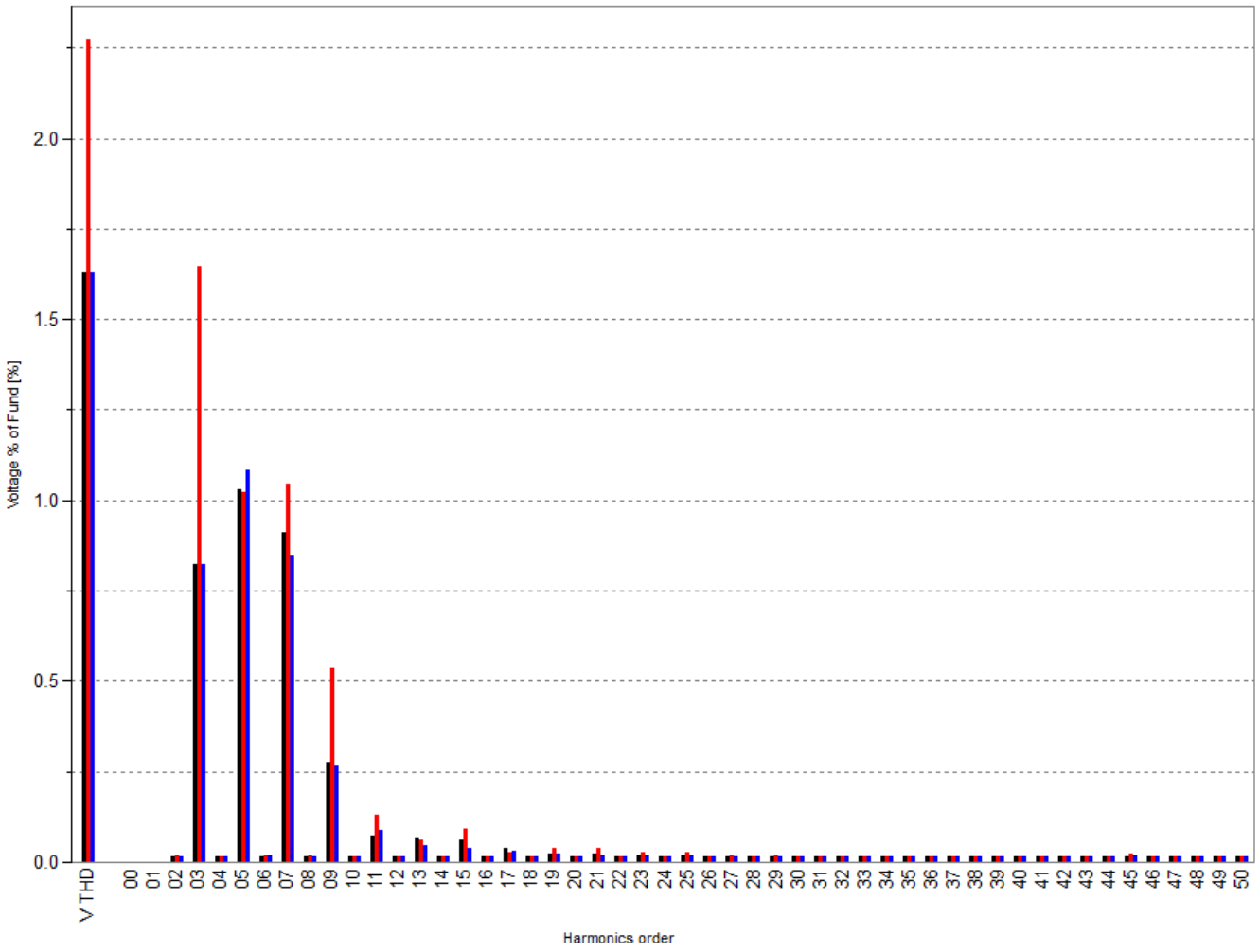
Logging Sessions	ID
ES.014	1

Right Scale Options	L1 (A)	L2 (B)	L3 (C)	N	Total	Aux1	Aux2	Min/Max
V THD [%]	X	X	X					

Harmonics Bar Graph

ES.014

Invalid values are not shown.



Logging Sessions	ID
ES.014	1

View as:	%Fundamental
Options:	
Channel selection:	Voltage
Phase filter:	A B C

Fundamental overview table

ES.014

Logging Information

Study type:	Energy study	Topology:	3-ph Delta	
Start date:	5/23/2023 11:07:25 AM	End date:	6/5/2023 9:16:19 AM	
Duration:	12d 22h 8m 54s			
Averaging interval:	5sec	Number of averaging intervals:	223307	* ... series contained invalid values that have been discarded for

Fund. Active Power [W]	A	B	C	Total
Max	-5.8* W 5/23/2023 11:20:00 AM	26.5* W 5/31/2023 6:51:50 PM	-2.8* W 5/23/2023 11:25:10 AM	-1.0* W 6/5/2023 9:11:35 AM
linear Avg	-10.8* W	20.7* W	-17.9* W	-8.0* W
Min	-17.6* W 5/23/2023 12:08:30 PM	3.6* W 5/23/2023 11:25:10 AM	-22.1* W 5/31/2023 6:51:45 PM	-18.0* W 5/31/2023 3:20:10 AM
Fund. Apparent Power [VA]	A	B	C	Total
Max	92.8* VA 5/26/2023 5:17:35 AM	67.5* VA 6/2/2023 6:26:50 PM	52.5* VA 5/23/2023 11:07:35 AM	211.2* VA 6/1/2023 8:06:00 PM
linear Avg	86.4* VA	63.3* VA	43.7* VA	200.4* VA
Min	70.2* VA 6/5/2023 9:11:35 AM	51.8* VA 6/5/2023 9:11:35 AM	33.0* VA 6/5/2023 9:11:35 AM	161.9* VA 6/5/2023 9:11:35 AM
Fund. Reactive Power [var]	A	B	C	Total
Max	91.9* var 5/26/2023 5:17:35 AM	64.8* var 5/23/2023 11:25:10 AM	51.9* var 5/23/2023 11:07:35 AM	192.3* var 6/1/2023 8:00:45 PM
linear Avg	85.7* var	59.8* var	39.9* var	185.4* var
Min	69.6* var 6/5/2023 9:11:35 AM	49.5* var 6/5/2023 9:11:35 AM	30.4* var 6/5/2023 9:11:35 AM	150.4* var 6/5/2023 9:11:35 AM
Displacement Power Factor [1]	A	B	C	Total
Max				
linear Avg				
Min				

Averaging interval:

	Configured Interval length
ES.014	5sec

Van Ert
Electric Company, Inc.

ELECTRICAL MOTOR INSULATION RESISTANCE TEST REPORT

JOB NO./SYSTEM	DATE 5/23/2023
BY D. Cunningham	
PAGE 1	OF 1

TEST VOLTAGE = ☐ 500 Volts ☒ 1000 Volts ☐ 2500 Volts

SCALE CALIB. = ☐ 600 Megohms ☐ 1000 Megohms ☐ 2000 Megohms

NOTE: List average resistance of control leads.

TOOL ID# VE# 13929 CALIBRATION DATE:

Klein ET600

MOTOR OR ITEM DESCRIPTION	RESISTANCE-MEGOHMS			STATOR-GROUND	REMARKS:
	A-GND	B-GND	C-GRD		
Air Comp.	∞	∞	∞	–	
	(4000MΩ)	4000MΩ	4000MΩ		
Ω to L1-L2	0.003Ω				
Ω to L2-L3		0.003Ω			
Ω to L3-L1			0.003Ω		

David Cunningham

Van Ert Electric Company Inc.
VE/QC-R-002

Van Ert QAQC Manager

Stehn, Andrew

From: David Cunningham <dcunningham@vanert.com>
Sent: Monday, July 3, 2023 8:31 AM
To: Stehn, Andrew; Tory Weidemann
Cc: Michael Everhart; Koepke, Cynthia L - DNR; Vater, Katherine
Subject: RE: [External] RE: [EXTERNAL] Refuse Hideaway Landfill Electrical System Diagnostic Report

Hello Andrew,

You are correct, the report should state that the existing transformer is 208/480V not 280/480V.

The output of the PV system will not the output of the existing 75kVA 208/480V, nor the replacement 75kVA 240/480V transformer.
The PV system operates in parallel with the MG&E service. Power generated by the PV system will back feed onto MG&E system when the flare skid is off.

If you have any questions, please contact me.
Thank you,
David

David Cunningham, PE*, CESCP
Van Ert Electric Company, Inc.
Office: (920) 462-1422
Cell: (920) 366-4341

*Licensed in GA, IA, IL, KY, ME, MI, MN, NC, NJ, OR, VA, WI

From: Stehn, Andrew <AStehn@trccompanies.com>
Sent: Wednesday, June 28, 2023 3:36 PM
To: David Cunningham <dcunningham@vanert.com>; Tory Weidemann <tweidemann@vanert.com>
Cc: Michael Everhart <meverhart@vanert.com>; Koepke, Cynthia L - DNR <Cynthia.Koepke@wisconsin.gov>; Vater, Katherine <KVater@trccompanies.com>
Subject: [External] RE: [EXTERNAL] Refuse Hideaway Landfill Electrical System Diagnostic Report

Dave and Tory,

Thanks for completing this first phase of work and providing the attached report. TRC has reviewed the report and it appears everyone (TRC' Electrical Engineers and Van Ert) concurs that the transformer specified in the request for bid is

sufficient. One comment on the report, can you verify the voltage specification noted at the end of the first sentence in the first paragraph. Should it state “208/480V” instead of “280/480V”? Also, based on the one-line diagram, it appears the PV runs in parallel to the transformer system, I just wanted to verify that regardless of the operation of the PV or not, it will not affect the transformer output to the skid system.

Tory,
Assuming the PV system (if repaired) will have no effect on the transformer output, please proceed with ordering the equipment to make the necessary upgrades to the electrical system and let us know what sort of lead time there is. You previously noted that you identified a comparable transformer but different brand than specified, if so can you provide specification sheets for the unit you plan to procure.

If you guys have any questions or need further information, please do not hesitate to contact me.

Thanks in advance.
Andy

Andrew M. Stehn, P.E. (WI)
Senior Project Engineer

TRC
999 Fourier Drive, Suite 101, Madison, WI 53717
C 608.807.8112
LinkedIn | Twitter | Blog | TRCcompanies.com

Please note our new office address as of October 25, 2022.

From: David Cunningham <dcunningham@vanert.com>
Sent: Friday, June 9, 2023 10:42 AM
To: Stehn, Andrew <AStehn@trccompanies.com>; Tory Weidemann <tweidemann@vanert.com>
Cc: Michael Everhart <meverhart@vanert.com>
Subject: [EXTERNAL] Refuse Hideaway Landfill Electrical System Diagnostic Report

Hello Andrew,

Attached is our report with recommendations to correct/upgrade the electrical distribution system at the Refuse Hideaway Landfill.

Please contact me if you have any questions.

Thank you,
David Cunningham

David Cunningham, P.E.* , CESCP
Engineering Project Manager
Van Ert Electric Company, Inc.

Making a Difference through Performance

*Registered in GA, IA, IL, KY, ME, MI, MN, NC, NJ, OR, VA, WI

Office: 920.766.3888 | **Direct:** 920.462.1422 | **Cell**: 920.366.4341
Email: dcunningham@vanert.com | **Website:** www.vanert.com

Stehn, Andrew

From: Stehn, Andrew
Sent: Wednesday, September 6, 2023 2:45 PM
To: Stehn, Andrew
Subject: FW: [External] refuse site transformer readings

Andy contacted Tory on 9/5/2023 to further discuss the below voltage reading for A (H1) TO GROUND 43V. Tory recalled from his previous notes when we initially started the project that he believes the voltage is 43V because the MG&E service is an ungrounded delta.

From: Tory Weidemann <tweidemann@vanert.com>
Sent: Tuesday, September 5, 2023 3:13 PM
To: Stehn, Andrew <astehn@trccompanies.com>
Subject: RE: [External] refuse site transformer readings

Confirm it as in I saw it or did I take pictures?

I believe that this is the same reading that we got the last time with the transforemer that we just took out

Tory Weidemann
Foreman
Van Ert Electric Company, Inc.

Cell: 608.444.5556
Email: tweidemann@vanert.com | Website: vanert.com

From: Stehn, Andrew <astehn@trccompanies.com>
Sent: Tuesday, September 5, 2023 3:05 PM
To: Tory Weidemann <tweidemann@vanert.com>
Subject: RE: [External] refuse site transformer readings

Thanks Tory for sending this over. Can you confirm the reading A(H1) to Ground? Just a heads up we are planning to start the gas system blower up tomorrow but we are waiting to try the compressor until we have the overload contactor installed. Keep me posted on when you receive that part so we can plan to head out and get that part of the system going as well.

Thanks for all the help with this and I will let you know if we have any issues tomorrow.
Andy

From: Tory Weidemann <tweidemann@vanert.com>
Sent: Tuesday, September 5, 2023 2:37 PM
To: Stehn, Andrew <astehn@trccompanies.com>
Subject: [EXTERNAL] refuse site transformer readings

Andrew, here is what we got for readings on the transformer after installation of your recommended transformer

INCOMING POWER FROM MGE

A-B (X1—X2) 244V
B-C (X2-X3) 244V
C-A (X3- X10 243V

A (X1) TO GROUND 120V
B (X2) TO GROUND 213V
C (X3) TO GROUND 120V

OUTGOING TO SHED

A-B (H1-H2) 488V
B-C (H2-H3) 483V
C-A (H3-H1) 485V

A (H1) TO GROUND 43V
B (H2) TO GROUND 454V
C (H3) TO GROUND 446V

Thank you

Van Ert ELECTRIC COMPANY, INC.

Tory Weidemann
Foreman
Van Ert Electric Company, Inc.
Making a Difference through Performance

Cell: 608.444.5556
Email: tweidemann@vanert.com | **Website:** www.vanert.com

Attachment 2

Gas Probe Monitoring Summary Table

Attachment 2
Gas Probe Monitoring Data Summary - 2023
Wisconsin Department of Natural Resources - Refuse Hideaway Landfill
Madison, Dane County, Wisconsin

Location	Date	Pressure (in. WC)	Methane (% LEL)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)
GP-1D	12/5/2022	0.14	0.00	0.00	4.10	16.60
GP-1D	1/18/2023	0.00	0.00	0.00	2.80	18.30
GP-1D	2/7/2023	0.00	0.00	0.00	1.40	19.70
GP-1D	3/7/0223	-0.04	0.00	0.00	1.40	19.30
GP-1D	4/17/2023	0.00	0.00	0.00	2.60	16.40
GP-1D	5/3/2023	0.00	0.00	0.00	2.10	16.30
GP-1D	6/13/2023	0.00	27.00	1.30	7.60	7.20
GP-1D	7/5/2023	0.04	24.00	1.20	10.10	5.10
GP-1D	8/8/2023	0.00	40.00	2.00	14.30	1.90
GP-1D	9/7/2023	0.02	22.00	1.10	12.20	4.50
GP-1D	10/4/2023	0.00	0.00	0.00	10.70	6.00
GP-1D	11/2/2023	-0.02	0.00	0.00	5.50	13.00
GP-1S	12/5/2022	0.00	0.00	0.00	0.10	20.70
GP-1S	1/18/2023	0.00	0.00	0.00	0.00	20.80
GP-1S	2/7/2023	0.00	0.00	0.00	0.00	20.80
GP-1S	3/7/0223	-0.02	0.00	0.00	0.00	20.80
GP-1S	4/17/2023	0.00	0.00	0.00	0.10	20.60
GP-1S	5/3/2023	0.00	0.00	0.00	0.00	20.80
GP-1S	6/13/2023	0.00	>100	5.70	14.00	0.00
GP-1S	7/5/2023	0.07	>100	8.30	17.60	0.00
GP-1S	8/8/2023	0.00	>100	9.30	19.30	0.00
GP-1S	9/7/2023	0.00	>100	5.40	18.40	0.00
GP-1S	10/4/2023	0.00	28.00	1.40	15.90	0.00
GP-1S	11/2/2023	0.00	0.00	0.00	0.10	20.70
GP-2D	12/5/2022	0.00	0.00	0.00	1.30	19.60
GP-2D	1/18/2023	0.02	0.00	0.00	0.80	20.20
GP-2D	2/7/2023	0.00	0.00	0.00	0.60	20.40
GP-2D	3/7/0223	0.00	0.00	0.00	0.30	20.40
GP-2D	4/17/2023	0.00	0.00	0.00	2.40	16.30
GP-2D	5/3/2023	0.08	0.00	0.00	1.30	18.60
GP-2D	6/13/2023	0.10	42.00	2.10	5.70	11.70
GP-2D	7/5/2023	0.12	46.00	2.30	9.30	8.00
GP-2D	8/8/2023	0.14	66.00	3.30	12.10	5.40
GP-2D	9/7/2023	0.17	29.00	1.40	9.90	9.50
GP-2D	10/4/2023	0.11	8.00	0.40	10.30	8.70
GP-2D	11/2/2023	0.00	0.00	0.00	2.40	18.80
GP-2S	12/5/2022	0.00	0.00	0.00	1.00	19.90
GP-2S	1/18/2023	0.00	0.00	0.00	0.00	20.80
GP-2S	2/7/2023	-0.05	0.00	0.00	0.80	20.10
GP-2S	3/7/0223	0.00	0.00	0.00	0.20	20.50
GP-2S	4/17/2023	0.00	0.00	0.00	1.60	19.00
GP-2S	5/3/2023	0.00	0.00	0.00	0.40	20.30
GP-2S	6/13/2023	0.00	>100	5.00	13.90	0.00
GP-2S	7/5/2023	0.00	80.00	4.00	15.70	0.00
GP-2S	8/8/2023	0.00	90.00	4.50	16.60	0.00
GP-2S	9/7/2023	0.00	2.00	0.10	6.20	15.50
GP-2S	10/4/2023	0.00	14.00	0.70	16.00	2.60
GP-2S	11/2/2023	0.00	0.00	0.00	1.70	19.30
GP-3	12/5/2022	0.00	20.00	0.00	2.00	20.00
GP-3	1/18/2023	0.00	20.00	1.00	1.80	19.80
GP-3	2/7/2023	0.00	46.00	2.30	3.90	15.40
GP-3	3/7/0223	-0.02	0.00	0.00	0.30	20.30
GP-3	4/17/2023	-0.04	>100	75.40	15.60	0.00
GP-3	5/3/2023	0.00	4.00	0.20	1.30	20.00
GP-3	6/13/2023	0.00	>100	9.00	14.60	4.00
GP-3	7/5/2023	0.00	0.00	0.00	3.30	17.10
GP-3	8/8/2023	0.00	>100	57.10	38.30	0.00
GP-3	9/7/2023	0.00	0.00	0.00	2.30	19.00
GP-3	10/4/2023	0.03	>100	22.70	19.40	0.90
GP-3	11/2/2023	-0.01	2.00	0.10	6.00	18.10

Attachment 2
Gas Probe Monitoring Data Summary - 2023
Wisconsin Department of Natural Resources - Refuse Hideaway Landfill
Madison, Dane County, Wisconsin

Location	Date	Pressure (in. WC)	Methane (% LEL)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)
GP-4	12/5/2022	0.00	0.00	0.00	2.20	19.40
GP-4	1/18/2023	0.04	0.00	0.00	2.00	19.70
GP-4	2/7/2023	-0.01	0.00	0.00	2.50	19.80
GP-4	3/7/0223	-0.04	0.00	0.00	0.00	20.80
GP-4	4/17/2023	-0.04	0.00	0.00	0.00	20.80
GP-4	5/3/2023	0.00	0.00	0.00	0.80	18.60
GP-4	6/13/2023	0.00	0.00	0.00	5.00	16.90
GP-4	7/5/2023	0.00	0.00	0.00	3.90	16.60
GP-4	8/8/2023	0.00	0.00	0.00	8.50	11.80
GP-4	9/7/2023	0.00	0.00	0.00	9.50	13.50
GP-4	10/4/2023	0.00	0.00	0.00	6.30	14.90
GP-4	11/2/2023	0.00	0.00	0.00	4.20	17.20
GP-5	12/5/2022	0.00	0.00	0.00	1.50	20.10
GP-5	1/18/2023	0.00	0.00	0.00	1.40	20.30
GP-5	2/7/2023	0.00	0.00	0.00	0.80	20.10
GP-5	3/7/0223	0.06	0.00	0.00	0.00	20.80
GP-5	4/17/2023	0.00	0.00	0.00	0.10	20.70
GP-5	5/3/2023	0.00	0.00	0.00	1.30	19.60
GP-5	6/13/2023	0.00	0.00	0.00	2.80	17.40
GP-5	7/5/2023	0.00	0.00	0.00	3.90	15.40
GP-5	8/8/2023	0.00	0.00	0.00	6.50	12.90
GP-5	9/7/2023	0.00	0.00	0.00	6.30	15.30
GP-5	10/4/2023	0.00	0.00	0.00	4.40	17.00
GP-5	11/2/2023	0.00	0.00	0.00	3.50	18.50
GP-6	12/5/2022	0.00	0.00	0.00	0.70	18.20
GP-6	1/18/2023	0.00	0.00	0.00	0.90	18.60
GP-6	2/7/2023	0.00	0.00	0.00	0.20	19.80
GP-6	3/7/0223	0.12	0.00	0.00	0.00	20.80
GP-6	4/17/2023	0.00	0.00	0.00	0.00	20.80
GP-6	5/3/2023	0.00	0.00	0.00	0.00	20.80
GP-6	6/13/2023	0.00	0.00	8.80	2.40	18.70
GP-6	7/5/2023	0.00	0.00	0.00	3.50	17.00
GP-6	8/8/2023	0.00	0.00	0.00	3.90	17.70
GP-6	9/7/2023	0.00	0.00	0.00	4.90	17.10
GP-6	10/4/2023	0.00	0.00	0.00	3.70	18.10
GP-6	11/2/2023	0.00	0.00	0.00	2.10	19.20
GP-7	12/5/2022	0.00	0.00	0.00	2.60	18.40
GP-7	1/18/2023	0.00	0.00	0.00	3.10	17.90
GP-7	2/7/2023	0.00	0.00	0.00	1.60	19.70
GP-7	3/7/0223	0.30	0.00	0.00	0.20	20.50
GP-7	4/17/2023	0.00	0.00	0.00	0.20	20.40
GP-7	5/3/2023	0.21	0.00	0.00	0.00	20.80
GP-7	6/13/2023	0.00	0.00	0.00	2.50	18.50
GP-7	7/5/2023	0.00	0.00	0.00	2.40	18.30
GP-7	8/8/2023	0.00	0.00	0.00	4.10	16.30
GP-7	9/7/2023	0.00	0.00	0.00	4.10	17.60
GP-7	10/4/2023	0.00	0.00	0.00	3.90	16.80
GP-7	11/2/2023	-0.07	0.00	0.00	4.10	16.40
GP-8	12/5/2022	0.00	0.00	0.00	3.90	17.80
GP-8	1/18/2023	0.00	0.00	0.00	3.40	17.60
GP-8	2/7/2023	0.00	0.00	0.00	2.20	19.80
GP-8	3/7/0223	-0.04	0.00	0.00	1.40	18.80
GP-8	4/17/2023	0.00	0.00	0.00	2.50	18.00
GP-8	5/3/2023	0.00	0.00	0.00	1.80	19.40
GP-8	6/13/2023	0.00	0.00	0.00	3.70	17.90
GP-8	7/5/2023	0.00	0.00	0.00	3.40	18.10
GP-8	8/8/2023	0.00	0.00	0.00	6.70	15.00
GP-8	9/7/2023	0.00	0.00	0.00	4.70	17.20
GP-8	10/4/2023	0.00	0.00	0.00	6.90	14.80
GP-8	11/2/2023	-0.02	0.00	0.00	6.10	16.20

Attachment 2
Gas Probe Monitoring Data Summary - 2023
Wisconsin Department of Natural Resources - Refuse Hideaway Landfill
Madison, Dane County, Wisconsin

Location	Date	Pressure (in. WC)	Methane (% LEL)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)
GP-9	12/5/2022	0.00	0.00	0.00	2.40	18.70
GP-9	1/18/2023	0.00	0.00	0.00	2.00	19.60
GP-9	2/7/2023	0.00	0.00	0.00	1.50	19.70
GP-9	3/7/0223	0.00	0.00	0.00	1.20	18.50
GP-9	4/17/2023	0.00	0.00	0.00	2.00	17.90
GP-9	5/3/2023	0.00	0.00	0.00	2.00	18.60
GP-9	6/13/2023	0.00	0.00	0.00	2.20	19.00
GP-9	7/5/2023	0.00	0.00	0.00	2.40	19.10
GP-9	8/8/2023	0.00	0.00	0.00	5.20	16.10
GP-9	9/7/2023	0.00	0.00	0.00	3.90	17.80
GP-9	10/4/2023	0.00	0.00	0.00	3.90	17.60
GP-9	11/2/2023	-0.02	0.00	0.00	3.60	17.70
GP-10	12/5/2022	0.00	0.00	0.00	7.30	11.50
GP-10	1/18/2023	0.00	0.00	0.00	7.80	11.10
GP-10	2/7/2023	0.00	0.00	0.00	1.50	19.80
GP-10	3/7/0223	0.00	0.00	0.00	0.80	17.90
GP-10	4/17/2023	0.00	0.00	0.00	1.90	15.20
GP-10	5/3/2023	0.00	0.00	0.00	1.50	18.50
GP-10	6/13/2023	0.00	0.00	0.00	3.50	15.70
GP-10	7/5/2023	0.00	0.00	0.00	4.90	14.20
GP-10	8/8/2023	0.00	0.00	0.00	8.90	10.00
GP-10	9/7/2023	0.00	0.00	0.00	6.80	14.30
GP-10	10/4/2023	0.00	0.00	0.00	6.60	14.90
GP-10	11/2/2023	0.00	0.00	0.00	4.90	17.10
GP-11D	12/5/2022	-0.07	0.00	0.00	0.30	20.20
GP-11D	1/18/2023	0.00	0.00	0.00	0.40	20.40
GP-11D	2/7/2023	0.00	0.00	0.00	0.00	20.60
GP-11D	3/7/0223	-0.05	0.00	0.00	0.00	20.80
GP-11D	4/17/2023	0.00	0.00	0.00	0.10	20.70
GP-11D	5/3/2023	0.00	0.00	0.00	0.00	20.80
GP-11D	6/13/2023	0.00	>100	6.40	13.80	0.40
GP-11D	7/5/2023	0.03	>100	6.10	15.40	0.00
GP-11D	8/8/2023	0.00	>100	5.00	16.00	0.00
GP-11D	9/7/2023	0.00	72.00	3.60	13.50	4.10
GP-11D	10/4/2023	0.00	>100	5.00	16.40	0.00
GP-11D	11/2/2023	-0.02	0.00	0.00	0.80	20.00
GP-11S	12/5/2022	0.00	0.00	0.00	0.70	19.80
GP-11S	1/18/2023	0.00	0.00	0.00	0.90	18.80
GP-11S	2/7/2023	0.00	0.00	0.00	0.00	20.80
GP-11S	3/7/0223	0.00	0.00	0.00	0.10	20.70
GP-11S	4/17/2023	0.00	0.00	0.00	0.30	20.40
GP-11S	5/3/2023	0.00	0.00	0.00	0.30	20.40
GP-11S	6/13/2023	0.00	78.00	3.90	11.20	0.00
GP-11S	7/5/2023	0.00	>100	5.40	14.10	0.00
GP-11S	8/8/2023	0.00	62.00	3.10	15.80	0.00
GP-11S	9/7/2023	0.00	0.00	0.00	10.10	9.80
GP-11S	10/4/2023	0.00	39.00	1.90	16.60	0.00
GP-11S	11/2/2023	0.00	0.00	0.00	2.00	19.00
GP-12D	12/5/2022	-0.03	36.00	2.20	3.90	16.70
GP-12D	1/18/2023	0.00	36.00	1.80	4.80	17.20
GP-12D	2/7/2023	0.00	70.00	3.50	4.00	16.80
GP-12D	3/7/0223	0.00	>100	6.50	6.90	13.10
GP-12D	4/17/2023	-0.05	>100	13.70	14.90	5.80
GP-12D	5/3/2023	0.00	76.00	3.80	4.60	16.20
GP-12D	6/13/2023	0.00	>100	12.80	16.60	4.50
GP-12D	7/5/2023	0.00	>100	12.70	19.10	1.10
GP-12D	8/8/2023	0.00	>100	8.90	17.30	3.10
GP-12D	9/7/2023	0.00	>100	6.70	13.90	6.70
GP-12D	10/4/2023	0.00	>100	5.80	12.50	8.20
GP-12D	11/2/2023	0.00	>100	6.20	12.70	8.20

Attachment 2
Gas Probe Monitoring Data Summary - 2023
Wisconsin Department of Natural Resources - Refuse Hideaway Landfill
Madison, Dane County, Wisconsin

Location	Date	Pressure (in. WC)	Methane (% LEL)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)
GP-12S	12/5/2022	0.00	0.00	0.00	2.40	18.40
GP-12S	1/18/2023	0.00	0.00	0.00	2.10	18.70
GP-12S	2/7/2023	0.00	0.00	0.00	1.20	19.80
GP-12S	3/7/0223	0.00	0.00	0.00	0.20	20.70
GP-12S	4/17/2023	0.00	0.00	0.00	2.70	15.80
GP-12S	5/3/2023	0.00	0.00	0.00	0.70	19.20
GP-12S	6/13/2023	0.00	0.00	0.00	5.10	14.00
GP-12S	7/5/2023	0.00	0.00	0.00	4.50	16.00
GP-12S	8/8/2023	0.00	0.00	0.00	4.40	16.40
GP-12S	9/7/2023	0.02	0.00	0.00	2.60	19.00
GP-12S	10/4/2023	0.00	0.00	0.00	3.50	18.20
GP-12S	11/2/2023	-0.03	0.00	0.00	2.60	18.50
GP-13D	12/5/2022	0.00	10.00	0.60	4.40	14.90
GP-13D	1/18/2023	0.00	10.00	0.50	4.00	15.60
GP-13D	2/7/2023	0.00	0.00	0.00	0.20	20.60
GP-13D	3/7/0223	0.04	0.00	0.00	0.00	20.80
GP-13D	4/17/2023	0.00	0.00	0.00	2.80	15.90
GP-13D	5/3/2023	0.00	2.00	0.10	1.70	18.20
GP-13D	6/13/2023	0.00	17.00	0.80	5.40	12.10
GP-13D	7/5/2023	0.08	46.00	2.30	10.50	7.00
GP-13D	8/8/2023	0.00	20.00	1.00	8.30	10.50
GP-13D	9/7/2023	0.03	15.00	0.80	7.20	12.70
GP-13D	10/4/2023	0.00	20.00	1.00	10.70	8.20
GP-13D	11/2/2023	0.00	2.00	0.10	1.90	18.60
GP-13S	12/5/2022	0.00	0.00	0.00	1.10	19.30
GP-13S	1/18/2023	0.00	0.00	0.00	0.90	19.50
GP-13S	2/7/2023	0.00	0.00	0.00	0.40	20.30
GP-13S	3/7/0223	0.00	0.00	0.00	0.30	20.50
GP-13S	4/17/2023	0.00	0.00	0.00	2.20	17.30
GP-13S	5/3/2023	0.00	0.00	0.00	1.20	19.60
GP-13S	6/13/2023	0.00	0.00	0.00	7.70	5.10
GP-13S	7/5/2023	0.06	0.00	0.00	12.00	1.00
GP-13S	8/8/2023	0.00	0.00	0.00	6.40	13.90
GP-13S	9/7/2023	0.00	0.00	0.00	4.30	17.80
GP-13S	10/4/2023	0.00	0.00	0.00	7.40	14.10
GP-13S	11/2/2023	0.00	0.00	0.00	1.60	19.10
GP-16D	12/5/2022	0.00	0.00	0.00	6.10	12.00
GP-16D	1/18/2023	0.00	0.00	0.00	6.50	12.20
GP-16D	2/7/2023	-0.03	0.00	0.00	9.20	6.50
GP-16D	3/7/0223	-0.05	0.00	0.00	0.00	20.80
GP-16D	4/17/2023	0.00	0.00	0.00	2.80	16.20
GP-16D	5/3/2023	0.00	8.00	0.40	1.10	19.00
GP-16D	6/13/2023	0.00	0.00	0.00	0.90	19.30
GP-16D	7/5/2023	0.00	0.00	0.00	1.30	19.00
GP-16D	8/8/2023	0.00	0.00	0.00	1.30	19.00
GP-16D	9/7/2023	0.00	0.00	0.00	2.10	18.90
GP-16D	10/4/2023	0.04	0.00	0.00	2.00	18.80
GP-16D	11/2/2023	0.00	0.00	0.00	0.50	20.20
GP-16S	12/5/2022	0.00	0.00	0.00	0.80	19.90
GP-16S	1/18/2023	0.00	0.00	0.00	0.60	20.10
GP-16S	2/7/2023	0.00	0.00	0.00	1.00	19.00
GP-16S	3/7/0223	0.00	0.00	0.00	0.00	20.80
GP-16S	4/17/2023	0.00	0.00	0.00	3.80	12.20
GP-16S	5/3/2023	0.00	60.00	3.00	5.50	12.90
GP-16S	6/13/2023	0.00	0.00	0.00	2.20	19.00
GP-16S	7/5/2023	0.00	0.00	0.00	2.60	18.80
GP-16S	8/8/2023	0.00	0.00	0.00	3.30	17.70
GP-16S	9/7/2023	0.00	0.00	0.00	3.10	18.50
GP-16S	10/4/2023	0.00	0.00	0.00	3.10	18.30
GP-16S	11/2/2023	0.00	0.00	0.00	0.80	20.00

Attachment 2
Gas Probe Monitoring Data Summary - 2023
Wisconsin Department of Natural Resources - Refuse Hideaway Landfill
Madison, Dane County, Wisconsin

Location	Date	Pressure (in. WC)	Methane (% LEL)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)
GP-17D	12/5/2022	0.00	0.00	0.00	2.20	18.30
GP-17D	1/18/2023	0.00	0.00	0.00	2.40	18.10
GP-17D	2/7/2023	0.00	0.00	0.00	1.80	18.70
GP-17D	3/7/0223	-0.06	0.00	0.00	1.40	18.50
GP-17D	4/17/2023	0.00	10.00	0.50	3.70	14.70
GP-17D	5/3/2023	0.00	6.00	0.30	2.90	16.30
GP-17D	6/13/2023	0.00	0.00	0.00	3.70	15.90
GP-17D	7/5/2023	0.00	0.00	0.00	4.30	15.60
GP-17D	8/8/2023	0.00	0.00	0.00	4.10	16.10
GP-17D	9/7/2023	0.00	0.00	0.00	4.40	16.30
GP-17D	10/4/2023	0.00	0.00	0.00	3.10	18.00
GP-17D	11/2/2023	0.00	0.00	0.00	2.40	18.80
GP-17M	12/5/2022	0.00	0.00	0.00	0.30	20.20
GP-17M	1/18/2023	0.00	0.00	0.00	0.20	20.40
GP-17M	2/7/2023	0.00	0.00	0.00	0.00	20.80
GP-17M	3/7/0223	-0.05	0.00	0.00	0.00	20.80
GP-17M	4/17/2023	0.00	20.00	1.00	4.80	11.10
GP-17M	5/3/2023	0.00	4.00	0.20	1.30	18.50
GP-17M	6/13/2023	0.00	0.00	0.00	2.40	18.70
GP-17M	7/5/2023	0.00	0.00	0.00	3.50	17.20
GP-17M	8/8/2023	0.00	0.00	0.00	3.50	17.30
GP-17M	9/7/2023	0.00	0.00	0.00	3.10	18.00
GP-17M	10/4/2023	0.00	0.00	0.00	3.80	17.10
GP-17M	11/2/2023	0.00	0.00	0.00	0.60	20.20
GP-17S	12/5/2022	0.00	0.00	0.00	0.50	20.10
GP-17S	1/18/2023	0.00	0.00	0.00	0.70	19.90
GP-17S	2/7/2023	0.00	0.00	0.00	0.40	20.50
GP-17S	3/7/0223	-0.02	0.00	0.00	0.00	20.80
GP-17S	4/17/2023	0.00	30.00	1.50	4.00	10.80
GP-17S	5/3/2023	0.00	4.00	0.20	1.60	19.00
GP-17S	6/13/2023	0.00	0.00	0.00	3.10	18.20
GP-17S	7/5/2023	0.00	0.00	0.00	3.80	17.90
GP-17S	8/8/2023	0.00	0.00	0.00	3.70	17.60
GP-17S	9/7/2023	0.00	0.00	0.00	3.40	17.90
GP-17S	10/4/2023	0.03	0.00	0.00	3.90	17.30
GP-17S	11/2/2023	0.00	0.00	0.00	0.30	20.50
GP-18D	12/5/2022	0.00	0.00	0.00	0.40	20.50
GP-18D	1/18/2023	0.00	0.00	0.00	0.50	20.40
GP-18D	2/7/2023	-0.08	0.00	0.00	0.00	20.80
GP-18D	3/7/0223	-0.19	0.00	0.00	0.00	20.80
GP-18D	4/17/2023	0.00	0.00	0.00	3.70	15.80
GP-18D	5/3/2023	0.00	0.00	0.00	0.00	20.80
GP-18D	6/13/2023	0.00	0.00	0.00	4.30	14.40
GP-18D	7/5/2023	0.00	0.00	0.00	2.20	17.70
GP-18D	8/8/2023	-0.05	0.00	0.00	3.90	15.40
GP-18D	9/7/2023	0.00	0.00	0.00	1.10	19.30
GP-18D	10/4/2023	0.04	0.00	0.00	4.10	15.90
GP-18D	11/2/2023	0.00	0.00	0.00	0.40	20.40
GP-18M	12/5/2022	0.00	0.00	0.00	0.20	20.60
GP-18M	1/18/2023	0.00	0.00	0.00	0.00	20.70
GP-18M	2/7/2023	0.00	0.00	0.00	0.00	20.80
GP-18M	3/7/0223	-0.04	0.00	0.00	0.00	20.80
GP-18M	4/17/2023	0.00	0.00	0.00	1.30	18.60
GP-18M	5/3/2023	0.00	0.00	0.00	0.00	20.80
GP-18M	6/13/2023	0.00	0.00	0.00	3.50	16.30
GP-18M	7/5/2023	0.00	0.00	0.00	4.20	16.10
GP-18M	8/8/2023	0.00	0.00	0.00	3.50	16.60
GP-18M	9/7/2023	0.00	0.00	0.00	1.80	18.60
GP-18M	10/4/2023	0.00	0.00	0.00	2.60	18.20
GP-18M	11/2/2023	0.00	0.00	0.00	0.20	20.70

Attachment 2
Gas Probe Monitoring Data Summary - 2023
Wisconsin Department of Natural Resources - Refuse Hideaway Landfill
Madison, Dane County, Wisconsin

Location	Date	Pressure (in. WC)	Methane (% LEL)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)
GP-18S	12/5/2022	0.00	0.00	0.00	0.20	20.60
GP-18S	1/18/2023	0.00	0.00	0.00	0.30	20.60
GP-18S	2/7/2023	0.00	0.00	0.00	0.20	20.60
GP-18S	3/7/0223	0.00	0.00	0.00	0.00	20.80
GP-18S	4/17/2023	0.00	0.00	0.00	0.10	20.70
GP-18S	5/3/2023	0.00	0.00	0.00	0.00	20.80
GP-18S	6/13/2023	0.00	0.00	0.00	5.50	8.80
GP-18S	7/5/2023	0.00	0.00	0.00	5.90	11.80
GP-18S	8/8/2023	0.00	0.00	0.00	5.90	14.60
GP-18S	9/7/2023	0.00	0.00	0.00	3.30	18.20
GP-18S	10/4/2023	0.00	0.00	0.00	4.20	17.30
GP-18S	11/2/2023	0.00	0.00	0.00	0.20	20.60
GP-19$^{85-100}$	12/5/2022	0.00	0.00	0.00	4.50	15.60
GP-19$^{85-100}$	1/18/2023	0.00	0.00	0.00	4.90	15.40
GP-19$^{85-100}$	2/7/2023	-0.03	0.00	0.00	1.90	18.50
GP-19$^{85-100}$	3/7/0223	-0.04	0.00	0.00	1.80	19.00
GP-19$^{85-100}$	4/17/2023	-0.03	0.00	0.00	2.10	18.00
GP-19$^{85-100}$	5/3/2023	0.00	0.00	0.00	0.90	19.80
GP-19$^{85-100}$	6/13/2023	0.00	0.00	0.00	0.00	20.80
GP-19$^{85-100}$	7/5/2023	0.04	0.00	0.00	0.00	20.80
GP-19$^{85-100}$	8/8/2023	-0.02	0.00	0.00	0.00	20.80
GP-19$^{85-100}$	9/7/2023	0.00	0.00	0.00	0.00	20.80
GP-19$^{85-100}$	10/4/2023	0.00	0.00	0.00	0.00	20.80
GP-19$^{85-100}$	11/2/2023	0.00	0.00	0.00	2.20	18.60
GP-19$^{50-70}$	12/5/2022	0.00	0.00	0.00	1.70	19.00
GP-19$^{50-70}$	1/18/2023	0.00	0.00	0.00	1.50	18.80
GP-19$^{50-70}$	2/7/2023	0.00	0.00	0.00	2.40	17.70
GP-19$^{50-70}$	3/7/0223	-0.03	0.00	0.00	2.20	18.00
GP-19$^{50-70}$	4/17/2023	0.00	0.00	0.00	2.00	18.30
GP-19$^{50-70}$	5/3/2023	0.00	0.00	0.00	1.40	19.20
GP-19$^{50-70}$	6/13/2023	0.00	0.00	0.00	0.90	19.90
GP-19$^{50-70}$	7/5/2023	0.00	0.00	0.00	0.70	19.90
GP-19$^{50-70}$	8/8/2023	-0.03	0.00	0.00	0.80	20.10
GP-19$^{50-70}$	9/7/2023	0.00	0.00	0.00	0.80	20.10
GP-19$^{50-70}$	10/4/2023	0.00	0.00	0.00	0.90	20.20
GP-19$^{50-70}$	11/2/2023	0.00	0.00	0.00	1.60	19.90
GP-19$^{25-40}$	12/5/2022	0.00	0.00	0.00	2.10	18.90
GP-19$^{25-40}$	1/18/2023	0.00	0.00	0.00	1.90	19.20
GP-19$^{25-40}$	2/7/2023	0.00	0.00	0.00	2.80	17.10
GP-19$^{25-40}$	3/7/0223	-0.02	0.00	0.00	2.50	17.50
GP-19$^{25-40}$	4/17/2023	0.00	0.00	0.00	2.20	18.10
GP-19$^{25-40}$	5/3/2023	0.00	0.00	0.00	1.20	19.40
GP-19$^{25-40}$	6/13/2023	0.00	0.00	0.00	0.40	20.50
GP-19$^{25-40}$	7/5/2023	0.00	0.00	0.00	0.20	20.50
GP-19$^{25-40}$	8/8/2023	0.00	0.00	0.00	0.30	20.60
GP-19$^{25-40}$	9/7/2023	0.00	0.00	0.00	0.40	20.40
GP-19$^{25-40}$	10/4/2023	0.00	0.00	0.00	0.50	20.40
GP-19$^{25-40}$	11/2/2023	0.00	0.00	0.00	1.40	20.00

Attachment 2
Gas Probe Monitoring Data Summary - 2023
Wisconsin Department of Natural Resources - Refuse Hideaway Landfill
Madison, Dane County, Wisconsin

Location	Date	Pressure (in. WC)	Methane (% LEL)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)
GP19$^{2-15}$	12/5/2022	0.00	0.00	0.00	1.30	18.00
GP19$^{2-15}$	1/18/2023	0.00	0.00	0.00	1.00	19.40
GP19$^{2-15}$	2/7/2023	0.00	0.00	0.00	2.50	17.80
GP19$^{2-15}$	3/7/0223	0.00	0.00	0.00	1.90	18.80
GP19$^{2-15}$	4/17/2023	0.00	0.00	0.00	2.30	18.50
GP19$^{2-15}$	5/3/2023	0.00	0.00	0.00	1.40	20.00
GP19$^{2-15}$	6/13/2023	0.00	0.00	0.00	0.00	20.80
GP19$^{2-15}$	7/5/2023	0.03	0.00	0.00	0.00	20.80
GP19$^{2-15}$	8/8/2023	0.00	0.00	0.00	0.00	20.80
GP19$^{2-15}$	9/7/2023	0.00	0.00	0.00	0.20	20.60
GP19$^{2-15}$	10/4/2023	0.00	0.00	0.00	0.70	20.20
GP19$^{2-15}$	11/2/2023	0.00	0.00	0.00	1.20	20.20
GP-20$^{85-100}$	12/5/2022	0.00	0.00	0.00	0.50	20.20
GP-20$^{85-100}$	1/18/2023	0.00	0.00	0.00	0.30	20.40
GP-20$^{85-100}$	2/7/2023	-0.06	0.00	0.00	0.80	19.70
GP-20$^{85-100}$	3/7/0223	0.00	0.00	0.00	0.00	20.80
GP-20$^{85-100}$	4/17/2023	0.00	0.00	0.00	1.10	19.60
GP-20$^{85-100}$	5/3/2023	0.00	0.00	0.00	0.00	20.80
GP-20$^{85-100}$	6/13/2023	0.10	0.00	0.00	0.50	20.10
GP-20$^{85-100}$	7/5/2023	0.00	0.00	0.00	0.20	20.40
GP-20$^{85-100}$	8/8/2023	-0.03	0.00	0.00	0.00	20.80
GP-20$^{85-100}$	9/7/2023	0.00	0.00	0.00	0.00	20.80
GP-20$^{85-100}$	10/4/2023	0.00	0.00	0.00	0.30	20.60
GP-20$^{85-100}$	11/2/2023	0.00	0.00	0.00	0.50	20.10
GP-20$^{50-70}$	12/5/2022	0.00	0.00	0.00	1.10	19.90
GP-20$^{50-70}$	1/18/2023	0.00	0.00	0.00	1.30	19.40
GP-20$^{50-70}$	2/7/2023	0.00	0.00	0.00	1.50	19.00
GP-20$^{50-70}$	3/7/0223	0.00	0.00	0.00	0.00	20.80
GP-20$^{50-70}$	4/17/2023	0.00	0.00	0.00	1.20	19.30
GP-20$^{50-70}$	5/3/2023	0.00	0.00	0.00	0.10	20.70
GP-20$^{50-70}$	6/13/2023	0.03	0.00	0.00	0.00	20.80
GP-20$^{50-70}$	7/5/2023	0.00	0.00	0.00	0.00	20.80
GP-20$^{50-70}$	8/8/2023	0.00	0.00	0.00	0.00	20.80
GP-20$^{50-70}$	9/7/2023	0.00	0.00	0.00	0.00	20.80
GP-20$^{50-70}$	10/4/2023	0.00	0.00	0.00	0.00	20.80
GP-20$^{50-70}$	11/2/2023	0.00	0.00	0.00	1.10	19.90
GP-20$^{25-40}$	12/5/2022	0.00	0.00	0.00	1.50	19.70
GP-20$^{25-40}$	1/18/2023	0.00	0.00	0.00	1.70	19.30
GP-20$^{25-40}$	2/7/2023	-0.04	0.00	0.00	1.80	18.50
GP-20$^{25-40}$	3/7/0223	0.00	0.00	0.00	1.00	19.40
GP-20$^{25-40}$	4/17/2023	0.00	0.00	0.00	1.60	19.50
GP-20$^{25-40}$	5/3/2023	0.00	0.00	0.00	0.60	20.00
GP-20$^{25-40}$	6/13/2023	0.00	0.00	0.00	0.20	20.60
GP-20$^{25-40}$	7/5/2023	0.00	0.00	0.00	0.00	20.80
GP-20$^{25-40}$	8/8/2023	0.00	0.00	0.00	0.20	20.70
GP-20$^{25-40}$	9/7/2023	0.00	0.00	0.00	0.00	20.80
GP-20$^{25-40}$	10/4/2023	0.00	0.00	0.00	0.30	20.50
GP-20$^{25-40}$	11/2/2023	0.00	0.00	0.00	1.30	20.00

Attachment 2
Gas Probe Monitoring Data Summary - 2023
Wisconsin Department of Natural Resources - Refuse Hideaway Landfill
Madison, Dane County, Wisconsin

Location	Date	Pressure (in. WC)	Methane (% LEL)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)
GP-20$^{2-15}$	12/5/2022	0.00	0.00	0.00	1.80	19.50
GP-20$^{2-15}$	1/18/2023	0.00	0.00	0.00	2.00	18.90
GP-20$^{2-15}$	2/7/2023	0.00	0.00	0.00	1.50	18.80
GP-20$^{2-15}$	3/7/0223	0.00	0.00	0.00	1.20	19.10
GP-20$^{2-15}$	4/17/2023	0.00	0.00	0.00	1.40	19.00
GP-20$^{2-15}$	5/3/2023	0.00	0.00	0.00	1.20	19.50
GP-20$^{2-15}$	6/13/2023	0.00	0.00	0.00	0.50	20.30
GP-20$^{2-15}$	7/5/2023	0.00	0.00	0.00	0.30	20.50
GP-20$^{2-15}$	8/8/2023	0.00	0.00	0.00	0.50	20.50
GP-20$^{2-15}$	9/7/2023	0.00	0.00	0.00	0.00	20.80
GP-20$^{2-15}$	10/4/2023	0.00	0.00	0.00	0.70	20.20
GP-20$^{2-15}$	11/2/2023	0.00	0.00	0.00	1.60	19.70
GP-21$^{85-100}$	12/5/2022	-0.10	0.00	0.00	0.60	19.90
GP-21$^{85-100}$	1/18/2023	0.06	0.00	0.00	0.70	20.10
GP-21$^{85-100}$	2/7/2023	-0.15	0.00	0.00	0.40	20.30
GP-21$^{85-100}$	3/7/0223	-0.30	0.00	0.00	0.40	19.80
GP-21$^{85-100}$	4/17/2023	-0.11	0.00	0.00	0.60	19.90
GP-21$^{85-100}$	5/3/2023	0.08	0.00	0.00	0.30	20.30
GP-21$^{85-100}$	6/13/2023	0.28	0.00	0.00	0.90	19.20
GP-21$^{85-100}$	7/5/2023	0.19	0.00	0.00	0.30	20.60
GP-21$^{85-100}$	8/8/2023	-0.08	0.00	0.00	0.30	20.40
GP-21$^{85-100}$	9/7/2023	0.00	0.00	0.00	0.40	20.50
GP-21$^{85-100}$	10/4/2023	0.00	0.00	0.00	0.40	20.40
GP-21$^{85-100}$	11/2/2023	0.00	0.00	0.00	0.40	20.50
GP-21$^{50-70}$	12/5/2022	-0.07	0.00	0.00	1.50	19.30
GP-21$^{50-70}$	1/18/2023	0.00	0.00	0.00	1.30	19.00
GP-21$^{50-70}$	2/7/2023	-0.06	0.00	0.00	1.00	19.80
GP-21$^{50-70}$	3/7/0223	-0.10	0.00	0.00	0.00	20.80
GP-21$^{50-70}$	4/17/2023	-0.04	0.00	0.00	1.30	19.50
GP-21$^{50-70}$	5/3/2023	0.00	0.00	0.00	0.00	20.80
GP-21$^{50-70}$	6/13/2023	0.05	0.00	0.00	0.20	20.50
GP-21$^{50-70}$	7/5/2023	0.00	0.00	0.00	0.00	20.80
GP-21$^{50-70}$	8/8/2023	0.00	0.00	0.00	0.00	20.80
GP-21$^{50-70}$	9/7/2023	0.00	0.00	0.00	0.00	20.80
GP-21$^{50-70}$	10/4/2023	0.00	0.00	0.00	0.20	20.70
GP-21$^{50-70}$	11/2/2023	0.00	0.00	0.00	0.70	20.40
GP-21$^{25-40}$	12/5/2022	0.00	0.00	0.00	2.30	18.50
GP-21$^{25-40}$	1/18/2023	0.00	0.00	0.00	2.70	18.40
GP-21$^{25-40}$	2/7/2023	-0.04	0.00	0.00	0.00	20.80
GP-21$^{25-40}$	3/7/0223	-0.04	0.00	0.00	0.00	20.50
GP-21$^{25-40}$	4/17/2023	0.00	0.00	0.00	0.60	20.00
GP-21$^{25-40}$	5/3/2023	0.00	0.00	0.00	0.30	20.60
GP-21$^{25-40}$	6/13/2023	0.03	0.00	0.00	0.20	20.40
GP-21$^{25-40}$	7/5/2023	0.00	0.00	0.00	0.00	20.80
GP-21$^{25-40}$	8/8/2023	0.00	0.00	0.00	0.00	20.80
GP-21$^{25-40}$	9/7/2023	0.00	0.00	0.00	0.00	20.80
GP-21$^{25-40}$	10/4/2023	0.00	0.00	0.00	0.00	20.80
GP-21$^{25-40}$	11/2/2023	0.00	0.00	0.00	1.70	19.80

Attachment 2
Gas Probe Monitoring Data Summary - 2023
Wisconsin Department of Natural Resources - Refuse Hideaway Landfill
Madison, Dane County, Wisconsin

Location	Date	Pressure (in. WC)	Methane (% LEL)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)
GP-21$^{2-15}$	12/5/2022	0.00	0.00	0.00	1.20	19.90
GP-21$^{2-15}$	1/18/2023	0.00	0.00	0.00	1.00	19.80
GP-21$^{2-15}$	2/7/2023	0.00	0.00	0.00	0.90	20.00
GP-21$^{2-15}$	3/7/0223	0.00	0.00	0.00	0.50	20.10
GP-21$^{2-15}$	4/17/2023	0.00	0.00	0.00	0.20	20.40
GP-21$^{2-15}$	5/3/2023	0.03	0.00	0.00	0.40	20.30
GP-21$^{2-15}$	6/13/2023	0.00	0.00	0.00	0.50	20.50
GP-21$^{2-15}$	7/5/2023	0.00	0.00	0.00	0.40	20.50
GP-21$^{2-15}$	8/8/2023	0.00	0.00	0.00	0.60	20.50
GP-21$^{2-15}$	9/7/2023	0.00	0.00	0.00	0.70	20.10
GP-21$^{2-15}$	10/4/2023	0.00	0.00	0.00	0.80	20.40
GP-21$^{2-15}$	11/2/2023	0.00	0.00	0.00	1.20	20.10
GP-22$^{85-100}$	12/5/2022	0.00	0.00	0.00	3.80	17.00
GP-22$^{85-100}$	1/18/2023	0.00	0.00	0.00	4.20	16.70
GP-22$^{85-100}$	2/7/2023	-0.04	0.00	0.00	2.20	19.10
GP-22$^{85-100}$	3/7/0223	-0.15	0.00	0.00	0.90	20.00
GP-22$^{85-100}$	4/17/2023	-0.12	0.00	0.00	2.40	18.60
GP-22$^{85-100}$	5/3/2023	0.07	0.00	0.00	1.90	19.30
GP-22$^{85-100}$	6/13/2023	0.03	0.00	0.00	2.10	19.40
GP-22$^{85-100}$	7/5/2023	0.00	0.00	0.00	1.60	19.60
GP-22$^{85-100}$	8/8/2023	-0.06	0.00	0.00	0.00	20.80
GP-22$^{85-100}$	9/7/2023	0.00	0.00	0.00	2.20	19.20
GP-22$^{85-100}$	10/4/2023	0.04	0.00	0.00	1.70	19.50
GP-22$^{85-100}$	11/2/2023	0.00	0.00	0.00	2.40	18.60
GP-22$^{50-70}$	12/5/2022	0.09	0.00	0.00	2.80	18.30
GP-22$^{50-70}$	1/18/2023	0.07	0.00	0.00	2.40	18.10
GP-22$^{50-70}$	2/7/2023	-0.06	0.00	0.00	1.10	20.00
GP-22$^{50-70}$	3/7/0223	-0.14	0.00	0.00	0.80	20.20
GP-22$^{50-70}$	4/17/2023	-0.10	0.00	0.00	1.60	19.40
GP-22$^{50-70}$	5/3/2023	0.00	0.00	0.00	0.00	20.80
GP-22$^{50-70}$	6/13/2023	0.04	0.00	0.00	2.60	17.70
GP-22$^{50-70}$	7/5/2023	0.00	0.00	0.00	0.40	20.40
GP-22$^{50-70}$	8/8/2023	-0.07	0.00	0.00	0.60	20.40
GP-22$^{50-70}$	9/7/2023	0.00	0.00	0.00	0.60	20.20
GP-22$^{50-70}$	10/4/2023	0.03	0.00	0.00	1.50	19.30
GP-22$^{50-70}$	11/2/2023	0.00	0.00	0.00	1.90	19.00
GP-22$^{25-40}$	12/5/2022	0.00	0.00	0.00	1.70	19.70
GP-22$^{25-40}$	1/18/2023	0.00	0.00	0.00	1.40	19.90
GP-22$^{25-40}$	2/7/2023	0.00	0.00	0.00	1.40	19.60
GP-22$^{25-40}$	3/7/0223	0.00	0.00	0.00	1.70	19.40
GP-22$^{25-40}$	4/17/2023	-0.04	0.00	0.00	1.10	19.70
GP-22$^{25-40}$	5/3/2023	0.00	0.00	0.00	0.50	20.40
GP-22$^{25-40}$	6/13/2023	0.00	0.00	0.00	1.30	19.80
GP-22$^{25-40}$	7/5/2023	0.00	0.00	0.00	0.50	20.30
GP-22$^{25-40}$	8/8/2023	0.00	0.00	0.00	0.70	20.20
GP-22$^{25-40}$	9/7/2023	0.00	0.00	0.00	1.30	19.70
GP-22$^{25-40}$	10/4/2023	0.00	0.00	0.00	0.90	20.20
GP-22$^{25-40}$	11/2/2023	0.00	0.00	0.00	1.90	19.20

Attachment 2
Gas Probe Monitoring Data Summary - 2023
Wisconsin Department of Natural Resources - Refuse Hideaway Landfill
Madison, Dane County, Wisconsin

Location	Date	Pressure (in. WC)	Methane (% LEL)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)
GP-22$^{2-15}$	12/5/2022	0.00	0.00	0.00	2.20	19.30
GP-22$^{2-15}$	1/18/2023	0.00	0.00	0.00	2.10	19.00
GP-22$^{2-15}$	2/7/2023	0.00	0.00	0.00	1.70	19.40
GP-22$^{2-15}$	3/7/0223	0.00	0.00	0.00	1.20	19.80
GP-22$^{2-15}$	4/17/2023	0.00	0.00	0.00	0.60	20.10
GP-22$^{2-15}$	5/3/2023	0.00	0.00	0.00	1.30	19.80
GP-22$^{2-15}$	6/13/2023	0.00	0.00	0.00	2.60	18.90
GP-22$^{2-15}$	7/5/2023	0.00	0.00	0.00	1.40	19.70
GP-22$^{2-15}$	8/8/2023	0.00	0.00	0.00	2.60	18.80
GP-22$^{2-15}$	9/7/2023	0.00	0.00	0.00	1.70	19.50
GP-22$^{2-15}$	10/4/2023	0.00	0.00	0.00	1.70	19.60
GP-22$^{2-15}$	11/2/2023	0.00	0.00	0.00	2.40	18.80
GP-23$^{85-100}$	12/5/2022	0.00	0.00	0.00	1.50	19.10
GP-23$^{85-100}$	1/18/2023	0.00	0.00	0.00	1.30	19.30
GP-23$^{85-100}$	2/7/2023	-0.02	0.00	0.00	0.00	20.80
GP-23$^{85-100}$	3/7/0223	-0.04	0.00	0.00	0.00	20.80
GP-23$^{85-100}$	4/17/2023	-0.03	0.00	0.00	0.00	20.80
GP-23$^{85-100}$	5/3/2023	0.00	0.00	0.00	0.00	20.80
GP-23$^{85-100}$	6/13/2023	0.00	0.00	0.00	1.20	19.70
GP-23$^{85-100}$	7/5/2023	0.00	0.00	0.00	0.00	20.80
GP-23$^{85-100}$	8/8/2023	0.00	0.00	0.00	0.40	20.50
GP-23$^{85-100}$	9/7/2023	0.00	0.00	0.00	0.20	20.50
GP-23$^{85-100}$	10/4/2023	0.00	0.00	0.00	0.70	20.30
GP-23$^{85-100}$	11/2/2023	0.00	0.00	0.00	0.90	19.90
GP-23$^{50-70}$	12/5/2022	-0.03	0.00	0.00	1.00	19.60
GP-23$^{50-70}$	1/18/2023	0.00	0.00	0.00	5.30	15.70
GP-23$^{50-70}$	2/7/2023	-0.03	0.00	0.00	0.00	20.80
GP-23$^{50-70}$	3/7/0223	-0.03	0.00	0.00	0.00	20.80
GP-23$^{50-70}$	4/17/2023	0.00	0.00	0.00	0.00	20.80
GP-23$^{50-70}$	5/3/2023	0.00	0.00	0.00	0.00	20.80
GP-23$^{50-70}$	6/13/2023	0.00	0.00	0.00	2.20	18.80
GP-23$^{50-70}$	7/5/2023	0.00	0.00	0.00	0.00	20.80
GP-23$^{50-70}$	8/8/2023	0.00	0.00	0.00	0.00	20.80
GP-23$^{50-70}$	9/7/2023	0.00	0.00	0.00	0.10	20.70
GP-23$^{50-70}$	10/4/2023	0.00	0.00	0.00	4.10	17.90
GP-23$^{50-70}$	11/2/2023	0.00	0.00	0.00	0.80	20.10
GP-23$^{25-40}$	12/5/2022	0.00	0.00	0.00	5.70	15.20
GP-23$^{25-40}$	1/18/2023	0.00	0.00	0.00	6.40	15.30
GP-23$^{25-40}$	2/7/2023	0.00	0.00	0.00	0.00	20.80
GP-23$^{25-40}$	3/7/0223	-0.04	0.00	0.00	0.00	20.80
GP-23$^{25-40}$	4/17/2023	0.00	0.00	0.00	0.80	20.10
GP-23$^{25-40}$	5/3/2023	0.00	0.00	0.00	0.00	20.80
GP-23$^{25-40}$	6/13/2023	0.00	0.00	0.00	4.60	16.30
GP-23$^{25-40}$	7/5/2023	0.00	0.00	0.00	0.00	20.80
GP-23$^{25-40}$	8/8/2023	0.00	0.00	0.00	0.00	20.80
GP-23$^{25-40}$	9/7/2023	0.00	0.00	0.00	0.10	20.70
GP-23$^{25-40}$	10/4/2023	0.00	0.00	0.00	0.40	20.60
GP-23$^{25-40}$	11/2/2023	0.00	0.00	0.00	0.80	20.20

Attachment 2
Gas Probe Monitoring Data Summary - 2023
Wisconsin Department of Natural Resources - Refuse Hideaway Landfill
Madison, Dane County, Wisconsin

Location	Date	Pressure (in. WC)	Methane (% LEL)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)
GP-23$^{2-15}$	12/5/2022	0.00	0.00	0.00	3.20	17.30
GP-23$^{2-15}$	1/18/2023	0.00	0.00	0.00	3.60	17.50
GP-23$^{2-15}$	2/7/2023	0.00	0.00	0.00	2.40	18.40
GP-23$^{2-15}$	3/7/0223	-0.03	0.00	0.00	0.00	20.80
GP-23$^{2-15}$	4/17/2023	0.00	0.00	0.00	1.20	19.40
GP-23$^{2-15}$	5/3/2023	0.00	0.00	0.00	0.00	20.80
GP-23$^{2-15}$	6/13/2023	0.00	0.00	0.00	3.80	17.20
GP-23$^{2-15}$	7/5/2023	0.00	0.00	0.00	0.60	20.30
GP-23$^{2-15}$	8/8/2023	0.00	0.00	0.00	0.80	20.30
GP-23$^{2-15}$	9/7/2023	0.00	0.00	0.00	0.40	20.50
GP-23$^{2-15}$	10/4/2023	0.00	0.00	0.00	3.50	18.10
GP-23$^{2-15}$	11/2/2023	0.00	0.00	0.00	2.70	18.70
GP-24$^{85-100}$	12/5/2022	-0.06	0.00	0.00	11.20	8.30
GP-24$^{85-100}$	1/18/2023	0.00	0.00	0.00	11.70	7.90
GP-24$^{85-100}$	2/7/2023	-0.07	0.00	0.00	0.00	20.80
GP-24$^{85-100}$	3/7/0223	-0.16	0.00	0.00	0.00	20.80
GP-24$^{85-100}$	4/17/2023	0.00	0.00	0.00	0.00	20.80
GP-24$^{85-100}$	5/3/2023	0.00	0.00	0.00	0.00	20.80
GP-24$^{85-100}$	6/13/2023	0.00	0.00	0.00	13.00	4.40
GP-24$^{85-100}$	7/5/2023	0.00	0.00	0.00	0.90	19.60
GP-24$^{85-100}$	8/8/2023	-0.04	0.00	0.00	0.00	20.80
GP-24$^{85-100}$	9/7/2023	0.00	0.00	0.00	0.00	20.80
GP-24$^{85-100}$	10/4/2023	0.09	0.00	0.00	10.30	8.50
GP-24$^{85-100}$	11/2/2023	0.00	0.00	0.00	0.20	20.60
GP-24$^{50-70}$	12/5/2022	0.00	0.00	0.00	1.80	19.10
GP-24$^{50-70}$	1/18/2023	0.00	0.00	0.00	1.60	19.40
GP-24$^{50-70}$	2/7/2023	-0.09	0.00	0.00	0.40	20.40
GP-24$^{50-70}$	3/7/0223	-0.10	0.00	0.00	0.00	20.80
GP-24$^{50-70}$	4/17/2023	0.00	0.00	0.00	1.40	19.40
GP-24$^{50-70}$	5/3/2023	0.00	0.00	0.00	0.00	20.80
GP-24$^{50-70}$	6/13/2023	0.00	0.00	0.00	3.20	16,7
GP-24$^{50-70}$	7/5/2023	0.00	0.00	0.00	1.20	19.30
GP-24$^{85-100}$	8/8/2023	-0.04	0.00	0.00	0.00	20.80
GP-24$^{50-70}$	9/7/2023	0.00	0.00	0.00	1.00	20.00
GP-24$^{50-70}$	10/4/2023	0.06	0.00	0.00	3.40	16.60
GP-24$^{50-70}$	11/2/2023	0.00	0.00	0.00	2.20	18.30
GP-24$^{25-40}$	12/5/2022	0.00	0.00	0.00	5.70	15.20
GP-24$^{25-40}$	1/18/2023	0.00	0.00	0.00	6.30	14.90
GP-24$^{25-40}$	2/7/2023	0.00	0.00	0.00	0.00	20.80
GP-24$^{25-40}$	3/7/0223	-0.06	0.00	0.00	0.00	20.80
GP-24$^{25-40}$	4/17/2023	0.00	0.00	0.00	4.60	16.80
GP-24$^{25-40}$	5/3/2023	0.00	0.00	0.00	0.00	20.80
GP-24$^{25-40}$	6/13/2023	0.00	0.00	0.00	4.50	16.50
GP-24$^{25-40}$	7/5/2023	0.00	0.00	0.00	0.90	19.70
GP-24$^{25-40}$	8/8/2023	0.00	0.00	0.00	0.80	20.10
GP-24$^{25-40}$	9/7/2023	0.00	0.00	0.00	0.00	20.80
GP-24$^{25-40}$	10/4/2023	0.04	0.00	0.00	4.30	16.90
GP-24$^{25-40}$	11/2/2023	0.00	0.00	0.00	2.00	18.50

Attachment 2
Gas Probe Monitoring Data Summary - 2023
Wisconsin Department of Natural Resources - Refuse Hideaway Landfill
Madison, Dane County, Wisconsin

Location	Date	Pressure (in. WC)	Methane (% LEL)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)
GP-24[2-15]	12/5/2022	0.00	0.00	0.00	4.70	15.10
GP-24[2-15]	1/18/2023	0.00	0.00	0.00	5.10	15.30
GP-24[2-15]	2/7/2023	0.00	0.00	0.00	0.30	20.40
GP-24[2-15]	3/7/0223	-0.05	0.00	0.00	0.00	20.80
GP-24[2-15]	4/17/2023	0.00	0.00	0.00	2.40	17.30
GP-24[2-15]	5/3/2023	0.00	0.00	0.00	1.40	19.90
GP-24[2-15]	6/13/2023	0.00	0.00	0.00	4.00	16.00
GP-24[2-15]	7/5/2023	0.00	0.00	0.00	1.30	19.40
GP-24[2-15]	8/8/2023	0.00	0.00	0.00	1.80	19.50
GP-24[2-15]	9/7/2023	0.00	0.00	0.00	0.70	20.40
GP-24[2-15]	10/4/2023	0.03	0.00	0.00	4.10	16.90
GP-24[2-15]	11/2/2023	0.00	0.00	0.00	2.50	18.10
GPW-1D	12/5/2022	0.44	0.00	0.00	1.90	17.00
GPW-1D	1/18/2023	0.32	0.00	0.00	1.50	18.60
GPW-1D	2/7/2023	-0.79	0.00	0.00	0.00	20.80
GPW-1D	3/7/0223	-0.82	0.00	0.00	0.00	20.80
GPW-1D	4/17/2023	-0.68	0.00	0.00	0.00	20.80
GPW-1D	5/3/2023	0.26	0.00	0.00	0.00	20.80
GPW-1D	6/13/2023	0.42	0.00	0.00	1.70	18.50
GPW-1D	7/5/2023	0.10	0.00	0.00	1.80	19.80
GPW-1D	8/8/2023	0.00	0.00	0.00	2.00	18.50
GPW-1D	9/7/2023	0.00	0.00	0.00	1.80	18.90
GPW-1D	10/4/2023	0.00	0.00	0.00	1.50	19.10
GPW-1D	11/2/2023	-0.38	0.00	0.00	2.40	18.30
GPW-1M	12/5/2022	0.45	0.00	0.00	1.80	17.30
GPW-1M	1/18/2023	0.27	0.00	0.00	1.10	18.40
GPW-1M	2/7/2023	-0.71	0.00	0.00	0.00	20.80
GPW-1M	3/7/0223	-0.74	0.00	0.00	0.00	20.80
GPW-1M	4/17/2023	-0.64	0.00	0.00	1.60	19.00
GPW-1M	5/3/2023	0.20	0.00	0.00	0.00	20.80
GPW-1M	6/13/2023	0.44	0.00	0.00	1.60	18.00
GPW-1M	7/5/2023	0.09	0.00	0.00	0.50	20.40
GPW-1M	8/8/2023	0.00	0.00	0.00	0.00	20.80
GPW-1M	9/7/2023	0.00	0.00	0.00	0.30	20.50
GPW-1M	10/4/2023	0.00	0.00	0.00	0.60	20.20
GPW-1M	11/2/2023	-0.34	0.00	0.00	1.40	19.50
GPW-1S	12/5/2022	0.02	0.00	0.00	1.50	18.30
GPW-1S	1/18/2023	0.03	0.00	0.00	1.90	19.00
GPW-1S	2/7/2023	0.00	0.00	0.00	1.10	19.70
GPW-1S	3/7/0223	0.00	0.00	0.00	1.70	18.60
GPW-1S	4/17/2023	0.00	0.00	0.00	0.30	20.20
GPW-1S	5/3/2023	0.00	0.00	0.00	0.60	20.30
GPW-1S	6/13/2023	0.00	0.00	0.00	0.90	19.70
GPW-1S	7/5/2023	-0.03	0.00	0.00	0.70	20.10
GPW-1S	8/8/2023	0.00	0.00	0.00	1.40	19.50
GPW-1S	9/7/2023	0.00	0.00	0.00	1.90	18.70
GPW-1S	10/4/2023	0.00	0.00	0.00	1.70	18.80
GPW-1S	11/2/2023	0.00	0.00	0.00	1.80	18.90
G-1D	12/5/2022	-0.05	0.00	0.00	0.00	20.80
G-1D	1/18/2023	0.00	0.00	0.00	0.10	20.80
G-1D	2/7/2023	-0.06	0.00	0.00	0.00	20.80
G-1D	3/7/0223	-0.05	0.00	0.00	0.00	20.80
G-1D	4/17/2023	-0.04	0.00	0.00	0.00	20.80
G-1D	5/3/2023	0.00	0.00	0.00	0.00	20.80
G-1D	6/13/2023	0.03	>100	5.70	16.60	0.00
G-1D	7/5/2023	0.04	79.00	3.90	17.20	0.00
G-1D	8/8/2023	0.00	78.00	3.90	17.40	0.00
G-1D	9/7/2023	0.01	87.00	4.30	17.60	0.00
G-1D	10/4/2023	0.00	44.00	2.20	17.90	0.00
G-1D	11/2/2023	0.00	0.00	0.00	0.00	20.80

Attachment 2
Gas Probe Monitoring Data Summary - 2023
Wisconsin Department of Natural Resources - Refuse Hideaway Landfill
Madison, Dane County, Wisconsin

Location	Date	Pressure (in. WC)	Methane (% LEL)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)
G-1S	12/5/2022	-0.03	0.00	0.00	0.40	20.50
G-1S	1/18/2023	0.00	0.00	0.00	0.20	20.70
G-1S	2/7/2023	-0.04	0.00	0.00	0.10	20.70
G-1S	3/7/0223	-0.03	0.00	0.00	0.00	20.80
G-1S	4/17/2023	-0.02	0.00	0.00	0.00	20.80
G-1S	5/3/2023	0.00	0.00	0.00	0.80	19.90
G-1S	6/13/2023	0.04	>100	22.60	22.10	0.00
G-1S	7/5/2023	0.05	>100	17.50	22.10	0.00
G-1S	8/8/2023	0.00	>100	16.80	22.30	0.00
G-1S	9/7/2023	0.03	>100	12.20	21.30	0.00
G-1S	10/4/2023	0.00	>100	7.70	19.70	0.00
G-1S	11/2/2023	0.00	0.00	0.00	1.20	19.80
G-2D	12/5/2022	0.00	0.00	0.00	0.10	20.60
G-2D	1/18/2023	0.00	0.00	0.00	0.30	20.40
G-2D	2/7/2023	-0.02	0.00	0.00	0.00	20.80
G-2D	3/7/0223	0.00	0.00	0.00	0.00	20.80
G-2D	4/17/2023	0.00	0.00	0.00	2.00	19.20
G-2D	5/3/2023	0.00	0.00	0.00	1.10	19.90
G-2D	6/13/2023	0.00	0.00	0.00	3.10	15.80
G-2D	7/5/2023	0.00	0.00	0.00	1.10	19.80
G-2D	8/8/2023	0.00	0.00	0.00	1.80	18.70
G-2D	9/7/2023	0.00	0.00	0.00	1.50	19.60
G-2D	10/4/2023	0.00	0.00	0.00	1.60	18.80
G-2D	11/2/2023	0.00	0.00	0.00	0.30	20.40
G-2S	12/5/2022	0.00	0.00	0.00	0.20	20.40
G-2S	1/18/2023	0.00	0.00	0.00	0.50	20.30
G-2S	2/7/2023	0.00	0.00	0.00	0.00	20.80
G-2S	3/7/0223	0.04	0.00	0.00	0.00	20.80
G-2S	4/17/2023	0.00	0.00	0.00	0.00	20.70
G-2S	5/3/2023	0.00	50.00	2.50	6.90	12.40
G-2S	6/13/2023	0.00	>100	8.50	17.80	0.00
G-2S	7/5/2023	0.00	>100	7.80	7.70	0.00
G-2S	8/8/2023	0.00	>100	7.30	18.10	0.00
G-2S	9/7/2023	0.00	0.00	0.00	0.10	20.70
G-2S	10/4/2023	0.00	>100	5.60	18.60	0.00
G-2S	11/2/2023	0.00	86.00	4.30	18.80	0.20
G-5	12/5/2022	0.00	0.00	0.00	3.00	18.40
G-5	1/18/2023	0.00	0.00	0.00	2.80	18.60
G-5	2/7/2023	0.00	0.00	0.00	1.30	19.70
G-5	3/7/0223	0.18	NM	NM	NM	NM
G-5	4/17/2023	0.00	NM	NM	NM	NM
G-5	5/3/2023	0.00	0.00	0.00	2.20	18.70
G-5	6/13/2023	0.22	0.00	0.00	4.60	15.90
G-5	7/5/2023	0.17	0.00	0.00	5.30	16.40
G-5	8/8/2023	0.00	0.00	0.00	7.40	14.20
G-5	9/7/2023	0.16	0.00	0.00	6.20	15.50
G-5	10/4/2023	0.15	0.00	0.00	5.70	15.40
G-5	11/2/2023	-0.04	2.00	0.10	5.60	14.10
G-6	12/5/2022	0.00	0.00	0.00	1.10	19.50
G-6	1/18/2023	0.00	0.00	0.00	0.20	20.60
G-6	2/7/2023	0.00	0.00	0.00	0.00	20.80
G-6	3/7/0223	0.00	0.00	0.00	0.00	20.80
G-6	4/17/2023	0.00	0.00	0.00	0.00	20.80
G-6	5/3/2023	0.00	0.00	0.00	0.00	20.80
G-6	6/13/2023	0.00	0.00	0.00	1.00	19.20
G-6	7/5/2023	0.00	0.00	0.00	0.60	20.30
G-6	8/8/2023	0.00	0.00	0.00	0.80	20.10
G-6	9/7/2023	0.00	0.00	0.00	0.40	20.60
G-6	10/4/2023	0.00	0.00	0.00	0.80	20.10
G-6	11/2/2023	0.00	0.00	0.00	0.00	20.80

Attachment 2
Gas Probe Monitoring Data Summary - 2023
Wisconsin Department of Natural Resources - Refuse Hideaway Landfill
Madison, Dane County, Wisconsin

Location	Date	Pressure (in. WC)	Methane (% LEL)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)
G-8	12/5/2022	0.00	0.00	0.00	0.00	20.80
G-8	1/18/2023	0.00	0.00	0.00	0.00	20.70
G-8	2/7/2023	0.00	0.00	0.00	0.00	20.80
G-8	3/7/0223	0.00	0.00	0.00	0.00	20.80
G-8	4/17/2023	0.00	0.00	0.00	0.00	20.80
G-8	5/3/2023	0.00	0.00	0.00	0.00	20.80
G-8	6/13/2023	0.00	0.00	0.00	0.00	20.80
G-8	7/5/2023	0.00	0.00	0.00	0.40	19.90
G-8	8/8/2023	0.00	0.00	0.00	0.90	19.90
G-8	9/7/2023	0.00	0.00	0.00	0.60	20.00
G-8	10/4/2023	0.00	0.00	0.00	0.20	19.10
G-8	11/2/2023	0.00	0.00	0.00	0.10	19.20
G-9	12/5/2022	0.00	0.00	0.00	1.30	17.40
G-9	1/18/2023	0.00	0.00	0.00	1.00	17.90
G-9	2/7/2023	0.00	0.00	0.00	2.10	16.50
G-9	3/7/0223	0.00	0.00	0.00	0.50	18.50
G-9	4/17/2023	0.00	0.00	0.00	0.00	20.80
G-9	5/3/2023	0.00	0.00	0.00	0.90	18.50
G-9	6/13/2023	0.04	0.00	0.00	0.00	20.40
G-9	7/5/2023	0.00	0.00	0.00	0.10	20.70
G-9	8/8/2023	0.00	0.00	0.00	0.00	20.80
G-9	9/7/2023	0.00	0.00	0.00	0.20	20.20
G-9	10/4/2023	0.00	0.00	0.00	0.30	20.40
G-9	11/2/2023	-0.04	0.00	0.00	0.40	18.80
G-10	12/5/2022	-0.53	0.00	0.00	0.10	20.60
G-10	1/18/2023	0.00	0.00	0.00	0.30	20.40
G-10	2/7/2023	-0.82	0.00	0.00	0.00	20.80
G-10	3/7/0223	-1.66	0.00	0.00	0.00	20.80
G-10	4/17/2023	-1.47	0.00	0.00	0.00	20.80
G-10	5/3/2023	-0.74	0.00	0.00	0.00	20.80
G-10	6/13/2023	0.34	0.00	0.00	1.40	17.30
G-10	7/5/2023	0.17	0.00	0.00	0.20	20.50
G-10	8/8/2023	-0.38	0.00	0.00	0.10	20.70
G-10	9/7/2023	0.00	0.00	0.00	0.10	20.70
G-10	10/4/2023	0.40	0.00	0.00	0.40	20.60
G-10	11/2/2023	-0.14	0.00	0.00	0.20	20.50
Speedway Office	12/5/2022	0.00	0.00	0.00	0.00	20.80
Speedway Office	1/18/2023	Open to ATM	0.00	0.00	0.00	20.80
Speedway Office	2/7/2023	0.00	0.00	0.00	0.00	20.80
Speedway Office	3/7/0223	0.00	0.00	0.00	0.00	20.80
Speedway Office	4/17/2023	0.00	0.00	0.00	0.00	20.80
Speedway Office	5/3/2023	0.00	0.00	0.00	0.00	20.80
Speedway Office	6/13/2023	0.00	0.00	0.00	0.00	20.80
Speedway Office	7/5/2023	0.00	0.00	0.00	0.00	20.80
Speedway Office	8/8/2023	0.00	0.00	0.00	0.00	20.80
Speedway Office	9/7/2023	0.00	0.00	0.00	0.00	20.80
Speedway Office	10/4/2023	0.00	0.00	0.00	0.00	20.80
Speedway Office	11/2/2023	0.00	0.00	0.00	0.00	20.80

Notes:
GES was in operation

Created By: M. Wagler 12/1/2023
Checked by: M. Holicky 3/1/2024

Attachment 3

Gas Extraction Well Summary Table

Attachment 3
Gas Extraction Well Data Summary - 2023
Wisconsin Department of Natural Resources - Refuse Hideaway Landfill
Madison, Dane County, Wisconsin

Well No.	Date	Well Temperature (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Differential Pressure (in. W.C.)	Final Well Pressure (in. W.C.)	Final Differential Well Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)
GW-1	9/7/2023	64	-5.99	-0.06	0.02	-	-	-	54.1	40.2	0.2	0 / 12	0 / 12
GW-1	9/14/2023	54	-5.75	-0.43	0.01	-	-	-	32.6	38.4	0	0 / 12	0 / 12
GW-1	10/16/2023	46	-5.87	-5.87	0.02	-0.03	0.02	-	21.4	32.8	0.4	0.5 / 12	0.5 / 12
GW-1	11/20/2023	40	-5.61	-0.26	0.03	-0.26	0.03	-	21.3	31.2	0.3	0.5 / 12	0.5 / 12
GW-2	9/7/2023	70	-5.82	-0.44	0.01	0	0	-	0	0.1	20.6	0 / 12	0 / 12
GW-2	9/14/2023	72	-5.58	-0.52	0.01	-	-	-	0	0	20.8	0 / 12	0 / 12
GW-2	10/16/2023	38	-5.77	-5.77	0.02	-0.05	0.02	-	0	0.1	20.7	0 / 12	0 / 12
GW-2	11/20/2023	40	-5.49	-0.44	0.02	-0.44	0.02	-	0	0.2	20.5	0 / 12	0 / 12
GW-3	9/7/2023	62	-5.75	-5.39	0.06	-	-	-	61.8	38.1	0.1	0 / 12	0 / 12
GW-3	9/14/2023	60	-5.5	-5.15	0.06	-	-	-	42.2	36.7	0	0 / 12	0 / 12
GW-3	10/16/2023	52	-5.72	-5.72	0.08	-5.2	0.08	-	30.6	32.5	0	5 / 12	5 / 12
GW-3	11/20/2023	52	-5.37	-5.01	0.07	-5.01	0.07	-	29.3	31.3	0	0.5 / 12	5 / 12
GW-4	9/7/2023	72	-5.73	-0.9	0.01	-0.72	0.01	-	28.9	21.5	5.5	0 / 12	0.25 / 12
GW-4	9/14/2023	74	-5.47	-0.45	0.01	-0.4	-	-	0	0	20.8	0.25 / 12	0 / 12
GW-4	10/16/2023	42	-5.7	-5.7	0.02	-1.1	0.08	-	73.5	26.5	0	0.25 / 12	1 / 12
GW-4	11/20/2023	48	-5.4	-1.31	0.03	-0.93	0.02	-	6.6	17.6	5.1	1 / 12	0.5 / 12
GW-5	9/7/2023	68	-5.67	-5.16	0.07	-3.01	0.24	-	15.5	8.8	14.3	0 / 12	0.5 / 12
GW-5	9/14/2023	74	-5.39	-3.98	0.01	-0.6	0.02	-	17.8	11.6	12	0.5 / 12	0.25 / 12
GW-5	10/16/2023	42	-5.45	-5.45	0.02	-1.3	0.02	-	28.9	18.3	7.6	0.5 / 12	0.5 / 12
GW-5	11/20/2023	42	-5.34	-1.85	0.03	-1.85	0.03	-	25.5	16.3	8.9	0.5 / 12	0.5 / 12
GW-6	9/7/2023	62	-6.05	-3.92	0.01	-	-	-	61.1	38.8	0	0 / 12	0 / 12
GW-6	9/14/2023	62	-5.81	-3.63	0.05	-	-	-	42.4	37.5	0	0 / 12	0 / 12
GW-6	10/16/2023	48	-5.94	-5.94	0.03	-3.57	0.03	-	25.3	32.5	0	1.5 / 12	1.5 / 12
GW-6	11/20/2023	44	-5.8	-3.31	0.04	-3.31	0.04	-	25.9	30.7	0	1.5 / 12	1.5 / 12
GW-7	9/7/2023	72	-5.94	-5.87	0.02	-	-	-	60.2	24.9	3.1	0 / 12	0 / 12
GW-7	9/14/2023	72	-5.73	-5.72	0.02	-	-	-	56.2	27.4	3	0 / 12	0 / 12
GW-7	10/16/2023	48	-5.78	-5.78	0.03	-5.68	0.03	-	49.8	32.6	0.8	6 / 12	7 / 12
GW-7	11/20/2023	44	-5.61	-5.59	0.04	-5.59	0.04	-	37,7	28.5	0.8	7 / 12	7 / 12
GW-8	9/7/2023	72	-5.85	-5.81	0.01	-	-	-	46.1	14.8	7.8	0 / 12	0 / 12
GW-8	9/14/2023	70	-5.98	-5.62	0.03	-	-	-	40.1	13	9.6	0 / 12	0 / 12
GW-8	10/16/2023	46	-5.84	-5.84	0.03	-5.71	0.03	-	62.8	19.8	3.6	2.75 / 12	3.5 / 12
GW-8	11/20/2023	44	-5.48	-5.44	0.04	-5.44	0.04	-	40.4	15,5	7.4	3.5 / 12	3.5 / 12
GW-9	9/7/2023	70	-5.97	-0.67	0.01	-0.13	0.01	-	6.3	2	17.8	0 / 12	0.25 / 12
GW-9	9/14/2023	72	-5.57	-0.12	0.01	-	-	-	10.9	6.2	10.6	0.25 / 12	0.25 / 12
GW-9	10/16/2023	44	-5.54	-5.54	0.01	-0.05	0.01	-	11.5	7.2	9.8	0.25 / 12	0.25 / 12
GW-9	11/20/2023	42	-5.42	-0.08	0.02	-0.08	0.02	-	10.6	6.7	10.5	0.25 / 12	0.25 / 12
GW-10	9/7/2023	68	-6.31	-2.34	0.01	-	-	-	52.6	21.3	3.0	0 / 12	0 / 12
GW-10	9/14/2023	84	-6.14	-2.26	0.02	-	-	-	30.5	20.8	3.3	0 / 12	0 / 12
GW-10	10/16/2023	52	-6.14	-6.14	0.04	-1.18	0.02	-	22.2	24.4	0.9	1 / 12	0.5 / 12
GW-10	11/20/2023	44	-6	-0.77	0.03	-0.77	0.03	-	30.9	25.3	0.6	0.5 / 12	0.5 / 12

Attachment 3
Gas Extraction Well Data Summary - 2023
Wisconsin Department of Natural Resources - Refuse Hideaway Landfill
Madison, Dane County, Wisconsin

Well No.	Date	Well Temperature (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Differential Pressure (in. W.C.)	Final Well Pressure (in. W.C.)	Final Differential Well Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)
GW-11	9/7/2023	72	-6.23	-2.54	0.01	-0.32	0.01	-	7	3.1	17.1	0 / 12	0.25 / 12
GW-11	9/14/2023	80	-6.1	0	0.01	-3.45	0.08	0	79.9	20	0	0.25 / 12	1.5 / 12
GW-11	10/16/2023	48	-5.97	-5.97	0.26	-2.31	0.03	-	4.8	2.6	18.4	1.25 / 12	0.5 / 12
GW-11	11/20/2023	44	-6.09	0.05	0.02	-5.41	0.03	-	81.5	17.8	0	0.5 / 12	1.5 / 12
GW-12	9/7/2023	70	-6.24	-1.06	0.01	-	-	-	27.3	13.5	11.4	0 / 12	0 / 12
GW-12	9/14/2023	72	-6.09	-0.65	0.29	-	-	-	18.9	10.7	13.1	0 / 12	0 / 12
GW-12	10/16/2023	48	-6.02	-6.02	0.02	-0.25	0.01	-	15.8	10.4	13.9	0.25 / 12	0.125 / 12
GW-12	11/20/2023	44	-6.08	0.04	0.02	-1.69	0.02	-	63.4	29.1	0	0.125 / 12	0.75 / 12
GW-13	9/7/2023	72	-6.46	-1.06	0.01	-	-	-	27.6	17.4	6.2	0 / 12	0 / 12
GW-13	9/14/2023	70	-6.02	-1.16	0.01	-	-	-	25.3	16.9	6.6	0 / 12	0 / 12
GW-13	10/16/2023	46	-6.09	-6.09	0.02	-0.17	0.01	-	10.2	10	11.3	0.75 / 12	0.25 / 12
GW-13	11/20/2023	46	-6.02	-0.02	0.02	-3.64	0.03	-	70.6	28.9	0	0.25 / 12	0.75 / 12

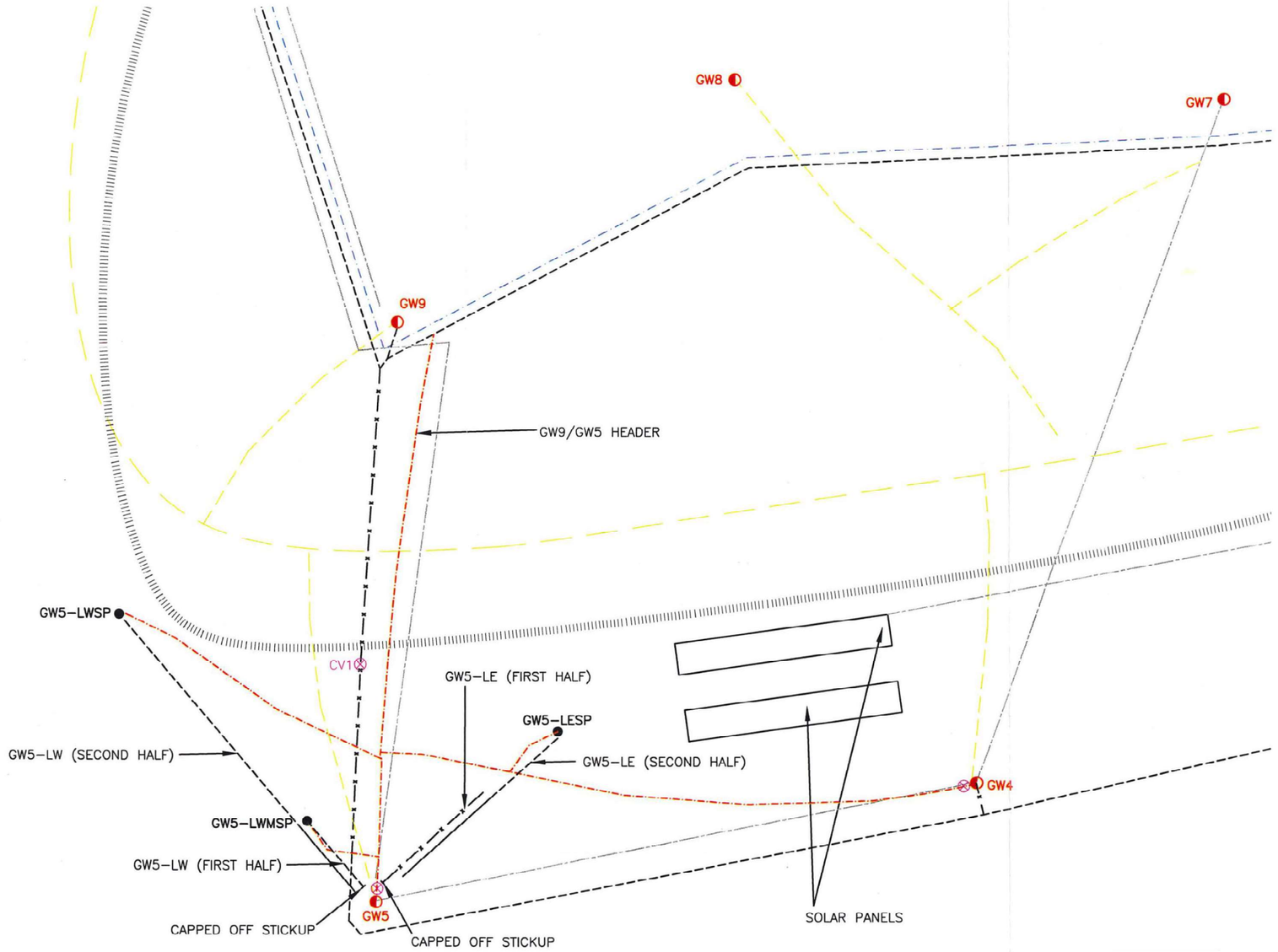
Created By: M. Wagler 12/1/2023
Checked By: M. Holicky 3/1/2024

Attachment 4

Post Construction GW4 and GW5 Landfill Gas Piping Detail

LEGEND

- GW9 — LEACHATE/GAS EXTRACTION WELL LOCATION
- GW5–LWSP — LATERAL WELL SAMPLE PORT LOCATION
- CV1 — CONTROL VALVE LOCATION
- GAS HEADER PIPE
- LEACHATE CONVEYANCE PIPE
- ACCESS ROAD
- ELECTRICAL
- AIR LINE
- NEW GAS HEADER PIPING
- PIPING NO LONGER CONNECTED TO LFG COLLECTION NETWORK



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SCALE IN FEET

NOTE: ALL LOCATIONS ARE APPROXIMATE

WISCONSIN DEPARTMENT OF NATURAL RESOURCES
REFUSE HIDEAWAY LANDFILL
MIDDLETON, WI

POST-CONSTRUCTION GW4 AND GW5
LANDFILL GAS PIPING

FILE: PM_SB_Z.dwg | DATE: May 2015 | FIGURE: 4

Prepared By:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Groundwater and
Environmental Engineering Services
6409 Odana Road, Suite 11
Madison, WI 53719
608.441.5544

REVISED 5/14

Attachment 5

Leachate Laboratory Analytical Report

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Tea Jackson-Strong
TRC Environmental Corporation
999 Fourier Drive, Suite 101
Madison, Wisconsin 53717

Generated 4/10/2023 3:59:06 PM

JOB DESCRIPTION

Refuse Landfill - 457573.0002.0000

JOB NUMBER

500-231323-1

Eurofins Chicago
2417 Bond Street
University Park IL 60484

See page two for job notes and contact information.

Eurofins Chicago

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

Results relate only to the items tested and the sample(s) as received by the laboratory. The results, detection limits (LOD) and Quantitation Limits (LOQ) have been adjusted for sample dilutions and/or solids content.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Chicago Project Manager.

Authorization

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Authorized for release by
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Designee for
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Table of Contents

Case Narrative

Client: TRC Environmental Corporation
Project/Site: Refuse Landfill - 457573.0002.0000

Job ID: 500-231323-1

Job ID: 500-231323-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative
500-231323-1

Comments
No additional comments.

Receipt
The sample was received on 3/28/2023 10:10 AM. Unless otherwise noted below, the sample arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.7º C.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: TRC Environmental Corporation
Project/Site: Refuse Landfill - 457573.0002.0000

Job ID: 500-231323-1

Client Sample ID: Leachate Tank

Lab Sample ID: 500-231323-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	0.89	J B	2.0	0.43	ug/L	1		6010D	Total Recoverable
Chromium	14		10	1.7	ug/L	1		6010D	Total Recoverable
Copper	32	B	10	1.8	ug/L	1		6010D	Total Recoverable
Lead	13		5.0	2.7	ug/L	1		6010D	Total Recoverable
Nickel	13		10	1.9	ug/L	1		6010D	Total Recoverable
Selenium	7.6	J	10	5.3	ug/L	1		6010D	Total Recoverable
Zinc	190		20	5.0	ug/L	1		6010D	Total Recoverable
Mercury	0.11	J	0.20	0.079	ug/L	1		7470A	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: TRC Environmental Corporation
Job ID: 500-231323-1
Project/Site: Refuse Landfill - 457573.0002.0000

Method	Method Description	Protocol	Laboratory
6010D	Metals (ICP)	SW846	EET CHI
7470A	Mercury (CVAA)	SW846	EET CHI
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	EET CHI
7470A	Preparation, Mercury	SW846	EET CHI

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CHI = Eurofins Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

Sample Summary

Client: TRC Environmental Corporation
Project/Site: Refuse Landfill - 457573.0002.0000

Job ID: 500-231323-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-231323-1	Leachate Tank	Water	03/22/23 12:50	03/28/23 10:10

Client Sample Results

Client: TRC Environmental Corporation
Job ID: 500-231323-1
Project/Site: Refuse Landfill - 457573.0002.0000

Client Sample ID: Leachate Tank
Lab Sample ID: 500-231323-1
Date Collected: 03/22/23 12:50
Matrix: Water
Date Received: 03/28/23 10:10

Method: SW846 6010D - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**0.89**	**J B**	2.0	0.43	ug/L		04/04/23 09:29	04/04/23 18:46	1
Chromium	**14**		10	1.7	ug/L		04/04/23 09:29	04/07/23 21:37	1
Copper	**32**	**B**	10	1.8	ug/L		04/04/23 09:29	04/04/23 18:46	1
Lead	**13**		5.0	2.7	ug/L		04/04/23 09:29	04/04/23 18:46	1
Molybdenum	<3.8		10	3.8	ug/L		04/04/23 09:29	04/04/23 18:46	1
Nickel	**13**		10	1.9	ug/L		04/04/23 09:29	04/04/23 18:46	1
Selenium	**7.6**	**J**	10	5.3	ug/L		04/04/23 09:29	04/04/23 18:46	1
Silver	<1.5		5.0	1.5	ug/L		04/04/23 09:29	04/04/23 18:46	1
Zinc	**190**		20	5.0	ug/L		04/04/23 09:29	04/04/23 18:46	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.11**	**J**	0.20	0.079	ug/L		04/03/23 14:55	04/04/23 08:29	1

Definitions/Glossary

Client: TRC Environmental Corporation
Job ID: 500-231323-1
Project/Site: Refuse Landfill - 457573.0002.0000

Qualifiers

Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Metals

Prep Batch: 705605

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-231323-1	Leachate Tank	Total/NA	Water	7470A	
MB 500-705605/13-A	Method Blank	Total/NA	Water	7470A	
LCS 500-705605/12-A	Lab Control Sample	Total/NA	Water	7470A	

Prep Batch: 705757

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-231323-1	Leachate Tank	Total Recoverable	Water	3005A	
MB 500-705757/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 500-705757/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 705825

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-231323-1	Leachate Tank	Total/NA	Water	7470A	705605
MB 500-705605/13-A	Method Blank	Total/NA	Water	7470A	705605
LCS 500-705605/12-A	Lab Control Sample	Total/NA	Water	7470A	705605

Analysis Batch: 706033

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-231323-1	Leachate Tank	Total Recoverable	Water	6010D	705757
MB 500-705757/1-A	Method Blank	Total Recoverable	Water	6010D	705757
LCS 500-705757/2-A	Lab Control Sample	Total Recoverable	Water	6010D	705757

Analysis Batch: 706832

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-231323-1	Leachate Tank	Total Recoverable	Water	6010D	705757
MB 500-705757/1-A	Method Blank	Total Recoverable	Water	6010D	705757
LCS 500-705757/2-A	Lab Control Sample	Total Recoverable	Water	6010D	705757

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 500-705757/1-A
Matrix: Water
Analysis Batch: 706033

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 705757

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	0.557	J	2.0	0.43	ug/L		04/04/23 09:29	04/04/23 17:40	1
Copper	3.41	J	10	1.8	ug/L		04/04/23 09:29	04/04/23 17:40	1
Lead	<2.7		5.0	2.7	ug/L		04/04/23 09:29	04/04/23 17:40	1
Molybdenum	<3.8		10	3.8	ug/L		04/04/23 09:29	04/04/23 17:40	1
Nickel	<1.9		10	1.9	ug/L		04/04/23 09:29	04/04/23 17:40	1
Selenium	<5.3		10	5.3	ug/L		04/04/23 09:29	04/04/23 17:40	1
Silver	<1.5		5.0	1.5	ug/L		04/04/23 09:29	04/04/23 17:40	1
Zinc	<5.0		20	5.0	ug/L		04/04/23 09:29	04/04/23 17:40	1

Lab Sample ID: MB 500-705757/1-A
Matrix: Water
Analysis Batch: 706832

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 705757

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	<1.7		10	1.7	ug/L		04/04/23 09:29	04/07/23 20:28	1

Lab Sample ID: LCS 500-705757/2-A
Matrix: Water
Analysis Batch: 706033

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 705757

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Cadmium	50.0	50.5		ug/L		101	80 - 120
Copper	250	255		ug/L		102	80 - 120
Lead	100	93.1		ug/L		93	80 - 120
Molybdenum	1000	975		ug/L		97	80 - 120
Nickel	500	472		ug/L		94	80 - 120
Selenium	100	94.2		ug/L		94	80 - 120
Silver	50.0	46.0		ug/L		92	80 - 120
Zinc	500	446		ug/L		89	80 - 120

Lab Sample ID: LCS 500-705757/2-A
Matrix: Water
Analysis Batch: 706832

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 705757

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chromium	200	190		ug/L		95	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 500-705605/13-A
Matrix: Water
Analysis Batch: 705825

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 705605

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.079		0.20	0.079	ug/L		04/03/23 14:55	04/04/23 07:32	1

Client: TRC Environmental Corporation
Project/Site: Refuse Landfill - 457573.0002.0000

Job ID: 500-231323-1

Method: 7470A - Mercury (CVAA) (Continued)

Lab Sample ID: LCS 500-705605/12-A
Matrix: Water
Analysis Batch: 705825

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 705605

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Mercury			1.98	1.91		ug/L		96	80 - 120		

Lab Chronicle

Client: TRC Environmental Corporation
Project/Site: Refuse Landfill - 457573.0002.0000

Job ID: 500-231323-1

Client Sample ID: Leachate Tank

Date Collected: 03/22/23 12:50
Date Received: 03/28/23 10:10

Lab Sample ID: 500-231323-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	3005A			705757	BDE	EET CHI	04/04/23 09:29 - 04/04/23 09:59 [1]
Total Recoverable	Analysis	6010D		1	706033	CMS	EET CHI	04/04/23 18:46
Total Recoverable	Prep	3005A			705757	BDE	EET CHI	04/04/23 09:29 - 04/04/23 09:59 [1]
Total Recoverable	Analysis	6010D		1	706832	CMS	EET CHI	04/07/23 21:37
Total/NA	Prep	7470A			705605	MJG	EET CHI	04/03/23 14:55 - 04/03/23 16:55 [1]
Total/NA	Analysis	7470A		1	705825	MJG	EET CHI	04/04/23 08:29

[1] Completion dates and times are reported or not reported per method requirements or individual lab discretion.

Laboratory References:

EET CHI = Eurofins Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

Accreditation/Certification Summary

Client: TRC Environmental Corporation
Job ID: 500-231323-1
Project/Site: Refuse Landfill - 457573.0002.0000

Laboratory: Eurofins Chicago

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	999580010	08-31-23

Chain of Custody Record

638986

Environment Testing America

Address

Regulatory Program ☐ DW ☐ NPDES ☐ RCRA ☐ Other

500-231323 COC TAL-8210

Client Contact	Project Manager: Andy Stehn	Site Contact: Andy Stehn	Date: 3/27/23	2 1 0 4 3 1
Company Name: TRC	Tel/Email: (608) 807-8112	Lab Contact: Sandra Fredrick	Carrier: Fed Ex	1 of 1 COCs
Address: 999 Fourier Dr.	Analysis Turnaround Time			Sampler: John Keelke
City/State/Zip: Madison, WI 53717	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only
Phone: (608) 807-8112	TAT if different from Below			Walk in Client
Fax: astehn@trccompanies.com	☐ 2 weeks			Lab Sampling
Project Name: Refuse Landfill	☒ 1 week			
Site: Middleton WI	☐ 2 days			Job / SDG No.: 500-231323
P O #: 457573.0002.0000	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	T. Cadmium	T. Chromium	T. Copper	T. Lead	T. Nickel	T. Selenium	T. Silver	T. Zinc	T. Molybdenum	T. Mercury	Sample Specific Notes
1 Leachate Tank	3/27/23	12:50	G	W	1	N	N	X	X	X	X	X	X	X	X	X	X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample

☐ Non Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments

Custody Seals Intact ☐ Yes ☐ No | Custody Seal No | Cooler Temp (°C) Obs'd 1.3 Corr'd 1.7 | Therm ID No

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
	TRC	3/27/23 1310			
Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Relinquished by	Company	Date/Time	Received in Laboratory by	Company	Date/Time
					3/28/23 1010

500-231323 Waybi

ORIGIN ID RRLA (262) 202-5955
IAN EVANS
EUROFINS TESTAMERICA
4125 N 124TH ST
SUITE F (REAR)
BROOKFIELD, WI 53005
UNITED STATES US

SHIP DATE: 24MAR23
ACTWGT: 20.00 LB MAN
CAD: 0269688/CAFE3621

BILL SENDER

TO **SAMPLE RECEIPT**
EUROFINS
2417 BOND ST.

UNIVERSITY PARK IL 60484

(262) 202-5955 REF
INV:
PO: DEPT:

FedEx Express

FedEx
TRK# 0201 6374 2028 2447

TUE - 28 MAR A
PRIORITY OVERNIGH

Login Sample Receipt Checklist

Client: TRC Environmental Corporation

Job Number: 500-231323-1

Login Number: 231323
List Number: 1
Creator: James, Jeff A

List Source: Eurofins Chicago

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.7
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Andy Stehn
TRC Environmental Corporation
21 Griffin Rd North
Windsor, Connecticut 06095

Generated 7/10/2023 1:36:37 PM

JOB DESCRIPTION

Refuse LF Leachate - 457573

JOB NUMBER

500-236066-1

Eurofins Chicago
2417 Bond Street
University Park IL 60484

See page two for job notes and contact information.

Eurofins Chicago

Job Notes

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Results relate only to the items tested and the sample(s) as received by the laboratory. The results, detection limits (LOD) and Quantitation Limits (LOQ) have been adjusted for sample dilutions and/or solids content.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Chicago Project Manager.

Authorization

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7/10/2023 1:36:37 PM

Authorized for release by
Sandie Fredrick, Project Manager II
Sandra.Fredrick@et.eurofinsus.com
(920)261-1660

Table of Contents

Case Narrative

Client: TRC Environmental Corporation
Project/Site: Refuse LF Leachate - 457573

Job ID: 500-236066-1

Job ID: 500-236066-1

Laboratory: Eurofins Chicago

Narrative

Job Narrative
500-236066-1

Receipt
The sample was received on 7/1/2023 10:30 AM. Unless otherwise noted below, the sample arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.0º C.

Receipt Exceptions
The Chain-of-Custody (COC) was incomplete as received and/or improperly completed. Updated sample ID to 06-30-23 per client request.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: TRC Environmental Corporation
Project/Site: Refuse LF Leachate - 457573

Job ID: 500-236066-1

Client Sample ID: Leachate Tank

Lab Sample ID: 500-236066-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Copper	4.1	J B	10	1.8	ug/L	1		6010D	Total Recoverable
Zinc	7.1	J	20	5.0	ug/L	1		6010D	Total Recoverable

This Detection Summary does not include radiochemical test results.

Method Summary

Client: TRC Environmental Corporation
Project/Site: Refuse LF Leachate - 457573

Job ID: 500-236066-1

Method	Method Description	Protocol	Laboratory
6010D	Metals (ICP)	SW846	EET CHI
7470A	Mercury (CVAA)	SW846	EET CHI
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	EET CHI
7470A	Preparation, Mercury	SW846	EET CHI

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CHI = Eurofins Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

Sample Summary

Client: TRC Environmental Corporation
Project/Site: Refuse LF Leachate - 457573

Job ID: 500-236066-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-236066-1	Leachate Tank	Water	06/30/23 15:30	07/01/23 10:30

Client Sample Results

Client: TRC Environmental Corporation
Project/Site: Refuse LF Leachate - 457573

Job ID: 500-236066-1

Client Sample ID: Leachate Tank

Lab Sample ID: 500-236066-1

Date Collected: 06/30/23 15:30

Matrix: Water

Date Received: 07/01/23 10:30

Method: SW846 6010D - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	<0.43		2.0	0.43	ug/L		07/06/23 08:24	07/06/23 23:23	1
Chromium	<1.7		10	1.7	ug/L		07/06/23 08:24	07/06/23 23:23	1
Copper	**4.1**	**J B**	10	1.8	ug/L		07/06/23 08:24	07/06/23 23:23	1
Lead	<2.7		5.0	2.7	ug/L		07/06/23 08:24	07/06/23 23:23	1
Molybdenum	<3.8		10	3.8	ug/L		07/06/23 08:24	07/06/23 23:23	1
Nickel	<1.9		10	1.9	ug/L		07/06/23 08:24	07/06/23 23:23	1
Selenium	<5.3		10	5.3	ug/L		07/06/23 08:24	07/06/23 23:23	1
Silver	<1.5		5.0	1.5	ug/L		07/06/23 08:24	07/06/23 23:23	1
Zinc	**7.1**	**J**	20	5.0	ug/L		07/06/23 08:24	07/06/23 23:23	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.079		0.20	0.079	ug/L		07/07/23 10:00	07/10/23 08:27	1

Definitions/Glossary

Client: TRC Environmental Corporation
Project/Site: Refuse LF Leachate - 457573

Job ID: 500-236066-1

Qualifiers

Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

QC Association Summary

Client: TRC Environmental Corporation
Project/Site: Refuse LF Leachate - 457573

Job ID: 500-236066-1

Metals

Prep Batch: 721843

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-236066-1	Leachate Tank	Total Recoverable	Water	3005A	
MB 500-721843/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 500-721843/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
500-236066-1 MS	Leachate Tank	Total Recoverable	Water	3005A	
500-236066-1 MSD	Leachate Tank	Total Recoverable	Water	3005A	
500-236066-1 DU	Leachate Tank	Total Recoverable	Water	3005A	

Prep Batch: 722085

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-236066-1	Leachate Tank	Total/NA	Water	7470A	
MB 500-722085/12-A	Method Blank	Total/NA	Water	7470A	
LCS 500-722085/13-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 722102

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-236066-1	Leachate Tank	Total Recoverable	Water	6010D	721843
MB 500-721843/1-A	Method Blank	Total Recoverable	Water	6010D	721843
LCS 500-721843/2-A	Lab Control Sample	Total Recoverable	Water	6010D	721843
500-236066-1 MS	Leachate Tank	Total Recoverable	Water	6010D	721843
500-236066-1 MSD	Leachate Tank	Total Recoverable	Water	6010D	721843
500-236066-1 DU	Leachate Tank	Total Recoverable	Water	6010D	721843

Analysis Batch: 722326

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-236066-1	Leachate Tank	Total/NA	Water	7470A	722085
MB 500-722085/12-A	Method Blank	Total/NA	Water	7470A	722085
LCS 500-722085/13-A	Lab Control Sample	Total/NA	Water	7470A	722085

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 500-721843/1-A
Matrix: Water
Analysis Batch: 722102

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 721843

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	<0.43		2.0	0.43	ug/L		07/06/23 08:24	07/06/23 23:16	1
Chromium	<1.7		10	1.7	ug/L		07/06/23 08:24	07/06/23 23:16	1
Copper	1.81	J	10	1.8	ug/L		07/06/23 08:24	07/06/23 23:16	1
Lead	<2.7		5.0	2.7	ug/L		07/06/23 08:24	07/06/23 23:16	1
Molybdenum	<3.8		10	3.8	ug/L		07/06/23 08:24	07/06/23 23:16	1
Nickel	<1.9		10	1.9	ug/L		07/06/23 08:24	07/06/23 23:16	1
Selenium	<5.3		10	5.3	ug/L		07/06/23 08:24	07/06/23 23:16	1
Silver	<1.5		5.0	1.5	ug/L		07/06/23 08:24	07/06/23 23:16	1
Zinc	<5.0		20	5.0	ug/L		07/06/23 08:24	07/06/23 23:16	1

Lab Sample ID: LCS 500-721843/2-A
Matrix: Water
Analysis Batch: 722102

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 721843

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Cadmium	50.0	50.8		ug/L		102	80 - 120
Chromium	200	200		ug/L		100	80 - 120
Copper	250	260		ug/L		104	80 - 120
Lead	100	101		ug/L		101	80 - 120
Molybdenum	1000	986		ug/L		99	80 - 120
Nickel	500	509		ug/L		102	80 - 120
Selenium	100	93.3		ug/L		93	80 - 120
Silver	50.0	51.5		ug/L		103	80 - 120
Zinc	500	504		ug/L		101	80 - 120

Lab Sample ID: 500-236066-1 MS
Matrix: Water
Analysis Batch: 722102

Client Sample ID: Leachate Tank
Prep Type: Total Recoverable
Prep Batch: 721843

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Cadmium	<0.43		50.0	51.4		ug/L		103	75 - 125
Chromium	<1.7		200	197		ug/L		99	75 - 125
Copper	4.1	J B	250	269		ug/L		106	75 - 125
Lead	<2.7		100	102		ug/L		102	75 - 125
Molybdenum	<3.8		1000	995		ug/L		100	75 - 125
Nickel	<1.9		500	511		ug/L		102	75 - 125
Selenium	<5.3		100	97.8		ug/L		98	75 - 125
Silver	<1.5		50.0	50.8		ug/L		102	75 - 125
Zinc	7.1	J	500	505		ug/L		100	75 - 125

Lab Sample ID: 500-236066-1 MSD
Matrix: Water
Analysis Batch: 722102

Client Sample ID: Leachate Tank
Prep Type: Total Recoverable
Prep Batch: 721843

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Cadmium	<0.43		50.0	52.0		ug/L		104	75 - 125	1	20
Chromium	<1.7		200	199		ug/L		99	75 - 125	1	20
Copper	4.1	J B	250	268		ug/L		106	75 - 125	0	20
Lead	<2.7		100	103		ug/L		103	75 - 125	1	20

Method: 6010D - Metals (ICP) (Continued)

Lab Sample ID: 500-236066-1 MSD
Matrix: Water
Analysis Batch: 722102

Client Sample ID: Leachate Tank
Prep Type: Total Recoverable
Prep Batch: 721843

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Molybdenum	<3.8		1000	1000		ug/L		100	75 - 125	0	20
Nickel	<1.9		500	517		ug/L		103	75 - 125	1	20
Selenium	<5.3		100	99.4		ug/L		99	75 - 125	2	20
Silver	<1.5		50.0	50.8		ug/L		102	75 - 125	0	20
Zinc	7.1	J	500	509		ug/L		100	75 - 125	1	20

Lab Sample ID: 500-236066-1 DU
Matrix: Water
Analysis Batch: 722102

Client Sample ID: Leachate Tank
Prep Type: Total Recoverable
Prep Batch: 721843

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Cadmium	<0.43		<0.43		ug/L		NC	20
Chromium	<1.7		<1.7		ug/L		NC	20
Copper	4.1	J B	3.93	J	ug/L		4	20
Lead	<2.7		<2.7		ug/L		NC	20
Molybdenum	<3.8		<3.8		ug/L		NC	20
Nickel	<1.9		<1.9		ug/L		NC	20
Selenium	<5.3		<5.3		ug/L		NC	20
Silver	<1.5		<1.5		ug/L		NC	20
Zinc	7.1	J	<5.0		ug/L		NC	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 500-722085/12-A
Matrix: Water
Analysis Batch: 722326

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 722085

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.079		0.20	0.079	ug/L		07/07/23 10:00	07/10/23 07:34	1

Lab Sample ID: LCS 500-722085/13-A
Matrix: Water
Analysis Batch: 722326

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 722085

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	1.98	1.95		ug/L		98	80 - 120

Lab Chronicle

Client: TRC Environmental Corporation
Project/Site: Refuse LF Leachate - 457573

Job ID: 500-236066-1

Client Sample ID: Leachate Tank

Date Collected: 06/30/23 15:30
Date Received: 07/01/23 10:30

Lab Sample ID: 500-236066-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	3005A			721843	BDE	EET CHI	07/06/23 08:24 - 07/06/23 08:54 [1]
Total Recoverable	Analysis	6010D		1	722102	FXG	EET CHI	07/06/23 23:23
Total/NA	Prep	7470A			722085	MJG	EET CHI	07/07/23 10:00 - 07/07/23 12:00 [1]
Total/NA	Analysis	7470A		1	722326	MJG	EET CHI	07/10/23 08:27

[1] This procedure uses a method stipulated length of time for the process. Both start and end times are displayed.

Laboratory References:

EET CHI = Eurofins Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

Accreditation/Certification Summary

Client: TRC Environmental Corporation
Job ID: 500-236066-1
Project/Site: Refuse LF Leachate - 457573

Laboratory: Eurofins Chicago

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	999580010	08-31-23

Eurofins Chicago
2417 Bond Street
University Park IL 60484
Phone 708-534 5200 Fax 708-534 52

Chain of Custody Record

eurofins

500-236066 COC

Client Information	Sampler	Lab PM	Carrier Tracking No(s)	COC No
Client Contact: Andy Stehn	Tom w/ Perkins	Fredrick Sandie		500-114148-46275 1
Company: TRC Environmental Corporation	Phone: (608) 347-2022	E Mail: Sandra.Fredrick@et.eurofinsus.com	State of Origin: WI	Page: Page 1 of 1
Address: ~~21 Griffin Rd North~~ 999 Fourier Dr. Ste 101	PWSID	Analysis Requested		Job #: 500-236066
City: ~~Windsor~~ Madison	Due Date Requested			Preservation Codes
State, Zip: ~~CT, 06095~~ WI, 53717	TAT Requested (days): Standard			A HCL, B NaOH, C Zn Acetate, D Nitric Acid, E NaHSO4, F MeOH, G Amchlor, H Ascorbic Acid, I Ice, J DI Water, K EDTA, L EDA, M Hexane, N None, O AsNaO2, P Na2O4S, Q Na2SO3, R Na2S2O3, S H2SO4, T TSP Dodecahydrate, U Acetone, V MCAA, W pH 4-5, Y Trizma, Z other (specify)
Phone: (608) 807-8112	Compliance Project: Δ Yes Δ No			Other:
Email: AStehn@trccompanies.com	PO #: Purchase Order Requested			
Project Name: Refuse LF Leachate 457573	WO #:			
Site: Refuse Hideaway Landfill	Project #: 50020017			
	SSOW#:			

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010D, 7470A	Total Number of containers	Special Instructions/Note
			Preservation Code:				D		
LEACHATE TANK	11/30/2023	1530	G	Water			X		

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested I II III IV Other (specify)

Special Instructions/QC Requirements

Empty Kit Relinquished by	Date	Time	Method of Shipment

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Tom w. Perkins	11/30/2023 1730	TRC	Stephanie Hernandez	7/1/23 1030	EETA
Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Relinquished by	Date/Time	Company	Received by	Date/Time	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No	Cooler Temperature(s) °C and Other Remarks
		3.4+3.0


ORIGIN ID:RRLA (262) 202 5955
JOHN ROELKE
TRC
21 GRIFFIN R D NORTH
WINDSOR, CT 06095
UNITED STATES US
SHIP DATE: 27JUN23
ACTWGT: 15.00 LB MAN
CAD: 0269688/CAFE3707
TO SAMPLE RECIEPT
EUROFINS CHICAGO
2417 BOND STREET
UNIVERSITY PARK IL 60484
(708) 534-5200
INV:
PO
REF
DEPT
RMA
500-236066 Waybi
FedEx
Express
FedEx
TRK# 0221 6483 4233 9780
SATURDAY 12:00P
PRIORITY OVERNIGHT
60484
IL-US ORD
XO JOTA
Ref #156297-435 BRDR2 EXP 04/24

16qt.

Login Sample Receipt Checklist

Client: TRC Environmental Corporation

Job Number: 500-236066-1

Login Number: 236066
List Number: 1
Creator: Scott, Sherri L

List Source: Eurofins Chicago

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

October 11, 2023

Andrew Stehn
TRC Madison
708 Heartland Trail
Madison, WI 53717

RE: Project: REFUSE LANDFILL-LEACHATE
Pace Project No.: 40268811

Dear Andrew Stehn:

Enclosed are the analytical results for sample(s) received by the laboratory on September 29, 2023. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Green Bay

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Tod Noltemeyer

Tod Noltemeyer
tod.noltemeyer@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Peggy Popp, TRC - Madison

Pace Analytical Services, LLC
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(920)469-2436

CERTIFICATIONS

Project: REFUSE LANDFILL-LEACHATE
Pace Project No.: 40268811

Pace Analytical Services Green Bay
1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
South Carolina Certification #: 83006001
Texas Certification #: T104704529-21-8
Virginia VELAP Certification ID: 11873
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-21-00008
Federal Fish & Wildlife Permit #: 51774A

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: REFUSE LANDFILL-LEACHATE
Pace Project No.: 40268811

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40268811001	**LEACHATE TANK**	Water	09/28/23 12:55	09/29/23 09:10

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SAMPLE ANALYTE COUNT

Project: REFUSE LANDFILL-LEACHATE
Pace Project No.: 40268811

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40268811001	**LEACHATE TANK**	EPA 6010D	SIS	9
		EPA 7470	AJT	1

PASI-G = Pace Analytical Services - Green Bay

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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SUMMARY OF DETECTION

Project: REFUSE LANDFILL-LEACHATE
Pace Project No.: 40268811

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
40268811001	**LEACHATE TANK**					
EPA 6010D	Chromium	3.1J	ug/L	10.0	10/03/23 14:19	
EPA 6010D	Copper	6.7J	ug/L	10.0	10/03/23 14:19	
EPA 6010D	Nickel	4.2J	ug/L	10.0	10/03/23 14:19	
EPA 6010D	Zinc	67.7	ug/L	40.0	10/03/23 14:19	

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PROJECT NARRATIVE

Project: REFUSE LANDFILL-LEACHATE
Pace Project No.: 40268811

Method: **EPA 6010D**
Description: 6010D MET ICP
Client: TRC - MADISON
Date: October 11, 2023

General Information:
1 sample was analyzed for EPA 6010D by Pace Analytical Services Green Bay. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010A with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: REFUSE LANDFILL-LEACHATE
Pace Project No.: 40268811

Method: **EPA 7470**
Description: 7470 Mercury
Client: TRC - MADISON
Date: October 11, 2023

General Information:
1 sample was analyzed for EPA 7470 by Pace Analytical Services Green Bay. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 7470 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: REFUSE LANDFILL-LEACHATE
Pace Project No.: 40268811

Sample: LEACHATE TANK **Lab ID: 40268811001** Collected: 09/28/23 12:55 Received: 09/29/23 09:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Cadmium	**<1.3**	ug/L	5.0	1.3	1	10/02/23 13:22	10/03/23 14:19	7440-43-9	
Chromium	**3.1J**	ug/L	10.0	2.5	1	10/02/23 13:22	10/03/23 14:19	7440-47-3	
Copper	**6.7J**	ug/L	10.0	3.4	1	10/02/23 13:22	10/03/23 14:19	7440-50-8	
Lead	**<5.9**	ug/L	20.0	5.9	1	10/02/23 13:22	10/03/23 14:19	7439-92-1	
Molybdenum	**<2.4**	ug/L	10.0	2.4	1	10/02/23 13:22	10/03/23 14:19	7439-98-7	
Nickel	**4.2J**	ug/L	10.0	2.6	1	10/02/23 13:22	10/03/23 14:19	7440-02-0	
Selenium	**<12.2**	ug/L	40.0	12.2	1	10/02/23 13:22	10/03/23 14:19	7782-49-2	
Silver	**<3.2**	ug/L	10.0	3.2	1	10/02/23 13:22	10/03/23 14:19	7440-22-4	
Zinc	**67.7**	ug/L	40.0	11.6	1	10/02/23 13:22	10/03/23 14:19	7440-66-6	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470 Pace Analytical Services - Green Bay								
Mercury	**<0.066**	ug/L	0.20	0.066	1	10/10/23 07:20	10/10/23 13:44	7439-97-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: REFUSE LANDFILL-LEACHATE
Pace Project No.: 40268811

QC Batch: 457014
QC Batch Method: EPA 7470
Analysis Method: EPA 7470
Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40268811001

METHOD BLANK: 2624286 Matrix: Water
Associated Lab Samples: 40268811001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.066	0.20	10/10/23 12:51	

LABORATORY CONTROL SAMPLE: 2624287

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.6	112	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2624288 2624289

Parameter	Units	40268716021 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.066	5	5	5.4	5.4	108	108	85-115	0	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: REFUSE LANDFILL-LEACHATE
Pace Project No.: 40268811

QC Batch: 456321
QC Batch Method: EPA 3010A
Analysis Method: EPA 6010D
Analysis Description: 6010D MET
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40268811001

METHOD BLANK: 2620542 Matrix: Water
Associated Lab Samples: 40268811001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium	ug/L	<1.3	5.0	10/03/23 13:45	
Chromium	ug/L	<2.5	10.0	10/03/23 13:45	
Copper	ug/L	<3.4	10.0	10/03/23 13:45	
Lead	ug/L	<5.9	20.0	10/03/23 13:45	
Molybdenum	ug/L	<2.4	10.0	10/03/23 13:45	
Nickel	ug/L	<2.6	10.0	10/03/23 13:45	
Selenium	ug/L	<12.2	40.0	10/03/23 13:45	
Silver	ug/L	<3.2	10.0	10/03/23 13:45	
Zinc	ug/L	<11.6	40.0	10/03/23 13:45	

LABORATORY CONTROL SAMPLE: 2620543

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium	ug/L	250	257	103	80-120	
Chromium	ug/L	250	255	102	80-120	
Copper	ug/L	250	261	104	80-120	
Lead	ug/L	250	263	105	80-120	
Molybdenum	ug/L	250	258	103	80-120	
Nickel	ug/L	250	260	104	80-120	
Selenium	ug/L	250	259	103	80-120	
Silver	ug/L	125	130	104	80-120	
Zinc	ug/L	250	258	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2620544 2620545

Parameter	Units	40268786034 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium	ug/L	<2.7	250	250	264	257	105	102	75-125	3	20	
Chromium	ug/L	28.4	250	250	290	283	105	102	75-125	2	20	
Copper	ug/L	9.0J	250	250	277	272	107	105	75-125	2	20	
Lead	ug/L	<11.8	250	250	262	256	105	103	75-125	2	20	
Molybdenum	ug/L	6.1J	250	250	271	265	106	103	75-125	3	20	
Nickel	ug/L	121	250	250	388	381	107	104	75-125	2	20	
Selenium	ug/L	<24.5	250	250	277	250	111	100	75-125	10	20	
Silver	ug/L	<6.4	125	125	134	132	107	105	75-125	1	20	
Zinc	ug/L	<23.1	250	250	271	264	101	99	75-125	2	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Green Bay, WI 54302
(920)469-2436

QUALIFIERS

Project: REFUSE LANDFILL-LEACHATE
Pace Project No.: 40268811

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

DL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: REFUSE LANDFILL-LEACHATE
Pace Project No.: 40268811

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40268811001	**LEACHATE TANK**	EPA 3010A	456321	EPA 6010D	456432
40268811001	**LEACHATE TANK**	EPA 7470	457014	EPA 7470	457058

CHAIN-OF-CUSTODY Analytical Request Document

Pace Analytical®

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevent fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-In Number Here: 40268811

ALL SHADED AREAS are for LAB USE ONLY

Company: TRC	Billing Information: 457573
Address: 999 Fourier Dr Suite 101	
Report To: Andy Stehn	Email To: astehn@trccompanies.com
Copy To:	Site Collection Info/Address:
Customer Project Name/Number: Refuse Landfill	State: WI County/City: Dane/Middleton Time Zone Collected: [ ] PT [ ] MT [ ] CT [ ] ET
Phone: / Email:	Site/Facility ID #:
Collected By (print): John Roelfs	Purchase Order #: / Quote #:
Collected By (signature):	Turnaround Date Required:
Sample Disposal: [X] Dispose as appropriate [ ] Return [ ] Archive: _____ [ ] Hold._____	Rush: [ ] Same Day [ ] Next Day [ ] 2 Day [ ] 3 Day [ ] 4 Day [ ] 5 Day (Expedite Charges Apply)

Compliance Monitoring? [ ] Yes [ ] No

DW PWS ID #: / DW Location Code:

Immediately Packed on Ice: [ ] Yes [ ] No

Field Filtered (if applicable): [ ] Yes [ ] No

Analysis: _____

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Container Preservative Type **: 1

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other _____

Lab Project Manager:

Analyses: metals

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start) Date	Collected (or Composite Start) Time	Composite End Date	Composite End Time	Res Cl	# of Ctns	Analyses	Lab Profile/Line
Leachate Tank	OT	G	9/28/23	12:55	—	—		1	X	001

Lab Sample Receipt Checklist:

Custody Seals Present/Intact	Y	N	NA
Custody Signatures Present	Y	N	NA
Collector Signature Present	Y	N	NA
Bottles Intact	Y	N	NA
Correct Bottles	Y	N	NA
Sufficient Volume	Y	N	NA
Samples Received on Ice	Y	N	NA
VOA - Headspace Acceptable	Y	N	NA
USDA Regulated Soils	Y	N	NA
Samples in Holding Time	Y	N	NA
Residual Chlorine Present	Y	N	NA
Cl Strips:			
Sample pH Acceptable	Y	N	NA
pH Strips:			
Sulfide Present	Y	N	NA
Lead Acetate Strips:			

LAB USE ONLY: Lab Sample # / Comments:

SCURF 9/29/23 NL

Customer Remarks / Special Conditions / Possible Hazards: Leachate Sample

Type of Ice Used: Wet Blue Dry None

Packing Material Used:

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #: 2881765

Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:
Temp Blank Received: Y N NA
Therm ID#: _____
Cooler 1 Temp Upon Receipt: ____oC
Cooler 1 Therm Corr. Factor: ____oC
Cooler 1 Corrected Temp: ____oC
Comments: 1

Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:
TRC	9/28/23		
Fedex	9/29/23 0910	Pace	9/29/23 0910

MTJL LAB USE ONLY
Table #:
Acctnum:
Template:
Prelogin:
PM:
PB:

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Non Conformance(s): YES / NO

Sample Preservation Receipt Form

Client Name: TRC Project # 402688 11

All containers needing preservation have been checked and noted below. ☒Yes ☐No ☐N/A Initial when completed NK Date/ Time

Lab Lot# of pH paper 1002723 Lab Std #ID of preservation (if pH adjusted)

Pace Lab #	Glass							Plastic						Vials						Jars				General				VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
	AG1U	BG1U	AG1H	AG4S	AG5U	AG2S	BG3U	BP1U	BP3U	BP3B	BP3N	BP3S	BP2Z	VG9C	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	JG9U	WGFU	WPFU	SP5T	ZPLC	GN 1	GN 2							
001																																X		2.5 / 5
002																																		2.5 / 5
003																																		2.5 / 5
004																																		2.5 / 5
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019																																		2.5 / 5
020																																		2.5 / 5

9/29/23 NK

Exceptions to preservation check VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other_____ Headspace in VOA Vials (>6mm) . ☐Yes ☐No ☒N/A ***If yes look in headspace column**

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	VG9C	40 mL clear ascorbic w/ HCl	JGFU	4 oz amber jar unpres
BG1U	1 liter clear glass	BP3U	250 mL plastic unpres	DG9T	40 mL amber Na Thio	JG9U	9 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP3B	250 mL plastic NaOH	VG9U	40 mL clear vial unpres	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9H	40 mL clear vial HCL	WPFU	4 oz plastic jar unpres
AG5U	100 mL amber glass unpres	BP3S	250 mL plastic H2SO4	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG2S	500 mL amber glass H2SO4	BP2Z	500 mL plastic NaOH + Zn	VG9D	40 mL clear vial DI	ZPLC	ziploc bag
BG3U	250 mL clear glass unpres					GN 1	
						GN 2	

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Sample Condition Upon Receipt Form (SCUR)

Project #:

WO# : 40268811

40268811

Client Name: TRC

Courier: ☐ CS Logistics ☒ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco
☐ Client ☐ Pace Other:

Tracking #: 773576928721

Custody Seal on Cooler/Box Present: ☒ yes ☐ no Seals intact: ☒ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other

Thermometer Used SR - 134 **Type of Ice:** (Wet) Blue Dry None ☐ Meltwater Only

Cooler Temperature Uncorr. 1.0 /Corr: 1.0

Temp Blank Present: ☒ yes ☐ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Person examining contents:
Date: 9/29/23 /Initials: NK

Labeled By Initials: MA

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	☒Yes ☐No ☐N/A	1. + CC 9/29/23 NK
Chain of Custody Filled Out:	☒Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☒Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☒Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☒Yes ☐No	5.
- DI VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☒No	6.
Rush Turn Around Time Requested:	☐Yes ☒No	7.
Sufficient Volume:		8.
For Analysis: ☒Yes ☐No MS/MSD:	☐Yes ☒No ☐N/A	
Correct Containers Used:	☒Yes ☐No	9.
Correct Type: ~~Pace Green Bay,~~ Pace IR, Non-Pace		
Containers Intact:	☒Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☒N/A	11.
Sample Labels match COC:	☒Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: W		
Trip Blank Present:	☐Yes ☐No ☒N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☒N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: Date/Time:

Comments/ Resolution:

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logi